Agroborealis

Volume 6 Number 2; December 1974

Institute of Agricultural Sciences
University of Alaska

Building . . . For A Brighter Agricultural Future

From The Director's Desk

This issue of Agroborealis is devoted to a description of the facilities with which we work. But not all our research is carried out on the land and in the buildings provided by the taxpayers or donated by the federal government. In 1904, 24 homesteaders, miners and missionaries, scattered all over the Territory, planted and carefully tended seeds and nursery stock sent out by the old Alaska Agricultural Experiment Station, and the account of their results formed an important part of the Station's annual report. Ever since, we have been supplementing our own resources with the generously shared land, and often the time and labor, of interested private citizens. As a matter of fact, in no other way could we even hope to sample just the major agricultural areas of a state as vast and varied as Alaska.

For example, right now the task of surveying the agricultural potential of Alaska seems particularly urgent. Over 80 million acres have been tentatively withdrawn from possible agricultural uses. Unfortunately, this huge block of land contains most of what we believe to be the best potential farmland in the state. But up to now we have had to base our arguments against this withdrawal solely on the results of a recent soil survey, coupled with considerations of climate. We very badly need actual data on crop yields, as measured at various points within several large areas – the Yukon Valley, the Kuskokwim, the Bristol Bay region.

Last spring, to meet this need, Dr. Wooding and Mr. Sparrow carefully prepared 16 packages, each containing just the right amounts of seed and fertilizer to plant 10-foot rows of 6 varieties each of wheat, oats and barley, covering the whole gamut from early to late maturing grains. Then, after much correspondence and a few long-distance phone calls, the packages were sent out to cooperators in Fort Yukon (2), Manley Hot Springs, Tanana, Ruby, Minchumina, Red Devil, Aniak, Chuathbaluk, Holy Cross, St. Marys, Dillingham (2), Koliganek, Nenana and Big Delta, together with detailed instructions. We managed to send people of our own to make 9 of the plantings, but the rest were made by volunteers, and in one case, by a grade school class.

I was fortunate enough to be able to think of a reasonable excuse to go along and help harvest 13 of these plots and was amazed by the uniform appearance they presented. Judging from their looks, all of them could have been planted by the same professional worker. One or two had later become quite weedy and another would have benefited from a little extra water. And apparently there were also a few marmots and field mice last summer upon which manna fell from heaven, in the midst of the tundra! But in spite of all this, all of the plots yielded valuable results. In several plots, notably in the upper Yukon and Tanana Valleys, every single variety of grain fully matured. In almost all of the rest, at least one variety ripened. Only one plot (Koliganek) produced nothing but nice green hay.

During the winter, all seeds will be counted, weighed and analyzed for nutritive value, and then each total will be multiplied by a factor which will give the potential yield per acre. Of course it will not be safe to draw final conclusions from the results of one summer's work, especially since everyone says this was the best summer in recent memory. But at least we are delighted with the results achieved so far at these particular "off campus" sites. And this is just one of several current projects utilizing non-university lands.

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Fairbanks Research Farm

University of Alaska

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Alaska's Agricultural Stations:

Then and Now

Agriculture was introduced into Alaska by the Russians and conducted on a limited scale here during their fur trading. At that time, the Russians made some attempt to supply a portion of their produce needs, but results were largely unsuccessful, for the men involved were not farmers and they had no qualified leaders to pave the way.

To a small extent, however, there were gardens, and beef cattle were introduced at both Kodiak and Kenai. Agriculture was attempted in vain at Yakutat, and a few fields were cultivated across Cook Inlet, near Kustatan. Today, one settlement set up under the Russians as an agricultural station remains: the little fishing village of Ninilchik below Kenai, on the Kenai Peninsula.

From 1867, when the U.S. purchased Alaska, until the late 1890s, no special attempts at agriculture were made, save for gardens grown by the prospectors, miners and other fortune hunters who were slowly infiltrating the isolated North. As the population increased and the great and lesser gold strikes that would ultimately change the destiny of the vast territory took place, more and more tales of the need for locally supplied food were taken back to the states. Not only the needs but also the production possibilities were described by people who had been to Alaska, who had seen with their own eyes the fertile valleys and long, sunny days for growing.

In 1897, largely because of such first-hand accounts, three men left Washington, D.C. on a mission that was to have far-reaching effects on the then-Territory and later State of Alaska. Under the direction of the U.S. Congress, they were bound for the remote and little-known northern Territory to make an extensive reconnaissance of agricultural possibilities.

So favorable were reports the commission brought back, that U.S. Secretary of Agriculture Wilson recommended a second survey the following year. Both parties presented encouraging, but realistic reports on the varied produce growing in the far north, and seemed especially impressed by potatoes weighing a pound or more apiece. While they judged Alaska to be "mainly a berry country" and not hospitable to fruit trees, they concluded "it seems probable that with proper direction the local demands for many products could be fully supplied."

Because of the encouraging reports, it was recommended to start agricultural stations in Alaska. Late in 1898, reservations for the first were made at the territorial capital of Sitka (another at "Kadiak") which was also designated as the main station, or headquarters, from which work on other stations was to be directed. The following spring, construction of a laboratory and office building to cost roughly $5,000 got underway on the reserved tract. At Kenai about the same time, land was cleared and log silos built for "ensiling the native grass."

In charge of all station work was Professor C. C. Georgeson, who had an assistant for the station at Sitka, as well as one for Kenai. It was necessary to import three farm workers, since it was almost impossible to find qualified laborers. To help in the building and later work, several yoke of oxen were ordered from Oregon plus necessary implements such as plows, cultivators, harrows, wagons, stump pullers and hand tools.

With these beginnings, Alaska's agricultural stations started to become a reality. Over the next years the following were built: Kenai, 1899; Rampart, 1900; Copper Center, 1902; Fairbanks, 1906; and Kodiak, 1907. The last to be established was at Matanuska in 1917.

During those early years, station buildings were often simple. Notes in the Annual Agricultural Experiment Station Progress Reports expressed needs for new blacksmith shops, granaries, root cellars; or something more adequate than sod-roofed sheds to house implements.

Three quarters of a century after the first was built at Sitka, agricultural stations in Alaska are filling even more important needs than ever before. Not all of those constructed survived; as mining communities declined, frontier population centers shifted and some of the stations were closed. (Copper Center and Kenai were closed in 1908; Rampart in 1925; Kodiak in 1931; and Sitka in 1932). Today it is paradoxical, and indicative of Alaska's growth, that two new stations are going up near old locations: one at Homer, south of Kenai, on the Kenai Peninsula; and the other on Kodiak Island.

