

The Mountain Research Station

A RESEARCH STATION with an ALTITUDE



INSTITUTE of ARCTIC and ALPINE RESEARCH
UNIVERSITY OF COLORADO at BOULDER

Jean Matthews Kindig

***A RESEARCH STATION
with an ALTITUDE***

A HISTORY OF THE
MOUNTAIN RESEARCH STATION

INSTITUTE OF ARCTIC AND ALPINE RESEARCH
UNIVERSITY OF COLORADO at BOULDER

Jean Matthews Kindig



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Front cover: Climatologists servicing the D-2 Environment-Measurement Station on Niwot Ridge in winter, 1953. Shoshoni Peak is in the background on the Continental Divide (Marr, Archives, UCB Libraries).

Title page: the logo for the Mountain Research Station was designed by Olga Plam.

Photographs cited Archives, UCB (University of Colorado at Boulder) Libraries are in the Mountain Research Station collection.

The map on page vi is a portion of a map printed in the Science Lodge brochures of the 1930s and 1940s.

This is the story of a research and teaching facility and this book is dedicated to all the people who shaped its direction and growth.

The author gratefully acknowledges the many people who provided photographs, documents, and recollections, and expresses appreciation for technical assistance ably provided by Mariah Carbone, Scott Elias, Dave Kindig and Susan Sheldon. This book was made possible with the help of the Mountain Research Station, the Niwot Ridge-LTER program, and INSTAAR.

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INTRODUCTION

The Mountain Research Station (MRS) is an interdisciplinary research and educational facility operated by the Institute of Arctic and Alpine Research (INSTAAR) within the Office of the Associate Vice Chancellor for Research, University of Colorado, and overseen by the Dean of the Graduate School. The station is located 40 km (25 miles) west of Boulder in a lodgepole pine forest at 2880 m (9500 ft) in the Front Range of the Colorado Rockies. The MRS provides logistic support for the study of mountain ecosystems, particularly on Niwot Ridge and in the Green Lakes Valley.



(J. Kindig)

*John W. Marr Alpine Laboratory
Mountain Research Station, 1999*

THE MOUNTAIN LABORATORY

The precedence for a mountain field station was established in **1909** when **Dr. Francis Ramaley** started the **Mountain Laboratory** at Tolland, Colorado. Ramaley came to the University of Colorado in 1898 as a botanist-ecologist and was convinced there should be a mountain location to provide instruction in botany and zoology. He recognized the enormous potential for mountain field studies, with diverse environmental conditions and varied biota for study from the Plains to the Continental Divide.

The Mountain Laboratory was approved by the Regents of the University of Colorado in **1908** and classes started the next summer. The field station was a collection of buildings in Tolland, Gilpin County, along South Boulder Creek. Students, faculty, and visiting researchers could access the Lab by train on the main line of the Denver Northwestern and Pacific Railroad (the Moffat Road) or by automobile on dirt roads. There were three hotels—the Toll Inn, Ohio House, and Tolland Hotel—and several cabins in this small railroad village providing resident housing. Classes were held in a rented business building that was converted into a lab. The locals referred to the Lab as the “Bug House” and to zoology as “bugology.”

Students could take the train from the montane environment of Tolland at 2710 m (8890 ft) to the alpine environment of Rollins Pass at 3654 m (11,987 ft). Summer classes and field studies for advanced students were offered for ten years until the Mountain Laboratory closed in **1919**.



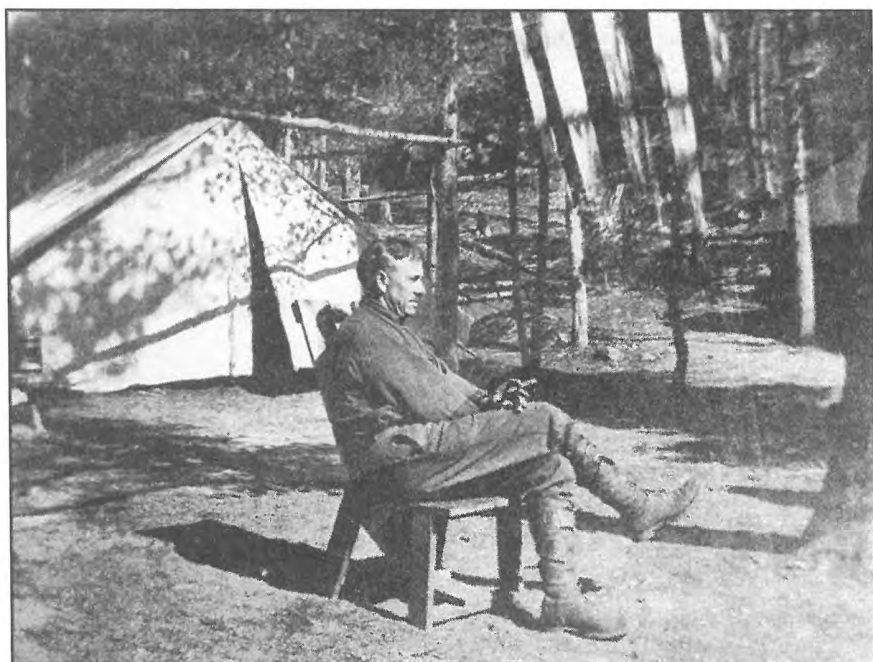
*The Mountain Laboratory (left) in Tolland, Colorado, 1909.
(Archives, UCB Libraries)*



Dr. Caldwell, Dr. Ramaley and Dr. Bethel on the steps of the Mountain Laboratory, summer 1909. (Archives, UCB Libraries)



Camper gear and bedrolls are piled in front of the lodge at University Camp (UC), 1918. (Thompson collection)



Frank E. "Pop" Thompson sitting in front of his family tent at University Camp, 1918 (Thompson collection)

UNIVERSITY CAMP ON NORTH BOULDER CREEK

During this same period, when Ramaley was conducting field studies for students, a group of diverse University of Colorado faculty members, loosely referred to as the High Hikers, hiked and camped in the area of the Arapaho Peaks. Their informal hikes became organized in **1914** when their annual excursion to Arapaho Glacier and the Arapaho Peaks became so popular. The members discussed the possibility of a permanent camp as a base of operations for their recreational trips. Frank E. "Pop" Thompson and Harry A. Curtis selected a site in the subalpine forest along North Boulder Creek. They obtained permission from the National Forest Service with help from Boulder District Ranger H. N. Wheeler.

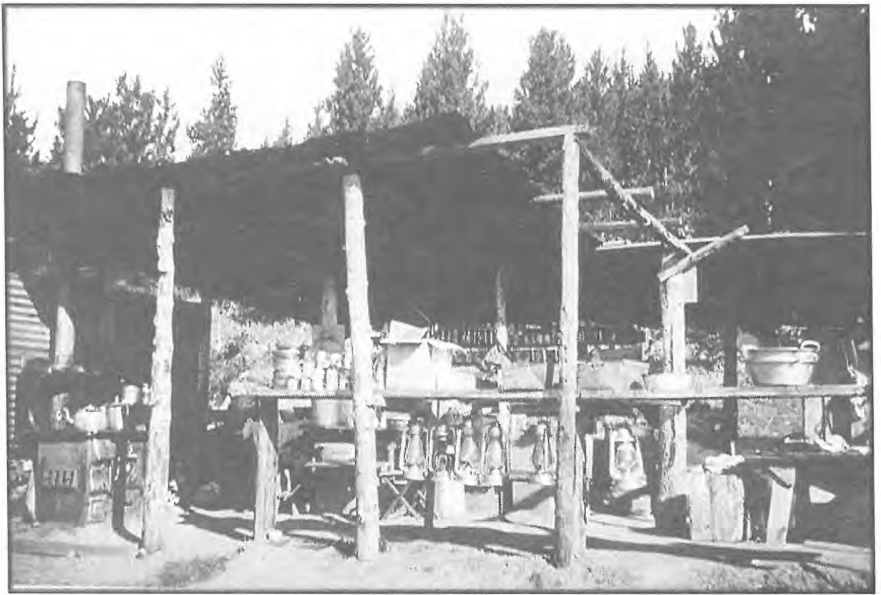
University Camp started with a log lodge built in **1915** with the help of High Hikers that included "Pop" and his son, Warren O.

Thompson, Harry Curtis, Dean Walter E. McCourt, Robert Burns, "Dutch" Titus, and E. Waite Elder. Campers stayed in canvas tents and hiked the alpine region west of camp.

A Christmas gathering at University Camp held in **1915** marked the first winter activity, cross country skiing. "Pop" noted that it was possible to live at the altitude and temperature of camp "with none but good results." The High Hikers became the Front Rangers of the Front Range Club in **1918** and the Boulder Group of the Colorado Mountain Club in **1920**.



Clara (Mrs. F. E.) Thompson, 1915
(Thompson collection)



*Outdoor mess at the “new” University Camp on Como Creek, 1920.
(Thompson collection)*



*The approach to University Camp in 1927 was via a wooden bridge over
Como Creek. The Megaron is at the top of the photo.
(Colorado Alumnus 1933, Archives, UCB Libraries)*

UNIVERSITY CAMP ON COMO CREEK

University Camp operated with restricted activities in **1917** and **1918** during World War I. In **1920** the City of Boulder purchased land from the National Forest Service for a watershed, requiring University Camp to relocate.

“Pop” Thompson, as chair of the University Camp Committee, was again the motivator for selecting a site and getting approval. The camp was relocated in **1920** on Como Creek, two miles northeast of “Old Camp.” The University of Colorado purchased 20 acres from the National Forest Service for “New Camp” near a group of springs providing a year-round supply of cool, clear water.

The Thompson family, particularly young Warren, was instrumental in constructing tent platforms and cutting trails. Building continued the following years with lumber transported from Camp Albion four miles west, Hill’s Mill one mile north, Hill Siding one mile south, and from logs obtained on site.

