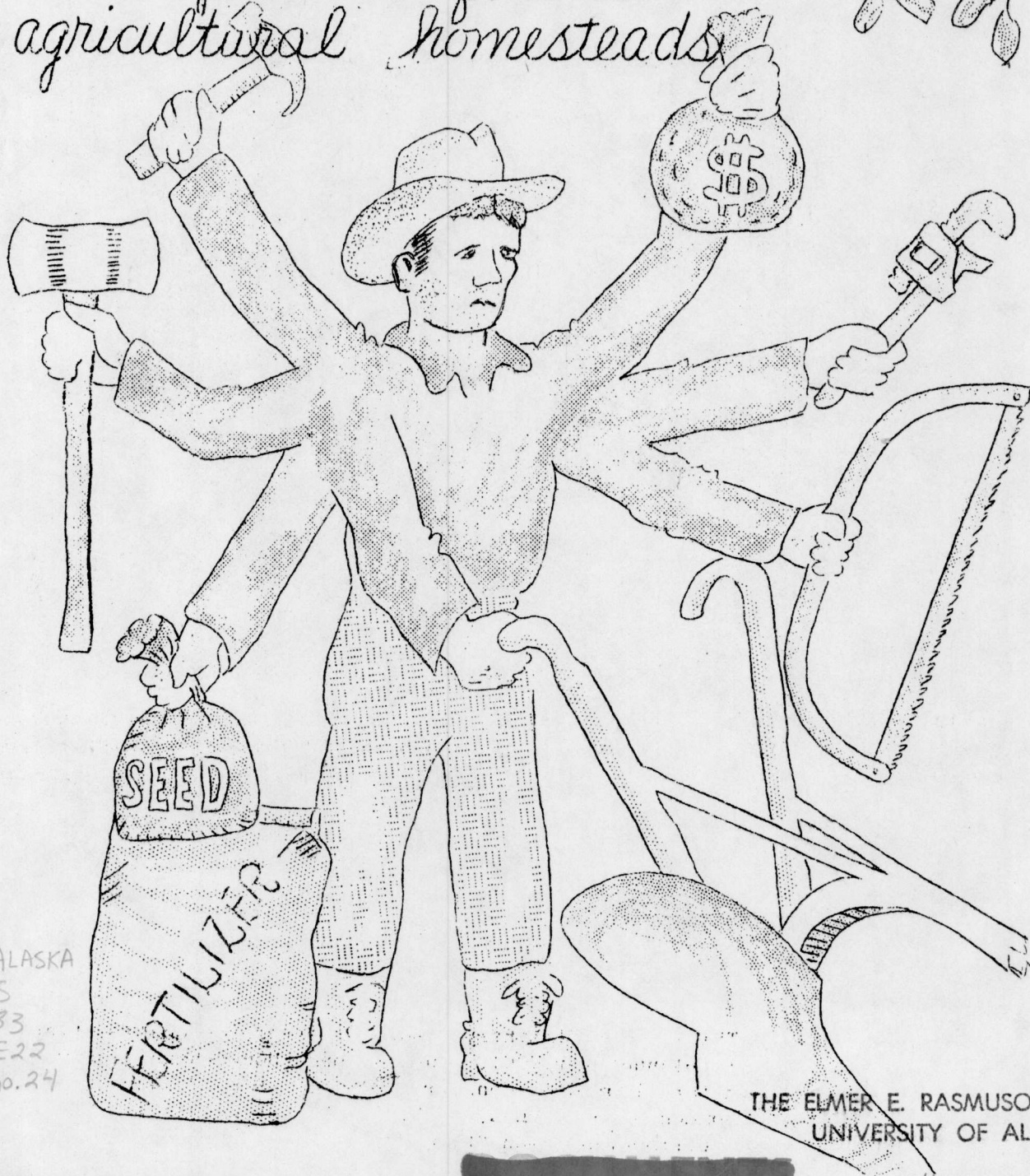
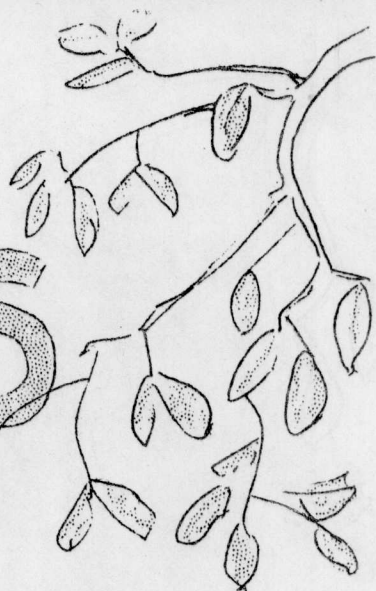


a handbook for Alaska's
SETTLERS

with special reference to
agricultural homesteads



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ALASKA AGRICULTURAL EXPERIMENT STATIONS

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a handbook for Alaska's settlers

Since World War II many people have tried to make a living by claiming and farming an Alaska homestead. Chief attractions seem to be a desire for adventure and the idea of "free land". While the homesteader finds his life adventuresome, most new settlers quickly discover that "free land" is a misleading term.

The cost of filing for 160 acres of land under the Federal homestead law is only \$10 but the expense of building a house, clearing 20 acres, planting a crop, and the time used in meeting homestead requirements can easily exceed a thousand times the filing fee. If a settler actually stays with his homestead to the point of developing his land into a paying farm, his investment will be even greater. Homesteading is but a method of obtaining a piece of land on which to establish a farm.

Anyone who has considered buying a farm knows that much money is needed, not only to purchase the land but to buy equipment, seed, livestock and to meet day-to-day operating costs. The chief advantage of homesteading is to avoid a sizable cash outlay at the start for land. For this advantage a settler accepts a larger development cost spread over many years, and the additional problem that until development has been made, little or no income can be derived from farming.

This handbook contains information on what to look for when selecting a place, and how to start developing a homestead. The intent is not to answer all questions, but to point out some major problems and to suggest a few means of solving some of them.

SELECTING A HOMESTEAD

Selection of land is the most important decision a settler makes once he has decided to homestead. His land and location determines what crops he may grow, costs of clearing, and markets for what he has to sell. Family welfare will be affected by location of schools, neighbors, medical facilities and community services. Time spent in looking over the land, talking with people in the area, consulting with government agencies dealing with agriculture, and getting acquainted with farmers and farming in Alaska can prove profitable.

Selecting a suitable homestead is not simply finding a good piece of land to farm. Personal and social needs must be met, as well as those of farm operations. Since each family has different standards, goals and needs, the selection should be made by you and your family only after careful inspection and consideration.

WHAT TYPE OF FARM DO YOU WANT? First of all, do you want to farm as a full-time occupation? Or do you want only a part-time farm -- just a place to live in the country? Or a piece of ground for speculation? The answers to these questions determines to a large extent where you will locate, and the kind and amount of land you will need.

If your prime interest is merely a place to live, its location in relation to your place of employment is a major concern. A person primarily interested in a rural residence might find that purchase of a small tract from the State or Federal government, or from a private individual is cheaper and more satisfactory than trying to develop a homestead. Five-acre homesites are available on terms similar to those in the homestead law, except no cultivation is required.

If you expect to operate a full-time farm then you will probably be interested in obtaining at least a 160 - acre homestead. More land is usually needed for most types of farming. The land you select should be suitable for the type of farming you wish to do. A potato or grain farmer is interested in obtaining as much readily tillable, level land as possible. On the other hand, a livestock or dairy farmer needs pasture and can use some ground that is not suitable for cultivation.

PROFIT BY OTHERS' EXPERIENCE - Maybe you already know what kind of a farm you wish to operate. In that case look around and see if similar types of farms have succeeded in Alaska. Does their success depend on special factors such as markets, climate, or soil? If so, in looking for a homestead try to find similar conditions. Adequate finances, hard work, and good management is required in any location.

If, in looking around Alaska and talking to people, you fail to find a successful farm of the kind you wish to operate, find out why not. You will not find corn, cotton, or orchards for the simple reason that these crops are not adapted to northern climates. While strawberries do well in many places, you won't find any large berry farms because large seasonal labor demands, perishable nature of the crop and limited nearby markets make strawberry growing unprofitable. Similarly beef cattle in some areas with a super-abundance of good summer pasture have proved unprofitable because of high costs of feeding during seven months when there is no grazing. Some specialty crops such as radishes can be profitably raised but the market is small.

FACTORS TO CONSIDER - In deciding on the type of farm you want there are two questions you must answer:

- o Is your type of farming adapted to Alaska, your area, and your farm?

- o Can you market what you grow at a profit?

The first question can usually be answered by your District Extension Agent, or by talking with farmers. The second question is harder. If the answer to either of these questions is negative, your chances of success are poor.

LAWS AND REGULATIONS

Until 1960 homesteading in Alaska was confined to land held by the U.S. government. There is now some prospect that homesteading will also be permitted on State-owned lands.

Prospective settlers can consult the Alaska Department of Natural Resources, Division of Lands, 333 D Street, Anchorage, for up-to-date information.

Under its Statehood act, Alaska may select over 100 million acres of land now owned by Uncle Sam. State land may be disposed of as the State sees fit. In early 1960 the State Division of Lands was drafting rules and regulations for disposal of land by lease, sale or homesteading.

Homesteading is still possible on Federal lands. The requirements very briefly are:

- o Qualifications - U.S. citizens, 21 years of age or over, or the head of a household. A woman may homestead, but a man and wife may claim only one homestead.
- o Amount of land - Up to 160 acres.
- o For final proof -
 - 1- A habitable house
 - 2- Cultivation of 1/8 of the land
 - 3- Residence for at least 7 months a year for three years, with certain credits being given for military service.

NATIVE ALLOTMENT - Natives of Indian, Eskimo, or Aleut origin may acquire an allotment of up to 160 acres of Federal land for a farm or homesite. There are no cultivation requirements, but an allotment may not be sold. A native may file for either a homestead or an allotment.

More details about homesteads and native allotments can be obtained at one of the Federal land offices in Anchorage, Fairbanks or Juneau.

HOW MUCH WILL IT COST?

No definite figures can be quoted for the cost of developing a homestead into a profitable full-time farm. Much depends on where the homestead is located, the type of land to be cleared, the type of farm operation being developed and, to a very large extent, on the managerial ability, economic resources and the working habits of the homesteader.