The present stations, near Fairbanks and Palmer (and the ones under construction) are a far cry from the first wilderness stations. Gone are the little frame buildings, the blacksmith shops, and sod-roofed implement sheds. Today's stations are modern, with the latest in laboratory equipment, barns to house livestock, and silos to store feed.

Resources Building on the Fairbanks campus.

A New Building for Fairbanks

Sixty-eight years ago the Fairbanks Agricultural Experiment Station was signed into existence by an Executive Order, and operations started on a 1,400-acre tract between the young mining communities of Fairbanks and Chena. Purpose of the station was to aid and inspire homesteaders in an effort to develop agriculture in Alaska's interior. It was begun in the most modest fashion with four surplus horses from the U.S. Geological Survey, 10 acres of cleared ground, and a minimum of machinery and seeds.

Fairbanks and the Rampart Station on the Yukon River initiated research on agricultural problems which were often unique to the far north. Siberian and Scandinavian seeds were tested; breeding programs with hardy breeds of cattle, such as crossbreeding Galloway and yak, were undertaken; and even experiments in musk-ox domestication were started.

Over the years the station has fulfilled its mission and many of the plants grown in Interior Alaska were developed here; others were selected from worldwide locations with similar climates. In addition, a successful musk-ox domestication program is now in full swing, operated by the Institute of Northern Agriculture.

Two hundred acres of cultivated fields and a potential of 150 more have replaced the meager 10 acres of the Research Center's early years. The total land holdings have been increased from 1,400 acres to 2,300.

Many of the buildings constructed in the early years are still in use, though the frame structures are considered substandard now. These include a dairy barn, shop and horticultural work area, staff housing, and an old agronomy work area.

In 1970 a much-needed new facility, the Resources Building, was constructed on the west ridge of the University of Alaska campus. At the present time, offices being used in the new building are those of the Institute Director, Dr. Horace Drury, three professional staff members, graduate students, and secretarial work areas. Laboratories within the building are still under construction. When completed, some 5,400 square feet on the third floor will be occupied by the Institute of Agricultural Sciences. There will be a photographic lab, conference room, three cold storage rooms, a general lab, plant-tissue culture lab, soils lab, and chemical lab.

Dr. H. F. Drury, Institute Director, and staff members have offices in the new Resources Building.

An unusually long house plant vine decorates the wall of the secretarial office in the Resources Building.

Matanuska Farm Gets a Cow Palace

Alaska Royal Appollo (right), registered Holstein-Friesian cow, is a champion milk producer: 69 tons of milk in eight lactations. For most of her 11 years, she had been part of one of the two small dairy herds at the Fairbanks Research Center and the Matanuska Farm. At her Matanuska home, she lived in a substandard barn large enough to hold only 31 other cows. Peeling paint and plywood, antiquated cleaning methods, and condensation dripping from ceiling to freeze on windows and walls characterized the old building. Like the rest of the herd, Appollo was confined to a stanchion most of the day and milked in the same spot. Twice a day the herd was put outside to exercise, though winter weather sometimes meant 30 degrees below zero, or more.

But, she was not destined to spend her entire life in the old barn. On November 8, 1973, Appollo's herd and the one from the Fairbanks Center were united into one large herd in a fine new barn at the Matanuska Farm. Especially designed and appointed, the new building, by comparison to the old, is indeed a palace. (Please turn page.)

The new barn is constructed of reinforced concrete blocks and has room for 80 cows. Fiberglass insulation is protected by native cottonwood siding. The roof is engineered to withstand 120 m.p.h. winds.

Many features of the new dairy barn can be credited to Arthur Brundage, Professor of Animal Science at the Palmer Station. Dr. Brundage spent considerable time visiting facilities in major dairy states so that important experience gained elsewhere could be used for the barn. This was incorporated into the designs, which were completed over a two-year period by an architectural firm retained by the University. Unfortunately, financing was insufficient until these were scaled down and successfully bid in the spring of 1973.

In the new edifice, four sets of free stalls have replaced confining stanchions, and there are means for feeding from one to a group of cows from two feed alleys. Adequate ventilation, an essential feature in a building where animals are to be confined throughout the long, cold winters of Alaska, is obtained by forcing fresh, warmed air into one end and exhausting stale air from the other. Two fans continuously circulate air within the building.

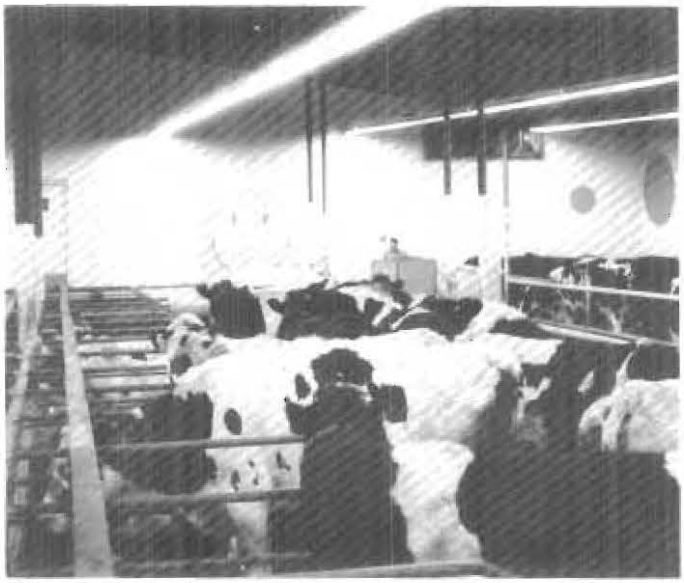
Cleaning methods for the new barn are modern and thorough. Twice each day, the floors of the free-stall areas, which were designed with a three percent slope, are flush-cleaned with water from four, 1,100-gallon tanks which flood the alleys behind the stalls and carry animal waste through a sewer system into a manure lagoon.

Two 500-gallon milk tanks from the old barn are now in use in the new milk room. Twice daily the cows move through the double-three, herringbone milking parlor from the free-stall areas and are fed blended concentrate pellets during milking.

Heifers and dry cows at the farm will be on summer pasture, but milking cows will be housed throughout the year. As Dr. Brundage points out:

"The modern dairy cow has been selectively bred for high levels of milk production, and year-round housing protects her from inclement weather and the necessity of foraging for food."

Silage is a staple during winter feeding since short, rainy summers of the North often prevent production of high quality hay. Here at the Matanuska Research Farm a 30x60-foot silo beside the barn provides space for 900 tons of silage.



"So, what else is new?" Decorations for the new barn are contemporary and cheerful.

Two photos show progressive action as an alley is flush-cleaned.

Cows await their turn in milking parlor. Both milking parlor and milk room occupy a separate building inside the new barn in order to meet Grade A milk standards.