“Pop” Thompson resigned from the University Camp Committee in **1921** and Professor C. Henry Smith was appointed chair. Members of the committee at this time were Phillip G. Worcester, Whitney C. Huntington, Severance Burrage, Frances Ramaley, and Fred G. Folsom. Dean McCourt and Guy Smith acted as advisors.



Clara Thompson (left), camp cook and chaperone, at University Camp, 1920. (Thompson collection)



*Dean Walter McCourt taught
the first geology class at
University Camp in 1921.
(Thompson collection)*



*Science Lodge was built at University Camp in 1922 for geology classes.
(Archives, UCB Libraries)*

SCIENCE LODGE

Dean Walter McCourt, a member of the original University Camp group of High Hikers and professor of geology at Washington University in St. Louis, requested permission to establish a summer field course in geology as a visiting professor. The Regents approved and granted a loan to the University Camp Committee of \$1000. Thirty-three students attended the first geology field class in **1921**, studying the glacial basins west of camp in a three-week session.

In **1922** a log structure, Science Lodge, was built for geology classes with a \$1950 loan from the Regents. These funds also contributed to the construction of tent floors and a dining hall that had a capacity for 125 people. Improvements were made with the help of volunteers, and both science and recreation thrived. The University Camp Register was signed by 972 visitors in **1922**.

The University Camp Committee recommended that the University employ a Director of Recreation. Dr. Severance Burrage became the first Director of Recreation in **1923**. University Camp was divided into three sections with functions of teaching at the west end of camp, administration in the middle and recreation to the east. The University Camp Committee continued to administer and manage the budget, but hired a camp manager for summer operations which included lodging and meals for students and recreational campers.

Prof. A. Gayle Waldrop was Director of Recreation in **1924**. During this year the camp was wired for electricity, replacing kerosene lamps, and a much-needed shower-bathhouse was built (**1924-1925**) downhill from Science Lodge.

Prof. Charles "Hutch" Hutchinson was Director of Recreation from **1925** to **1933**. A student camper penned a poem about camp life in a "Science Lodge Scrapbook" of **1925**.

*Here's to the Class of '25
And the profs who wisely led us
To Hutch who always brought good cheer
And the Smiths who nobly fed us*

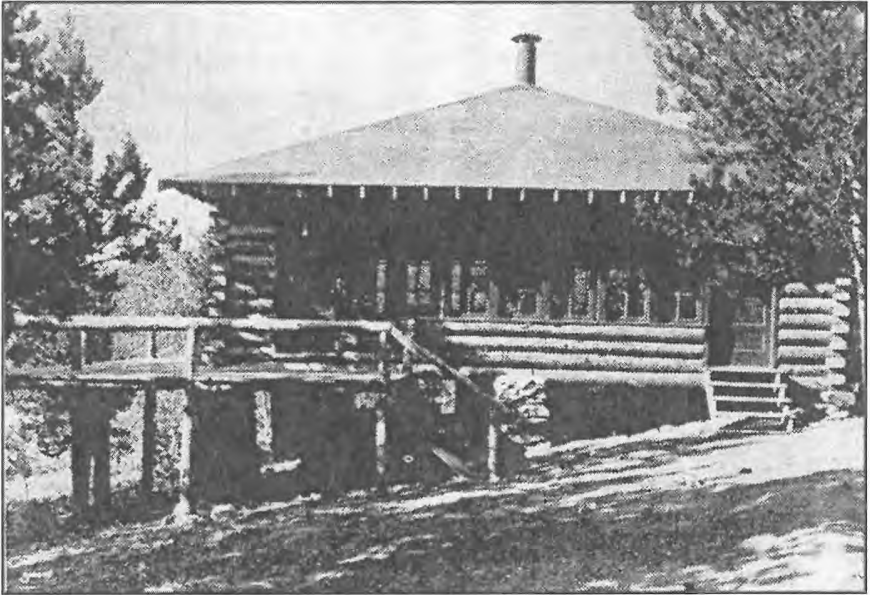
Wives often served as chaperones and cooks, along with other family members. The Smiths mentioned in the poem could have been either the family of C. Henry Smith or Guy Smith.

By **1926** the University of Colorado had acquired 80 acres around camp. The University Camp Committee was concerned about protecting the increased value of camp property and negotiated a purchase of public land from the Federal government. Negotiations involved the Regents, the National Forest Service, the Colorado Land Board, the US Department of Agriculture and finally, President Hoover's signature.

Improvements continued. Especially welcomed were student cabins built in **1926-1927** which were originally numbered and now known as the "Bird Cabins" with names such as Finch, Jay, Junco and Chickadee. The Megaron, Greek for "large meeting place," was built in **1927** as a student meeting and recreation lounge with a large central fireplace. A west wing (mess-rec) was added in **1928** to the



Family cabins (right, Nos. 7 and 9) were built east of the Dining Hall after 1932. (Archives, UCB Libraries)



The Megaron was built in 1927 as a classroom and student recreation hall. (Archives, UCB Libraries)

dining hall, affectionately known as Mesozoic Hall, accommodating an increased student population. Service cabins were built uphill from the dining hall in **1929**.

A field biology class was started in **1929** by Arthur C. Walton, a professor from Knox College in Illinois. To accommodate this popular summer course a second story was added to Science Lodge.

Dean McCourt, who had been an integral part of University Camp and Science Lodge from ca. 1914, retired in **1929**. A fountain was erected in his honor in **1930** with the inscription:

*To Walter Edward McCourt
Pioneer Director
of the
Geology Camp*

Warren O. Thompson, the son of Frank E. “Pop” Thompson, assumed the responsibility as Director of Science.

University Camp expanded and two chemical toilet-shower units were installed in **1930-31**. One near Science Lodge replaced the malfunctioning latrine built in 1925. The other bathhouse facility was built on the slope southeast of the dining hall. Two log cabin bunk houses accommodating 48 people were added in **1931**. Family cabins were added after **1932** at the request of faculty members who often brought their families to camp.

Bus and car traffic to the camp increased, and in **1932** the entrance road paralleling Como Creek was relocated to its present location east of the creek. Vehicles parked at the bend in the road (near the present-day Marr Lab) or near the dining hall.

Biology classes were expanding, and in **1932** a two-story four-room log Biology Lab (later referred to as the Zoology Lab or Zoo Lab), was built to meet the demand.

Prof. A. Gayle Waldrop served as CU Director of Recreation again from **1933** to **1943**. Students could study science during the week and join the recreation group for hikes on the weekends.



The two-story Biology Lab was built in 1932 to accommodate the popular botany and zoology courses. (G. Snow, Archives, UCB Libraries)



The Rock Pups in front of the Megaron, 1931.

(G. Snow, Archives, UCB Libraries)

One visitor to University Camp during the early **1930s** was Alice Tate Hartman, who came west from Illinois to study biology with Dr. A.C. Walton and geology. Her photographic album provides a view of summer activities as she studied geology with the “Rock Pups,” and hiked and explored the Rockies with the Recreation group. She climbed North and South Arapaho Peaks, glissaded the Arapaho glacier and the Henderson snowfield, climbed Long’s Peak and Mt. Audubon, adventured into the Never Summer Range, and spent evenings around the campfire singing or listening to lectures.

The Science Lodge brochures of **1939** and **1940** assures prospective students and parents that “the students at Science Lodge are under the chaperonage of the wife of the director.” Jane Thompson had this responsibility during the **1930s** when her husband, Warren O. Thompson, was Director. The fee for each term was \$125 for room, board, field, and travel expenses.



1930s cars parked in front of the Dining Hall. The west wing (left) was added in 1928 and demolished in 1959. (Archives, UCB Libraries)



Botanical researcher in Biology Lab, ca. 1940s. (Archives, UCB Libraries)



Uinta Cabin (S-5) was built in 1941 at the west end of camp. (J. Kindig)

To meet the increased interest in science classes, seven student “S” cabins were built at the west end of camp. Uinta (S-5) has a stamp on one of the inside planks that reads “CU Carpenter Shop 1941.”

Classes were suspended at Science Lodge from 1943 to 1945 because of World War II. Ms. Fern “Jane” Leas stayed in the vacated camp these years, and her presence helped prevent vandalism and other damage. Jane came to camp as a student in 1924 and then taught school in Las Animas, returning to camp every summer through 1962.

Recreation in camp was discontinued in 1943. The Department of Recreation had managed mountain activities at University Camp from 1923 to 1943. The recreation program resumed activities after the war, scheduling weekend hikes starting from the Boulder campus instead of from University Camp.

In 1945 the facility was taken over by the US Army and Fort Logan Convalescent Hospital for use as a rest and recreation center for battle weary veterans.

Dr. Gordon Alexander and student Adele Barnes in the Biology Lab, 1946. (Archives, UCB Libraries)



Dr. Ernest Wahlstrom leads a geology class at Silver Lake in the City of Boulder watershed, 1947. The caretaker's log house is at right. (Archives, UCB Libraries)



Mountain Laboratory class on a hillside near Tolland, July 20, 1909, with Dr. Ramaley (fourth from left) and Dr. Caldwell (right). (Archives, UCB Libraries)



Dr. Ernest (Ernie) Wahlstrom lectures to a class on a hillside at Science Lodge, 1947. (Archives, UCB Libraries)

Classes resumed at the Science Lodge in **1946** with the influx of GI's returning to school. Professor Wahlstrom led classes to Silver Lake where students could study glacial processes.

Winter Research

Professor **John W. Marr** joined the University of Colorado faculty in **1944** as a plant ecologist in the Department of Biology after serving as an arctic regional specialist for the AAF (Army Air Force) during WWII. He began teaching summer classes in plant ecology at the Science Lodge in **1946**. Marr proposed a class in winter ecology because there were few data on alpine winter conditions and, he reasoned, ecological processes could only be understood by studying seasonal changes. He also recognized a need for students to learn how to live, travel, and accomplish research in the often rigorous mountain environment.

