Agroborealis

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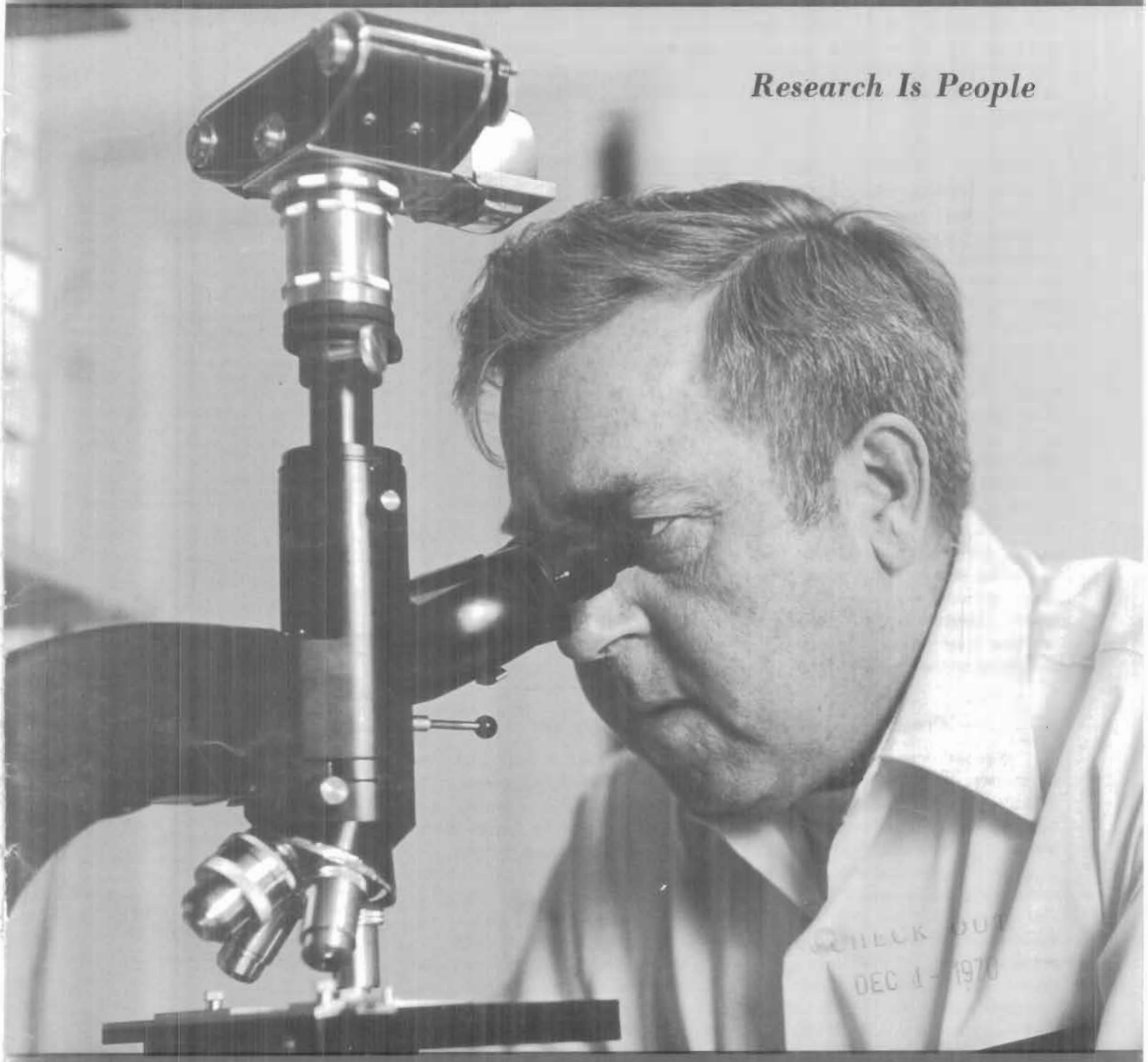
Research Is People



Alaska Agricultural Experiment Station
University of Alaska

from the

Director's Desk . . .

In this age of ever increasing bureaucracy we tend to forget that all the work of the world is accomplished not by agencies, offices, machines, or even by experiment stations, but by individual people with names, families, hobbies, pet likes and dislikes, and distinctive personalities, not really very different from yours and mine. Even the computer that made a mistake on your income tax refund last year was only doing what someone told it to do. Maybe he or she had a toothache or was thinking about the new baby or wondering what to get Aunt Minnie for her birthday.

Director Horace Drury

Research is just like any other kind of work. Tractors, typewriters, cows, greenhouses, spectrophotometers, microscopes, departmental organizations, and even administrators, like me, are only tools. The only things that really count, that get the job done, are people. This issue of Agroborealis is dedicated to our people -- in particular to our project scientists. Unfortunately, it just is not big enough to tell the story of all those who plant, water, weed, spray, pollinate cucumbers, harvest, weigh cabbages, count seeds, milk cows, grind feed, analyze soilsamples, perform all sorts of chemical tests, draw pictures, type notes, keep track of the money and pay the bills, show visitors around the Station and do many, many other things, without which we could not operate. Maybe we can gradually introduce these others to you in future issues. But this time we would like to concentrate on the people who plan the experiments and interpret the results.

Project Scientist Is a Big Investment

A project scientist is a very big investment for the Station. A young man (and by the way, we have nothing against young women either!) who comes to us directly from graduate school and stays until he retires, perhaps 30 years later, will cost us a good half million dollars during his professional lifetime. We will spend several times that much on his supplies, equipment, technicians and helpers, and other support. On the other hand, one good discovery could easily return all this and more to the farmers of the state in the form of increased production. In fact, a well thought out and skillfully executed research program could lead to the establishment of entirely new types of farming in Alaska. Good project scientists are also a form of insurance against future crop disasters from new diseases, imported insects and weeds, developing soil deficiencies, or even changes in the housewife's tastes. All of these benefits have occurred many times over in most of the other states, and in the bright agricultural future which we foresee for Alaska, good project scientists will be worth their weight in gold.

Here, then are the stories of our first recruits. In the future we hope that you will think of us, not just as an experiment station or as a unit of the University, but as a group of friends, neighbors and fellow taxpayers!

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ABOUT THE COVER . . .

Pictured on the front of this issue of Agroborealis is Dr. C.E. "Chuck" Logsdon, associate director of the Alaska Agricultural Experiment Station, peering through a microscope. Logsdon, professor of plant pathology, was photographed by Editor William L. Fox.

Dr. Curtis Dearborn

Alaska Frostless Holds Promise

Twenty years of breeding, selecting and testing potatoes for Alaskan conditions may have been time well spent as people around the world test Dr. Curtis Dearborn's new potato variety, Alaska Frostless. Dr. Dearborn, research horticulturist for Alaska at the Alaska Agricultural Experiment Station in Palmer, began searching in 1955 for potatoes that would tolerate field frosting of the vines. He obtained clones from many regions of the world to use as parental material to develop Alaska Frostless.

A brief excerpt from Dearborn's description of Alaska Frostless published in the January 1969 issue of the American Potato Journal reads this way:

"Alaska Frostless has been grown successfully by gardeners from Southeast Alaska's Panhandle to Unalakleet on Norton Sound. It has withstood field frosting to -3 C and regained turgidity of tissues after thawing. At -1 or -2 C the leaves became stiff and brittle, but remained green and maintained turgidity following field frosting at -1 C for four hours. Culinary characteristics of Alaska Frostless are very good. The eyes and stolon cavity are shallow and the skin is tough. The texture is mealy and fluffy but not gritty."

The capacity of a potato to survive light nighttime frosting can mean a lot in Alaska where it is not uncommon for frost susceptible varieties to be killed in mid August. If Alaska Frostless grows in other potato regions as it does in Alaska, it would add measurably to the world food supply. West Pakistan has just recently requested and received 50 pounds of Alaska Frostless. They hope that its frost resistance will permit successful production from plantings made over a 12-week rather than the present 6-week planting season.

Goals in research change with the needs of the people so goals have changed in potato work. Early in his work Dr. Dearborn and co-workers released the variety Knik. It was a heavy producer of attractive tubers at a time

DR. CURTIS DEARBORN
Comparing Potato Varieties

when growers were primarily interested in high yields. Its dry matter was too low to compete with the quality of imported potatoes so growers abandoned it.

Alaska 114 was the next variety named. It has a very desirable tough skin, yields well and has excellent flavor. It developed hollow heart when grown on certain farms under rather poor cultural conditions and this trouble got more publicity than was justified. It is still an excellent variety for Alaska.

Stately was released for home gardeners who wanted a high dry matter potato. With the decline in homesteading the demand for Stately has deminished.

Alaska Russet was introduced to provide commercial growers with a variety to compete with imported russet potatoes as the demand for a russet skinned potato was strong. It is an excellent quality russet without the usual hollow heart and second growth characteristics of other russets. A few growers have learned the art of growing Alaska Russet and are pleasing the russet-skin potato customers.

Alaska Frostless is the latest contribution toward meeting the ever changing demands of producer and consumers. Dearborn said it might appear that the final goal had been reached but this is not so. Potato processing into chips, french fries and hash-brown products could add considerable local employment besides providing Alaskans with fresh processed products if just the right characteristics could be combined in a new potato variety.

Although potato has received most attention, enough time has been given to pea, broccoli and summer squash production and processing to show that each of these crops packaged and frozen in the conventional manner make an excellent product.

Strawberries in Alaska lacked red flesh color and red fleshed varieties from other states were not winter hardy so Dr. Dearborn crossed plants with better qualities and selected winter hardy, red-fleshed seedlings. Matared, Midka and Susitna attest to the success of this venture and these varieties are now highly prized by Alaskans.