In the new building at the Palmer Research Center, the laboratory is used for many different experiments. Plant carbohydrate levels are tested by the apparatus in foreground. Behind this is a section for testing nitrogen in soils. Milk quality tests and feed analyses are conducted at the far side of the room.

The Matanuska Valley Farm and Research Center

Early in this century, the frontier trading town of Knik sprang up on the north shore of Cook Inlet in the Matanuska Valley. For awhile, Knik was a thriving seaport where supplies for nearby Willow Creek gold mines and many Interior villages were unloaded from ships. It was at the old town of Knik that agriculture in Alaska's Matanuska Valley got its start, at first in home gardens and later in small commercial ventures.

Matanuska Research Farm

By 1915, with homesteading and farming thriving, the farmers formed an organization and took up petitions to have an experiment station located in the valley. Between 1917 and 1919 the Matanuska Farm was completed — the same establishment serving Southcentral Alaska today.

Unfortunately, many of the old buildings still in use at the farm need to be replaced. One of the dwellings was actually transported from Kodiak after the station there was closed. The newest construction is the dairy barn; but this failed to replace the old structure which has been put to use as housing for young stock until something more modern can be built.

Other buildings at the farm in current use include a large edifice housing a horticultural field laboratory, work rooms, and storage for potatoes, with the upstairs devoted to agronomy workrooms. A good shop, and storage facilities recently remodelled from surplus U.S. Air Force buildings are all in use at the farm.

Palmer Research Center

The Palmer Research Center, on the other hand, was built in 1949 to stimulate production of greater local food supplies to meet the needs of troops stationed in the Territory. Buildings constructed then are still in use: the laboratory-office building, greenhouses, and cold storage facilities.

The newest addition to the Palmer Center was constructed in 1972. Although the shell of this building was completed, bond-issue money failed to finish the inside and the staff ended up doing much of the work themselves. By using surplus materials and supplying their own labor the result was a considerable saving.

"The bowling alleys have made serviceable counter tops and were obtained for much less money than commercial counter tops," writes Dr. W. W. Mitchell, Professor of Agronomy.

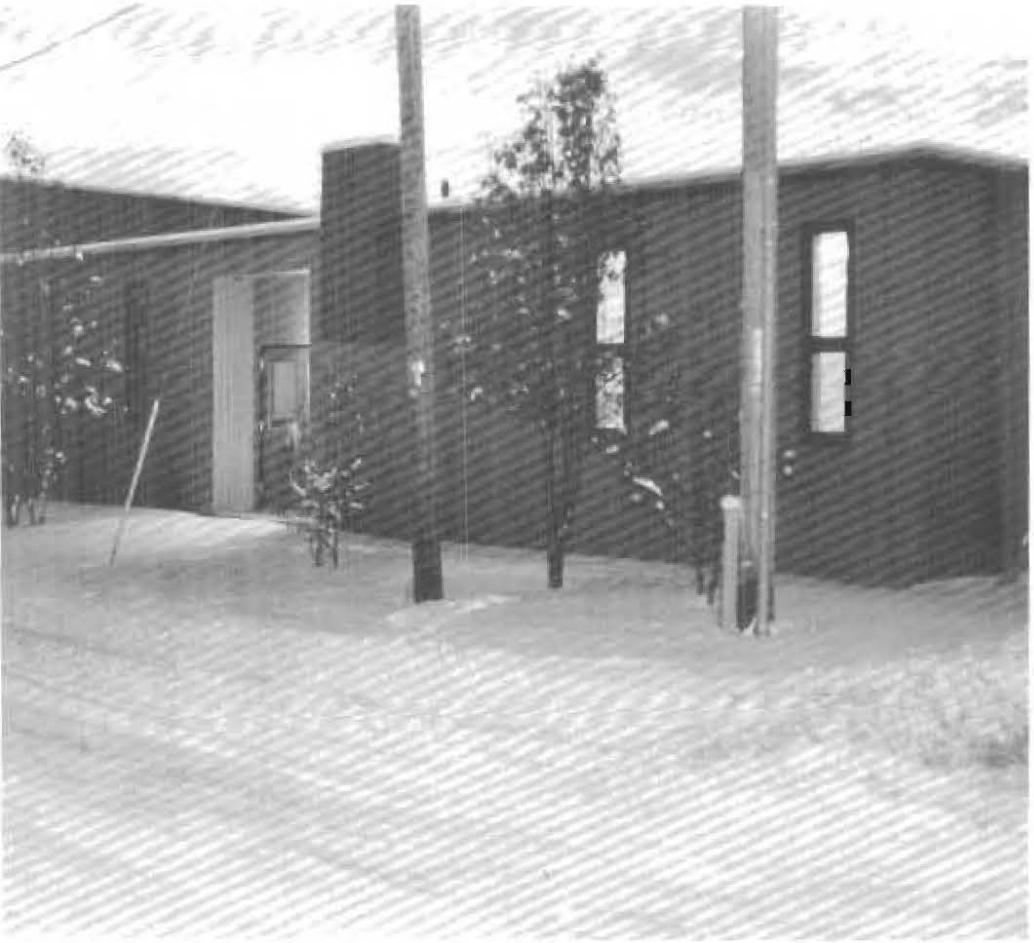
Though not completed, this facility is sufficiently finished for carrying out numerous tasks, and supplies space that has long been needed.

Small and medium-sized lots of seed can be threshed out and separated from chaff with special equipment. Smaller lots are hand-threshed; while large equipment is available for bulkier material.