LAND CLEARING IS COSTLY - Usually the largest single expense is landclearing. The cost of clearing forested land varies from \$50 to \$150 an acre depending on the size of the trees and density of the timber stand. This does not include picking up roots, burning out stump rows, or preparing the land for planting. Where hired labor is employed, these additional expenses often run as high as the original land clearing cost. On the other hand these tasks may be accomplished with little cash outlay by family labor.

If you develop your homestead to a full-time commercial farm your probable cash investment will run from \$40,000 to \$60,000. The minimum size of farm, investment and volume of business usually needed to support a family in Alaska is as follows -

Type of enterprise, size and annual production	Investment per unit	Probable total investment
Poultry, 2,500 to 3,000 hens, 50 to 60 thousand dozen eggs . . .	\$8 to 12 per hen	\$25,000 to 35,000
Dairy, 20 to 25 cows, 20 to 25 thousand pounds of milk	\$2,500 to 3,000 per cow	\$50,000 to 75,000
Vegetables, 20 to 25 acres, 100 to 150 tons	\$1,200 to 1,500 per acre	\$25,000 to 40,000
Potatoes, 30 to 35 acres, 250 to 300 tons	\$1,500 to 2,000 per acre	\$40,000 to 50,000
Grain, 250 to 300 acres, 250 to 300 tons	\$ 250 to 300 per acre	\$70,000 to 80,000
Beef, 125 to 225 cows, 100 to 200 head	\$ 600 to 800 per cow	\$75,000 to 150,000

With good management, the above size farms should yield the operator a net cash income of from \$5,000 to \$10,000. This income must pay for

family living, debt retirement, farm development, machinery, livestock and other capital costs.

NO ONE TYPE IS BEST - The type of farm best for a given situation depends more on available markets, the knowledge and skill of the operator, and the physical factors of climate and soil than on the initial capital investment. There have probably been more people who broke trying to start poultry farms in Alaska than from any of the other types listed, yet a few do very well. Although a well-selected 160 acres is large enough for a minimum poultry, vegetable or potato farm, it is hardly large enough for a 20 to 25 cow dairy, and is entirely too small for beef or grain.

LOCATION OF AREA

Alaska is big. It is obvious that a prospective settler cannot see all of it before selecting his homestead. The best he can do is look over the major agricultural areas. These are the Tanana Valley, the Matanuska and lower Susitna valleys and the west part of the Kenai peninsula.

In Southeastern Alaska possibilities of additional settlements are restricted because most public land suitable for farming is within the Tongass National Forest. Other areas are potentially suitable, but these are usually characterized by limited local markets, inadequate transportation, and little or no commercial farming.

MARKETS - Although many places in Alaska have land and climate suited to farming, the Matanuska Valley and a few farms near Anchorage sold 65 per cent of all Alaska-raised farm products. In 1959 the Tanana Valley near Fairbanks raised 15 per cent, while Southeast Alaska grew 8 per cent. The remaining 12 per cent was from the Kenai peninsula and other scattered areas.

In the same year, over half the state's population was concentrated in the Anchorage metropolitan area. Fairbanks was the second largest mar-

ket. Juneau and Ketchikan were the next two largest cities. This illustrates that farming in Alaska is most developed near the largest markets.

Alaska's principle farm product is fresh milk, which now accounts for half of all farm sales. Fresh milk is bulky, highly perishable, and not well suited for shipping long distances, although a processing dairy plant in Anchorage is now importing some fresh milk from Minnesota.

Other major farm products in order of importance are potatoes, eggs and vegetables. These are either bulky or they bring a premium for quality and freshness. With the exception of potatoes, these products must move to market quickly to insure good quality. It is therefore obvious why farming has developed chiefly in areas closest to markets.

PRODUCE FOR NEARBY MARKETS - In the foreseeable future, Alaska's farming will be largely limited to products consumed in Alaska. Transportation between Seattle and Anchorage costs from \$40 to \$80 per ton for most farm products, the higher rates being for perishables.

This high freight cost both hinders and helps Alaska's farmers. For those products that can be raised successfully in Alaska, the local farmer has an advantage of cheaper transportation costs to his local markets. On the other hand, he must ship in fertilizer, machinery, fuel, and other goods needed to raise a crop at a high cost.

The only farm product shipped to the States in any quantity is wool. This has been almost exclusively exported from two operations in the Aleutian Islands, which are based on low-cost grazing leases and virtually no winter feeding.

LOCATE NEAR A MARKET - The more perishable the product the greater the advantage in locating close to a market.

One of the most heavily homesteaded areas during the past 10 years has been the Kenai Peninsula, which is well adapted to dairying and potato farming. Yet there are few successful farms on the Kenai Peninsula because local markets are small and profitable outlets have not been developed elsewhere. Beef ranches on Kodiak Island are faced with a similar problem. The Kodiak market will only take a small part of the beef they can produce. Marketing elsewhere involves competing with beef shipped in from the States.

There is little shipment of farm products between those areas of the State where transportation by water is required. A large part of the cost of boat shipment is made up of handling charges. A farmer in the Matanuska Valley or on the Kenai Peninsula has no advantage of transportation in competing with lower-cost products of other states in the markets of Southeastern Alaska. Most water borne transportation operates from Seattle, so it is usually necessary to go through Seattle to ship a product from, say, Seward to Nome.

Alaska's small population limits how much a farmer can sell at a profit. In some years and at certain seasons, Alaska's farmers have produced more of some things than local markets can consume. This problem has been serious at times with milk, lettuce, cabbage, and potatoes. Before investing his time and money, a wise settler finds if there is a market for what he plans to produce and how much the market is able to consume at the time he will have produce to sell.

TOTAL MARKET UNAVAILABLE - Size of local markets is not determined solely by the number of people that live

in a given area. Price often imposes further limitations.

For example only a small portion of the eggs consumed here are actually produced in Alaska. Eggs shipped in from outside often undersell local eggs by 30¢ to 40¢ a dozen. Thus the actual market for local eggs is limited to those people willing to pay a premium for freshness and quality.

A similar factor limits dairying. Many families that would normally drink fresh milk if they were living in the States use evaporated, recombined, or powdered milk because they cannot afford local fresh milk. This means a farmer is limited by competition with the outside producer.

Potatoes have been marketed successfully mainly because Alaska-raised potatoes have sold at lower prices than outside potatoes.

MIDDLEMEN OFTEN LACKING - In selling their products Alaska's farmers are faced with another marketing problem not common in the States. With the exception of milk, and to a lesser extent potatoes and grain, there are no central markets or middlemen dealing in Alaska farm products. Most potato, egg and vegetable farmers sell directly to military services, retail stores or individuals. Most Alaska farmers have to clean, grade, package, sell and deliver their produce to the individual consumer, retail store, or the military base and they must, also, collect their own bills.

Only in Anchorage and Palmer are there any processors of meat who buy and slaughter livestock. Elsewhere the farmer does his own slaughtering and marketing. Since meat sold to military services or through many retail stores must be approved by a qualified inspector when slaughtered, the farmer is often limited to selling in markets not requiring such inspection.

In short, if you plan to make a living from your homestead you must locate where there is a market for the things you will have to sell. To sell them you must plan to produce at a price that will compete with shipped-in foodstuff. In most places you will have to do your own processing and marketing.

CLIMATE - There are wide differences in climate between various parts of Alaska.

Southeastern Alaska, Kodiak, the Aleutian Islands and a large part of the Kenai Peninsula have a maritime climate. The moderating influence of the ocean gives warmer winters and cooler summers than in interior Alaska. While the growing season is often longer, cloudiness, rain and low summer temperatures may delay or prevent maturing of some crops. Cool season vegetables, potatoes, and grasses usually yield well, although grains generally fail to mature and haying is difficult.

Further north, interior valleys have colder winters and shorter but warmer summers. Although the growing season is short, long sunny days and warmer temperatures make crops grow and mature faster.

RAINS COME AT WRONG TIME - The heaviest precipitation in most areas comes in late summer and fall. This makes haying difficult and slows the ripening of grain. Most dairy farmers have now turned to making silage because of the uncertainty of haying. While small grains mature in some areas, combined grain may be hard to store unless artificially dried.

The driest months in most localities are April, May and June. Lack of moisture sometimes causes delayed seed germination and a slow start for crops at a time when water is most important for rapid growth.

Some vegetable and potato growers

irrigate their fields to make best use of the growing season and to get fresh vegetables on the local market earlier. A few farmers in the Palmer area have irrigated small grains and grasses, but not enough experience has been gained to tell how irrigation pays on these crops. A homesteader interested primarily in growing vegetables and potatoes should locate where water is available for irrigation.

In Southeastern Alaska, Kodiak and in some of the Aleutian Islands the growing season extends from 130 to almost 200 days. In most of Alaska the growing season is only 80 to 110 days. It is imperative that a farmer plant adapted crops as early as soil and climate conditions permit to make best use of good growing weather.

LONG WINTER FEEDING PERIOD - The short growing season has an adverse effect on livestock enterprises such as beef cattle and sheep based on extensive grazing. Native grasses make phenomenal growth once the snow melts off in the spring. They often reach a height of 4 to 5 feet in late June or early July.

Once these grasses start to set seed, their feed value deteriorates. With heavy fall rains uncut grasses do not cure as they do in western states. Their feed value rapidly diminishes until livestock are not able to maintain themselves without supplemental feed. The mainland grazing season is usually limited to five months.

Several sections of Alaska have large areas of open ranges that may be leased from the Federal government for grazing. Limiting factors are the amount of winter feed that can be economically harvested, and the cost of carrying stock through the seven months when little or no grazing is available. Only on Kodiak and some other islands have cattle been successfully carried over the winter without supplemental feed, and even

there supplemental winter feeding is sometimes needed.

LAY OF THE LAND - Topography and elevation have a marked effect on the growing season. Farming above 2,000 feet is not recommended as freezing temperatures may occur in any month of the year. Although in some locations farming has been successful above 1,000 feet, most prospective farmers are wise to avoid sites above this elevation.

Local topography is often as important as elevation in determining the length of the growing season. Narrow valleys and low-lying hollows often have inadequate air drainage, increasing risks of early and late frosts. Northern slopes are usually avoided because the snow melts slower and soils warm up late. Mountains and high ridges to the east of fields block the early morning sun, in effect shortening the length of day. Gentle southern slopes and wide, open valley floors with adequate drainage for air generally are the best locations.