Dearborn, who was raised on a fruit and vegetable farm in Weare, N.H., graduated from the University of New Hampshire in 1935 and earned a PhD from Cornell in vegetable crops in 1939. He came to Alaska from Cornell's Experiment Station at Geneva, N.Y. While he was in the Army (for four and a half years) he served as plans officer for the Quartermaster Farm in the Philippines where 1,200 acres of vegetables were grown as a unit.

Dearborn considers himself a naturalist. He is an amateur photographer and has a pilot's license.

He lives with his wife Doris in a home they built on a 150-acre tract near the Matanuska Farm. The Dearborns have 27-year-old twins, Larry, a hydrologist with the U.S. Geological Survey, and Barry, an electrical engineer with the Air Force; a son Jayson, a senior at Washington State University; a son Jeffrey, a junior also at WSU; and a daughter, Jennie, a senior at Palmer High School.

Dr. D. H. Dinkel

Alaska's Custom-made Scientist

If there was ever a scientist custom-made for Alaska it's Dr. D. H. Dinkel. He came to Alaska as a youngster to live with colonists in Wasilla and was raised in the Matanuska Valley. During time off from school, he worked at the Alaska Agricultural Experiment Station's Research Center in Palmer.

Today Dr. Dinkel is associate professor of plant physiology at the University of Alaska and Head of the Experiment Station's Department of Horticulture. He is stationed at the College Research Center.

Dinkel has participated in a number of significant agricultural developments in Alaska, but perhaps one of the most fascinating has been his discoveries in plant growth using polyethylene to warm the soil. Dinkel's experiments with plastic have been electrifying; vegetables which could never before mature during an Alaskan growing season are now thriving under clear plastic.

The use of a plastic soil covering is not a new discovery, although farmers and scientists in the southern states have found that black polyethylene produced the best results. However, after careful testing Dinkel determined that because of the long daylight hours in Alaska the clear plastic was more effective than the dark plastic, increasing soil temperatures anywhere from 15 to 40 degrees. Corn, cucumbers, squash and numerous other vegetables which were once impossible to grow in Alaska are maturing in plenty of time to beat the first frost, thanks to Dinkel's work.

Dinkel has also been working extensively with greenhouses in growing tomatoes and other crops. In fact, he is convinced a large-scale greenhouse industry could be developed in Alaska and the time to start might be now while the industry in the U.S. is in a state of shifting. Alaska's natural gas deposits could be a major factor in establishing a greenhouse industry, according to Dinkel. In addition, hot springs in the state provide an excellent source of heat. In mid-September, Dinkel traveled to Nome where he studied the possibilities of setting up a greenhouse in association with Pilgrim Hot Springs. He said the hot springs in the area might be providing heat for as much as 50 acres of land and this would lend itself to an extensive greenhouse operation.

Dr. D. H. Dinkel Inspects Some of His College Tomatoes

In his work with small fruits Dinkel has attempted to develop a strawberry which can be used both by home gardeners in Alaska as well as commercial growers. At this point the Alaska Pioneer variety (produced by his predecessor) is the best strawberry for Alaska. Dinkel is continuing this work by planting large populations of seedling strawberries and picking out the best plants.

Dinkel has also spent a great deal of time in the propagation of native plants such as trees and shrubs for use in landscaping. "Some people have success in moving native trees and some don't," said Dinkel. "I'd like to see commercial nurseries set up so that we have a source of good quality ornamentals."

Born in Haysprings, Nebraska, in 1931, Dr. Dinkel first came to the Experiment Station Research Center in Palmer in 1948. He worked part-time at the station for six years assisting with research in horticulture under Dr. Myron Babb. After a two-year tour in the Army, Dinkel went to work for the Experiment Station in College during the summer of 1956 and that fall he went to St. Paul, Minnesota, where he worked for the University of Minnesota as a research assistant while attending graduate school. Dinkel had graduated from the University of Minnesota in 1954 with a degree in horticulture. His minor was agricultural botany. In 1960 he earned his doctorate in horticulture and returned to the Experiment Station, this time to take the positions of research horticulturist and research plant physiologist at the Palmer Center.

In 1966 Dinkel accepted a position as assistant professor of horticulture at Iowa State University and lived in Iowa for two years. He returned, however, in 1968 to accept the job he has today. Dinkel and his wife, Bonnie have four children: Kristie, 15; David, 13; Gene, 9; and Debbie, 7.

He Makes Hay When the Sun Shines

Dr. Leslie J. Klebesadel is a firm believer in making hay while the sun shines . . . however, he claims there are other factors to consider besides sunshine in deciding when to harvest forage crops, especially in Alaska. According to Klebesadel, the frequency and timing of crop harvest can have a considerable influence on forage yield and quality. His work for the Experiment Station is to devise the best possible procedures for the intelligent management of Alaska's forage crops.

Dr. Klebesadel - - who is known by his associates as "Buzz" - - is a research agronomist employed by the U.S. Department of Agriculture and located at the Palmer Research Center. Since 1957 he's been embarked on an extensive research program encompassing annual, biennial, and perennial forage crops. "Forage crops" he explained, "provide the roughage requirement of livestock. In terms of dollar value of Alaskan crops harvested, forages surpass all other crop categories."

"We want more efficiency in crop production," said Klebesadel, "to get higher yields of a better quality forage with maximum persistence of crop stands. Alaskan farmers are operating in an area of relatively short growing seasons in which they must maximize forage production to meet the needs of the unusually long winter in-feeding period. This means farmers here must employ sure-fire management procedures proven reliable for this unique farming region." And he said management procedures are being evaluated to "take the uncertainties out of growing, harvesting, and maintaining stands of forage crops. We want to prevent overcropping, yet we want to utilize forage crops to the utmost without weakening stands. Much of our work has been directed along these lines," said Klebesadel.

He went on to explain that his research program has placed special emphasis on winter hardiness because of the generally poor winter survival of imported forage crops when they are grown in Alaska. In this vein, Klebesadel's work is directed toward helping farmers out of a problem they brought with them when they first started tilling the soil in Alaska. "The farmers in Alaska were from lower latitudes and they tried to bring their own crops up here from the Midwest and western states," said Klebesadel. "Right away, they ran into trouble because perennial crops adapted to mid-temperate latitudes are poorly suited to the peculiar growing conditions in subarctic Alaska." Some of the crops which were brought into Alaska ***did*** survive winters, of course, but many did not. A few gave indications they might withstand the climate, only to die after two or three years. For this reason, Klebesadel is trying to determine the specific physiological or "internal chemistry" characteristics of native Alaskan grasses and legumes that account for their complete harmony with the Alaskan environment. Further, he wants to know to what extent those characteristics are deficient in crops adapted to more southern latitudes.

In Klebesadel's seed production investigations lies an example of how Alaskan research has created the need for still more research. As new, better adapted forage crop varieties are developed for Alaska, additional studies must define optimum management procedures for seed production of those new crops. Until ample seed is available, no crop can have much value to the commercial farmer. Moreover, seed growers must be able to obtain high seed yields in order to grow seed profitably. Management of a bromegrass field for seed production is quite different from procedures followed to obtain high forage yield, said Klebesadel. And procedures for best seed production in Alaska can differ considerably from those used by seed growers in the other states, he claims.

DR. LES KLEBESADEL
Studying Seed Set in Bromegrass

In addition to his work as research agronomist, Klebesadel has been designated Federal Scientist in Charge at the Alaska Experiment Station. In this position he functions as an on-site supervisor of the seven federal scientists stationed at the Palmer Research Center. He was given this assignment in January, 1969.

Born in Troy, Wisconsin, in 1928, Klebesadel received his elementary and high school education in the Midwest and was first introduced to Alaska when he traveled to the Territory to work as a temporary research aid at the Experiment Station for 10 months in 1949 and 3 months in 1953.

He received his bachelors degree in Agronomy from the University of Wisconsin in 1954, earned his masters in Agronomy a year later, and in 1958 completed his PhD in Agronomy and Soils at the University of Wisconsin. He joined the staff at the Experiment Station in 1957.

Klebesadel and his wife, Mary Jane, have five children and recently purchased a home and 120 acres near Palmer. Outside of duty hours, he stays busy with family activities and personal hobbies. Favorite recreational pursuits include hiking and camping and various forms of art, especially sketching and cartooning. The family intends to plant a garden on their new property as soon as they can find a place where plants will be safe from the moose which frequently visit their hilltop home.

Paul Martin

He Does the Station's Dirty Work

You might call Paul Martin's job at the Alaska Agricultural Experiment Station a dirty one. He's a research soil scientist and has been working at the Palmer Research Center since 1948, analyzing soil samples and generally working as part of a team dedicated to making things grow in Alaska.

Basically, Martin is involved in solving plant nutritional problems. Most of his activities are in the field of applied science and his work is confined to the laboratory where he must gather information, evaluate it and then interpret it, passing along his findings to other scientists who carry the studies back into the field.

Martin has participated in a number of important projects in Alaska including an analysis and eventual recommendation for improving the soil on the Lower Kenai Peninsula. In that study it was determined that the soil was too acid and thus was a poor growing medium. Martin's assessment of the situation and his recommendation for addition of lime to the soil reduced the acidity and helped release plant nutrients turning the area on the peninsula more productive.

In another program which required some detailed examination, Martin participated in the diagnosis and identification of a then unrecognized potato malady which proved to be a potash deficiency. By correcting the deficiency production was improved by an estimated 10 per cent.

By relying on soil testing as a predictive tool, Martin has been highly successful in resolving a wide range of plant nutritional problems and in forecasting plant responses and crop yields in relation to the soil in which the crop is grown.