The New . . . . . and

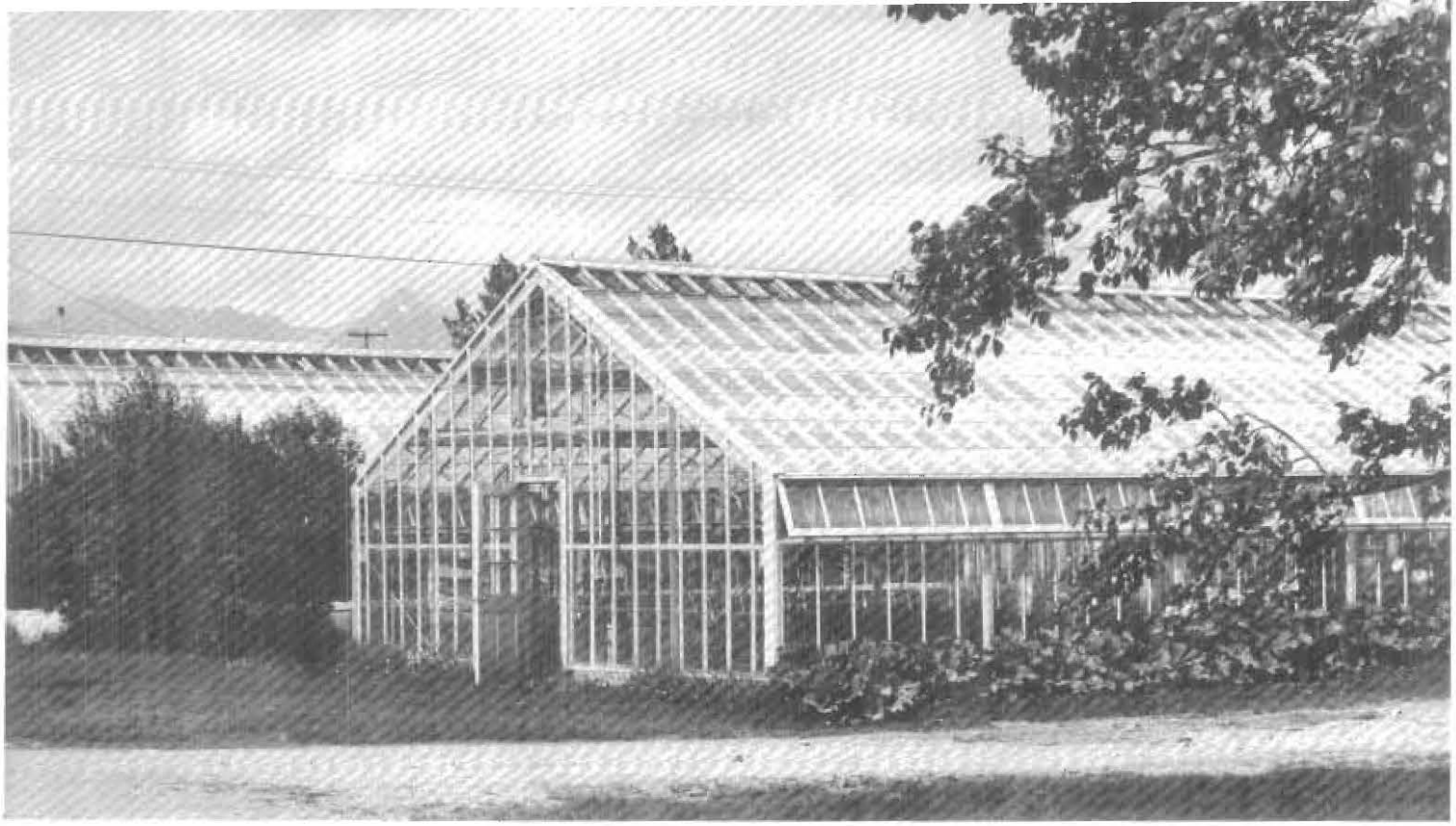
the Old Buildings

at the Palmer Center



(Top) Palmer Research Center's new building, located on South Gulkana Street in Palmer, is landscaped with a row of European mountain ash planted in the 1950s. The building is 115 feet by 50 feet, contains an analytical laboratory, soil and plant tissue preparation and seed processing room, and the engineering shop.
(Bottom) The older building at the Palmer Research Center has been in use nearly a quarter of a century. It had insufficient space for workroom and laboratory facilities, as agricultural programs at the Center were expanded. But offices and laboratories are still being used in this building.

(Top right) In the seed storage room of the new building, more than 2,000 seed lots are stored. The majority are native plant experimental collections being tested for use in Alaska.
(Bottom left) The shop serves several purposes: for repairing and fabricating special equipment needed in research projects and for processing vegetables during the harvest season.



At the Palmer Research Center, several greenhouses are used to produce a variety of plants for use in Alaskan gardens.

(Left) Small-grain improvement, production, and utilization continues as an important research interest at the Institute. (Right) The older barn at the Matanuska Farm has been replaced by a new and larger dairy building, but it still shelters young stock.

Three Red Meat Programs

A three-point red meat program in widely separated areas is being carried out by Alaska's Institute of Agricultural Sciences. At Fairbanks, deep in the state's interior, a new and very modern swine building comprises the beginnings of extensive pig-raising research. Six hundred miles south at Homer, a new station and small herd is the nucleus of an operation aimed at assisting ranchers in that area in their beef raising. And out on Kodiak Island, the beginnings of a similar station are under way.

Fairbanks

The much-needed swine building in Fairbanks was completed in 1972. Because of complications with the floor and an airline strike, it was not until February, 1974 that the pigs to start the new swine program were received. The three gilts and a boar, all purebred Durocs from Nebraska, were very young in order to keep shipping costs low. The first litter of new pigs was not expected until late in the year.

The pigs live in an atmosphere almost as sterile as an operating room. To minimize chances of disease among the experimental swine, the barn is locked at all times; workers who enter must don clean coveralls and boots, and walk through a disinfectant bath before proceeding to the pen area. Visitors are prohibited from entering, but have been provided with an enclosed gallery and windows where they can view the activities inside.

Humidity, one of the big problems in the North in animal barns, has been given special attention. Dr. Don C Tomlin, Assistant Professor, Animal Sciences, describes the method used in the new barn this way:

"A continuously operated fan forces air into a large perforated polyethylene tube. As the humidity in the barn reaches a pre-set level (about 55-60% at 60 degrees F), an exhaust fan comes on to pull some of the humid air outside. This creates negative pressure in the barn, causing louvers in the wall near the mouth of the polyethylene tube to open and admit fresh outside air, which is mixed in the tube with inside air before being released to the rest of the barn."

Special problems to be studied here deal with Alaska-produced feed, such as fish-meal, and ways of reducing mortality in baby pigs.

Homer

The Homer Research Center is located some 10 miles east and northeast of the town of Homer and contains about 5,000 acres of long-term lease land as well as 80 acres purchased by the University.

Virgin timberland near Homer was cleared for the buildings on purchased acreage and logs from the site were sawed and used in the construction. This feature saved money since the building costs amounted to just under $20 per square foot. The resulting buildings, ranch-style in design, and treated to produce a weathered, silvery finish, are well-suited to the frontier surroundings.

The present group of buildings is fairly basic. As funds are available, additional barns must be added in order to develop the research program fully in the next ten to fifteen years. In addition to animal science, the research at this center will include economics, agronomy, soils and engineering; and also horticultural research with small fruits.