In some areas winds control personal comforts and certain farming practices. In parts of the Matanuska Valley, strong winds frequently blow fields bare of snow, causing winter damage to some perennial grasses and legumes. Soil and moisture losses are often severe in the absence of adequate cover crops or stubble.

As a homesteader, you cannot change the length of the frost-free season. You can use it to the best advantage by planting adapted crops and using recommended farming practices. Most important is to select a place in an area that has the best climate for your chosen type of farming.

THE WIFE'S POINT OF VIEW - An important consideration in homesteading is the wife's attitude and abilities. Her willingness to homestead and her enjoyment of pioneer life usually determines the family's success. A wise entryman consults his wife in all decisions, and makes sure that she fully understands the conditions she will endure. The homestead venture must be planned according to her tastes as well as her husband's.

Many wives (as well as husbands and other family members) are enthusiastic about settling in the wilderness. Picnics or camping trips at the best time of the year, however, do not give a true picture of the chores and difficulties of year-round homestead life. Hardships cannot be ignored, but faced honestly.

Women must be prepared for hard physical work both in the house and out of doors, due to lack of modern conveniences. They must adjust themselves to isolation from neighbors, especially the companionship of other women, and they must be prepared for concern over the welfare of their children if they settle where medical care, schools and other similar services are not available.

Because the building season is short and much has to be done before winter, installation of conveniences must often be postponed, even when there is money enough to pay for them. A woman may have to use water carried from a stream or melted from ice and snow on the kitchen stove. She may have to relearn cookery on a wood-burning stove, with foods that must be preserved without refrigeration.

Washing clothes by hand, out-door plumbing, bathing in a wash-tub in the kitchen behind a draped blanket-these are normal homestead devices. A woman must be strong and versatile enough to butcher and preserve half-ton moose before it spoils, raise and can her own vegetables and perhaps learn to drive a dog-team.

Women often forget their need for other women until they discover themselves remote from feminine friends. Homestead wives enjoy getting together now and then for homemaker club meetings, or other similar affairs. They may help one another by sharing work, baby-sitting, practical ideas, and recipes. An occasional trip to town especially to relieve the cabin fevers of February and March is a morale booster that most women need. People forced to spend a long winter together in close quarters require some relief.

A lack of schools and other community facilities is usually not felt keenly until the children grow toward adolescence. The State provides an excellent correspondence course for isolated children, which persons of average education can teach. Children carefully tutored at home with this course frequently enter public schools in advance of their age level.

Yet teaching one's own children at home requires self-discipline and systematic daily effort. Women have much work to do that does not fall into daily patterns, and there are many excuses for postponing lessons.

Many mothers feel their children need the stimulus and companionship of boys and girls from outside the family circle.

Family harmony may be upset by a mother's worry about what might happen to her children in an emergency. Access to a telephone or a quick way of transportation on short notice if a doctor is suddenly needed may save a life. One must also think about storing extra clothes and supplies in a safe place in preparation for such an event as a cabin burning down when the temperature is 30° below zero.

Homesteading is not all hardship and danger for women. It has compensations not found anywhere else -- in personal freedom and enjoyment of the beauty of nature. Winters bring leisure hours for books, conversation,

and hobbies. Children learn valuable lessons from direct familiarity with animal and plant life. Outdoor life is healthy, and homestead children never lack entertainment. Also some parents consider it an advantage to have control over the environmental influences on their children.

Although nobody can expect to imagine everything about homestead life in advance, it is better to foresee as much as possible rather than venture into the wilderness in the kind of romantic, optimistic haze that often leads to disappointment and failure. The likes and dislikes of every member of the family, and especially of the housewife, should be taken into account.

COMMUNITY FACILITIES - Your location will largely determine how you will live. Many settlers coming to Alaska are tired of living in a crowded city and have a desire "to get away from it all". Alaska is big enough to offer isolation. The question is what degree of isolation is wanted and how well the family can adapt to living in an underdeveloped country. An unmarried man or occasional family may enjoy living in an isolated and undeveloped country. Most homesteaders, particularly those with families sooner or later find that they want or need certain facilities, public services, and conveniences offered only by populated areas.

TRANSPORTATION ESSENTIAL - The public service most needed by settlers is usually roads. There are not yet enough roads in Alaska to serve all potential farm land. A homesteader is faced with three or four choices in regard to roads.

In various outlying areas and in Southeastern Alaska, land may sometimes be found close to a small town served by water transportation or local roads. Schools, medical facilities, and retail service depend on the size of the town. Seed, farm

equipment, fertilizer and farm supplies have to be shipped in from outside. A few such communities not presently supplied with fresh local vegetables, potatoes, poultry and dairy products might support two or three farmers.

Development of a farm in a site like this requires careful planning and much capital. Transportation from the outside is irregular or possibly even seasonal. Large inventories of farm supplies, equipment and parts must be carried because these items are not locally available.

A homesteader may wish to locate in an isolated or "wilderness area". In such a location transportation is usually limited to small airplanes, foot, or boat travel. Commercial farming in these locations is usually not feasible because the cost of getting products to market is prohibitive. A "wilderness" homestead is suitable only for the rare individual who is in good health, is satisfied to live under primitive conditions, and is able to develop a source of income other than farming.

Most prospective commercial farmers want to locate along a maintained road. Good farm land so situated is usually occupied before a new road is completed. Later settlers must take land on inferior access roads or build their own roads. The Bureau of Public Roads frequently extends service roads or improves roads to new settlements as they promise to become permanent.

New settlers must usually choose between poor farmland along a road or good land without a road. Many homesteaders have based their choice of land on road frontage. If their primary purpose is to obtain a plot to live on or for speculation, this is a satisfactory decision. For a person who wants to develop a farm, it is a poor choice. While roads may be built there is little that can be done to make good farm land out of shallow soils, steep hills, muskogs and rockpiles.

WHERE IS THE DOCTOR AND SCHOOL? In Alaska's major farming areas, complete medical facilities are found only in Anchorage, Fairbanks, and in Palmer. Limited medical facilities are available at Homer, Nenana and Big Delta. All of these cities, in addition to Kenai and Wasilla, also have high schools. Grade schools are scattered over the state in a number of smaller communities.

It has been a general state policy to provide grade-school teachers in a community with 15 or more students not being served by an existing facility. In several communities the state has built a schoolhouse, while in others the state only provides a teacher and the community must supply a suitable building. If the new community develops a permanent and stable population the state may later replace the original community-built schoolhouse with more adequate buildings. While grade schools have been started quickly to accommodate new communities, high schools have come into being only after a community has developed a sizable stable population, skilled in making its needs known. School bus service is generally available where warranted.

ELECTRICITY AND TELEPHONES - R. E. A. cooperatives serve the major populated areas of the Kenai Peninsula, the Matanuska Valley and the Tanana Valley. In some areas municipal, private companies, or local R. E. A. cooperatives serve many smaller communities, but rural electricity is seldom available. A homesteader must bear his share of the cost if he wants central power service.

Telephone service is available only in the Matanuska Valley, and to a limited extent in the vicinity of Homer and Fairbanks. The Army Signal Corps provides limited service along some major highways and the Alaska Railroad. Rural telephones are obtained through community effort in which the homesteaders must participate.

SUPPLIES AND EQUIPMENT - Retail establishments dealing in groceries, building materials, petroleum products and general merchandise are located throughout Alaska. Specialized items such as fertilizer, feeds, seeds, farm equipment and supplies are found only in Palmer and Fairbanks and to a lesser extent in Homer and Anchorage. The Matanuska Valley Farmers' Cooperating Association in Palmer carries a complete stock of farm supplies and equipment.

Few homesteaders can afford heavy equipment like bulldozers needed for clearing land, and special plows and disks for preparing newly cleared fields. Not only is this machinery costly, but the homesteader has very little use for it once his place has been cleared and broken. Potato diggers and combines have only limited seasonal use. For this reason many homesteaders have located where such equipment can be rented.

TAXES FOR SERVICES - For schools and other public facilities and services the homesteader must expect to pay taxes. At the present time property taxes are levied only by incorporated cities, school districts, and public utility districts. Before a patent is issued, homesteaded lands are not subject to local property taxes. Personal property and improvements are taxed. There is a state income tax, a motor fuel tax and other state and local taxes commonly found in most states.

OFF-FARM EMPLOYMENT - Because many settlers seldom have enough money, development stretches out several years during which the homesteader works off the farm part of the time. Occasionally a settler finds permanent employment near his homestead. More often he must live away from his family and land to gain employment.

Most off-farm jobs are available only during summer months when the settler needs to be at home tending to crops and developing new lands.

In deciding to homestead, a settler must remember that during the first five years he must support his homestead and family. Only after 10 years or so will the homestead support the family. How will outside work fit in with development plans?

It is impossible for a settler to find any area in Alaska (or probably anywhere else) where all factors will be exactly right. A settler tries to find a location offering the best combination of desirable features that fills his particular needs.

After he has decided on the type of farm and the area in which he wants to settle, he is ready to select a particular piece of land to homestead.

SELECTING THE LAND - Selecting land is not simple. It takes a lot of walking and looking. Time is important, both as to season of the year, and taking enough to inspect land carefully.

Many settlers have arrived in Alaska when snow is on the ground, rushed out, took a quick glance at a piece of land, and promptly filed on it. Winter is a poor time to select land. In the winter all land will seem solid when frozen. Some homesteaders later find they can't drive a jeep over their swamp once it thaws out.

Under a foot of snow a rock pile or muskeg may look the same as grassy fields. While this may sound like an idle warning, something like one third of the homesteads that have been filed on in recent years have been selected by people who had seen the land only under snow. Although the filing fee is \$10, the cost of turning the homestead into a productive farm is often \$40,000 or more. Just moving on to it may cost \$2,000. Most people refuse to buy a car or a house without seeing them, yet they may select a homestead without a true appraisal.

GET A MAP - Before going out to look for land, invest in a map and a compass. Several types of useful maps are available. Land offices have "status" maps for most of the popular homesteading areas. These show correct land descriptions, what land is open to homesteading, and what is taken. Although status maps are revised from time to time, changes are too rapid for these maps to be fully reliable.

The United States Geological Survey sells useful sets of maps in two scale sizes. For large areas the maps are scaled at 1 inch to 4 miles, and for some smaller areas at 1 inch to the mile. These USGS maps show roads, streams, lakes and mountains, elevation and survey boundaries. On 1-inch-to-the-mile maps sections, ranges and townships are numbered in areas that have been surveyed. These maps are quite accurate, although some of the 1-inch-to-4-mile maps are old and less reliable.