During his 22 years at the Alaska Agricultural Experiment Station, Martin figures he has analyzed "tens of thousands" of soil samples and because his work has been in Alaska, it has been out of the ordinary. "Someone's always saying we're different up here and you hate to agree with them," said Martin. "But we *are* different! We have peculiar photoperiods during the summer and the climatic actions are variable. All this makes our situation different than in most other growing areas."

Research Soil Scientist Paul Martin Working in His Lab

Martin graduated from Clark University in 1939 and earned his Masters from Clark two years later. He received in-depth training in geography, geology and chemistry and before moving to Alaska in 1946, he was working at Oklahoma State University where he taught geography and headed the Air Force Pre-Flight Training Program in weather.

Once in Alaska he specialized in analytical soil testing, adapting the most streamlined analytical procedures developed elsewhere to Alaskan conditions. His prime aim has been to develop information which can be of value to other research workers and to the commercial farmer.

Martin views himself in a position which most scientists might tend to envy. He has access to highly sophisticated equipment and a well-stocked lab with everything he needs (in fact, perhaps more than he needs) to carry out his work. But, he says, there's one hitch: he could use some help. There just aren't enough hours in the day for Martin to reduce the mountain of soils confronting him.

When he does manage to tear himself away from his laboratory full of tiny flasks and complicated instruments, he retreats to Wasilla Lake west of Palmer where he claims to own the only island. Martin and his wife, Fannie, both enjoy snowmobiling during the winter and have a particular interest in lapidary work throughout the year. Martin says his cellar is bulging with various rocks and other items connected with this

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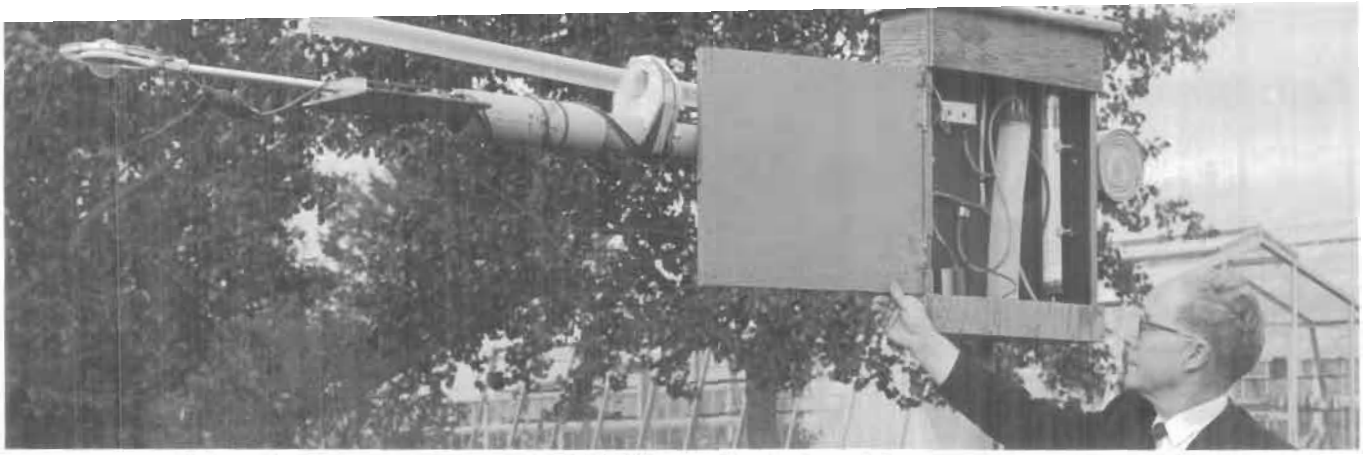

C. Ivan Branton, Agricultural Engineer in Palmer, Checks Special Device for Measuring Light

C. Ivan Branton

He Helped in Building Breakthrough

As a research agricultural engineer, C. Ivan Branton has had a hand in many of the major projects conducted by the Alaska Agricultural Experiment Station in the past 20 years. In fact, he got in on the ground floor of one project which eventually resulted in a breakthrough in the construction of housing in the North Country.

Branton, who came to the Experiment Station in Palmer in 1949, immediately became active in a program of testing native Alaskan materials for farm and home construction. The project not only experimented with various types of lumber and insulations, but it also dealt in depth with the use of vapor barriers and it was in this area that the breakthrough was made.

Branton supervised the project which involved the construction of several small cabins on the Experiment Station property in Palmer. The temperature and heat loss figures for each cabin were watched closely and there was no disputing the fact that those buildings in which a vapor barrier had been included in the construction were the most economical from the standpoint of heating.

Although several bulletins and booklets were published on the results of the experiment, none was in such high demand as the one on condensation control dealing with the results of the vapor barrier tests. Over 20,000 of these circulars were distributed.

If Branton had had his way in 1949 when he applied for the job in Alaska, he would have had his own personal housing experiment.

"I was working at Oregon State University and I saw the job opening in Alaska in one of those circulars listing job vacancies," recalled Branton. "I thought a great deal about homesteading, but now I'm awful glad I didn't do that."

When Branton came to Palmer the station was just being re-organized and the study on native materials for construction use was one of the first major experiments. At the time there was no such material as polyethylene and roll roofing was used in the vapor barrier tests. Today the vapor barrier is still an important part of construction specifications in the Far North, although better and more economical materials have been developed for the purpose.

Branton also initiated a program designed to collect accurate agricultural weather records in the Matanuska Valley. His basic aim was to obtain a historical record of the energy flux and to learn more about net radiation and sunshine (insolation).

At Palmer, records of net radiation have been kept since 1960. This allows scientists to compare each year to a previous year or to an average year and is valuable in crop development research.

As a part of the weather recording project, experimental plots of adapted crops are planned for several areas of the state and weather records and production figures are closely watched in an effort to determine more about plant-climate relationships in specific locations within Alaska.

Branton has also been closely associated with a study of soil moisture and irrigation which was begun in 1956 and a year ago he was pointing out the serious drought conditions. Many of the Matanuska Valley farmers installed irrigation systems this summer and were able to raise a crop despite a lack of rain and unusually excessive amounts of wind which can whisk away the soil moisture.

Branton is also the project leader in engineering for the well- publicized pea project which the Experiment Station has been conducting. He has worked in the actual planting and processing operations of this program.

Although Branton came to the Experiment Station in 1949, he left in 1966 for a position with the U.S. Department of Agriculture in Bushland, Texas. But he returned to Alaska again in 1968 at the urging of station director Horace Drury and he has no intentions of leaving again.

Branton was born in Sisters, Ore., in 1912 and graduated from Oregon State in 1933. He became an associate professor at Oregon State College.

Branton and his wife Eileen live on a farm near Palmer which they bought in 1952. They do not farm, however. Branton has a private pilot's license but has not been active in flying since 1945. He has three children and enjoys taking amateur movies in his spare time.

Lee Allen

As an Engineer, He's in High Demand

Like many of the staff members at the Alaska Agricultural Experiment Station in Palmer, Lee Allen was brought up on a farm. He was born in Bliss, Idaho, in 1934, graduated from the University of Idaho in 1957 with a degree in agricultural engineering and has been working in Alaska since 1953. He joined the Alaska Agricultural Experiment Station staff as Assistant Agricultural Engineer in June, 1957, although he had worked part-time for the station a year before.

Allen's work has been quite different than that of most of the staff members at the Palmer Research Center. His engineering knowledge has been in high demand since he arrived on the Alaskan scene.

His first work for the Experiment Station was in 1956 when he treated four native species of trees for use as fence posts, with a variety of preservative chemicals to determine which combination was most effective in providing extended service life. Many of the posts are still standing.

Another of his early projects involved the comparison of native materials as insulation with commercial materials. Nine cabins were constructed at the Palmer Center (before Allen had joined the staff) and different types of insulation were tested for their efficiency. The project took several years and detailed records of temperatures and heat loss were kept throughout the research.

Allen also contributed some of the first work with potato harvesters or "combines" in Alaska. Although the mechanical harvesters have been in widespread use in the Lower 48 for many years, they did not take hold in Alaska until recently because the tender skin of the Alaska potatoes is easily damaged by the rough treatment from a combine.

One piece of equipment which Allen developed especially for Alaska use was a low-cost batch-bin grain drier, a device which is not necessary in more southerly latitudes. Allen said grain which is grown in Alaska possesses too high a moisture content for storage and thus generally must be artificially dried. However, he said he has developed an alternative method which eliminates the necessity of drying. This involves the storage of grain in air-tight, plastic-lined containers.

Allen has been closely involved with the frozen pea experiments being conducted at the Experiment Station. He has worked with the machinery in the processing plant and his department undertook the plowing and planting of the crop. He has also played a key role in irrigation experiments to help determine the rate at which water can be applied to the soil and the interaction between fertilizer and soil moisture content.

Allen left on a year's sabbatical leave in late August with intentions of earning his masters degree in agricultural engineering at the University of Idaho. He expects to work during both regular semesters and work on his thesis during the summer of 1971. Allen's thesis will be on a subject which he has studied closely at the Experiment Station - - Micro-Climate Modification through the use of Plastic Mulches. He has conducted numerous experiments in researching the effects which plastic can have on soil temperatures and the results - - which are clearly visible at the Palmer Station - - are truly incredible to anyone who is not familiar with the scientific aspects of the tests.

Allen first came to Alaska in 1953 and spent a summer in the Panhandle region working on a diamond drilling crew for the U.S. Bureau of Mines. The following summer he again worked for the Bureau of Mines, this time at Manley Hot Springs in the Interior.

Eight years ago he purchased what he describes as a "log shell" on the Fishhook Road outside of Palmer and he's been spending most of his spare time turning the "shell" into a home. When he has time, he likes to hunt, fish and go snowmobiling. His wife, Charlotte, who will accompany him on his sabbatical, will also be studying at the University of Idaho. The Allens have three children, Albert, 14, Bonnie, 12, and Carol, 10.