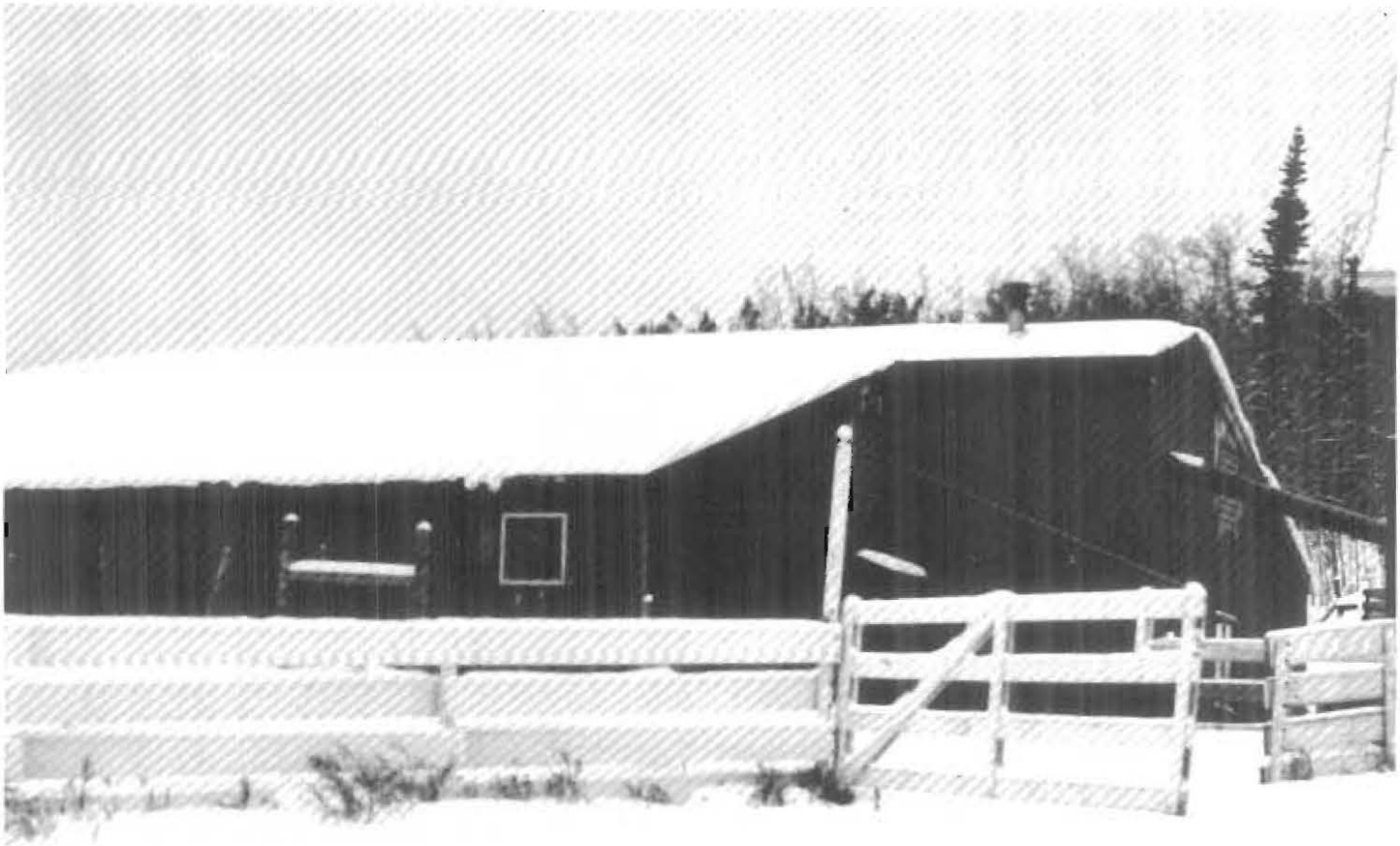
Kodiak

South of the town of Kodiak, land selected for the Kodiak Range Cattle Station lies along Kalsin Bay. Some 10,000 acres ranging from tidelands to bottomlands to hillsides make up the acreage. It is interesting to note that this includes the site of the original agricultural station on Kodiak Island which operated between 1907 and 1931.

By 1973, a pre-fab warehouse had been installed at the site which is located about one-quarter mile from Chiniak Road. For the present, the large warehouse will be used for storage of machinery and supplies and as a maintenance shop. In the future, as funds become available, the station will include a residence for the herdsman, cattle barn and corrals, and other facilities.

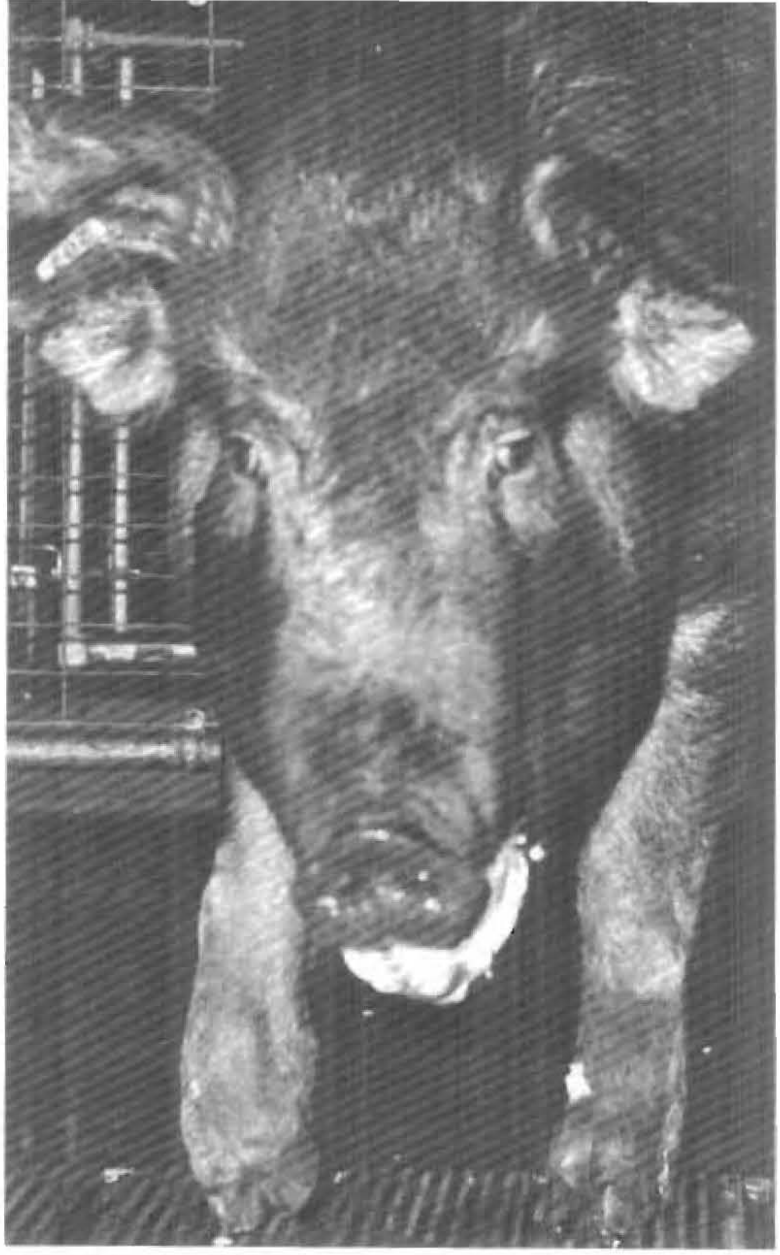
. . . Fairbanks Swine Barn

(Top) Two pigs get dinner in the modern new swine barn.
(Bottom) The new swine research building on the edge of the Fairbanks campus was completed in 1972 and features, among other innovations, an in-the-floor aerobic oxidation ditch for waste disposal.