For some areas a third type of map is available from the Soil Conservation Service, showing various soil characteristics and types, streams, roads and section lines. The soil maps are the most reliable and useful in selecting and developing a homestead. Unfortunately, only a small portion of the land suitable for farming has been covered by soil surveys.

CADASTRAL SURVEYS

A good map will help you locate a given piece of land. To describe it in legal terms you will have to find the nearby cadastral survey markers, providing the area has been surveyed. Less than 2 per cent of Alaska's total land surface has been covered by cadastral surveys, although most of these surveys have been confined to the best agricultural areas.

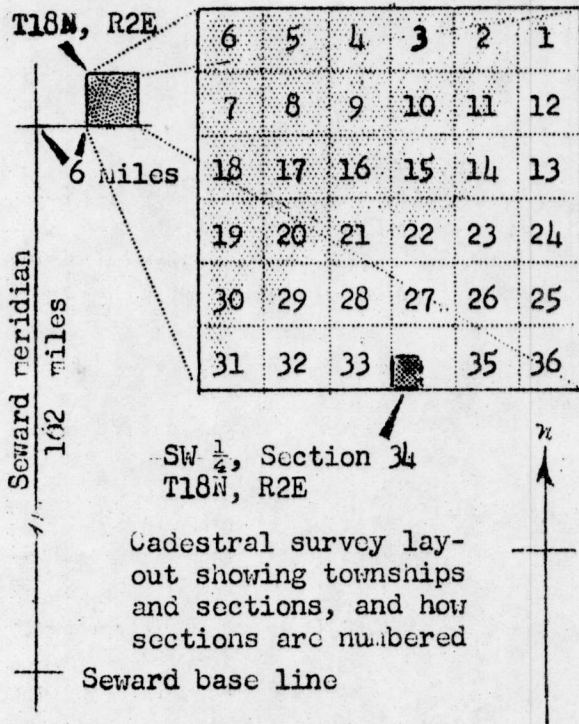
There are two types of surveys which you are likely to come across. special surveys and rectangular surveys. Special surveys cover rela-

tively small tracts, generally in isolated areas. These surveys are numbered starting with number one in the order they were surveyed. Thus USS 880 may lie along side USS 2341, while USS 2342 might be 600 miles away from USS 2343. There have been about 3800 of these special surveys for Alaska. Exact location and description of U. S. special surveys, along with the plat of survey, are available at federal land offices.

RECTANGULAR SURVEYS - Most settlers will encounter rectangular surveys. The name "rectangular" comes from a system of dividing land into square blocks measuring a mile on each side. These square-mile blocks are called "sections". They are numbered from 1 to 36, with 36 sections comprising a township. These 6-mile square blocks are numbered north and south as "Townships", and east and west as "Ranges" in relationship to a given base point located on a principle meridian.

In Alaska there are five principle meridians. Those that are likely to concern you are the Seward Meridian, which uses a starting point near the town of Seward, and the Fairbanks Meridian which has a starting point near Copper Center. The other two are the Umiat and Kateel River Meridians located in northern and western Alaska.

To illustrate this system of describing a tract of land, the railroad station in Palmer, Alaska is located in the SW $\frac{1}{4}$ of section 33, Township 18 North, Range 2 east, Seward Meridian. From the starting point near Seward on the Seward Meridian, this station is 17 whole townships north, or a total of 102 miles. The west side of Range 2 East is 6 miles east of the Seward Meridian. Here is located the southwest corner of Township 18 North, Range 2 East, Seward Meridian. The position of Section 33 is seen in the following sketch showing how sections are numbered within a township.



the resulting quarter sections are a half mile long, hence the corner of a quarter section lies a half mile from a section corner. The sketches below illustrate typical brass caps which vary in style and appearance. Some other types of survey monuments are "M.C." meander corner marking where a line follows a body of water, "W.C." witness corner where the actual corner would be located under water, and special corners.

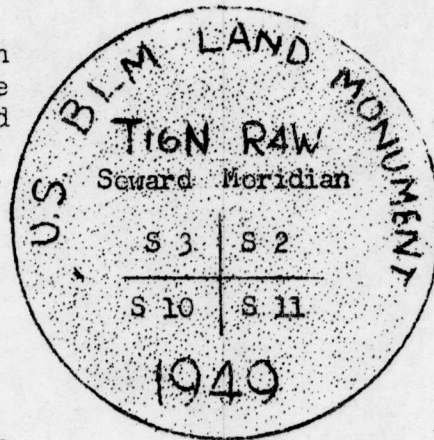
A section of land contains one square mile or about 640 acres, and is subdivided for purposes of description by quarters. Thus, the SE 1/4 contains about 160 acres.11

Plats of township surveys are available for purchase from the various Land Offices for those areas that have been surveyed. In looking over the plats you may run across places where sections are partially subdivided by "lots. Subdivision into lots is normally made where a 1/4 of a 1/4 of a section is smaller than 40 acres. You will also notice that

Each section is normally identified on the ground by eight markers or "monuments", occasionally called "brass caps". These usually consist of a brass cap approximately 2 inches in diameter on top of an iron pipe.

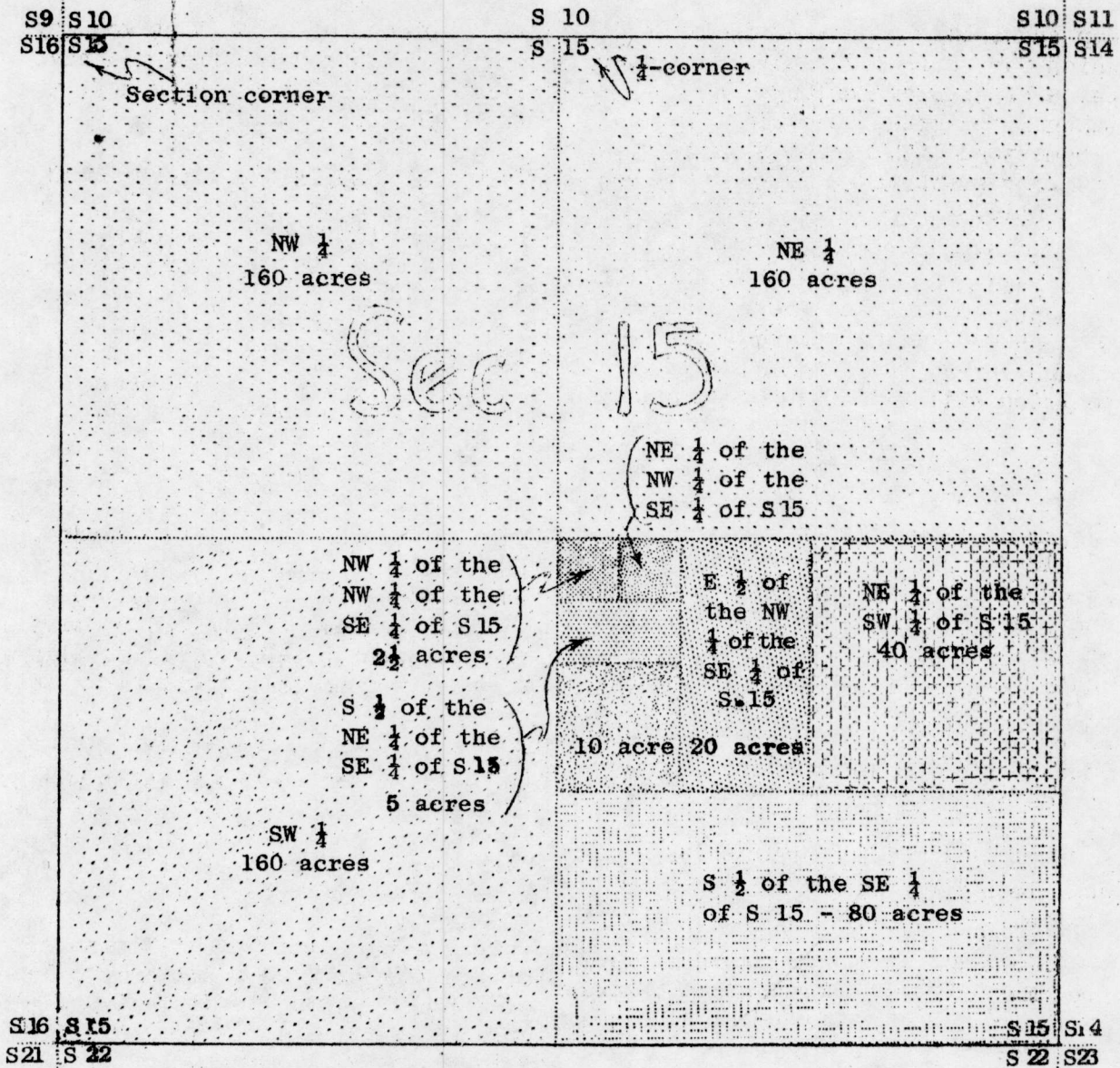
They may be as much as a foot above the ground, or imbedded so that the cap is flush with the surface. To make them easier to find in timber, two or more nearby trees are often slashed down one side and scribed with the corner location. These are called witness trees. The two most common types of monuments are section corners, placed at the corner of each section, and 1/4-corners, located on a section line halfway between corners.

The term 1/4-corner may at first be confusing. In normal land descriptions a section is divided into four parts or quarters. The boundaries of



Typical cadastral survey monument caps. On the left is a section corner marker, on the right is a 1/4-corner monument cap.

survey plat measurements are usually listed in "Chains". A chain is 66 feet and 80 chains equals one mile. ss A few other useful measurements are: 1 acre = 43,560 square feet or 10 square chains. A square acre meas-



ures approximately 208 feet on each side. A rectangle 330 feet x 660 feet equals five acres. 1/4-mile x 1/4-mile equals 40 acres.

UNSURVEYED LAND - The problem of describing a tract in unsurveyed land is more difficult. When a homesteader files on a piece of unsurveyed ground he is required to stake each corner. A homestead should be laid out as nearly rectangular as possible, but it does not have to be square. Natural boundaries such as rivers or lakes may be used, but other lines should be straight and run true north and straight east and west if possible.