Lee Allen, assistant agricultural engineer at the Palmer Research Center, points to one of his experiments with polyethylene in connection with warming soil temperatures. In foreground is black plastic and behind it is clear plastic.

Charles Marsh

Always Looking for New Markets

High production in any type of farming is, of course, of prime importance. A farmer cannot expect to become a success unless he can raise a crop or develop a herd. But he's equally handcuffed if he has no place to market his product.

Marketing and its accompanying problems have become a career for Charles Marsh, research economist in the Crops Research Division of the U.S. Department of Agriculture. Marsh has been stationed in Palmer at the Alaska Agricultural Experiment Station since 1956 and during this time he has worked in the field of economics with particular regard for Alaska crops and livestock.

He has played a leading role in a number of the major agricultural breakthroughs in Alaska during the past 10 years. One of his most recent programs involves the feasibility of establishing a vegetable processing and freezing industry within the state and he believes the idea has considerable merit.

Part of the program, which was given widespread publicity throughout Alaska, covered the test marketing of frozen peas in the Anchorage area during 1968. The results were exciting.

"It was far beyond our expectations," said Marsh. "The consumers gave us over-whelming support. We supplied 30 tons of frozen peas and the people clamored for more. We estimated we could have sold 200 tons then, and now our estimate is between 200 and 400 tons for the Anchorage and Railbelt market."

The pea program is typical of the type of project in which Marsh deals. "We first determined we could produce a high quality pea. We believe we can produce two tons per acre so it's economical from the standpoint of yield. And we have established the presence of a market," said Marsh. "Now our hope is simply that a private firm will take over where we leave off and set up a multiple product processing plant."

Marsh feels several types of vegetables would have to be used in any private venture. He suggested broccoli, brussels sprouts, cauliflower, carrots, and potatoes, in addition to peas. According to Marsh, "there appears to be an excellent chance also of processing and marketing 'fiddlehead ferns', - - a wild fern that grows in many areas of Alaska. If the fern can be domesticated and grown commercially, I believe there is a sizeable market here and 'outside' for this gourmet item." Marsh says, "the Space Needle restaurant in Seattle gave us an order last year for 40,000 pounds of frozen fiddleheads at a price of $1 per pound. At that time we couldn't even send them 500 pounds."

The frozen vegetable project is one of three major research studies now occupying Marsh's time. The second program involves the collection and distribution of information concerning the consumption and use patterns for dairy products and their substitutes in Alaska.

The third program in which Marsh is currently involved is one to determine the size of the market, consumer acceptance, retail price level and potential demand for fresh unfrozen Alaska produced veal in the Fairbanks area.

In addition to his continuing research on special programs, Marsh also compiles retail food prices from 13 Alaska cities and prepares them for publication in the regular Quarterly Report on Alaska's Food Prices. The publication, which provides a comparative index of food prices, is printed and distributed by the Alaska

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Research economist Charles Marsh checks over marketing figures with his secretary, Vicki Stokes in Palmer.

Dr. William Mitchell

Conservation Is His Business

Not very long ago most people had heard little or nothing about ecology. In fact, two years ago conservationists were a rare breed. Today, however, both ecologists and conservationists are very much in the public eye.

Dr. William Mitchell is an ecologist by trade and a conservationist by nature. He's been both for about 10 years - - long before it became the "in" thing to do. Mitchell is an associate professor of agronomy for the Alaska Agricultural Experiment Station at Palmer.

In 1969 when the Trans Alaska Pipeline System (TAPS) - - a consortium of oil companies - - was studying plans for an 800-mile pipeline to carry Alaska crude oil from Prudhoe Bay to Valdez, Mitchell was asked to join two other experts in an ecological survey of the northern section of the proposed pipeline route. The work was right up his alley.

Dr. William Mitchell checks experimental planting of grasses in plot at the Matanuska Research Center.

Mitchell served as botanist on the survey, which was funded by TAPS. His work consisted of making detailed studies of the plant communities between Fairbanks and Prudhoe Bay on the Beaufort Sea. He not only surveyed the plants along the proposed route, but also looked into the revegetation possibilities in a farsighted effort to come up with a way of covering up scars after the pipeline has been laid.

In pursuance of this objective Mitchell has established a number of experimental plots between the Copper River Basin and Delta Junction in Alaska's Interior. Mitchell is trying to find strains of grass that will flourish in areas where the soil has been scraped away during excavation. The process of finding grasses that will prosper in Alaska's weather conditions is no small task.

Most of Mitchell's projects are long-range ones, some of which have been continuing for many years and are still not complete. He has been working closely with ranchers on the Kenai Peninsula in an attempt to come up with good forage grasses for beef cattle and is commencing similar work on Kodiak Island. The work not only includes improvement on the feed base itself, but also on the management involved.

Born in Butte, Montana, in 1923, and raised in Roundup, Montana, a mining and ranch town, Mitchell has spent much of his life outdoors. His concern for man's proper relationship with his surroundings comes naturally. He spent over four years in the Marine Corps during World War II, graduated from the University of Montana at Missoula in 1957 with a degree in biology and received his masters degree a year later in plant ecology. In 1962 he received his doctorate in taxonomy from Iowa State University.

Mitchell, who still enjoys writing, worked for a period as assistant editor on a weekly newspaper in Montana, but the outdoors beckoned him from his typewriter and he never returned to a steady diet of office work.

He arrived in Alaska in the summer of 1963 and immediately became involved in a special Rockefeller Foundation grant project of studying various native grasses in Alaska. The project is still an active one. The Rockefeller program spurred basic research on indigenous grasses. It has been found that many different races occur within species and many different crosses between species. These represent a diverse reservoir of material for selection and breeding programs. Eventually, of course, it is hoped that some native grasses can be found that can be used for revegetation, forage, or turf purposes. A major problem at this stage, however, is producing seed from native grass varieties.

Mitchell, a member of the Matanuska Sportsmen's Association, enjoys fishing from time to time and considers himself an "off-and-on jogger." He is also interested in photography and has extensive records of his work on film. His wife, Zorka, is a substitute teacher in the Palmer school system and volunteer city librarian. The Mitchells' two children, Lynn, 11 and Alan, 10, go to school in Palmer.

Dr. Arthur Brundage

He Watches Over Alaska's Dairy Herd

Since the dairy cattle industry is the largest structured agricultural industry in the State at this time, it is understandable that Arthur Brundage, professor of animal husbandry, would be a busy man. His busy schedule is more predictable when one realizes that he is the only professional animal scientist with the Alaska Agricultural Experiment Station and assumes at least nominal responsibility for beef cattle, sheep, and swine in addition to dairy cattle. Dr. Brundage's background and formal training has been in the field of dairy production, however, and he is now working with Dr. Don C Tomlin, who assumed responsibility for animal production November 1.

Born in Wallkill, New York in 1927, Brundage was valedictorian of his graduating class in high school and earned his B.S. degree with distinction at Cornell University in 1950. Two years later he received his M.S. degree from the University of Minnesota and in 1955, the Ph.D. degree from the same institution.

Dr. Brundage came to Alaska in 1952 to accept a joint appointment with the U. S. Department of Agriculture and the University of Alaska as a research scientist in dairy cattle management and production. In 1968, he resigned the joint appointment and accepted a full time position as professor of animal husbandry with the University of Alaska - the job he holds today.

He is located in Palmer in the heart of the Matanuska Valley where all but one of the State's dairy herds are maintained. Dr. Brundage's work involves all phases of dairy cattle management and production. He is generally involved in several fascinating programs at one time. One project that has received considerable publicity has involved the study of the cow's digestive system with a special cow playing a major role in the experiments. The cow, who has her own private quarters at the Matanuska Farm, has a permanent opening into her stomach which makes it possible for Dr. Brundage and his staff to take samples of rumen fluid directly from the animal's stomach. The fluid is used in the laboratory to simulate ruminant digestion in a series of test tubes incubated at 39° centigrade. Using this technique, the feeding value of a given forage can be determined from a teaspoonful of feed in a week's time.

DR. ARTHUR BRUNDAGE
Taking Specimen from Cow

Meanwhile, back at the dairy barn, Brundage has other milking dairy cows which are used to compare different rations for milk production. The primary goal of all of these experiments is to develop feeding programs which are economically suited to conditions in Alaska. In the use of milking cows, however, the feeding experiments involve tons instead of teaspoonfuls of feed as is the case with the simulated rumen system.

In addition to his work directly for the experiment station, Brundage is manager of the Matanuska Valley Breeders Association, a joint cooperative effort between the livestock industry of the Matanuska Valley and the Experiment Station. The association's primary goal is the improvement of the genetic potential of the cattle population, by the introduction of high quality semen from outstanding bulls of all the major dairy and beef breeds. Brundage's background makes him an ideal man for the job with the Breeders Association, but it also adds another item to his never ending list of things to do.

Dr. Brundage and his wife, Helen, have three children, William, Richard, and Rodney. The boys have all participated in the Palmer Little League Baseball program and this has given Brundage something to do in his spare time; he has managed teams and is a regular umpire. His other major pasttime during the summer is gardening at his home just a few miles outside of Palmer.

Gary Ireland and Sheri Mathis Work in Dairy Laboratory

NC-64 Committee Meets in Alaska:

A Regional Effort to So

Above, whiskered Dr. Peter Van Soest of Cornell compares notes with Dr. Duane Erickson of North Dakota State University while touring the Matanuska Farm of the University of Alaska's Agricultural Experiment Station.