The Winter Research class started in **1946** with the co-operation



The winter research class meeting in the west wing of the Dining Hall in 1946. L-R: Archie Roach, Bruce Snow, Karl Raven, John Marr, Robert Barnett, Gordon Alexander, and Erik Bonde. (Archives, UCB Libraries)

of Dr. Gordon Alexander, chair of the Department of Biology, and Dr. Ernest Wahlstrom, chair of the Department of Geology and of the University Camp committee. Each month during the academic year, the students and Dr. Marr spent a three-day weekend at Science Lodge where winter living conditions were marginal. Group discussions were held in the west wing of the dining hall and students bunked in the room above the kitchen.

In the summer of **1947**, there were over one hundred residents including eighty students, five professors, the director, a manager, and service personnel. Facilities in the east end of camp, once used for recreation, were now utilized by Science Lodge.

Uncertain Future for Science Lodge

The student population had increased at Science Lodge, especially during the summer sessions, but the budget to improve the physical plant did not keep pace. The Biology Lab building leaned and the latrine-shower structure in west camp was almost unusable. Sanitary, bathhouse, and laundry facilities had always been a maintenance problem. Facilities built on soils in the west end of camp did not drain properly and were prone to frost-heave action. In the Fall of **1950**, the University Budget Manager estimated it would cost \$40,000 to renovate Science Lodge facilities and these funds were to come from the budgets of the Departments of Biology and Geology.

The policy of the departments was to keep the summer courses taught at the Science Lodge on par with courses taught on campus. Travel and appropriate lab equipment were two areas of concern because it was often easier to conduct field trips from campus, and duplicating necessary lab equipment was a budget matter the departments could not afford.

The Departments of Biology and Geology did not have the necessary funds to renovate Science Lodge, so no action was taken. Classes were not scheduled for the summer of **1951** and the future of Science Lodge was uncertain.

INSTITUTE OF ARCTIC AND ALPINE ECOLOGY

Dr. John Marr's two successful years of ecology courses (that included winter studies) stimulated him to write a research proposal in **1947**. The proposal to the University Committee on Research was for an institute that would focus on arctic and alpine ecology with field headquarters at Science Lodge. The research proposal was discussed with Dr. Gordon Alexander and Dr. Fritz Rohrman, Chairman of the University Committee on Research, who both gave encouragement. During this time, Marr was negotiating with the US Army Quartermaster Research and Development Command for testing military gear and clothing in extreme weather conditions, a project that depended on winter quarters for research.

The University Regents approved the **Institute of Arctic and Alpine Ecology** on April 20, **1951** which would be co-operatively managed by an Institute Council. The Council's first action, chaired by Dr. Hugo G. Rodeck, Director of the University Museum, was to recommend to President Stearns that Dr. Marr be appointed Director of the Institute. The second action was to negotiate with the University Camp Committee, chaired by Dr. Ernest Wahlstrom, for the use of Science Lodge facilities. These negotiations were successful. Dr. Marr received the grant from the Quartermaster Command (QM Project for the Quartermaster Corps), hired research assistants, and the high-mountain camp was occupied by mid-summer.

Former graduate students in John Marr's Winter Research class were hired as research staff of the newly formed Institute of Arctic and Alpine Ecology for the Mountain Ecology Project. William S. Osburn, Albert W. Johnson, and William H. Rickard lived at camp during the summers, along with their families, and joined in a cooperative dining venture. Victor Favier joined the group in **1951**, and after his departure in **1952**, was replaced by Markley Paddock. Harold Mooney assisted during the summer of **1952** and Ricardo Luti and Owen A. Knorr assisted during the summer of **1953**.



John W. Marr, 1957

(W. Dwight Billings)



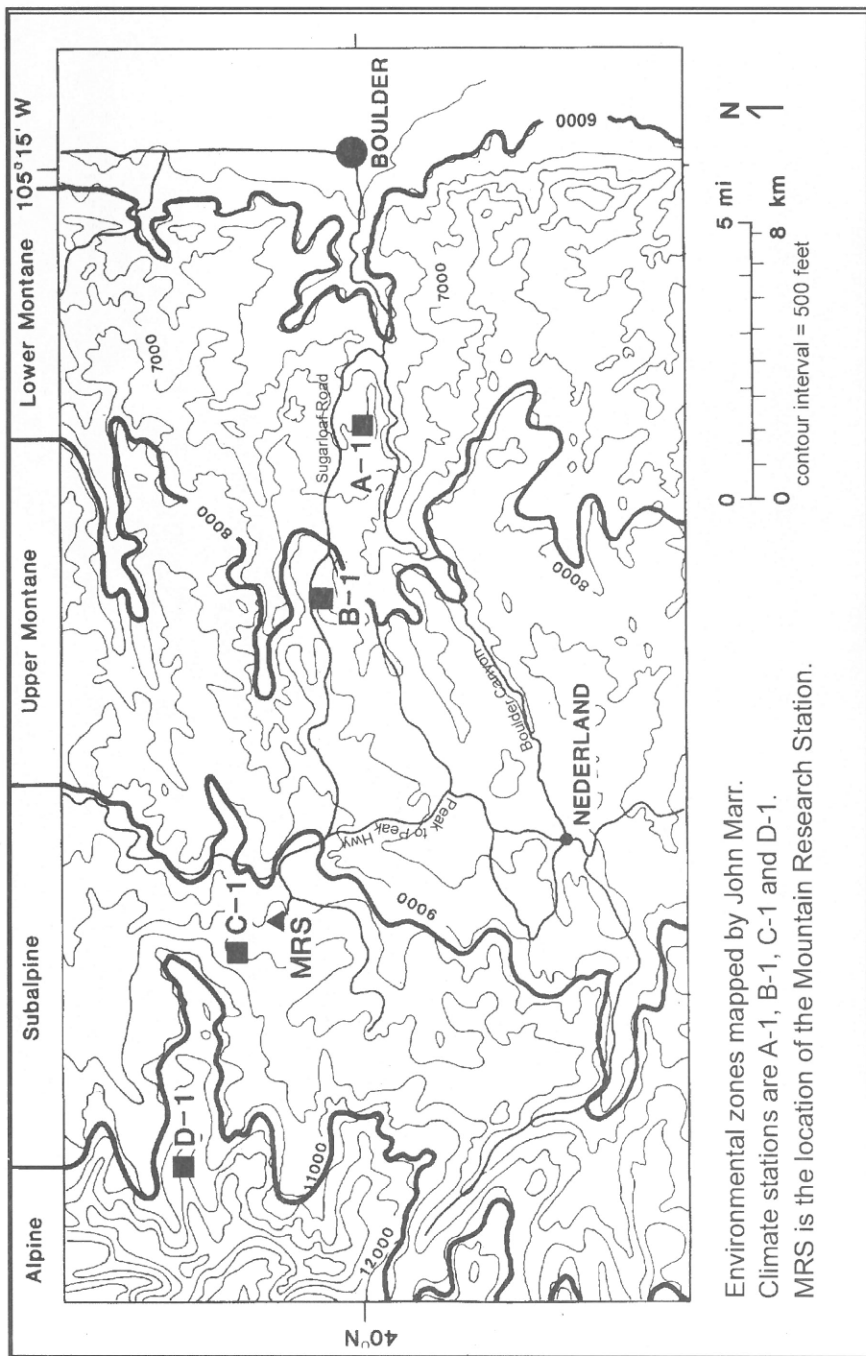
*Quatermaster Corps research team, 1953. From left:
Markley Paddock, Bill Osburn, Bill Rickard, and Al Johnson.*

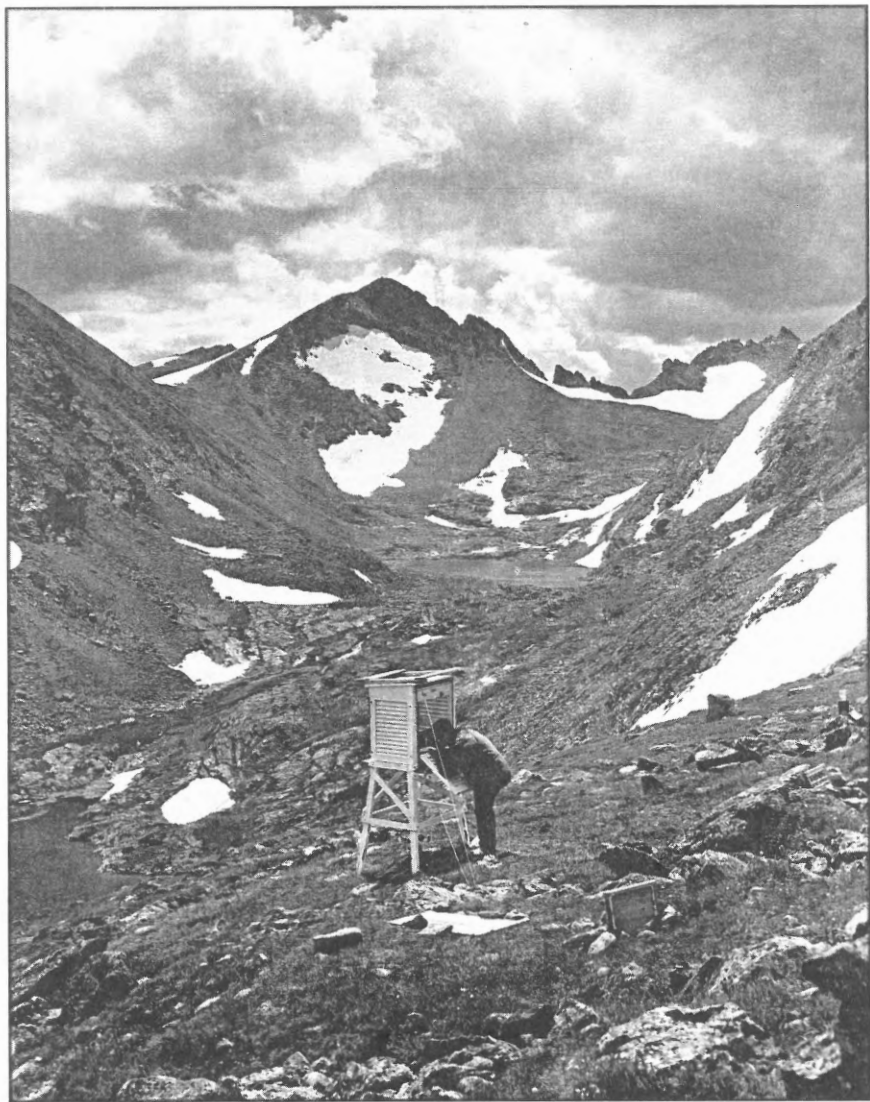
(Archives, UCB Libraries)

The Climate Recording Stations

Dr. Marr had written notes in **1945** giving ten reasons for establishing a “Winter Research Laboratory of Mountain Plant Ecology.” One of the reasons was to “make feasible a series of weather stations for study of mountain weather.” A weather data set was critical to the Quatermaster Corps research.