In looking over unsurveyed land it is wise to make local inquiries about other land claims because old stakes are often hard to find. Before a homestead is patented on unsurveyed land the Bureau of Land Management will survey it. Patents are not issued on the basis of private surveys.

A word of caution about using a compass is in order. A compass points to the magnetic north pole which, in Alaska, lies to the east of the true north pole. This difference between "true north" and "magnetic north" is referred to as "declination". A USGS

map shows the amount of declination which varies from 20° to 30° in most parts of Alaska. Declination must be taken into account before laying out a homestead with a compass because a 1° error grows to 92 feet at the end of a mile.

The State of Alaska will survey lands acquired from the federal government. There may be some changes, but so far the state has not done enough surveying to indicate what its policies will be.

WHAT TO LOOK FOR

When you first start looking over an area there are two things you should do. First, observe what other homesteaders are doing and how well they are making out. Second, get acquainted with some of the people that live in the area. By talking with other homesteaders you become aware of special problems they have encountered and learn about land that may be open for homesteading. You may also be able to learn the location of some of the section corners, and location corners of individual claims.

In selecting a specific site there are many factors to consider. Some of the more important points to look for are:

- Can you build a road to your site?
- Is the land exposed to the sun?
- Is the land rocky?
- Is the land steep or rolling? Flat or level?
- Do you have good drainage - both for air and water?
- How deep is the soil?
- What type of soil is there?
- Is there permafrost present?

If one or more of these factors are unfavorable, the site you are considering is probably not desirable for farming. Good land is not easy to find, but it would be better to pass up an undesirable place than to

take a piece of land that you may find, at a later date after you have invested a lot of time and money, is uneconomical to farm.

AVOID STEEP SLOPES - Level land, provided it has good drainage, is the easiest to farm. The raising of row crops presents no major problems, efficient use of farm machinery is possible, and there is a minimum of erosion on level land. A slight slope, particularly to the south, is good because it encourages better air and water drainage and will warm faster in the spring. North slopes are cold.

Steep slopes should be avoided. They are not suited for row crops such as potatoes, and are difficult to farm. Steep slopes can be used for permanent pasture, but usually they must remain in timber.

OBSERVE NATURAL COVER - What grows naturally is often a good clue to how desirable the land is. If the land is not able to support a good natural growth of grasses or trees it will not produce good crops.

Flat ground covered with mosses, low lying bushes, and shrubs should be avoided. These lands (often referred to as muskegs) have very poor drainage. Some muskegs can be drained but the soil is usually composed of partially decayed organic matter or peat. Muskog soils act like a sponge, soaking up large quantities of water, and warm slowly in the spring. Frost is often found at less than two feet even in July. Some muskegs are little more than floating bogs. They may be dangerous to cross on foot in the summer, and building a road across any muskeg is difficult and expensive.

Flat areas of ground covered with stands of small black spruce, sometimes called "swamp spruce", usually make poor farm land. The spruce seldom grows over twenty feet high and rarely exceeds five inches in diame-

ter. Stands are generally dense but are occasionally open. Drainage is poor, and persistent frost is found at a foot or less.

Some of Alaska's best farm land is covered with mature stands of birch and spruce. Birch grows best on good soil with adequate internal drainage. In some areas such as along the railroad between Palmer and Talkeetna, are dense stands of second growth birch and some spruce, with few trees over seven inches in diameter. This type of forest represents regrowth after severe burning. Underlying soils are similar to those supporting mature trees.

Along creeks and rivers large cottonwoods with some birch and spruce are often found. Cottonwoods generally grow where there is adequate surface drainage. While the top soil is often good, it may be shallow. Subsoil may be pure sand and gravel. On river bottoms alders and willows are usually found where water is near the surface. Drainage is often a problem.

On the Kenai Peninsula and in the southern part of the railbelt, grasslands are often encountered in burned over areas that have grown up largely to grass following the fire. The predominate grass in these areas is blue-joint (*Calamagrostis*) often called "redtop". These grasslands are usually suitable for farming providing they are below 1,500 feet elevation and are not too steep. Further to the north and in the Aleutian Islands grasslands are found because climate, elevation or wind are adverse to the growth of trees.

LOOK AT THE SOIL - The natural vegetation is only a clue to the underlying soil. Examining the soil is the only way to determine if it is suitable for farming. It is a good idea to have a soil auger or a shovel along when you are selecting a homestead. The first thing you should check in examining a soil is depth.

In many places -- even where there are good stands of trees or native grasses you will find shallow soils. Soils less than 2 feet deep are questionable for farming. In looking at the depth of your soil find out what it is like down four or five feet. Layers of heavy clay at a shallow depth may prevent adequate drainage, on the other hand, a shallow soil over gravel may dry out too fast.

A good soil is a light silt loam. Drainage is usually satisfactory making it possible to plant earlier crops. Though more subject to drought they are preferable to clay or muskeg soils because they warm up earlier in the spring.

BEWARE OF PERMAFROST - Permafrost, a condition where the soil remains frozen the year round may be a limiting factor particularly north of the Alaska Range. It may be found from the surface to a depth of several feet.

In the Fairbanks area some of the land formerly underlain with permafrost has been turned into farmland. The usual procedure is to clear the land of trees and insulating layers of moss and let it remain bare for a period of 2 or 3 years. After some years the permafrost will leave the upper soil layers and make farming possible.

The reclaimed land, while usable, may pose a drainage problem. In some places as ground thaws it settles, leaving rough fields that are difficult to farm. Because of these handicaps and additional time required to bring permafrost land into production, it is wise to avoid permafrost when possible.

Soils in Alaska are less productive than those in the south 48 states. Alaska soils are geologically younger and have not broken down as fully, thus making nutrients available for plant use. The supply of available plant nutrients is reduced by the

cool climate which slows down bacterial decomposition. To compensate for this lower level of available plant food, fertilizer is needed for crop production on all Alaskan soils. In selecting your land, a suitable soil that is easy to work, has adequate drainage and will warm up fast in the spring are prime considerations. Fertility levels can be increased with commercial fertilizers.

Clearing costs are usually the highest costs involved in developing a homestead. The larger the trees and the heavier the stand of timber the greater the cost of clearing will be. Grasslands are the easiest to clear, although you will rarely find land that can be worked from the start with the average farm tractor. Most grassland in Alaska needs leveling before plowing.

Some settlers have been tempted to try farming some of the better drained muskogs, but success has been limited. Drainage of a muskog is beyond the means of most homesteaders. It is wiser to spend more money to clear a good piece of land than to save on initial costs to develop a piece of ground that is not suited to farming.

DRINKING WATER - A source of drinking water is an absolute necessity. Most homesteaders obtain drinking water either from a spring, creek or hand-dug well. Where a well is needed find out from other people in the area if they have had any success. In a few locations the excessive cost of obtaining an adequate supply of domestic water has caused the downfall of the homesteader. This problem is most critical for livestock farmers, especially dairymen.

FILING ON THE LAND

When you have located a site suited to your needs, review the following important questions before you file. Once you have filed on a piece of land you have committed yourself to a number of problems with which you will have to live.

- Is the land suitable for the type of farm you want to operate?
- Can you get to your land?
- Is there a market for what you raise?
- Is the climate suitable for your crops and livestock?
- Are there schools and other public facilities to meet your needs?
- Are you going to be able to earn a living while you develop your homestead?
- Can you develop an adequate water supply?

The procedure you follow in filing on a homestead is determined by whether or not the land is surveyed or unsurveyed. In either case obtain proper forms from the Land Office in the district where your site is located. Although it is unnecessary to go to the Land Office when you file, land status is constantly changing, and a visit there will enable you to be sure the land you file on is still open. Otherwise, you might file on a piece of land that has been taken by someone else thereby losing considerable time amending your location.

On the surveyed land describe your homestead in terms of legal subdivision of a section or sections. Your homestead on surveyed land does not have to be rectangular so long as it is made up of legal subdivisions that have at least one common boundary with one or more of the other subdivisions composing your claim. You do not have to file on 160 acres but you should not file on more than 160 acres unless you have an odd size lot in your claim that may be slightly larger than 40 acres. After you file on surveyed land you are required to wait until the Land Office sends you word to proceed with your homestead development. This is called a "notice of allowance".

On unsurveyed land you must mark all four corners of your claim on the ground and take actual possession of

the land before you are eligible to file on it. The setting up of camp or temporary place to live is sufficient evidence of having taken possession. Within 90 days of the date you stake the ground you must file a "location notice" with the land office in the district where your land is located. In the location notice, you will be required to give a "meets and bounds" description of your claim and describe it in relation to some natural object or permanent monument. If your claim should join another be sure to mention the fact. Including a map or drawing of your homestead location would be helpful in letting the Land Office know your exact location. A homestead claim should be compact, preferably rectangular in form, and except under unusual circumstances should not be more than four times as long as it is wide.

DEVELOPING A FARM

Once you have filed, you have accepted a number of factors such as location, soils, climate and markets, over which you have little control. Your problem has now changed from trying to find the land best suited to your needs, to how to make the best use of the land and location selected, based upon your particular knowledge, skills and resources.

FARM LAYOUT - Before you start to build your dwelling or improve your place, take advantage of your opportunity to lay out a plan of development. You will never have a better opportunity to design a good layout for your roads, buildings and fields. Many farms have been developed without proper thought to location of roads, wells, buildings, and fields. The results often impose undesirable living conditions, higher costs and extra work on the farmer that could easily have been avoided by proper planning. Make a map of your homestead; locate any roads, streams, springs or lakes; indicate the direction of the prevailing winds, the

slope of the land and other features that will affect your farming. With the aid of your map draw a plan of where you will locate your buildings and fields. Try to develop a complete plan of your farm before you start; it is easy to revise a plan on paper but difficult and expensive to change a road, building or fence once built. Before you settle on a plan check it over carefully. See that you have given consideration to the following:

ROADS - If there is already a road by the place take advantage of it. If there is no road, try to figure the most likely spot one will be built. In surveyed areas roads usually follow section lines. Build your house at least a hundred feet back from a public road to avoid dirt and noise. Building further back will result in higher road building and maintenance costs. Remember, on a private road you do your own snow removal. Avoid building roads across muskegs or low places. The cost and maintenance will be higher and the road will probably be unusable part of the time.