"The Development and Application of Laboratory Methods for Determining Forage Quality - Cooperative Regional Project, NC-64" - - this is the formal title of a cooperative project which transcends state boundaries to unite the efforts of scientists from the North Central United States, including Alaska, New York State, and the U.S. Department of Agriculture at Beltsville, Maryland, in the exploration of methods of forage evaluation. The project transcends formal research disciplines as well; it brings together biochemists, agronomists, animal scientists, microbiologists and plant breeders to attack the many sides of the problem of forage evaluation.

As with many other regional committees, this one rotates its annual meeting among the participating institutions. As long as three years ago the committee expressed an interest in meeting in Alaska and that dream became reality this summer when some 20 members of the group came to Alaska for a week of intensive involvement in the goals of the project and the uniqueness of the Alaskan environment.

The group assembled and spent the first few days of the program in the Matanuska Valley at the Palmer Research Center and the Matanuska Farm of the Experiment Station. Here, participants were briefed on the operations of the Experiment Station by individual members of the staff. Efforts were made to point out the similarities and dissimilarities of agriculture in Alaska to that in the other 49 states.

Professor J. W. Thomas of Michigan State University put it well in a letter following the meeting:

"All your efforts did help me understand 'Alaska' much more than any other visit or informational book. The problems of Alaskan Agriculture are unique. You have always told us that, but only now can we begin to comprehend that. I hope that we as individuals and as a group can more effectively help you and your coworkers in the future."

Thomas' letter was one of several received by Dr. Arthur Brundage of the Experiment Station following the conference. As official representative on the committee from Alaska, Dr. Brundage became deeply involved in setting up the program and seeing that all went smoothly.

Professor James Ross of South Dakota State University appeared equally impressed by the peculiar problems of agriculture in Alaska. He wrote, in part:

At left, three scientists make notes during the NC-64 meeting in Alaska during July. At right, members of the committee, some with wives and children, assemble at the Matanuska Farm for the opening of the week-long program.

lve Scientific Problems

"I am sure that all of us have some small appreciation now of your problems and potentials. The potential for improving agriculture is tremendous with the right genotypes and the right management. You are supplying these in large measure and it is with pride that you can look on the fruits of your labor."

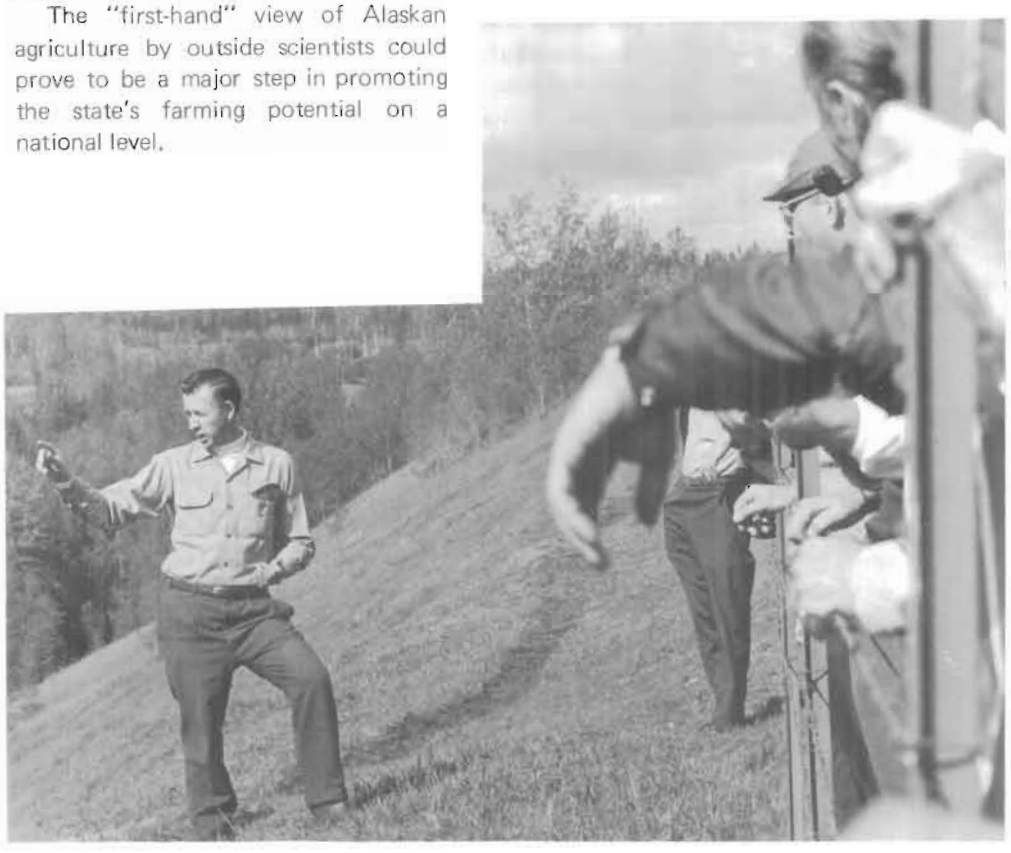
An important part of the program in the Matanuska Valley was the day set aside for the presentation of progress reports on the status of the research at the individual stations. This was held as an open seminar and gave workers from the Alaska station and from other agricultural agencies an opportunity for in-depth participation in the progress toward the goals of the committee.

Following the program in the Matanuska Valley the scientists drove to Mt. McKinley National Park to view the work at the reindeer station of the University of Alaska's Institute of Arctic Biology and to spend a day driving through the park. The group continued on to Fairbanks via the Alaska Railroad where they had an opportunity to view more of the Experiment Station facilities and the University of Alaska main campus, and to visit with the staff members assigned to the College Research Center. All would agree that it was an exhausting week, but a week of unparalleled opportunity to share the hospitality, the beauty and grandeur, and the promise of Alaska.

"I'm sure all of us have wondered at times what special kind of problems that you might have and how some of the research that you have done and presented to the committee fits in with the aims and goals of the rest of the committee," wrote Terry Klopfenstein of the University of Nebraska, former secretary and now chairman of the NC-64 committee. "I think we were all highly impressed with the caliber of research that is being done at the Experiment Station, both at Palmer and at Fairbanks. I think the people involved, including your associates in other departments, can be complimented for doing an outstanding job. I came away feeling that the only thing lacking was support to further expand research and extension programs in order to enhance the future of agriculture in Alaska. We were very happy to have this opportunity to see first-hand the current status of agricultural production in Alaska."

The "first-hand" view of Alaskan agriculture by outside scientists could prove to be a major step in promoting the state's farming potential on a national level.

Above, Drs. Thomas of Michigan State, Rhykerd of Purdue and Garner of the University of Missouri chat in a laboratory at the Palmer Reserach Center of the University of Alaska's Agricultural Experiment Station. Garner was chairman of the NC-64 Committee at the time of the meeting in Alaska. Below, Dr. Arthur Brundage, professor of animal husbandry at the University of Alaska and co-ordinator of the NC-64 meeting in Alaska last summer, explains some of the Matanuska Valley geography.



Dr. Winston Laughlin

Keeping an Eye on Soil Nutrients

Five years before Winston Laughlin was born in Fountain, Minnesota, an early Alaskan settler was working busily on a small tract of land near Palmer, readying it for planting. It's hard to say what that settler was growing then, but today that same land is still being cultivated and it has been ever since 912.

The only real difference between the cultivation almost 60 years ago and that of today is that the soil and plants grown in that soil are being closely watched, analyzed in the laboratory and compared to soil samples and previous plants taken from the same plot of land.

Laughlin, who was brought up as a farm hand and been in the farming business all his life, is a research soil scientist for the University of Alaska's Agricultural Experiment Station in Palmer. He has been with the Experiment Station since 1949 and during that time he has been involved in several long-term studies of soils, fertilizers and plant production.

One thing which Laughlin has learned in his constant scrutiny of land which is cultivated year after year is that the nutrients in soil which make healthy plants grow can be used up after a period of time. The nutrients must be replaced and this can be done through fertilizing. It sounds simple, but before a farmer can go out and spread fertilizer over his garden, he must know what the soil lacks and what fertilizer will correct that deficiency.

This is what Laughlin's work is all about–determining what types of soil make what plants grow and assuring that continuous plantings will not eventually destroy the soil altogether by robbing it of its nutrients.

A good example of farmers using up a nutrient occurred in the mid-1950's when potato plants in the area began to show signs of poor yield. In some cases the plants died and in others the tubers simply weren't marketable. After studying the potato in the laboratory, it was determined that there was a potassium deficiency - - a situation brought on by increasing 8-32-8 applications accentuating a low potassium level. After the potassium deficiency was discovered, it was a relatively simple second step to develop a fertilizer which could correct the problem and potatoes once again were flourishing.

Dr. Winston Laughlin in Greenhouse with Assistant Miss Kincaid

Laughlin's work at the Experiment Station keeps him busy moving between his laboratory at the Palmer Station, his experimental plantings throughout the State and his desk where he has turned out dozens of reports on his findings.

The particular plot of land which has been under cultivation for nearly 60 years is just one of the experimental areas which Laughlin is studying. But this land is a valuable one to Laughlin because it has allowed him to obtain information on soil which has been worked over and over with no relief, save that of the controlled application of fertilizers used in Laughlin's experiments.

In one experiment started in 1966, Laughlin determined that sulfur plays a major role in the development and hardiness of Alaska plant life. The test involved a field of bromegrass which was short, spotted and yellow. Muriate of potash was used to fertilize the bromegrass in some cases and sulfate of potash was used in others. Results of the fertilization showed the muriate of potash to have little effect in the yield and no influence on the sulfur content of the bromegrass. On the other hand, when the sulfate of potash was applied,

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Palmer's Front Office Lineup, from left, Lucille Stephan, Janet Hulbert, Barbara Leckwold and Mildred Marple

Sigmund Restad

Experiment Station's 'Crying Towel'

Sigmund H. Restad, a scientist turned administrator, is the executive officer of the Alaska Agricultural Experiment Station. Although he is based at Palmer, he generally makes at least a trip a month to the University of Alaska at College and is responsible for various administrative tasks at all of the Station's Research Centers including the Experimental Fur Station in Petersburg.