Environmental Analysis Stations were set up by October 1, **1952** in four major ecological zones: (A) Ponderosa in the Lower Montane at 2200 m (7216 ft), (B) Sugarloaf in the Upper Montane at 2621 m (8597 ft), (C) Como in the Subalpine Forest at 3021 m (9909 ft), and (D) Niwot Ridge in the Alpine Tundra at 3739 m (12264 ft).





*The D-3 Stevenson Screen on the south slope of Niwot Ridge, 1953.
Green Lake 5 is in the center beneath Arikaree Peak.
(Archives, UCB Libraries)*

Each zone had four collection stations which measured climate variation associated with slope exposure: (1) ridge top, (2) north slope, (3) south slope, and (4) valley bottom. Instruments collected data on the climate (temperature, humidity, wind, and precipitation), snow (depth and water content), and soil (profile, texture, soil water content, and temperature). Phenological observations on plants and animals were also recorded.

The Stevenson Screen, a standard National Weather Bureau shelter, protected instruments that included a hygrothermograph, an instrument that records temperature and relative humidity on a drum with an ink pen. The crew serviced some 240 instruments at the environment-measurement stations weekly or biweekly. Dr. Marr attributed the continuity of climate records to the abilities and stamina of the research team.

Science Lodge was active almost four days a week during the winter, and crews used the marginally insulated dining hall as office and living quarters. Access to Science Lodge was a challenge because the Peak-to-Peak Highway was not plowed north of Nederland (from the Lakewood Reservoir) to the Rainbow Lakes



A weasel "sidehilling" a snow drift, 1953.(Archives, UCB Libraries)



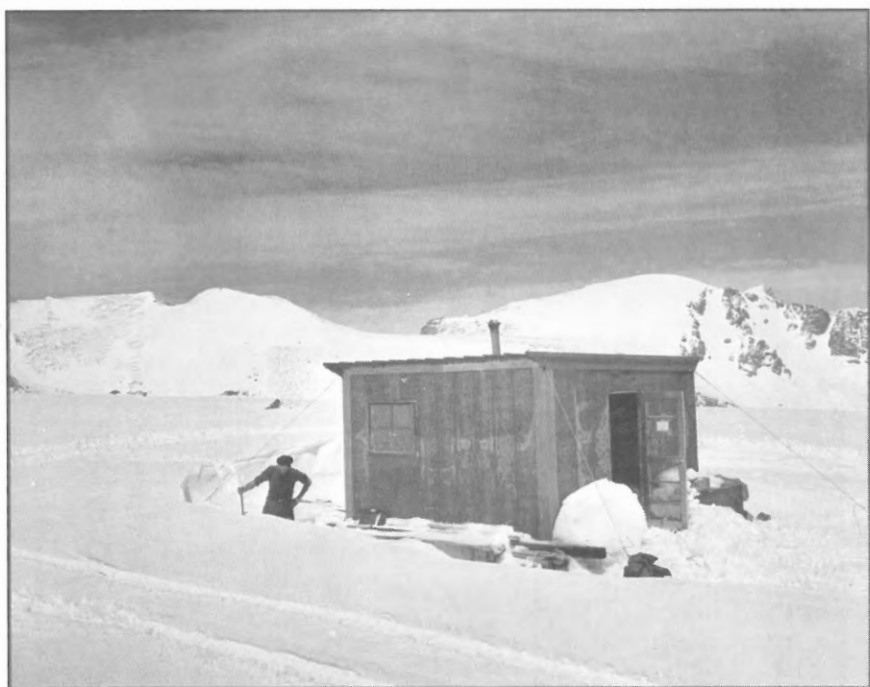
Quartermaster Corps research crew and weasels on Niwot Ridge, 1953. From the right: John Marr, Bill Osburn (knelling), Markley Paddock and Al Johnson. (Archives UCB Libraries)



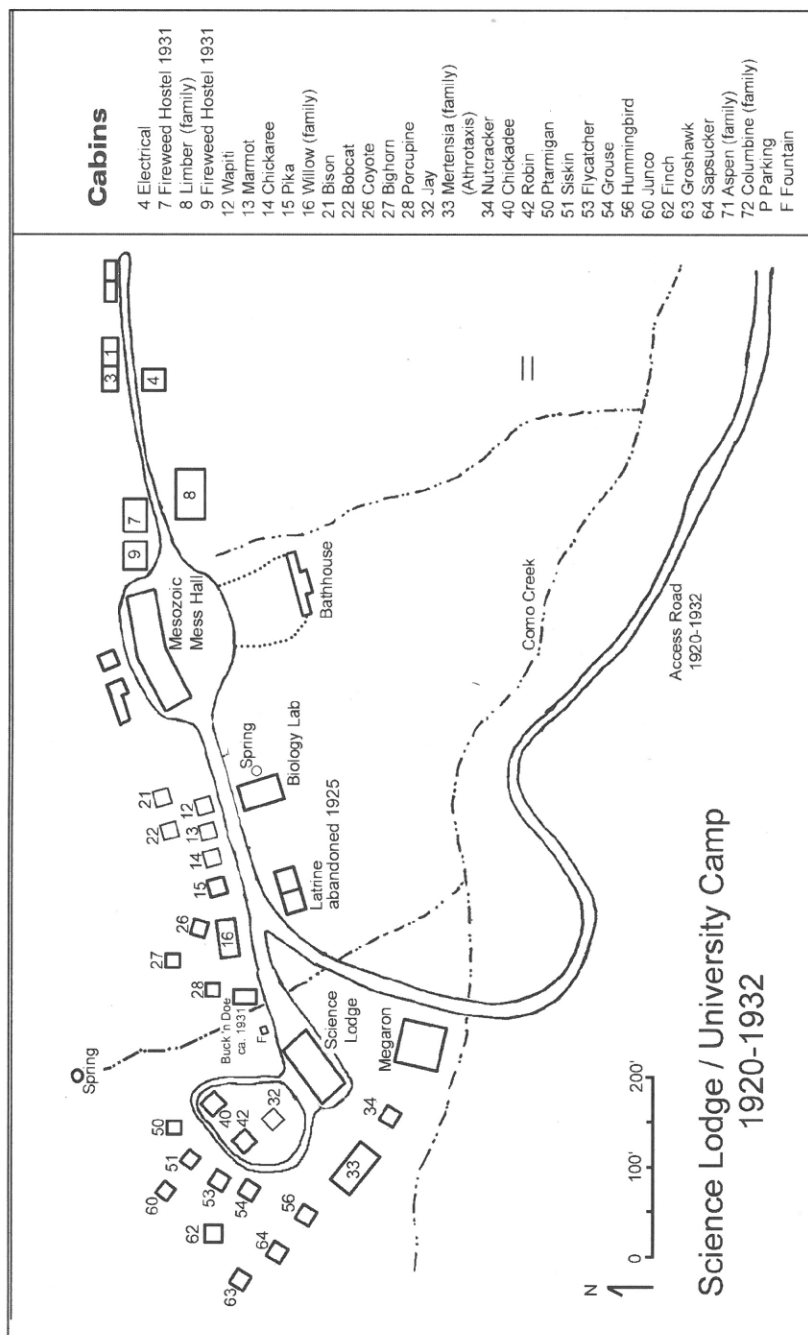
Weasels parked in front of the Dining Hall, 1953. (Archives UCB Libraries)