DRAINAGE - A farmstead should have drainage in one or more directions sufficient to carry off surface water. Locate the well above the out house or sewage system drainage. The barn and other livestock buildings and pens should drain away from the house. A gently sloping farmstead helps natural drainage. A high spot or knoll is an ideal location. The bottom of a hollow is colder in winter and water or air drainage is a problem. When modern earth-moving equipment is available at a reasonable cost, it may be easier and better to change farmstead topography than to arrange buildings to fit natural conditions.

WATER FOR THE HOME - If you cannot develop a source of water for the home you have an undesirable homesite. Drainage from all buildings and livestock pens should be away from the well. Where you use a spring or creek for water be sure your buildings are located below the source.

WIND - Locate the barn and livestock pens so the prevailing wind carries odors away from the house. Wind protection for your house and farm buildings add to your comfort and make work easier. If possible locate private roads where they will be least subject to drifting snow. Roads built in the same direction of the prevailing winds are subject to less drifting than roads built crosswise to the wind. In areas of heavy winds, leaving occasional windbreaks will reduce wind erosion and help keep a snow cover during the winter. Tree growth in Alaska is slow; if you have trees that serve as natural windbreaks use them.

SUN - Locate your buildings where they will get maximum benefit of the sun. The sun will help dry barnlot or grounds around your house. If you plan to raise livestock remember sunlight is one of the most potent enemies of disease. Fields should be laid-out to receive the maximum of sunlight.

LOCATION OF BUILDINGS - Locate your barn and livestock pens at least 150 feet from the house. The machine shop, garage and machine shed can be closer. Buildings should be located convenient to each other in order to reduce work. Locating outbuildings around an open gravelled court makes it easy to get from one to another without opening gates. A good layout often calls for the various farm buildings being served from a single yard pole where electricity is available. For safety, in case of fire, buildings should be at least 50 feet apart. The pump house should be separate from other buildings so water will be available during a fire.

PROVIDE FLEXIBILITY - Provide flexibility and room for expansion in case you change your type of farming. Locating your farmstead in the center of your road frontage rather than in a corner provides more room for expansion and makes pasture rotation easier. As your farm develops you

may engage in different enterprises; keep your buildings functional for many uses. Include such features as sufficient room between posts to work with machinery, high ceilings, large access openings and high doors. Highly specialized buildings are usually more costly, limited in usefulness and harder to change. Livestock buildings should be planned so mechanical feeding or cleaning may be added at a later date. Grain and hay storage should likewise be adapted to mechanical handling.

FIELD LAYOUT - All fields should be easily accessible from the farmstead. Large fields are easier to work and cheaper to fence. Odd-shape fields should be avoided; it takes 20% more time to plow a triangular field than a square field of equal acreage. Long rectangular fields are easiest to farm. Make the layout of your fields fit your local topography. Provide for adequate drainage and windbreaks.

BUILDING COSTS - Building costs can be held down by use of native materials. Pre-fab buildings are less expensive than custom-built buildings. Buildings should be soundly constructed to save on deterioration and repairs but unnecessary refinements or decoration will not pay. Livestock returns for use of building vary from 6-10% of gross livestock sales therefore, only minimum cost buildings are justified for livestock.

WHICH COMES FIRST? After you have drawn a satisfactory plan of your fields and farmstead, plan the order of your development. An access road and a residence will normally be your first undertakings. The development of the remainder of your homestead will depend upon the time and money available. In planning your order of development always try to figure which additional expenditure will bring the greatest return. Clearing enough land for a family garden will probably be next. The cost of clearing and getting land into production will be your largest development expense.

The construction of other building will probably have to wait until you have land ready for crops. However, you may be able to build a barn or machine shop of native materials for small cash cost. Projects such as these can often be done in the off-season when it is not possible to do other work.

Your local district extension agent has information and farm plans available for your use. The Soil Conservation Service helps farmers in making crops and farm plans for fields in regard to drainage, irrigation and conservation practices. Take advantage of these services as they can save you time and money.

In planning your homestead layout you will seldom find an ideal plan to fit all your needs. The best plan for your situation will be the one that makes the best use of all the natural advantages. To be of value your farm plan must fit the type of farming you intend to do and be in line with your financial resources and abilities.

ACCESS ROADS

Most homesteaders have to build an access road from the main road to their building site. A permit from the local Bureau of Public Roads office is required to connect a private road to a public road. If a ditch is crossed in tying in your private road an approved type culvert or bridge must be used.

KEEP IT SHORT AND DRY- In building a private road or driveway, make it as short as possible. The length of your road will be largely determined by where you select your building site; use the most direct approach, but avoid low wet ground and muskegs. On wet ground or muskeg corduroy the road bed. Provide ditches and adequate drainage where needed. When you have equipment available the building up of the road bed by a foot or more will help lick the mud prob-

lem and may make snow removal easier. A narrow road through the woods will tend to fill up more quickly with snow than a wider road. Land covered with large trees usually makes a better road bed than land covered with alders or brush. Gravel with some dirt to act as a binder makes the best road bed and should be used where possible.

If you must cross a ditch or small creek, often a satisfactory culvert can be cheaply made by knocking the ends out of used oil barrels. In setting the barrels in the ground you should provide about $\frac{1}{4}$ inch drop for each foot of length and the bottom of the barrel should be placed slightly below the level of the bottom of the ditch or creek bed. In back filling around a culvert be sure to pack your dirt in tight around the culvert and cover the culvert with at least two feet of dirt.

LOCATION AND RIGHT-OF-WAYS - If you must build a road of considerable length to reach your homestead, in surveyed areas, follow the section lines where possible. Road right-of-ways are provided by law along sections lines. In unsurveyed areas it is best to follow boundary lines between adjoining claims. After you do build a road across public land or private land other than your own, record the location with your nearest land office and recorder office to protect the right-of-way of the road. In building a road across private land it is your responsibility to obtain permission from the owner before you build.

BUILD IT RIGHT - Most homestead roads are originally built with a bulldozer shoving whatever trees, roots and brush there is to one side. The resulting road is passable in good weather but becomes badly rutted or impassable when it rains. Corduroying the mud holes will make the road more usable in wet weather, but it will still be rough. This type of construction is the cheapest.

A more satisfactory but expensive road can be built by removing the trees and brush, disturbing sod as little as possible. Low spots which may become muddy when wet should be corduroyed and the bed built up a foot or more by ditching from both sides with a cat and placing the material removed from the ditches on top of the road and leveled. This type of road will dry out faster after a rain and give more satisfactory year-around service. A desirable final step would be to add a layer of gravel, but few homesteaders will be able to do this because of the equipment, time and costs involved.

The cost of building a private road will vary tremendously, depending upon the quality of the road built and the amount of work hired. The clearing of a road right-of-way with a hired cat, operating in an average wooded area, with no special problems involved will probably cost from \$300-\$600 per mile. Where deep cuts, fills or adverse soil conditions are encountered the cost will rapidly increase. The cheapest original cost may often lead to a higher maintenance cost in addition to providing a road that will be more restricted in use by the weather.

PLAN DWELLING AND PROVIDE GOOD WATER

The first step in building your house is to select the best location to fit your homestead and future farm plans. Make sure that you will be able to develop an adequate supply of water. If you are going to have to dig a well and the area you are in has a history of dry wells, it might be wise to dig the well first so you will be sure of your water supply. A home without an adequate water supply is never satisfactory.

WHAT TYPE OF WELL IS BEST? The best type of well from the standpoint of sanitation is a drilled-well. The original cost of a drilled-well is greater but there is little upkeep cost except for the pump. Where the

water table is within 25 feet of the surface and the underlying soil is not filled with large rocks it is sometimes possible to drive a pipe with a sandpoint on the end. This type of well has the advantage of being low in original cost, simple and fast to construct, and is more sanitary and safer than a dug well. The principle disadvantage of a driven well is that you cannot drive where there are large rocks, you are limited in depth, and it may be impossible to develop a sufficient supply of water. If your neighbors have been successful with driven wells, it would probably be worth while to first try this method.

Most settlers obtain their water from hand-dug wells. If you do your own digging and can cut your own cribbing the initial cash cost is low. However, if you would have to hire the work done and the well is very deep, it is often cheaper and more satisfactory to have a drilled-well. A dug-well can be almost any depth, but each additional foot of digging is always harder than the preceding. A note of caution - never dig a well without cribbing and bracing to prevent cave-ins and always be sure that a dug-well is covered at all times when you are not actually working in the well. Homesteaders have been seriously injured when improperly cribbed wells caved in on them. Open wells are always dangerous, particularly where there are children. At least one Alaska homesteader found his horse in the bottom of a well left uncovered. Some settlers have dug their wells under their house in order to have the pump inside the house. This practice has disadvantages. In case of fire you would be unable to obtain water. There is also a danger, particularly during an earthquake which are fairly common in Alaska, of a dug well caving in and weakening the foundation of the house.

The Alaska Department of Health has excellent bulletins available on wells and sewage disposal systems.

These may be obtained by writing to the Alaska Department of Health at Anchorage, Fairbanks or Juneau. You can also have your water tested for safety by writing to the same address for further information.

LOGS VS. FRAME CONSTRUCTION

Most settlers build their own house and other buildings. The principle reason for this is the high cost of any labor in Alaska. The cost of labor to build an average house often runs from 40% - 60% of the cost of a house. Your first decision in building a house for your homestead will be whether to use logs or conventional lumber and frame construction.

BUILDING WITH LOGS - There are two major advantages of building with logs. Where lumber and other building materials are not readily available and it is impractical to move any but the bare minimum of building materials to the homestead, the homesteader has little choice but to build with logs if they are available. The other principle advantage of building with logs is that a minimum of out-of-pocket cash costs are involved. The principle disadvantages of log construction are that it takes considerably more time and hard work and good logs may be hard to find. Unless a homesteader has equipment or horses available it is not feasible to move logs far by hand. A good weather-tight fit with logs requires a highly skilled craftsman and is a time-consuming art foreign to most settlers.

The principle advantages of building with lumber are that work is faster and easier. The average homesteader is more likely to build a tighter and more weather proof building with lumber than with logs. It is also possible to better use insulating and vapor barrier materials which will increase the comfort of the occupants and performance of the structure. Lumber has an additional advantage in being better adapted to construction of a wide range of sizes

and shapes of buildings, and it is easier to add on to a frame house.