Although much of the financial business of the Experiment Station is handled from the College end, Restad is still closely involved with laying out the annual budget for operation of the station. In addition, he considers himself somewhat of a "crying towel" in his position as a liaison between the station staff members and the administration.

Restad, of course, does not have direct control over funding of the station programs, but he is involved in decision-making regarding the annual fiscal budget. Requests come in to Restadı from various departments within the station complex and he must sift through them, sort them out and organize them into a presentable package.

The station budget for fiscal 1971 (which ends June 30th next year) was $1,344,954. Of this some $304,230 was earmarked for administrative projects, including operation of the director's office, plant operations at all of the research centers, basic supplies, etc. State funds allocated for research projects totalled $520,823.

Funds available from the Department of Agriculture on a matching basis for projects eligible for Hatch grants totalled $350,335. U.S.D.A. funds totaling $44,566 were available for regional projects on a straight grant basis. And some $125,000 was available through cooperative agreement for ARS projects.

Restad, as executive officer, must keep himself totally familiar with the financial operations of the station. Consequently he sits in on a number of high level committee meetings that some station staff members never attend. He says he has a seat on all the director's committees, but claims his membership has "only nuisance value and no voting power."

Because of his understanding of the overall operation of the Experiment Station, Restad is generally the man who confers with visitors from other agencies who want to learn more about what makes the station tick.

Restad is also directly involved when a staff member takes on a special assignment. Most recently he participated in the final negotiations to make twc of the station scientists available to the Atomic Energy Commission on a consulting basis concerning revegetation on Amchitka Island in the Aleutians.

Despite his association with the financial affairs of the Experiment Station, Restad says he spends very little time on the adding machine. In fact, in describing his work Restad called himself the "babysitter of the organizational needs of the station."

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SIGMUND RESTAD
And Secretary Barbara Ferraro

Dr. Wayne Burton

A Real Place in the Research Picture

Dr. Wayne Burton's job as an agricultural economist is an unusual one in the field of research. In fact, some of Burton's colleagues might even hint that his field of economics is not a part of the field of agricultural research. But, as Burton points out, his work carries him into practically every research program conducted by the University of Alaska's Agricultural Experiment Station, so he must have a very real place in the research picture.

Dr. Burton is associate professor of economics and head of the Experiment Station's Department of Agricultural Economics. He is stationed at the College Research Center, having joined the Experiment Station in 1963 and worked in the Palmer Research Center through 1969.

In summing up his position within the Experiment Station, Burton says: "I like to think of myself first as a student, and then as an educator, researcher, and builder. I would be classed as a generalist in my professional field of agricultural economics. My training is in animal husbandry and general agriculture at the undergraduate level, and in agricultural economics, economics, sociology, and philosophy at the graduate level."

In his work as an economist, Burton generally provides the background work for major research programs. His job entails careful sifting and analyses of mountains of detailed facts which must be organized to a point where they can be used in planning and developing programs. Burton's findings can often contribute to the scope and directions in which programs develop.

The project which is beginning to occupy much of his time right now is a study of the potential for a greenhouse industry in Alaska. It's a vast subject and one which has been given little consideration in the past, so his work will all be new. He is working closely with Dr. D. H. Dinkel on the project. Among the answers which Burton must supply in his part of the project are a projection of industry demand, the size of potential market, and research needed to develop the industry properly.

Burton has worked closely with the developers of a barley-hog farm south of Fairbanks near Delta Junction this past summer. Although the project is a private undertaking of a corporation known as OHM, Inc., the University of Alaska has provided scientific assistance and Burton has coordinated the Experiment Station's efforts with those of the developers.

Dr. Wayne Burton, agricultural economist in the College Research Center, seated in his office with dissertation on his desk. The dissertation for his doctoral degree was entitled: "Alaska's Agricultural Production Potential: An Economic Analysis."

The project has been particularly interesting to Burton since it has allowed him to get back into farm management, to some degree, and still remains well within the realm of economics since it involves new firm development. After five years of operation, projections call for some 4,500 acres of land to yield 200,000 bushels of grain which will feed 10,000 pigs, estimated at a million-and-a-half pounds of pork. The project could be the most significant program Burton has ever worked on.

Born in a small sod-house on a homestead in Nebraska, Burton grew up on the family ranch. He graduated from the Nebraska School of Agriculture at Curtis in 1940 and graduated with a degree in general agriculture from the University of Wyoming in 1958. In 1960 he earned his masters in agricultural economics at Texas A & M and in 1968 he received his doctorate in agricultural economics from Montana State University.

Following World War II, Burton lived on his own 500-acre farm in Leadhill, Arkansas, where he had a dairy herd. In later years he added sheep and swine to his farming operations.

He has held numerous teaching positions during his career as an agriculturist-economist, including a position with the Mat-Su Community College in Palmer where he taught introductory economics.

Burton took a leave of absence from the University from September, 1967, through June, 1968, during which time he worked on his doctorate. His dissertation was entitled "Alaska's Agricultural Production Potential: An Economic Analysis."

Burton has been a firm believer in what he calls the "multidisciplinary type of work effort" in attacking agricultural problems. The method is designed to take in the entire scope of a problem and might be termed a task force system, since it involves establishment of committees to work over various integral parts of a project.

Burton and his wife, Vivian, have four children: Janet, who lives with her husband in Quito, Ecuador; Judy, living in Corvallis, Oregon; Danny and Teresa, at home.

Some 2,000 Mink Are In His Charge

The past year has been an extremely busy one for James Leekley. You'd be busy too if you had to house and feed 36 marten, 42 foxes and nearly 2,000 mink. Needless to say, it's enough to create a fulltime job.

Leekley is biologist in charge of the University of Alaska's Fur Experiment Station in Petersburg. The station is part of the Alaska Agricultural Experiment Station and is nestled among towering spruce trees far down on Alaska's picturesque Panhandle. Few people even know the Fur Station exists.

But Leekley has been working at the facility since July 24, 1941. At the time, the station was only three years old and the accommodations were extremely limited. The large office-residence building in which Leekley still lives formed the nucleus of the Fur Station in 1941 and the animal pens were adequate to house about 100 mink, 20 foxes and four marten. Today the station has developed into a well planned complex consisting of five 180-foot mink sheds capable of handling some 1900 mink, a 130-foot marten shed which will house 80 marten and 35 fox pens. All are located within a 200-foot by 325-foot area surrounded by an eight-foot escape proof fence. In addition there are two cold storage plants housed within a large building which also contains a feed mixing area and room for dry storage. A seven-car garage storage shed and shop building round out the station facilities.

Leekley's particularly busy schedule this past year has come as the result of a highly unusual experiment which involved the testing of effects of sonic booms on mink. (A detailed photo-news report on this program was carried in Agroborealis, Vol. 2, No. 1).

The experiment, which is still continuing at the Fur Station, involved several government agencies and top scientists in many fields. It was prompted by a rash of lawsuits filed by mink ranchers against the U.S. Air Force who claimed their mink had suffered ill effects from supersonic planes breaking the sound barrier. Some 650 mink were brought to Petersburg for the experiment in early 1970 and most of them produced young in the spring. This accounts for the large number of mink now on hand at the Fur Station.

Although Leekley considers the mink experiment among the most interesting in which he has participated, he has worked on a number of unusual projects. Once he raised a litter of seven wolf pups in cooperation with the Alaska Department of Fish and Game.

The marten have also held Leekley's interest over the years although he admits he has been so busy with other programs he has "been unable to do the marten justice." Nonetheless, the 36 marten now living at the station may well be the largest herd in the United States. Breeding has been the most fascinating aspect of the marten project. Results have varied considerably. The herd started with two wild - caught females and two wild - caught males in 1942. The females produced young and for a while it appeared reproduction would not be a problem. One year 26 offspring were produced, but reproduction has fallen off sharply since then and the reduction has been a mystery ever since.

Leekley, who holds a degree in wildlife management from Oregon State University, was working with the old U.S. Bureau of Biological Survey in Saratoga Springs, N.Y., prior to his assignment in Alaska. He was offered the position in Petersburg and took it without hesitation.

Leekley's wife, Anne, is as much a part of the Fur Station as Leekley himself. She handles the lion's share of the office work including payrolls, bookkeeping, filing animal records and recording animal weights and other experimental data around the animal pens. The only time she balks on the outside work is when the temperature dips below zero and then she leaves the data gathering to her husband.

JAMES LEEKLEY
Holding One of His 2,000 Mink

The Leekley's have two daughters, Janet, who is a school teacher, and Jeri, who is in her third year at the University of Cincinnati Medical School, and a son, Robin, who is a commercial fisherman here in Alaska and owns his own boat.

Leekley has three other men working fulltime at the station and additional help is brought in during the busy summer months. The animals at the station demand constant attention, so Leekley rarely finds time for a vacation.

The mink which breed in March and have their young in May, are generally pelted between mid-November and the middle of December. The foxes breed anywhere from mid-March to the end of April and their young are born some 54 days later. The foxes are pelted the same time as the mink. The marten have nearly a nine-month gestation period, breeding in July and August and producing their young the following April. Their pelts are prime in November.

He Specializes in Vegetable Disease

When it comes to potato farming in Alaska, Charles E. (Chuck) Logsdon believes the farmer has practically a year-round problem. He ought to know. He's an expert on the subject as professor of plant pathology for the University of Alaska and associate director of the Alaska Agricultural Experiment Station.