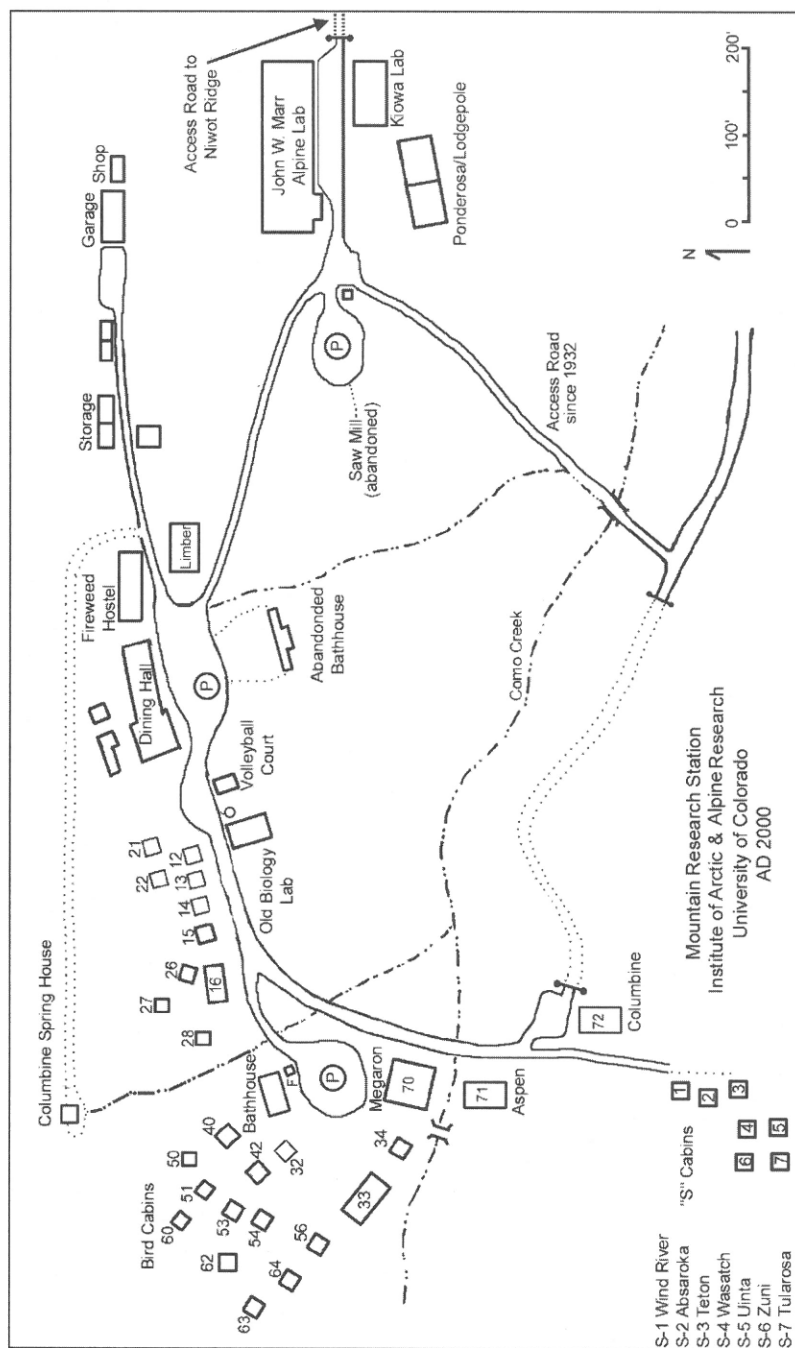
road. The Institute obtained Army weasels (tracked vehicles) to access camp and also Niwot Ridge. Weasels were able to access the tundra through the Boulder watershed to D-1. Weasels did well in deep snow, but often slipped their tracks while maneuvering on side slopes. As a result, the crew spent many hours shoveling paths and remounting tracks.

Collecting data from the tundra station, D-1 (3739 m), at the west end of Niwot Ridge was hazardous in winter conditions. A steel paneled prefabricated shelter hut, containing a stove and bunks, was erected in October of 1952.



The D-1 hut, constructed in 1952, continues to provide shelter for researchers on the tundra. (Archives, UCB Libraries)







Ron Foreman at T Van (Tree-Limit Van) in 1957. (Archives, UCB Libraries)



*T Van was painted orange for maximum visibility in winter.
(Archives, UCB Libraries)*

INSTITUTE OF ARCTIC AND ALPINE RESEARCH

A name change to the **Institute of Arctic and Alpine Research** (the acronym IAAR was used at this time) in **1953** reflected the environmental research activity. At the same time, the University Camp Committee merged with the Council of the Institute. The maintenance fund was transferred to the Council allowing IAAR to maintain cabins occupied by researchers. The contract with the Quartermaster Command continued through **1954** and several families lived at Science Lodge during the summer.

Only two families stayed in camp during the summer of **1955**, the Johnsons and Osburns. Al Johnson was working on his PhD thesis in the Silver Lake valley studying the ecology of subalpine forest communities. Bill Osburn continued observations on the weather stations, often on his own time, and continued his PhD thesis work on snow-free ecosystems in the alpine.

Cabins deteriorated from lack of use and improvements were made only on the structures utilized by the research crews.

The East Slope Ecology Project

A research grant rejuvenated Science Lodge in **1956**. Dr. Marr negotiated a contract with the Environmental Sciences Branch of the Division of Biology of the Atomic Energy Commission to study basic ecological research in mountain environments. When the East Slope Ecology Project started, Science Lodge buzzed with activity. Maintenance funds became available to renovate living structures. Labs and two new bridges were built and government surplus vehicles (Jeeps) were purchased for camp use. The University increased its land holdings to 190 acres, trading some University-owned land along the old Albion road for National Forest Service land adjacent to the Lodge.

University undergraduate programs were again offered in **1958** focused on field research techniques. A National Science Foundation grant in **1959** was used to extend the entrance road through camp and along the old Albion road to research areas on the tundra. The

extension road branched at "Cabin Clearing" and continued through the "Burn" and "Trough" providing access to Niwot Ridge three and a half miles from camp. T Van (Tree-Limit Van) was moved along this access road to 3475 m (11,400 ft) in **1959** to provide shelter and equipment storage for scientists.

The old Science Lodge was unusable and the old Rec/Mess Hall, the west wing addition to the dining room, was dismantled in **1959**. The remaining hall was renovated in **1960** to accommodate the increasing summer population. The floors of early cabins and the west wing of the dining hall rotted because of contact with the soil. The student "S" cabins and other structures built on pillars survived the ravages of winter, but some have since been replaced. Family cabins with kitchens were a welcome addition, especially for faculty and staff.

A young married couple with substantial Alaskan outdoor living experience, Leslie and Eleanor "Teri" Viereck, lived at the camp in the winters of **1957-58** and **1958-59**. Les and Teri, both PhD candidates at UC Boulder, insulated a three-room cabin and performed valuable services at the Lodge which gave the Institute a continuity of winter operations essential in such a rigorous environment. This continuity of winter caretaking was continued by three graduate students in **1959-60**: Wesley LeMasurier (now an Earth Sciences Professor at UC Denver), Andrew Johnson, and Roger Egeberg.

Ralph "Skip" Greene started working part time at Science Lodge in **1956**. He had demonstrated his capabilities by successfully controlling a fire in the Megaron in **1958** by pumping water from nearby Como Creek using a pump he had installed the previous day. Skip became Resident Manager in **1960** moving into cabin No. 7 with his wife, Joyce Gellhorn Greene, and young son. He provided year-round maintenance, improvements to the facility, managed logistics, and taught mountaineering skills to researchers and students.

Dr. Marr had classified the landscape of the Front Range into ecological zones. *Ecosystems of the East Slope of the Front Range in Colorado* (**1961**) is a classic compilation of Marr's research on the biota and climate of the region. The data on mountain environments



Joyce (Gelhorn) and Skip Green (left), Resident Manager of the Mountain Research Station from 1960-1970. John Clark (right), was the Climatologist from 1962-1980.
(R. Marr)

collected by the Environment Measurement Program research team from **1952** to **1965** was published in **1967** and **1968**. This research continues to be valuable to climatologists and other scientists.

John Clark assumed the responsibility of maintaining the climate stations and collecting data in **1962**, a task he had previously done as an assistant. He accessed the tundra in winter by Snow Cat or snowmobile.

Alpine Laboratory

Construction of the Alpine Laboratory was an important achievement of the early **1960s**. This 4,500 ft² single-story building, with twenty-seven rooms providing classrooms, labs, and a reading room, was funded by the National Science Foundation and the University of Colorado.

The Lab was completed in 1962 and formally dedicated on June 21, **1963**. Pierre Dansereau presented the dedication address, "The Barefoot Scientist," elaborating on the unique opportunities offered by the field station to enrich personal experiences in the study of biological sciences. A conference held the next day on the "Role of Field Stations in Modern Taxonomy and Ecology," was chaired by Dr. Hugo Rodeck.



The Alpine Laboratory, dedicated in 1963. (INSTAAR)

In **1963**, President Newton, recommended the Institute be placed under the supervision of the Dean of the Graduate School. The Institute Council included the Provost of the University and administrators of the Graduate School, Departments of Biology and Geology, the University Museum and the Office of Research Studies.

Research Programs

Dr. Peter Wardle came from New Zealand in **1963** to study the tree-line ecotone. A steel van, dubbed “Kiwi Van,” was moved along the Niwot Ridge access road to 3340 m (10,960 ft). A lithic scatter of prehistoric artifacts indicated this area had also been a campsite for Native Americans. Archaeologists have suggested there was a prehistoric trail over Niwot Ridge linking the South St. Vrain watershed with the North Boulder Creek headwaters.

Bill Osburn, Associate Director of the Institute, was directing studies in radiation ecology in **1964** for the Atomic Energy Commission and the US Army. The National Science Foundation granted support for *Research Participation for College Teachers* and for a (*High School*) *Student Training Program*. Programs such as the

Training Program have launched many a scientific career.

Science Lodge was filled to capacity in **1965** with nine high school and college research assistants, four college teachers on the NSF research grant, nine senior scientists, sixteen graduate students, seventeen administration and operation personnel, and thirty assistants and support people.

There were 55 researchers in **1966** spending three weeks to three months studying biota, such as the life cycle of snow algae. Researchers were also studying plants in extreme conditions to learn basic life processes for possible use in space and spacecrafts with a grant from NASA (National Aeronautic and Space Administration) *Life in Extreme Environments Program*.

The field station was recognized internationally for its research opportunities. Alex Watt, an ecologist from Oxford, England, Eilif Dahl, a Norwegian plant ecologist, Aino Henssen, a Swedish lichenologist, Hugo Sjors from Sweden, Carl Troll of Germany, and Robert Crocker of Australia and were some of the international research scientists who visited or resided at the Station in the **1960s**.