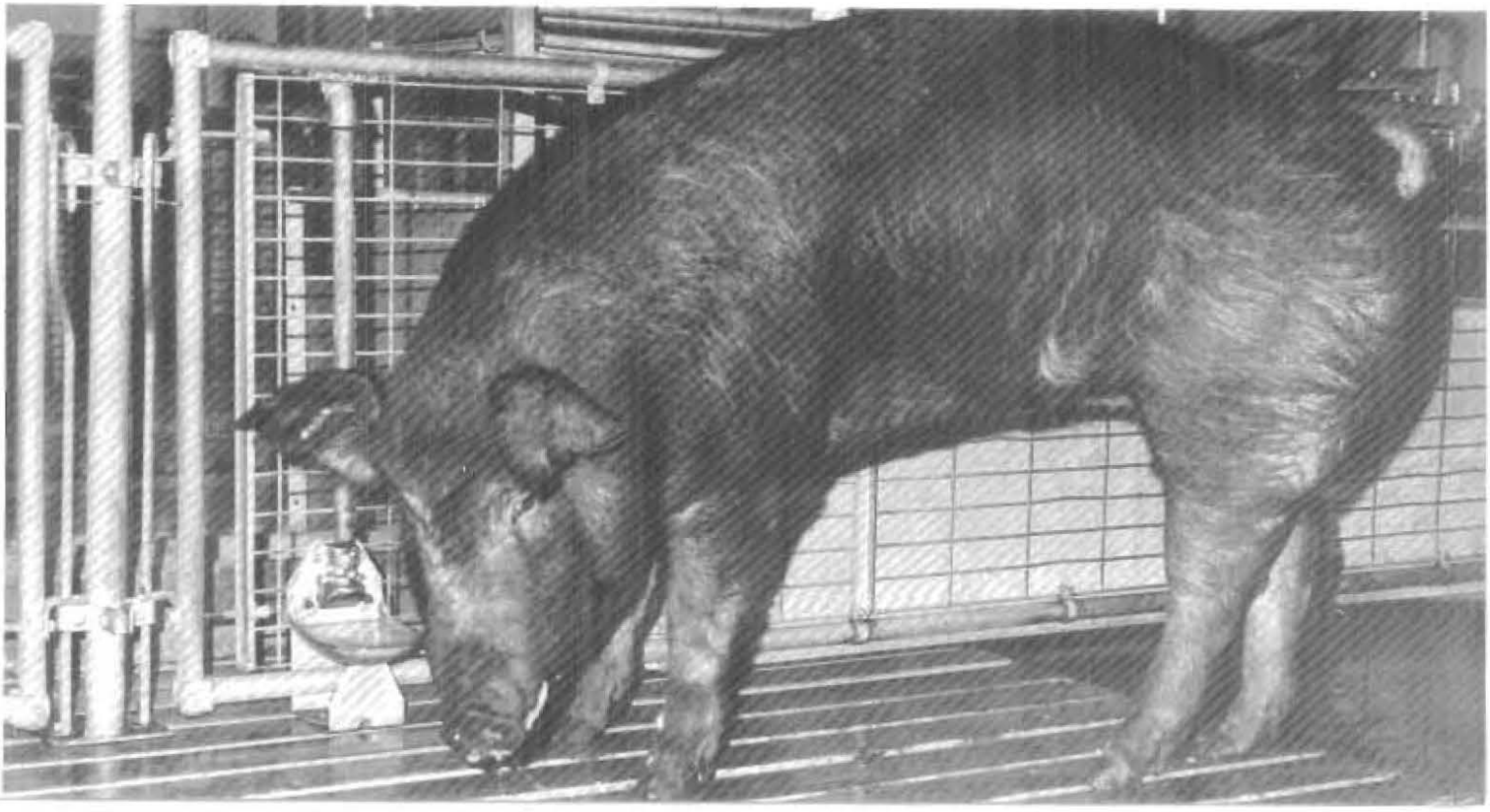


This purebred Duroc boar was flown to Fairbanks from Waldo Farms in southeast Nebraska, when he was very young.

The large polyethylene tube across ceiling is a key part of the modern ventilation system: warm, fresh air enters the tube and is disbursed through small holes. Stale air is removed at the other end of the building. Pen in center, foreground, is farrowing crate, especially designed to keep sow from crushing baby pigs. Directly behind is the paddlewheel (just above floor level) which keeps the waste and water moving in the ditch beneath the slatted floor.