Logsdon, who has been with the Experiment Station in Palmer since 1953, has dealt with all sorts of potato problems and sums the situation up this way:

Disease problems start with seed selection and planting in the spring and continue through the growing season, through storage, and right down to the market place.

A brief look at some of the problems which have plagued the Alaskan potato farmer bears out Logsdon's assessment. And it has been Logsdon who has led the fight to eliminate these problems.

When he first joined the Experiment Station, potato ringrot was a serious problem in Alaska. In fact, at the time he was hired Logsdon was studying ringrot in connection with his doctoral degree and probably knew as much about the disease as anyone in the country. The knowledge paid off.

Through a combination of research, extension work and seed certification, ringrot was virtually eliminated and few cases have been reported since 1957. In this case the only control of the disease was the elimination of infected seed.

Potato scab is another disease which Logsdon has been combatting. Control measures, however, have been hard to come by and it appears the only effective control is the development of resistant varieties. Potato scab does not actually hurt the potato, although it causes a corky scab to form on the potato skin and downgrades the commercial quality.

Skinspot and storage diseases have also come into Logsdon's research programs as has blackrot of carrots. He is currently working on a lettuce storage project which could produce major changes in the marketing of lettuce.

Another area of Logsdon's research concerns low temperature fungi, especially those attacking grasses and other perennials during the winter under the snow. Some of these fungi have been identified, but others are yet unknown.

"We're trying to determine what these organisms are, we're trying to learn something of their life cycle, and then we'll try to work out a control," said Logsdon in outlining his plan of attack. "We've collected some cultures to analyze but now we have a big sorting out program ahead of us."

Logsdon has also done considerable research on a disease known as potato Virus X, a common latent virus which shows no signs of its presence except for a lack of yield in the plant it attacks.

He has found that potato viruses can be controlled very easily in Alaska, so Alaskan growers can produce the best potato seed in the United States.

As part of the crop improvement program, Logsdon keeps seeds on hand from plants developed for special use in Alaska. In the case of potatoes the seeds are distributed to commercial growers. Cabbage and tomato seeds are made available for home gardeners through local seed dealers and strawberry plants are turned over to nurseries for increase and distribution.

Logsdon, born in Stoutland, Missouri, in 1921, graduated from the University of Kansas City in 1942 with a degree in biology. He became a pilot in the Army Air Corps during World War II and entered graduate school at the University of Minnesota in 1946 where he received his PhD in Plant Pathology eight years later. During that time he worked as a research assistant at the University and for three years he was a research fellow. Before driving his old Mercury to Alaska in 1953, Logsdon spent three years with the Department of Agriculture as a biological science aide.

The mayor of Palmer from 1959 to 1961, Logsdon has been active in community affairs. He served on the City Council and the Board of Trustees of the Valley Hospital. In addition, he has been executive secretary of the Alaska Crop Improvement Association since 1953.

Logsdon and his wife Arloine Marie have three children, Charles, 21, Onnalie, 17, and John, 15.

Dr. Chuck Logsdon, right, Checks Experiment with Harold Stephan.

Roscoe Taylor

Development Of Cereal Crops Has Two Goals

ROSCOE TAYLOR
Feeling His Oats

Although Roscoe Taylor's time is spent almost exclusively on the development of cereal crops for use in Alaska, his job is somewhat double-barreled. Most researchers working with cereal crops would be aiming for a better grain. This is a major part of Taylor's work, but at the same time he's seeking improvement of cereal crops as forage.

Taylor, Research Agronomist at the Alaska Agricultural Experiment Station in Palmer, has spent a great deal of time in the development of oats as a forage crop as well as a grain. In fact, his research has led him to a point where he has developed an oat (which is as yet unnamed) that appears to mature early enough to be grown as a grain crop, yet is still vigorous enough to be used as a forage.

Although oats take up considerable acreage in Taylor's experimental plots in the Matanuska Valley, he is concurrently running tests on barley and wheat in efforts to reduce undesirable characteristics of both crops.

Barley, which is widely used by farmers in Alaska, is the subject of some of Taylor's most intense research. The most popular variety right now is Edda barley, a strain which came to Alaska from Sweden, but which the Swedes have virtually discarded now in favor of newly developed varieties.

Basically, Taylor is working to achieve what he calls "good grain yield which the farmer can realize." He explained that while he may have a barley which will produce a high yield under optimum conditions, it may have little value in the Palmer area where these conditions are not prevalent. Wind can often reduce a barley stand to ruins by "shattering" the crop.

According to Taylor there are two types of shattering and he is working to produce a plant which does not shatter under normal Matanuska Valley weather conditions. "Head shattering" - - a term which Taylor uses to describe those unhappy times when the heads of the barley plants snap off the stem - - is a common problem in Alaska. To correct it, Taylor is attempting to develop a stiffer strawed plant which can withstand the wind. Regular shattering - - as it is commonly known - - occurs as individual kernels of grain fall off the head. This too can cut severely into the yield which the farmer can realize.

At this time, Taylor is not studying either barley or wheat for possible industrial use (such as in brewing), but merely as a livestock feed. To this end he has planted rows and rows of different selections in the hope of finding the perfect crop for Alaska.

A good example of one plant which may eventually become useful to farmers in an isolated area is an oat which may actually mature earlier than some farmers want, but which can produce a reasonable yield in a short season. Thus farmers who before may not have been able to grow any variety of oats, will have at least something to rely on, even if the yield is not in record proportions. This illustrates the type of individual problem which Taylor is trying to solve.

Taylor, born in South Dakota in 1923, came to Palmer in 1951 and has worked at the Experiment Station ever since. He met his wife Alice in Palmer and the couple was married in 1952. They now have eight children ranging in age from five to 17.

After spending three years on active duty in the Air Force, Taylor graduated from South Dakota State University in 1948 with a degree in agronomy. Two years later he earned his masters in crop breeding from Iowa State University.

Taylor recalls his decision to come to Alaska was not a difficult one, although he had intended to stay just two years under his original contract. "I figured after three years in the Air Force, I could stand two years anywhere," he said with a grin.

In addition to his primary work in cereal crop breeding and management, Taylor has picked up two jobs at the Experiment Station by "default." He is also involved in breeding and management of turfgrass and forage breeding. He gained these responsibilities after certain staff members who were specialists in these fields left the Experiment Station.

With such a full schedule, Taylor is not exactly a man with time on his hands, but when he can break away, he enjoys both hunting and fishing.

Dr. Richard Washburn

His Work Is Usually Full of Bugs

When Dr. Richard Washburn mentioned that the study of insects affecting agriculture in Alaska could be viewed "in broader terms than elsewhere," he knew what he was talking about. Washburn, research entomologist at the Alaska Agricultural Experiment Station's Palmer Center, has been involved with some unusual programs in his past 20 years in Alaska. The diversity of his work is enormous.

For example, one of his major projects has dealt with insect problems in reindeer - certainly a field which he shares with few other American entomologists. It has involved the reindeer warble whose adult form is about the size of a small bumblebee, and when laying eggs terrorizes the reindeer so as to render them almost unmanageable.

The eggs are laid at the base of the hair. The larvae on hatching tunnel through the muscles ending up beneath the skin along the backbone. In leaving the animal to complete the development it cuts a hole in the skin reducing its value.

Dr. Richard Washburn, research entomologist for the Alaska Agricultural Experiment Station at Palmer, checks one of his experimental plots for root maggots.

Washburn's work has been to study the warble problem and work out a solution. Now that satisfactory insecticides and method of application have been found it is necessary to determine residue data for label approval so that the method can be utilized by others.

Washburn's work, of course, reaches far beyond the reindeer problem. He has other work under way including - root maggot biology and control, the inhibition of blowfly oviposition in drying fish, and studies on cutworm biology and control just to name three.

The root maggot research is particularly challenging because of the magnitude of the problem. "You can always depend on root maggots in Alaska," said Washburn. "They occur from Ketchikan to the Brooks Range, from the Aleutians to the Canadian Border and they affect almost every member of the cabbage family grown by man."

Washburn's job is, once again, to come up with a way to control the problem or at least reduce it where crops can be raised in Alaska with a better chance of surviving various types of insect problems.

Washburn first came to Alaska in 1942, spending 25 months in the U.S. Army at the Aleutian Island stations of Unalaska, Adak and Attu. He was born in Cadillac, Michigan, March 25, 1919, and received his early education in East Lansing schools.

He graduated from Michigan State College in 1941, majoring in chemistry with minors in entomology and botany. Following his term in the Army, he became a graduate assistant in entomology at Cornell University from 1945 to 1948 and he earned his PhD at Cornell in 1948 with a major in economic entomology and minors in organic chemistry and insecticide chemistry.

He spent a year at the University of Georgia as assistant professor of entomology and then returned to Alaska where he became an entomologist for the U.S. Army Alaska in charge of insect and rodent control.

Washburn went to work for the Experiment Station in 1950 and has been there ever since. During the past 20 years he has had various employers although he has remained at the same headquarters. Until 1968 he was a joint employee of the University of Alaska and the U.S. Department of Agriculture and since then he has been research entomologist, Crops Research Division for the USDA. For one brief period he was also an entomologist for the Extension Service.

Washburn's interest in plants has extended into his private life. His wife, Mary Jane, operates a commercial nursery about five miles from Palmer. The nursery includes some 35-40 varieties of apples, as well as other fruits and ornamentals.

The Washburns have four children: Richard, Jr.; Catherine Anne; Rebecca Mae; and Deborah Sue.

Dr. Frank Wooding

An Exciting Program for 1971

Dr. Frank J. Wooding came to work for the Alaska Agricultural Experiment Station last July -- a bit too late in the season to start any major projects of his own. So he spent much of his time planning his program for next year and it's packed with new experiments as far as Alaska is concerned.