The Institute office was in Dr. Marr's faculty office in Hale Science on the University campus. John Marr had successfully balanced teaching, research and administrative duties, but it became apparent a full-time administrator was needed. The office of the Institute changed location when a new Director was appointed in **1967**.

THE MOUNTAIN RESEARCH STATION INSTAAR FIELD STATION

Dr. Marr relinquished his duties as Director of the Institute and took a sabbatical leave during the Fall semester of **1967**, returning to a full-time faculty position in the Department of Biology. The University decided to expand the scale of the Institute and secured space in the Armory on the Boulder campus to house a new director and additional staff. The Institute Council appointed Dr. Jack Ives from Canada as Director in **1967**. The acronym of the Institute of Arctic and Alpine Research changed to the melodic **INSTAAR**, and the Science Lodge Mountain Research Station became known as the **Mountain Research Station**.

Dr. Ives recruited scientists from Canada and Great Britain, some with research interests in the Canadian Arctic, broadening the scope of research of the Institute beyond the Front Range of Colorado. The scientists who helped shape the direction of INSTAAR from this period were John Andrews, Roger Barry, Nel Caine, Harvey Nichols, and Patrick Webber.

A Scientific Advisory Committee was established with appointments of professional researchers and directors of institutes outside the University of Colorado who would meet annually to confer on matters of academic and research potentials. A permit policy now required faculty and students to submit formal research proposals to work on Niwot Ridge or in Green Lakes Valley.

In **1968** six PhD candidates focused their research projects on Niwot Ridge and were influenced, encouraged, or directed by Dr. Marr. A notable PhD thesis by James B. Benedict, a graduate student from the University of Wisconsin, *Neoglacial History of the Colorado Front Range*, was a lichenometric study of cirque glaciation. He also studied periglacial mass movement, dating of geomorphological and archaeological forms by lichenometry, and the history of man in the Front Range in relation to climate change over the past 12,000 years. Dr. Benedict, now director of the Center for Mountain Archeology, continues to contribute research reports on these topics in the same research areas, the alpine and subalpine-

forest ecotones of the Indian Peaks and Rocky Mountain National Park.

NOAA (National Oceanic and Atmospheric Administration) initiated a research partnership with the MRS in **1968** with the Global Monitoring of Climate Change Program. NOAA established a flask collection station at T-Van for CO₂ and later for methane and chlorofluorocarbons.

INSTAAR expanded beyond its allotted space in the Armory. Offices and labs moved to East Campus in **1969** into PSRB No. 1 (Physical Science Research Building), now the Litman Research Laboratory, RL-1, named in honor of a former Vice Chancellor for Research, Rose Litman.

One of the new initiatives started at INSTAAR by Jack Ives was a quarterly research journal, *Arctic and Alpine Research*, first published in **1969**, providing national and international research scientists with a venue. Kathleen Salzberg, managing editor, also edits "Occasional Papers," a monograph series of in-depth research papers initiated in **1971**.

Tundra Biome Site - International Biological Programme

Niwot Ridge was designated a Tundra Biome study site in **1971** under the International Biological Programme (US/IBP). The general objective of the IBP, ambitiously stated, was "to predict the consequences of today's actions on tomorrow's world and thereby to increase man's ability to manage efficiently the natural resources of the biosphere." As one of eight intensive research sites, Niwot Ridge was used to evaluate "the impact of human activities on mountain and tundra ecosystems."

In **1972**, a US Army Skycrane helicopter air lifted a mobile laboratory onto the tundra for Dr. Phil Miller of San Diego State University, a former student of John Marr's. Sensitive instruments monitored the microclimate and plant gas exchanges in the high-altitude environment.

Glaciology and Geomorphology

Glacier and periglacial processes, including cirques, glacial debris, soil deposition, rates of soil movement and distribution, and hydrological patterns were studied in the **1970s**. A study of freeze-thaw and frost-heave cycles and frost penetration (B.D. Fahey 1971) was an important contribution to how researchers analyze subsurface matter.

Remote Sensing in Mountainous Areas

In **1973**, NASA funded *Remote Sensing in Mountainous Areas Program*, applying space and remote sensing technology to the environmental and land use needs of Colorado mountain areas. Faculty, staff, and graduate assistants were year-round residents at the station from **1974** to **1977** during the project.

Twenty-five high school students were summer residents at the station in **1973** participating in a National Science Foundation Summer Training Program in Mountain Ecology and Earth Sciences at the same time the Remote Sensing Program was initiated.

First Resident Director

By this time, there was a need for a director to reside at the Mountain Research Station to manage the programs for the summer students, researchers, and the year-round residents of the Remote Sensing Program. Dr. Michael Grant, a specialist in genetics and plant ecology, was appointed the first Resident Director in **1974**, and he moved to the station with his family.

The MRS was designated a component member of the National System of Experimental Ecological Reserves (EER) in **1975** by the Institute of Ecology, supported by the National Science Foundation. INSTAAR held a special use permit from the National Forest Service for the use of 1200 ha on Niwot Ridge.

Increased use of the MRS put heavy demands on the facilities. Health and safety were issues that needed to be addressed and an

updated sewage system was built to comply with Boulder County Health Department regulations. To help meet the requests for student lodging, two cabins were combined to make a dormitory, "Fireweed," which was completed by 1976.

Biosphere Reserve within the Indian Peaks Wilderness

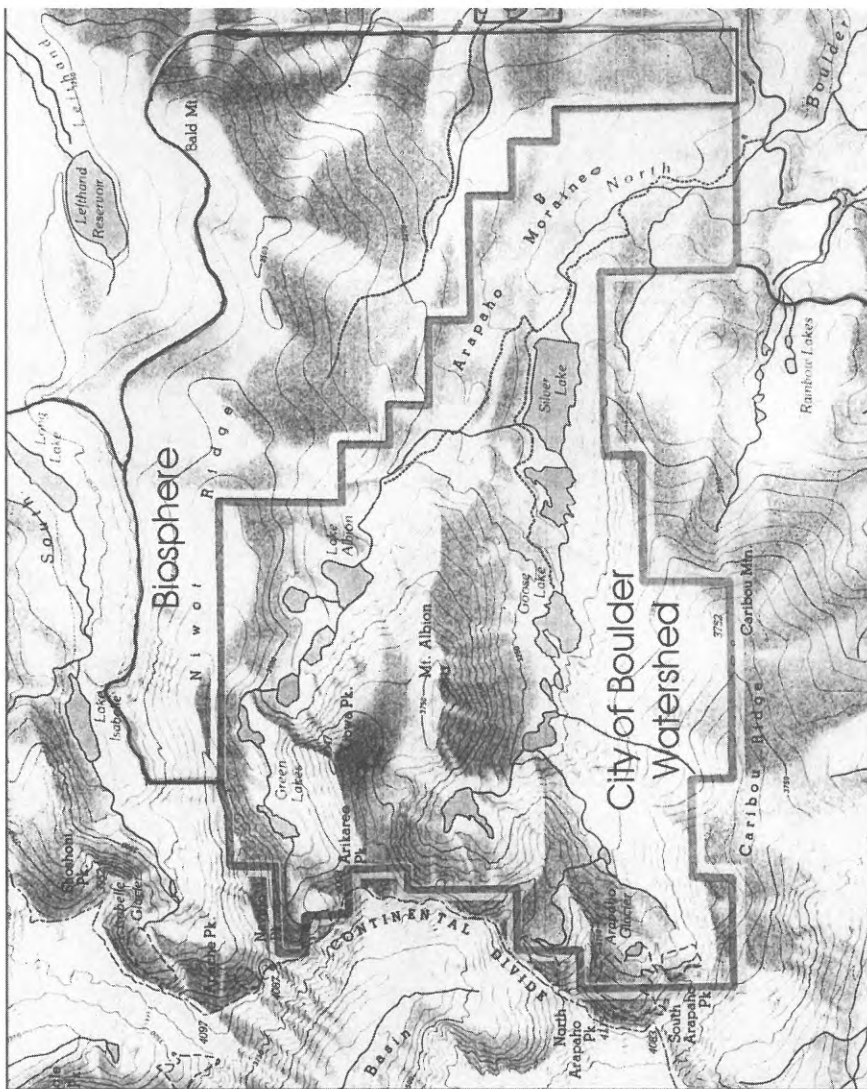
Dr. David Greenland, a climatologist, became Director of MRS in 1977 during a period of boundary designations. A gate had been installed at the lower end of the Niwot Ridge road in 1968 in an attempt to control the increased use of Niwot Ridge by sportsmen and recreationists. Mineral speculation had caused environmental damage in the spring which sparked a move to protect the tundra. A formal request was made by INSTAAR to the National Forest Service to withdraw Niwot Ridge from mineral development.

Protecting the Indian Peaks was important to environmentalists and researchers. The Indian Peaks region straddles the Continental Divide in Boulder and Grand Counties incorporating varied ecological zones. The Rocky Mountain National Park (RMNP) and the U.S. Congress funded the RMNP Boundary Study to decide the viability of extending the boundaries of RMNP to include the Indian Peaks. The Indian Peaks were not included into the National Park, but were to be designated an NFS wilderness. Researchers studied landscapes, surficial deposits, vegetation, soils, avalanche maps, and geomorphology of natural mountainous hazards. A shaded relief map was developed, an Environmental Atlas of the Indian Peaks Area, defining the boundaries of the Wilderness, Biosphere and Watershed. In 1976, Vera Komarkova completed a map and dissertation: *Alpine Vegetation of the Indian Peaks*.