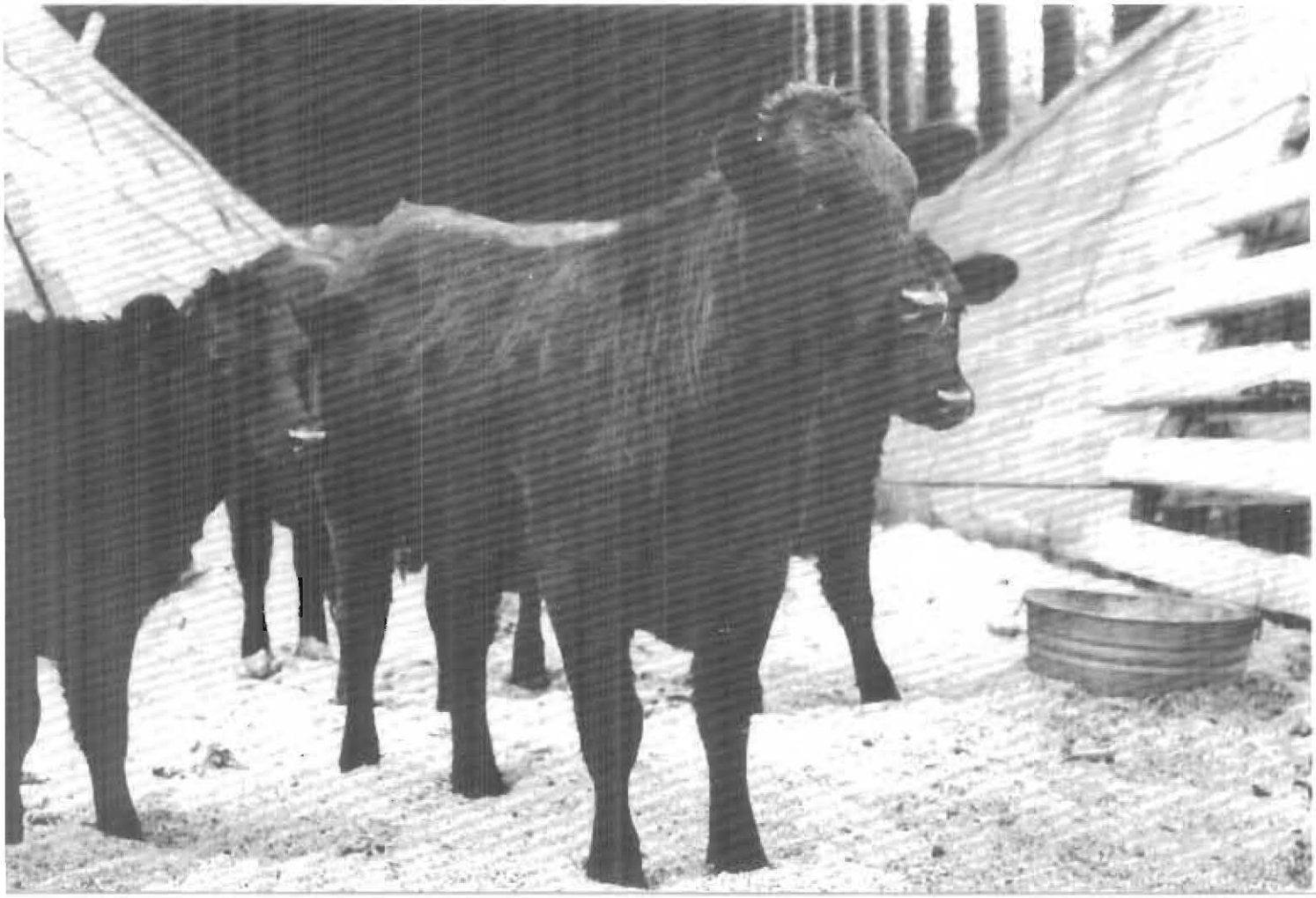
(Top) To keep this valuable young experimental animal healthy, all who enter the swine barn must don clean boots and coveralls and walk through a disinfectant bath.
(Bottom) This pig at the Fairbanks swine barn walks on a slatted floor that helps to keep her pen clean, and has her own waterer where she can obtain fresh drinking water.



. . . A New Beef Program for Homer

To start the new station at Homer, virgin land was cleared for buildings and fields. Timber from the site was used for building construction.

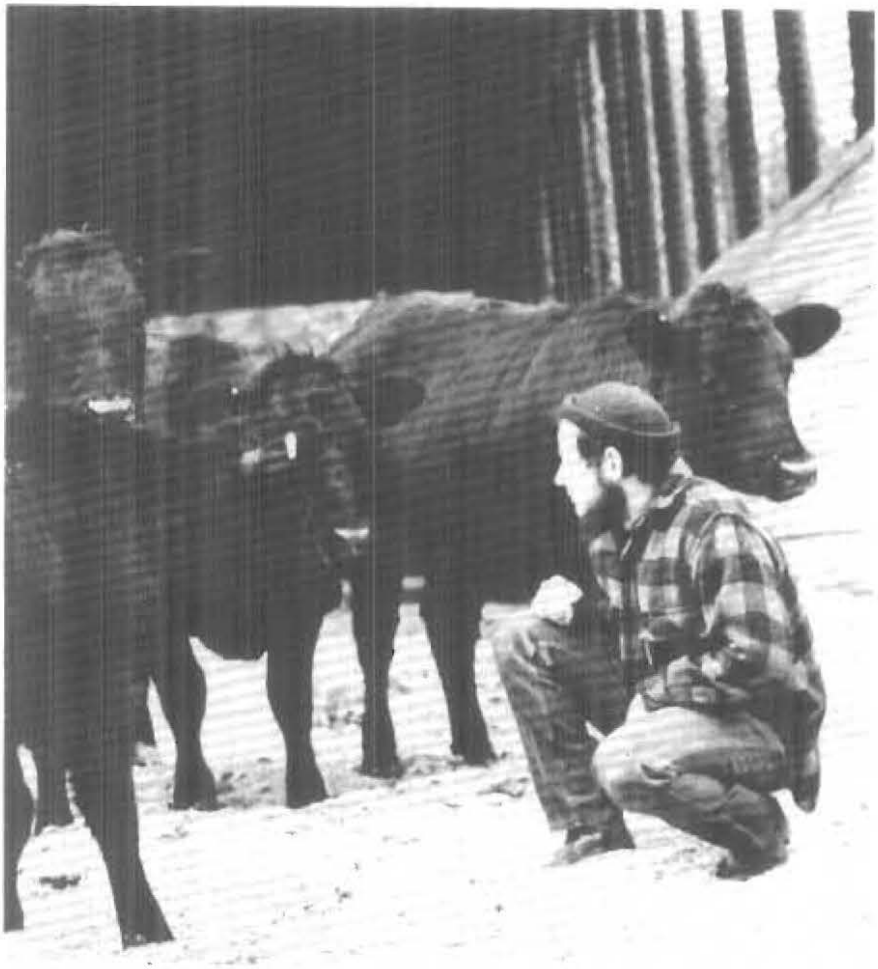
Institute Holstein cows and a selected Angus bull were used to produce these crossbred heifers which are the first cattle at the Homer Center.