Wooding, 29, is an assistant professor in agronomy for the University of Alaska and is stationed at the College Research Center. His background includes study in soil chemistry, soil fertility, soil physics, plant physiology, and plant biochemistry. Although he has never spent a winter in Alaska, he has already begun experimenting with varieties of winter cereals at Delta Junction and Fairbanks in hopes of developing a better crop for Alaska farmers.

Wooding's introduction to the Experiment Station was an immediate involvement in the station's program efforts on the well-publicized OHM, Inc., barley-hog project at Delta Junction. It was Wooding's recommendation to top-dress the barley with nitrogen when a deficiency of this nutrient was noted in the plants. Nitrogen fertilizer supplied as urea produced immediate results.

Wooding believes there is considerable need for variety testing of barley, oats, and other grains at several locations in the Tanana Valley. He hopes to begin a comprehensive research program next spring and among his various projects will be the test planting of certain varieties of triticale, a feed grain which is a cross between wheat and rye.

Wooding said triticale has not been tested extensively in Alaska, but he believes it has potential as a feed grain crop. Triticale is widely grown from as far south as Texas up into Canada. It is a high protein grain which contains certain amino acids often deficient in other cereals.

Wooding's observation of the triticale on the OHM unit at Delta Junction aroused his interest in possible adaptation of the crop to Alaska. He has already obtained seed for six varieties from Dr. B. Charles Jenkins in California who has contributed greatly to the development of the grain.

"When you compare it with barley, you can't help but get excited," said Wooding enthusiastically.

Over the winter Dr. Wooding will no doubt be spending a great deal of time developing a laboratory at the College Research Center which was just being started late in the summer. Wooding feels the lab is absolutely mandatory for proper analysis of soils and plants and, since it will be a newly established facility at the Experiment Station, he will be able to have a direct hand in its layout and organization.

Born in Pontiac, Illinois, Wooding received his B.S. in agriculture at the University of Illinois in 1963. He earned his masters in agronomy three years later at Kansas State University and then in 1969 received his doctorate in agronomy from Kansas State. He did post-doctoral work at Pennsylvania State University from 1969 until he decided to move to Alaska.

While studying in Kansas, Wooding probed deeply into areas which made his background particularly useful for work in Alaska. He was engaged in soil fertility studies with winter wheat, forage sorghum, grain sorghum, corn, and alfalfa. He studied the effects of fertilizers on crop yield and the chemical composition of agronomic crops. In Pennsylvania he became involved in a project supported by the U.S. Atomic Energy Commission dealing with the mechanisms of phosphorus uptake by corn genotypes.

Wooding came to Alaska with his wife, Josefina, and their two children, Christopher, 4, and Eric, 2. The couple lives about a mile from the University campus. Mrs. Wooding, who is a dietitian with a masters from Kansas State, is originally from the Philippines and thus has moved virtually from the equator to the Arctic.

Wooding enjoys reading in his spare time. He also likes to hunt and fish and has a large collection of Indian arrowheads which he built up before coming to Alaska.

Dr. Frank Wooding, newly-arrived assistant professor in agronomy, is based at the College Research Center where he is in the process of building a laboratory.

Experiment Station's Flying Director

Dr. Horace F. Drury, director of the University of Alaska Agricultural Experiment Station, flies his own airplane to many of the business meetings he must attend in connection with his administrative position. Drury's plane, a Navion, is instrument equipped and he has made numerous trips within Alaska as well as many to the Lower 48 states. He is pictured here in the cockpit of the plane while it was parked at Fairbanks International Airport.

Dr. Graumann's Alaska Role

A largely unseen (in Alaska) but important member of the team engaged in Alaskan agricultural research is Dr. Hugo O. Graumann, Associate Director of Crops Research Division of the U.S. Department of Agriculture. His office is located at the research headquarters for the nation's Agricultural Research Service at Beltsville, Maryland. Dr. Graumann is the supervisory and administrative leader of the 7 federal research scientists located at Palmer.

Federal involvement in agricultural research in what was then the Territory of Alaska began in the last century with establishment of research stations at Sitka and Kenai in the late 1890's. During the next 3 decades, federal research stations were established at Rampart (1900), Copper Center (1903), Kodiak (1907), Fairbanks (1907), and Matanuska (1917).

The federal government has had a keen interest in the agricultural development of Alaska. To foster accelerated research here, the U.S. Department of Agriculture funded the construction of the modern Palmer facilities between 1949 and 1951. These include the large laboratory-office building, staff houses, and the cold storage and greenhouse complex. In 1968, these research facilities and adjacent land were transferred to state ownership.

"The current federal research program in Alaska is intended to complement and cooperate fully with state scientists and research goals," said Dr. Graumann. He and Dr. Drury, Director of the Alaska Experiment Station, confer frequently in the interest of continuing a harmonious research program providing badly needed answers to promote agricultural development in this northernmost state.

Dr. Graumann travels to Alaska as frequently as possible. Thus, he maintains contact with the federal scientists at Palmer engaged in research in horticultural, forage, and grain crops, turfgrass, entomology, soils, and economics. Program objectives and progress are reviewed annually to maintain maximum effectiveness in all research specialties.

Born in Oklahoma, Dr. Graumann completed undergraduate and masters degree studies at Oklahoma Agricultural and Mechanical College, subsequently renamed Oklahoma State University. He completed requirements for the doctorate degree at the University of Nebraska. Dr. Graumann advanced to associate professor at Oklahoma before transferring to the U.S. Department of Agriculture at Lincoln, Nebraska in 1947, to devote full-time to research on alfalfa. Since that time, he served first as national leader of alfalfa investigations and later as chief of the Forage and Range Research Branch within Crops Research Division at Beltsville, Maryland, before advancing to his present position. Dr. and Mrs. Graumann are the parents of a daughter, now married. He is an avid week-end golfer, when work schedules and weather permit. Their home is located in Silver Spring, Maryland.

Dr. Laughlin

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yield rose sharply, the bromegrass turned a deep green with a marked increase in sulfur content. In addition, the following spring when winterkill could be examined, it was found that the bromegrass which received the sulfate of potash was virtually untouched. The only winterkill was found in the crop which received the muriate of potash.

Laughlin, born in 1917, received his elementary education in Iowa and Minnesota, graduating from Mabel, Minnesota, Consolidated School in 1934. He worked as a farm hand until the Fall of 1938 when he entered the University of Minnesota and graduated from there in 1941 with a B.S. degree with distinction in Science Specialization.

He became a graduate assistant at Michigan State College in East Lansing until 1942 when he entered the Army during the Second World War. He was discharged in 1946 and again became a graduate assistant at Michigan State where he earned his Masters that year. He married his wife Dorothy the next year and then became a graduate fellow with the Beechnut Packing Company at Michigan State where he received his doctorate with distinction in 1949.

Laughlin and his wife own a home just south of Palmer and have four children: Ellen, Laurence, Keith and Brian.

Sigmund Restad

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Restad claims his administrative skills came to him by accident rather than by design. He received both a BS and an MS in dairy husbandry at the University of Minnesota and embarked on a career of research.

"I have no regrets about leaving research, though," said Restad. "I'm not a hard core researcher and I like to play the field. I still get in on a little research once in awhile."

Restad has what he calls a "six-pack" of children - - Mark, Jason, Eric, Lori, Joyce and Mary.

Restad spends most of his spare time with his family and his wife runs a virtual taxi service carrying the children to 4-H meetings, Civil Air Patrol, band practice, scouts and various church activities.

Charles Marsh

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Cooperative Extension Service. Over 6,000 copies of the reports are mailed each quarter to government agencies, chambers of commerce, labor organizations, businesses and individuals throughout Alaska, the United States and several foreign countries.

Marsh's overall federal research project is entitled "Marketing of Alaska - - Produced Agricultural Products." His work covers vast areas including the economics of product quality and grade, market potentials, market structure, marketing costs, feasibility studies, consumer surveys and the impact of special programs.

Marsh; raised on a commercial dairy farm in northeastern Kansas, graduated from Kansas State University in 1949 with a degree in agricultural administration. In 1955 he completed his Masters in Agricultural Economics. Before coming to Alaska he was teaching agricultural finance at Kansas State while carrying out a variety of economic research projects.

His first assignment at the Agricultural Experiment Station was to take charge of farm production and management research. Two years later he was given responsibility for planning and supervising research in marketing. And in 1960 he was named senior economist and program supervisor of agricultural economics research.

When Marsh and his wife, Mary Lou, first moved to Alaska with their two children in 1956 it was with the idea of staying for two years and moving on. Somehow the fascination of the North Country changed their minds.

Mrs. Marsh, who has a BS in home economics and a Masters in psychology, is a teacher at the Palmer Community College. Their son Jimmy is a junior at Kansas State and their daughter Kathy is a freshman.

Paul Martin

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hobby.

The Martins have five children, none of whom live at home. One daughter, Nancy, is a mathematics teacher in Samoa and a son, David, is finishing his Masters degree in Indiana. The couple also has two other sons, Peter and Wallace, and a daughter Phoebe. None of the children apparently will be going into the field of soil science.

Martin is one of several scientists working at the Alaska Agricultural Experiment Station who is employed by the U.S. Department of Agriculture. But he says his work is part of a team project between the federal government and the University of Alaska.

"My work really doesn't get its value until it is put to use by other members of the staff such as the agronomists, economists and others," said Martin.

Who Puts 'Agroborealis' Together

William L. Fox has been the Editor of "Agroborealis" for the past three issues. The work is part-time for Fox whose regular job is managing editor of Alaska Industry Magazine, a monthly business/industrial publication. Fox, who flies his own plane to Palmer to meet with the Publications Committee in charge of Agroborealis, has written all the profiles in this issue and took all the photographs as well.

Alaska