The Indian Peaks region was designated a Wilderness in 1978, managed, as in prior years, by the National Forest Service, Boulder and Grand County Ranger Districts. INSTAAR administrators negotiated to keep Niwot Ridge out of the Indian Peaks Wilderness to assure its continued use for research. In 1979, approximately 710 ha (1775 ac) centered on Niwot Ridge was designated a Biosphere Reserve by the US Congress, dedicated as a UNESCO (United



Niwot Ridge, Front Range, colorado. (INSTAAR)



Indian Peaks topographical map showing the City of Boulder watershed, the Biosphere Reserve and the location of the Mountain Research Station. (Environmental Atlas, Indian Peaks Area, Colorado)

Nations Education, Scientific and Cultural Organization) Reserve in July 1981. The Biosphere is managed by the National Forest Service, Boulder Ranger District, with special-use permits issued to INSTAAR.

There were patented and unpatented mineral claims in the area of the proposed Biosphere Reserve, although there were never any active mines. The United States Geological Survey Mineral Study, conducted for the RMNP Boundary Study, concluded that no minerals existed in the Biosphere Reserve area that could be mined. As a result, the Niwot Ridge Biosphere Reserve was excluded for mineral exploration.

Dr. Misha Plam, a glaciologist, joined the Remote Sensing project in 1977 and was a resident of the station when he was appointed Director in 1978. He had been director of the Mountain Research Station at the base of Mt. Elbrus in the Caucasus Mountains, a field station of the Department of Geography of the University of Moscow. Because of a difficult political situation, he and his family emigrated to the United States. At this time, Dr. Plam was the only scientist who had managed mountain field stations on two continents.

CU became an Associate Institute of the United Nations University with four Nepali and three Thai UNU fellows in residence at MRS in 1979. Three Chinese UNU fellows were in residence at MRS until the summer of 1981.

Long-Term Ecological Research

Dr. Roger Barry was Acting Director of INSTAAR while Dr. Ives was at the University of Bern, Switzerland, on a Fellowship in 1976-1977. Dr. Ives resigned in 1979 and Dr. Patrick Webber was appointed Director of INSTAAR. Dr. Webber successfully established Niwot Ridge as a site in the NSF sponsored Long-Term Ecological Research (LTER) Program in 1980, one of twelve original sites. LTER scientists examine long-term dynamics and function of the alpine ecosystem on Niwot Ridge and Green Lakes Valley. Long-term data sets are collected for climate, snowpack, water flows, biogeochemistry, atmospheric chemistry, biological productivity,



Tim Seastedt, Director of LTER, on Niwot Ridge discussing the Bonde research plot with INSTAAR fellows, 1992. Mark Williams is standing at center. (LTER)

phenology, and decomposition. One project was initiated in **1981** by Dr. Erik Bonde when he removed plants and organic soils on the tundra to study succession and plant recovery.

The Niwot Ridge-LTER program initiated an experiment utilizing a 60-m-long snow fence placed in the Saddle in **1993** to document significant changes to the soil and biotic communities over time and to modify the timing, amount and duration of snow. The 3-m-high fence is dismantled during the non-snow season.

The John W. Marr Laboratory

Dr. James Halfpenny was appointed director of the Mountain Research Station in **1981**. The Alpine Laboratory was renamed and updated with a new computer system to facilitate data collection. The Lab was rededicated to honor John W. Marr in **1982**. *Ecological Studies in the Colorado Alpine: a Festschrift for John W. Marr*,

edited by Dr. Halfpenny and published in the *Occasional Paper* series, was a tribute from his colleagues. Dr. Marr was also honored with the distinguished Stearns Award for service to the University of Colorado upon his retirement in **1982**.

Another collection of research papers was published in **1982**, *Geocology of the Colorado Front Range*, edited by Dr. Ives.

Dr. Mark Noble was a Research Associate of INSTAAR when he was appointed Director of the MRS in **1985**. Student programs increased under Dr. Noble's direction with twelve summer courses offered along with student participation in research.

The Marr Lab was again renovated in the summer and fall of **1987**, to remove asbestos and update facilities. Mark Losleben was Acting Director of the Station during the remodeling, managing the Station and renovation activities from the temporary office in "Limber" cabin. At this time, the responsibility of maintenance was transferred from the Mountain Research Station to the University Facilities Management.

Kiowa Laboratory, built in **1971**, was outfitted as a wet chemical lab to analyze soils, water and plants in **1987**. The Environmental Chemistry Lab is currently managed by Chris Seibold.

The Mountain Climate Program

The number of climate data collecting stations was reduced from sixteen to four after the Quartermaster Corps project ended in **1953**. A single ridge top station at each of the four altitudinal zones, are now referred to as A-1, B-1, C-1, and D-1.

Mark Losleben succeeded John Clark as climatologist in **1980** for the Mountain Research Station Mountain Climate Program. Mark accesses C-1 climate Station five times a week, D-1 weekly in summer and biweekly in winter, and Green Lakes 4 and Arikaree Glacier every 80 to 85 days. Maintaining instruments in high winds up to 120+ mph in blowing snow at the D-1 station is physically challenging. Mark does not depend on vehicles, but skis/walks/runs according to the snow cover.



(Archives, UCB Libraries)

*Bill Osburn (above in 1953) and Mark Losleben (below in 1988)
servicing instruments in the Stevenson Screen at the C-1 climate station.*



(J. Gellhorn)

In **1985** the Mountain Climate Program replaced the mechanical pen and ink recorders at A-1 and B-1 with electronic data collectors and added the electronic instruments along side the recorders at C-1 and D-1. The Mountain Climate Program now maintains a data base from sites spanning the lower montane to the alpine, A-1, B-1, C-1, and the Saddle, D-1, Green Lake 4, and Arikaree Glacier.

NOAA scientists sample atmospheric gases at C-1, one of seven world-wide long-term climate monitoring stations for ozone depleting gases and one of sixty-three world-wide sampling sites for greenhouse gases. There are two National Atmospheric Deposition Program (NADP) sites, one on Sugarloaf and another at the Saddle research site on Niwot Ridge. These sites are in a network of about 203 stations monitoring precipitation chemistry.

The Tundra Laboratory on Niwot Ridge

Dr. David Inouye, of the University of Maryland, was appointed Director of MRS in **1988** assisted by full-time resident Facilities Manager. In order to accommodate increasing research needs on



The Tundra Laboratory in the Saddle on Niwot Ridge at 3525 m (1990). Arikaree peak in the background. (M. F. Meier)

Niwot Ridge, the MRS built the Tundra Lab in **1989** in the Saddle (3525 m, 11,565 ft) funded primarily by the National Science Foundation. The Lab is a modular Quonset hut-shaped building supported on columns.

Scientific instruments in the small Saddle Van, located next to the Tundra Lab, were initially powered by batteries charged from photovoltaic panels in **1984**. Line power to the Tundra Lab was available by **1996** and a fiber optic cable was functional by **1999** facilitating data transfer from the remote research site on Niwot Ridge to the Marr Lab. Installation of line power and fiber optic line was facilitated by Steve Seibold, Station Manager, and Karla Adami, Facilities Manager, with the volunteer help of the 244th Army Reserve Unit of Boulder.

Academic Director of MRS

Dr. David Yamaguchi, a dendrochronologist, was Acting Director of MRS in **1990**. Dr. William Bowman, appointed Director in **1991**, is now a tenured professor in EPOB (Environmental, Population and Organismic Biology). As a plant ecologist, he is involved with plant ecological studies in alpine tundra, yielding valuable data in a high-altitude alpine region in proximity to a densely populated metropolitan area. Dr. Bowman's increased duties in research and teaching led to a division of responsibilities. There is now an Associate Director, a Climatologist, a Station Manager (business and scheduling), and Facilities Manager, along with support staff during the summer months.

The University of Colorado Regents met at the Station in August of **1993**. The Scientific Advisory Committee of INSTAAR meets annually at the Station and tours Niwot Ridge to observe research facilities. The Committee has included Al Johnson who worked on Dr. Marr's research contract with the Quartermaster Corps in the 1950s and did his research in the Silver Lake/Green Lakes valley in the Boulder watershed. There is now an annual Niwot Ridge/Green Lakes Research Workshop held at the Station as part of the LTER program.

Niwot Ridge Hydrology Programs

A Subnivean Shelter with eighteen snow lysimeters was built in **1993** into the tundra near the Saddle and started collecting data in **1994**. Meltwater flow through snow is collected in basin-like lysimeters, then monitored by instruments in the shelter allowing researcher Dr. Mark Williams of the Department of Geography, UC Boulder, to measure biological processes within and beneath the snow pack.

Snow and glacial hydrology continue to be of research interest because of the proximity of the MRS to the City of Boulder watershed. Boulder obtains part of its water supply from snowmelt from an active glacier, Arapaho Glacier. The MRS obtains its supply of water from Columbine Spring, assured of cool, clean water with the installment of a cistern and new water system in **1993**.



Subnivean Lab (built in 1993) in the Saddle on Niwot Ridge collects data on snowmelt for the Niwot Ridge LTER program. (J. Kindig)

A second subnivean shelter with 106 snow lysimeters was installed in **1997** in the subalpine region near Cable Gate to collect data that could be compared to data collected on the tundra. This walk-over shelter is covered with sod and is referred to as the Soddy Site. The long-term hydrology project, to be reviewed in **2002**, is a cooperatively supported study of pure research with practical applications. The Army Research Office (ARO), for instance, is interested in snow hydrology equipment to monitor troop habitation field sites.

C-1 Station

Dr. Russel K. Monson, of the Environmental, Population and Organismic Biology Department, established a long-term trace gas flux study in **1998**. Two 30-m-tall towers near the C-1 climate station measure the flux of gases, that include CO₂ and hydrocarbons, between the subalpine forest and the atmosphere. The tower project is part of the nationwide AmeriFlux Tower Network.