PLAN YOUR HOUSE BEFORE YOU BUILD

Regardless of what type of materials you are going to use in building your house it is a good idea to have a set of plans before you start. Even in a one room cabin you must figure the size and location of your doors and windows and where you place your heating stove. Use of a set of plans can save you time and money by preventing costly mistakes and will usually result in the construction of a better building. You may wish to draw your own plans but unless you have had considerable building experience you would be better off buying a good set. Several sets of plans for houses and other farm buildings are available at a nominal charge through your local extension agent or by writing directly to Farm Building Plans, Agricultural Extension Service, University of Alaska, College, Alaska. Bulletin 802 published by the Extension Service shows several plans of buildings that you may choose from. There is no charge for the bulletin and individual sets of plans may be ordered for a cost of \$1 to \$3.

If you are going to build a log house a very informative bulletin, "Building With Logs", Miscellaneous Publication No. 579, U.S. Department of Agriculture, is available from your district agent. Your extension agent also has other bulletins available on construction of buildings, use of native material and preserving wood that could be useful in your building program.

FOUNDATIONS - The most important factor determining the life of the building is the foundation. The best type is a continuous reinforced concrete foundation. This type, if properly built will last indefinitely and is an effective barrier against movement of air under a house. The chief disadvantage is high initial cost and requirement of considerable

labor for building. The use of concrete pillars or posts is the next best because they do not rot. Most settlers building frame buildings use wood posts. If properly set, they will provide a satisfactory foundation, but unless treated their life will be relatively short. Extension Bulletin 803, which is available through your local extension agents, describes some simple methods you could use to treat foundation posts.

In building a log cabin it is preferable to provide a permanent foundation; however the bottom log serves as a foundation for most cabins and in time will rot out. When a foundation is not used the floor should never be attached to the bottom log. The floor may either be built independent of the cabin on a separate foundation where the floor joists are cut into the logs. This should be done at least one log above the ground level so it will be possible to replace the bottom log without disturbing the floor. Peeled spruce logs are preferred to cottonwood or birch for contact with the ground.

MATERIALS AND COSTS - You can reduce out-of-pocket building costs by use of native locally produced materials. Locally sawed, unfinished lumber usually costs \$30 to \$50 per thousand board feet, less than commercially produced, finished lumber. While the locally sawed rough lumber tends to vary in thickness and width, it is satisfactory for framing and where a smooth finish is not necessary. Cottonwood lumber usually runs \$10-\$20 per thousand less than spruce, and is satisfactory where structural strength is not critical. In using native lumber, remember green lumber shrinks; special nails may be necessary to provide adequate holding power while the lumber is green.

You can also reduce building cost by substituting dried ground moss or sawdust for commercial insulation. Tests conducted by the Alaska Experiment Station show that six inches of

sawdust insulation in a cabin built with unfinished local lumber performed as well as a combination of a 2 inch commercial, batt-type insulation and $\frac{1}{2}$ inch of fiberboard in a conventional built cabin. Moss that has been dried and then ground has proven to be a better insulator than sawdust. Where these materials are used a good vapor barrier is required on the inner wall to keep the insulation dry, to prevent the movement of warm air through the wall, and to prevent structural deterioration. Cabins with vapor barriers required about 22 per cent less heat than those without.

Logs for construction should be peeled; when bark is left on they are more subject to attack by insects and decay. Many insects such as the Spruce Bark Beetles tend to live just under the bark layer. They then bore into the log which permits entry by fungi which cause rot. Unpeeled logs will not dry-out as readily. The higher moisture level in the log encourages growth by rot-causing organisms. Spruce logs peel easiest in the spring when the sap begins to flow. Peeled spruce logs are commonly considered the best for cabins. Cottonwood or aspen, when peeled are also useable but should be kept off the ground. Birch is not satisfactory for house logs.

Some people have logs sawed square on three sides. Squared logs are easier to build with because they are more uniform and tend to give a tight-fit than natural logs. Tests conducted on cabins built of squared logs showed about a third more heat was required than for cabins built with unfinished lumber and insulated with 6 inches of sawdust. This indicates that sawing the logs into rough lumber would be more profitable in the long run than using the material as squared logs.

Any house built for Alaskan winters needs an entry with double doors. The entrance way not only provides a convenient place to remove heavy

outhergarments and overshoes but also will greatly reduce the amount of fuel needed to heat the house.

Another feature not to be overlooked is some type of safety flue where your stove pipe passes through the ceiling and the roof. Many of the cabins have been destroyed by fire because a hot stove pipe was located too close to combustible materials.

OTHER BUILDINGS

What has been said about planning your house is equally true for your other farm buildings and entire farm. Maximum use should be made of native materials in buildings and costs should be held as low as practical. These buildings are primarily needed to keep the rain, wind and snow out. Tightness against the weather and minimum cost should be your prime consideration. Refinements for the sake of appearance alone add little to the usefulness but may greatly increase costs.

Two small structures often found on Alaskan homesteads are useful and can be built for a small cash expense. These are a root-cellar and a cache.

A root cellar can be used for storing potatoes, canned goods and other items that freeze. Its biggest advantage is that temperature above freezing can be maintained without artificial heat, thus permitting you to be absent from the homestead without worrying about your food supply freezing. Plans for root cellars are shown in Bulletin 803 previously referred to under house plans.

A cache is a simple and useful building very commonly found in the bush country. A cache is a small building atop four poles 10 feet or more above the ground level. The poles are usually partially covered with metal near the top or a half of an old oil drum over the top of each post, to prevent small animals or bears from climbing the poles and getting into the cache. They are

used for the storage of dry foods such as beans, flour and other items of food and clothing which might be damaged by small animals or bears if left in the cabin. A screened-in cache makes a good place to store fresh meat. Old-timers living in the bush keep an extra sleeping bag, food and clothes in their cache in case a bear or fire might destroy their cabin.

LAND CLEARING AND CULTIVATION

Before the bulldozer arrives decide upon the best plan of clearing and the best land to start clearing. Aside from the small clearing around your buildings, the place to start is the best land on your place. Even if it may cost more to clear, one acre of good land can produce more than several acres of poor. Plan your land clearing so you will be able to farm it most efficiently. If you have berm piles, run them in the same direction so your fields will be as long as possible. Scattering berm piles in a willy-nilly manner makes it hard to use modern machinery. A big tree in the center of a field may look nice, but it will interfere with crop growth over a wide area, and make your field more difficult to work.

METHODS AND COSTS - There is no one best method to clear land. The best way will depend upon the type of land to be cleared, the amount of money you can afford to spend on clearing, how fast you want to clear, also how much "off-season" time you have when you are not busy at other things.

Clearing by hand when you do your own work, is the cheapest method of clearing from the standpoint of out-of-pocket costs, however it is slow and yields a poor return for labor. Hand clearing is practical only when (1) no labor is hired and (2) when you cannot put your labor to a more profitable use. The most profitable hand clearing might come in the win-

ter months when no other work is possible. The best use of this time could be made where you may have a few large trees that can be cut either for lumber or fire wood. Such trees should be cut leaving a high stump to make it easier for the bulldozer to shove over.

Most land clearing in Alaska is done with a bulldozer. Generally the larger the bulldozer the lower the clearing cost per acre, although, the cost per hour is higher. The cost of bulldozing runs from \$10 to \$40 per hour depending upon the size, age, and location of the machine. When paying rates like this you will naturally want to get the best results in the least possible time. Careful planning and efficient use of a dozer is essential to keep your clearing costs down.

Two general types of clearing methods are used on trees. Where there are large trees such as birch, white spruce and cottonwoods which exceed a diameter of 6 inches, the usual method is to push the trees over with a bulldozer and shove them into long piles to be burned at a later date. The chief advantage of this method is it is a quick and relatively easy way of getting land cleared. This method removes a large portion of the roots with the trees. A major disadvantage is that much top soil is often left clinging to the roots. Not only is the best soil removed from the land cleared, but the dirt in the windrows makes them difficult to burn. Dozing usually costs from \$100-\$150 per acre. An additional \$100-\$150 or more per acre is required for root picking but the settler and his family can reduce this cash outlay by hand labor.

A method recently used in the Fairbanks area on relatively small trees is to shear the trees and moss off in winter when the ground is frozen. The sheared trees may either be stacked in windrows for burning or left to dry out where they fall

and then broadcast burned in the summertime. Clearing this way is practical only where the trees are small (usually less than 2 inches in diameter). The chief advantage of this method is that it is faster and less top soil is lost. The absence of roots and soil help make the windrows pack tighter and burn hotter. Limitations are, large trees do not shear well and the large roots are left in the ground. Shearing of light cover usually costs \$40-\$80 per acre. Where the trees and brush are stacked the additional cost for windrowing is from \$25-\$50 per acre.

After the bulldozer leaves your work really begins. If the land has been sheared off you must use either a heavy breaking plow or special disk before it can be worked by regular farm equipment. In any case, there will be lots of roots to be picked. This is usually a hand operation, although experimental work indicates some types of rock pickers maybe used. If the trees were just sheared they must be burned in place before any other work can be done. The best time to burn is in the late spring or early summer after the trees and roots have dried. A good burn is seldom possible after the early part of August because rains usually start then and continue through the fall months. Spruce will burn well at this time of the year but it is difficult to get a good burn on birch or cottonwood any time. Before you start to burn make certain you have made adequate preparation to prevent the spread of fire to adjoining lands. Extra water, shovels and fire fighting equipment should be in the field. Freshly made fire breaks at least 10 to 20 feet wide, should surround the area to be burned. It is a good idea to have a bulldozer on hand in case the fire gets away. Before you light a fire notify the nearest fire warden and Bureau of Land Management fire control officer. Remember the laws hold you responsible for any damage done by a fire you start.

CARELESS CLEARING COSTLY - Many homesteaders have lost a large amount of top soil by careless clearing. The formation of top soil is an exceedingly slow process. Because of the cool climate, organic matter decays at a very slow rate and humus is slow in building up. Removing the small trees and brush while ground is frozen will save a maximum amount of top soil and takes the least amount of bulldozer time. Where necessary to remove the roots along with the tree it is recommended that the bulldozer be equipped with root teeth and the clearing done when the ground is thawed down to the level of the roots. Root teeth do a better job of grubbing out roots and remove a smaller amount of soil. Berm piles stacked with root teeth dozers contain minimum amount of soil, will pack tighter and burn better.