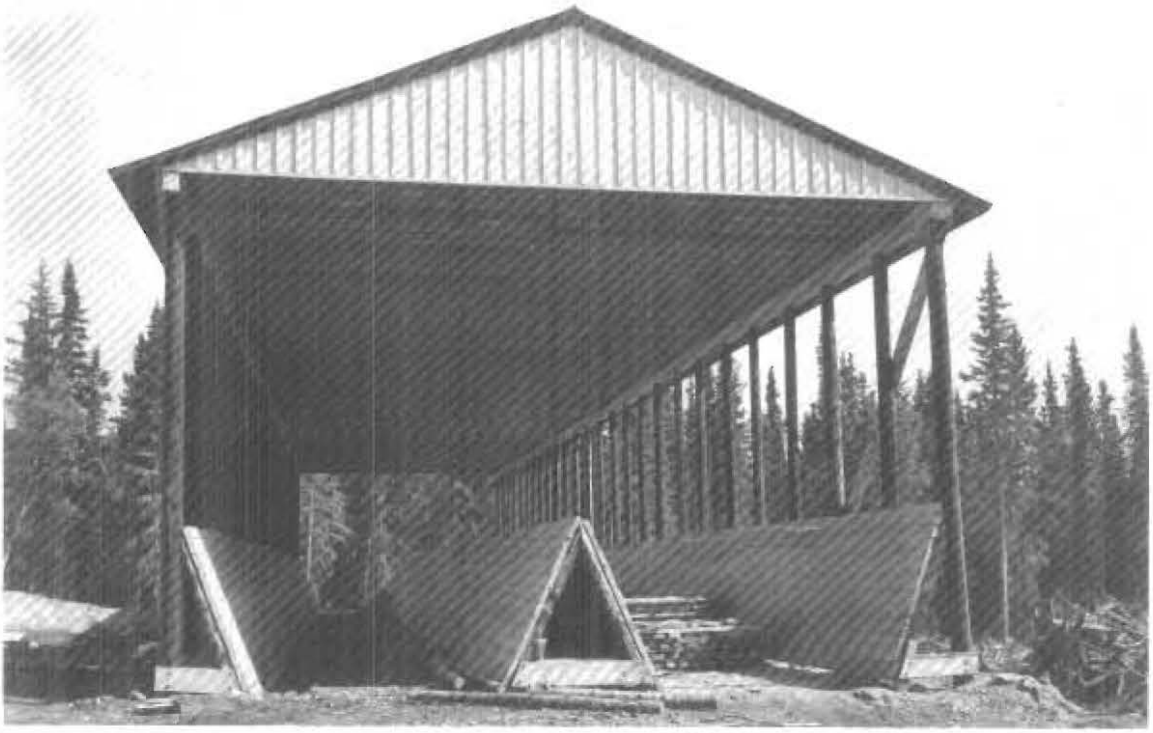
General view of the Homer Station, which includes a cattle barn, silo, maintenance shop and toolroom, open shed for machinery storage, house for herdsman, and an office building.

An office and small lab overlook the animal pens in the Homer barn.

A neat shop (background) and weather station are located at forest's edge at the Homer Station.



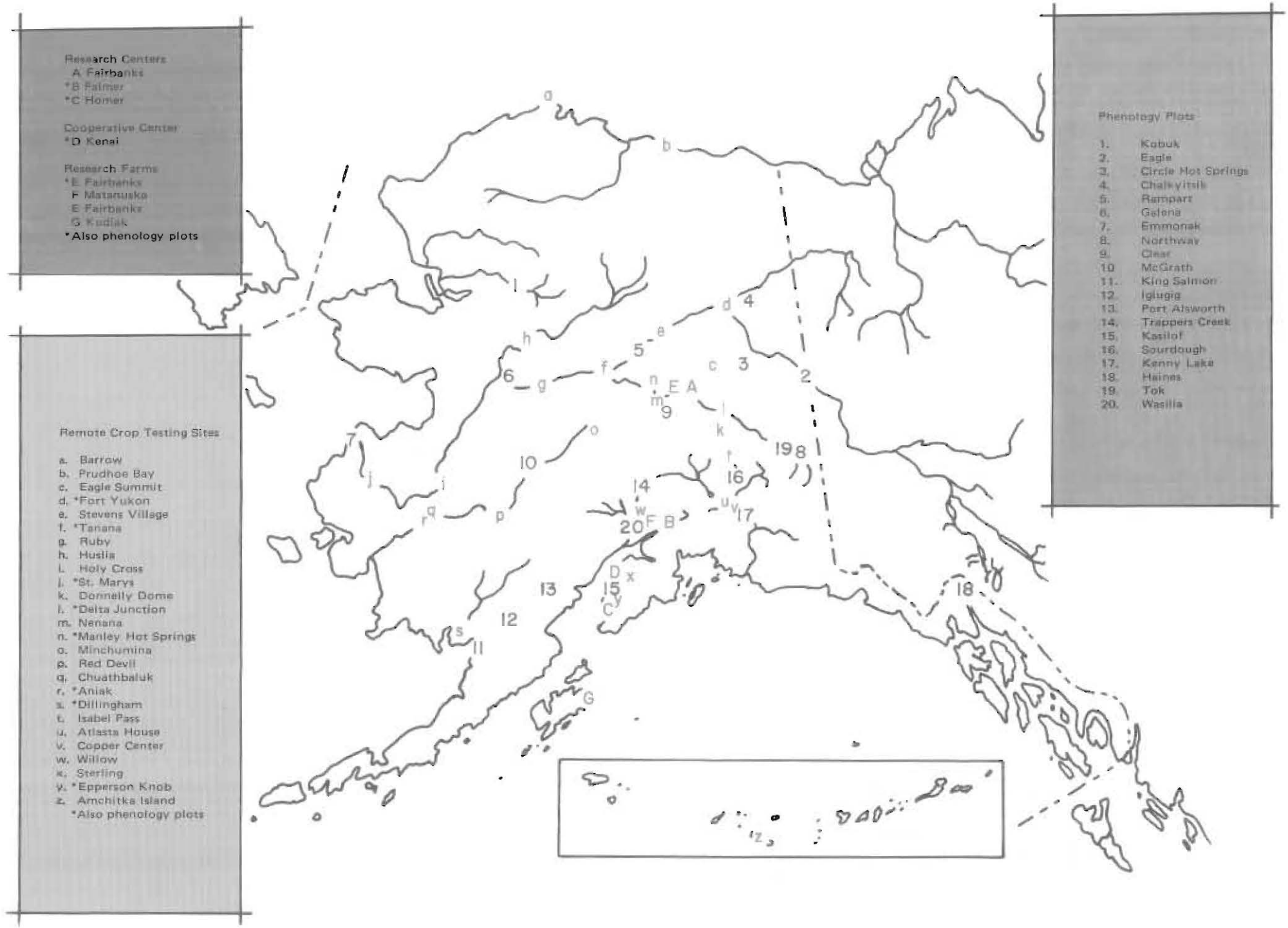
(Top) Farm Superintendent, Don Brainard, admires his charges, four Angus x Holstein heifers that will help produce the beef cattle to stock the Homer Center.
(Bottom) In Homer where the climate is rainy, the wide roofs of the bunker silo are very useful for protecting silage and sometimes even cattle who are eating silage directly from the silo.



Kodiak Research Ranch, which is in the process of being built, will occupy a beautiful location across Kalsin Bay, south of the town of Kodiak. The site lies at the base of the sloping mountain pictured here at right background.

. . . Research at Kodiak to Help the Ranchers

The Kodiak facility is being developed, in a broad sense, to aid the established cattle operations on the island. Kodiak has long been a beef-raising area and scenes such as this are typical.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