The C-1 Station, on the Niwot Ridge road, has developed into a cluster of vans with sensitive instruments and data collecting equipment. NOAA continues to monitor atmospheric chemistry and data have been transmitted via fiber optic cable to the Marr Lab since **1995**. In **1990**, NOAA began atmospheric sampling of anthropogenic gases every hour at C-1. One of the gases tested was CFC11, a major greenhouse gas and ozone depleter. Concentrations began decreasing in **1995**, reflecting the Montreal



Instruments in this 30-meter tower measure the flux of atmospheric gases. (J. Kindig)

Protocol agreement. The Federal Aviation Administration tested visibility instruments at C-1 that are now in use at Denver International Airport. In **1997**, the National Weather Service set up a precipitation measuring station. The Natural Resources Conservation Services (NRCS), Department of Agriculture, has a program that measures snowpack and can be accessed at <http://www.wcc.nrcs.usda.gov/>.

75th Anniversary 1921-1996

The field station celebrated 75 years of science education in **1996**. The first geology course was taught in a three-week summer session in **1921**. During the summer of the **75th Anniversary** there were thirteen courses offered in intensive three-week sessions.

Students were accommodated in tents in **1921**. In **1996**, faculty, staff, researchers, and students were housed in cabins, some winterized. The first educational lab facility, Science Lodge, was built in **1922** for geology and a second story was added in **1929** for



The Dining Hall and new hostel under construction in 1999. (J. Kindig)



The Mountain Research Station staff in 1999. Chris Seibold, Kiowa Laboratory Manager; Steve Seibold, Station Manager; Carla Adami, Facilities Manager; and Mark Losleben, Climatologist. (W. Bowman)

biology classes. In **1996** there were 65 buildings on 80 ha (192 ac) that included cabins, dining hall, a bath house, two laboratories, office space, field shelters, storage sheds, and a garage.

Science Lodge was built and the first class taught with a loan from the University of Colorado Regents that was paid back with tuition. The present Institute was started with a single grant in 1951. In the late **1990s**, INSTAAR received over 120 research grants with a total operating budget in excess of \$9 million. The Niwot Ridge-LTER program has the largest federal grant(s), approximately \$4 million, focusing research on Niwot Ridge and adjacent areas. Grants from federal and non-federal agencies support teaching and other research projects at the Mountain Research Station.

Into Year 2000

Dr. James Syvitski, a former member of the INSTAAR Scientific Advisory Committee, was appointed Director of INSTAAR in **1995**. Dr. Syvitski is an oceanographer with research interests in the sedimentation of ocean coasts, particularly in glaciated regions.



A new ramp and deck have been added to the Megaron. (1999) (J. Kindig)

A web page for the MRS was constructed in **1997** by Peg Halloran, assistant Director at that time. Information of current programs can be accessed via <http://www.colorado.edu/mrs/>.

Remodeling has kept the John Marr Alpine Laboratory in compliance with the Americans with Disabilities Act (ADA) standards, health and safety standards, and dry. The roof of the Marr Lab, originally flat to accommodate a planned second story, was replaced in **1998** with sloping metal hipped sections capped with climate data-collecting instruments. The facilities in the Marr Lab in **1999** include plant labs, a soils lab, a denrochronology lab, a climate lab, a reading and computer room, and administrative offices. The Megaron is also in compliance with the ADA now that a ramp and deck have been added.

The MRS added a second faculty position to accommodate the increased interest in high-altitude studies and research. Dr. Diane McKnight was appointed Associate Director in **1998**. Dr. McKnight was a research hydrologist for the USGS and is interested in aquatic

biogeochemistry, particularly in the alpine and subalpine lakes in the “backyard” of the Mountain Research Station. Diane is involved in Antarctic research as a member of the McMurdo Dry Valleys LTER Program. As an educator, she has been instrumental in getting the MRS more involved in primary and secondary school outreach programs.

The National Forest Service recognized Niwot Ridge as a unique resource, as indicated in their forest plan finalized in **1998**, giving the University of Colorado responsibility for research. The Boulder Ranger District of the Arapaho National Forest granted a Special Use Permit to the Regents for use of forest-managed lands within the Niwot Ridge Biosphere Reserve (NRBR). The Director of the MRS is the NRBR Manager responsible for preparing an Annual Operating Plan and a Master Research Map that documents locations of permanent and nonpermanent research plots. The Ridge has designated zones for nonmanipulative (the Saddle Core Zone) and manipulative research.

The Niwot Ridge-LTER program, currently one of twenty-one sites, has a general review every six years with the intention of maintaining quality research. The NR-LTER program, directed by Dr. Timothy Seastedt, received favorable reviews in **1987**, **1993**, and **1999**; this NSF funded program will again be reviewed in **2005**.

A data manager assures manually entered and electronic data are archived, then facilitates public access to data and information. Principal Investigators of the NR-LTER program, and other researchers publish papers in professional journals including the journal published by INSTAAR, *Arctic, Antarctic and Alpine Research* (new title in **1999**).

Real-time viewing of climate data at C-1 are on the web at: <http://culter.colorado.edu:1030/>. Internet users can now receive a live image of Niwot Ridge or zoom in on the Indian Peaks by controlling a webcam mounted on a robotic arm. Tundra-Cam operates from the Tundra Laboratory and can be accessed from the CULTER and MRS web sites.



The Dining Hall with the west wing, ca. 1930s. (T. Thompson)



The Dining Hall in 1999. (J. Kindig)

Approximately forty researchers per year use the Mountain Research Station as a base of operations, including University of Colorado faculty and students, and national and international scientists. Small cabins in the pine forest are a popular attraction for symposia and workshops, faculty retreats, and national scientific meetings.

A new winterized hostel is under construction with a Great Room/Lecture Hall, a dining room, and accommodations for 32 people. Visitors bringing computers will be able to access the internet from their rooms. To meet the increased requests for family housing there are plans for four new cabins with indoor plumbing. The field station also plans a new classroom-laboratory with computers, an expansion of the Kiowa lab, and a greenhouse facility.

The University of Colorado Alpine Observatory (UCAO) is being developed with the help of Dr. Alan Kiplinger, Department of Astrophysics of UCB, putting the research scope of the MRS into the extraterrestrial arena. A 12.5" reflecting telescope, donated by Dr. Kiplinger (and named the Kiplinger telescope), will be housed in a rotating domed observatory at a site east of the Marr Lab.

One of the missions of the Station is public education, and many programs are designed for K-12, teacher education, and general seminars. Over 100 students reside at the Station over the summer taking field courses for academic credit in the departments of Geological Sciences, Geography, and Environmental, Population, and Organismic Biology (EPOB). Research opportunities are available to undergraduates participating in, Summer Undergraduate Research Experience (SURE), and the National Science Foundation's Research Experience for Undergraduates Program (REU).

The Mountain Research Station provides a unique environment near the crest of the Rockies. Higher education, indeed, takes on a significant meaning.

DIRECTORS and CHAIRS

MOUNTAIN LABORATORY AT TOLLAND

1909-1919	Dr. Francis Ramaley
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UNIVERSITY CAMP COMMITTEE

1914-1920	Dr. Frank E. Thompson
1921-1936	Dr. C. Henry Smith
1936-1951	Dr. Hugo Rodeck
1951-1953	Dr. Ernest Wahlstrom
1953	Committee Dissolved

MOUNTAIN RECREATION

1923	Dr. Severance Burrage
1924	Mr. A. Gayle Waldrop
1925-1933	Dr. Charles E. Hutchinson
1933-1942	Mr. A. Gayle Waldrop

SCIENCE LODGE

1921-1929	Dean Walter E. McCourt
1930-1943	Dr. Warren O. Thompson
1946	Dr. Ernest Wahlstrom
1947	Dr. Warren O. Thompson
1948-1950	Dr. Ernest Wahlstrom
1951	Dr. John W. Marr

MOUNTAIN RESEARCH STATION

1951-1967	Dr. John W. Marr
1967-1974	Dr. Jack D. Ives
1974-1976	Dr. Michael Grant
1976-1977	Dr. David Greenland
1978-1981	Dr. Misha Plam
1981-1985	Dr. James Halfpenny
1985-1987	Dr. Mark Noble
1987-1988	Mr. Mark Losleben (Acting Director)
1988-1990	Dr. David Inyoue
1990-1991	Dr. David Yamaguchi (Acting Director)
1991-	Dr. William Bowman

INSTITUTE OF ARCTIC AND ALPINE RESEARCH

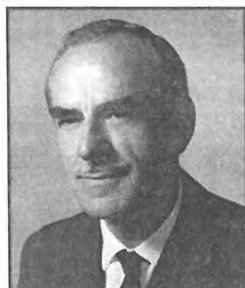
1951-1967	Dr. John W. Marr
1967-1979	Dr. Jack D. Ives
1976-1977	Dr. Roger Barry (Acting Director)
1979-1985	Dr. Patrick Webber
1982	Dr. John Andrews (Acting Director)
1985-1994	Dr. Mark Meier
1994-1995	Dr. Nelson Caine (Acting Director)
1995-	Dr. James P.M. Syvitski



Francis Ramaley



Frank E. Thompson



Hugo Rodeck



Charles E. Hutchinson



Walter E. McCourt



Warren O. Thompson



Ernest Wahlstrom



John W. Marr



Jack D. Ives



Michael Grant



David Greenland



Misha Plam



James Halfpenny



Mark Noble



Mark Losleben



David Inyoue



David Yamaguchi



William Bowman

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- varied University of Colorado Alumni publications
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- 1999 Conversations, editorial comments, documents and photographs: Dr. William Bowman, Dr. and Mrs. William Bradley, Mrs. Barbara Dolder, Dr. Joyce Gellhorn, Mr. Mark Losleben, Mrs. John W. (Ruby) Marr, Dr. Thomas Thompson, Mrs. Kathleen Salzberg, and other INSTAAR Fellows and Associates.



Aspen bridge over Como Creek (J. Kindig)



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