INITIAL SOIL PREPARATION - Pick all the roots possible. This is a disagreeable job but a root left in the field will cause trouble in working your soil and may even lead to machinery breaking down. After you have picked roots, it is a good idea to either plow the field with a heavy duty breaking plow or use a heavy disk, cut-out blades at least 24" in diameter. This will cut-up and turn under many troublesome roots. The problem of roots is not easy. In Alaska they require several years to rot. Most farmers pick roots annually on new ground at least five years. This should be taken into consideration when planning your cropping program.

THE FIRST CROP - Freshly cleared land in Alaska is always low in fertility, often acid and in poor working condition. Usually two or three years are needed to bring a new field into full production. To get good yields you must fertilize. Circular 513, published by the University of Alaska Cooperative Extension Service gives

recommended fertilizer requirements for various crops. This may be obtained from the local extension agent or writing to the extension service at College. Through the extension service you can have your soil tested at the Experiment Station to learn how much fertilizer you need.

Since new land is low in fertility and usually contains roots and other debris, it is best not to plant crops which require a high level of fertility and intensive cultivation during the first or second year. Some settlers have tried growing potatoes and vegetables the first year with poor results. Roots can create a problem when cultivating or digging potatoes with mechanical equipment. Therefore, potatoes and vegetable crops are not recommended for first-year crops except for the family garden. A good initial crop would be oats or peas cut for either hay or silage. Where harvesting facilities are available grain such as oats or barley would also be satisfactory. By raising one of these crops for the first few years you can build-up fertility and get your soil in a better condition. Each year as you plow or disk you will cut-up the smaller tree roots and bring the larger ones to the surface where they can be picked-up.

Regardless of what you plant always grow a variety that has been tested and found adaptable to Alaska soils and climatic conditions. The Alaska Agricultural Experiment Station continuously tests new varieties of vegetables and crops as they become available and makes current recommendations on those varieties that are best suited for Alaskan conditions. Each year the Extension Service publishes a circular on recommended varieties of vegetables, available from your local Extension agent.

LIVESTOCK, IF AND WHEN

Many homesteaders get over-anxious to buy a cow and a few chickens to

provide fresh milk and eggs for their home table. Before you buy any livestock be sure you are ready to take care of them -- ask yourself these three questions:

(1) Do you have the feed? A cow or chickens must eat. A cow may be able to pasture in summer but what will you feed her in the winter? A single cow is a questionable investment until you are able to provide at least your own home-grown silage or hay. In most cases you must buy feed for your chickens - will the cost of the feed be worth less than the eggs you produce?

(2) Where will you put livestock? A hen roosting in a spruce tree is a poor layer, even if you can find the eggs. Adequate housing is essential to good production from either a cow or chickens.

(3) Will you be home to care for your livestock? This is often the biggest stumbling block particularly where you are away from the farm part of the time, earning a living. You can care for a garden on weekends, but you have to milk a cow twice a day and chickens also need daily care.

Livestock are normally the last step in a good homestead plan of development. First comes the home to live in; second get your land cleared and into production and third, you may be ready to take on livestock after you have made provisions for their housing and feeding. The principle difficulty many homesteaders have had with livestock is, they did not have enough livestock to earn a living but to take care of the few they did have prevented them from accepting employment which would keep them away from their homestead. In such cases either the homesteader has suffered from lack of income or the livestock from lack of care.

Dairying is the principle source of farm income in Alaska and also the most regular. However, not every farmer or homesteader is suited for dairying.

The first requirement for a successful dairy enterprise is a market for fresh milk. Before you start making preparations for a dairy be sure of your market. Two serious drawbacks to getting started in dairying are that the development costs are higher and initial returns lower than for other enterprises. Before you can sell milk you need adequate buildings for your cows and meet certain sanitary requirements established by the Alaska Department of Health. The other drawback to starting a dairy is that it is a full-time, year-around operation which makes it difficult for a homesteader to hold an outside job once he starts dairying.

CREDIT AND FINANCING

Credit for Alaska farmers already in production is limited and credit for beginning settlers is practically non-existent. Until a homesteader receives patent to his land he cannot mortgage or use it as security for a loan. For this and other reasons a settler on unpatented land is usually considered a poor credit risk. In the case where a settler purchases land the ability to obtain a farm loan may be limited until the settler has buildings and land ready for production.

Private banks in Alaska have generally been reluctant to make agricultural loans. Only one or two Alaskan banks have been active in the farm loans, and the loans made are usually for a period of less than three years. Active in the short and intermediate term loan field is the Alaska Rural Rehabilitation Corporation established to aid development of the Matanuska Valley Colony, but now operating statewide, and the Alaska Agricultural Loan Board, a state agency administered by the Alaska Division of Agriculture. Both of these agencies have authority to make long-term loans but due to limited funds available, largely confine their activities to short and medium term loans of ten years or less.

The Farm Home Administration is the largest source of farm credit in Alaska. FHA makes all types of loans ranging from emergency and operating loans for relatively short periods of time to ownership loans up to 40 years. FHA farm loans are restricted to farmers who earn their major income from farming. The state office is in Palmer.

Recently the Federal Land Bank Association has made several long-term loans in Alaska but these loans are based primarily on land value and do not apply to a homesteader. Their state headquarters is in Palmer. Insurance companies which are a principle source of long-term loans in the other states have not been active in this field in Alaska.

GOVERNMENT AGENCIES

DIVISION OF AGRICULTURE, Alaska Department of Natural Resources. Main office in Palmer, has charge of the state veterinary program and the grading and inspection of potatoes, eggs, vegetables, meats and livestock products. Administers the Alaska Agriculture Loan Program, and promotes agricultural products. Collects and disseminates market news and agricultural statistics in cooperation with the U. S. Department of Agriculture.

DIVISION OF LANDS Alaska Department of Natural Resources. Office is located at 333 D Street, Anchorage. In charge of state owned lands.

BUREAU OF LAND MANAGEMENT with offices in Anchorage, Fairbanks and Juneau, has jurisdiction over federally owned lands.

UNITED STATES GEOLOGICAL SURVEY has offices in Anchorage and Fairbanks, and is a source of maps for various parts of Alaska.

SOIL CONSERVATION SERVICE has offices in Homer, Palmer and Fairbanks. SCS makes soil classification maps for various parts of Alaska and assists individual farmers with farm soils maps, plans and conservation practices.

ALASKA DEPARTMENT OF HEALTH Offices in Anchorage, Fairbanks and Juneau. Inspects food processing and serving facilities, including farm dairies for sanitation requirements for grade A milk. Also makes tests on water for purity.

ALASKA AGRICULTURE EXPERIMENT STATION, University of Alaska. Located at Palmer, Matanuska, College and Petersburg. Evaluates crops, makes soil tests for individual farmers, and carries on research in horticulture, crop and livestock husbandry, plant diseases, insect and pests, soils and fertilizers, engineering, management and marketing.

COOPERATIVE EXTENSION SERVICE, University of Alaska. Main office is at College, with other offices in Juneau, Palmer, Anchorage, Fairbanks and Homer. District Agricultural Agents are stationed at Homer, Fairbanks and Palmer. The Extension Service conducts 4-H Club work, distributes information on farming and homemaking, offers building plans, and provides advice on agricultural problems.

AGRICULTURE CONSERVATION PROGRAM. Main office is at College with local offices at Fairbanks, Palmer and Homer. Assists farmers in conservation practices.

CREDIT AND FINANCE

BANKS are located in principle towns and cities.

ALASKA AGRICULTURAL LOAN program is administered by the State Division of Agriculture officed in Palmer.

ALASKA RURAL REHABILITATION CORPORATION Office in Palmer.

FEDERAL LAND BANK Using same office as Alaska Rural Rehabilitation Corporation at Palmer.

FARM HOME ADMINISTRATION Office in Palmer.

AGRICULTURAL CONSERVATION PROGRAM For details see your Extension Agent. Provides cost-sharing for certain approved conservation practices and is also a source of grain storage loans.

SELECTED USEFUL PUBLICATIONS

	Insecticides for Alaska
Experiment Station-Extension Service Information Bulletin No. 2 - Publications list for the Alaskan	Agriculture in Alaska (For Prospective Settlers)
Buildings for Alaska (Catalog of plans)	Sampling Soils - Improving Soil
Condensation Control for Alaska's Farms and Homes	Weeds in Alaska
Use of Native Alaskan Materials for Farm and Home Construction	Wild Edible and Poisonous Plants of Alaska
Using Alaska's Native Grasslands	Home Canning Alaska Fish and Shellfish
Fertilizer for Alaska	Alaskan Potatoes (Food Preparation)
Field Crops for Alaska	Alaskan Berries (Food Preparation)
Gardens in Alaska	For Wilderness Wives (Basic Recipes, Etc.)
Fruits for Alaska	The Hunter Returns with the Kill (Wild Game)
Vegetables -- Recommended Varieties	Agriculture in Alaska
Tree Fruits for Alaska	Alaskan Farm Facts
Greenhouses for Alaska(Construction)	Urban Use of Alaskan Farm Products
Planning and Managing Greenhouses in Alaska	Dairy Farming with Dollars and Sense in the Matanuska Valley
Bad News For Bugs	Better Forage for Alaska's Dairy Industry
Root Maggots in Alaska	Getting a Start in Dairying

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THE AUTHOR, Dale Saunders, is an Alaskan homesteader who knows first hand the trials and tribulations encountered in the last frontier. This publication, while based on information collected by the Alaska Agricultural Experiment Station, has been compiled on the basis of his personal experience in developing a homestead, and also on his observations as an employee of the Bureau of Land Management where he dealt with new settlers and their many problems.

Mrs. Kay Hitchcock, a homesteader's wife who raised her family in a relatively isolated area, contributed the section on the "wife's point of view".

The need for a publication on this subject was suggested by members of the Cooperative Extension Staff including the District Agents, who reviewed an initial draft and offered a number of suggestions incorporated in the final draft. The publication was edited by H. P. Gazaway and Charles F. Marsh, agricultural economists, and completed under their supervision.

This is a preliminary issue. A letterpress publication is planned for 1961. Suggestions about changes, new material or deletions are welcome. Please address comments to Allan H. Mick, Alaska Agricultural Experiment Station, Palmer

UNITED STATES DEPARTMENT OF AGRICULTURE

Insects and Diseases of Vegetables in the Home Garden	The Home Canning of Fruits and Vegetables
Foundation for Farm Buildings	Cutworms in the Garden
Fireplaces and Chimneys	Protecting Log Cabins
Building with Logs	Home Canning of Meat
Pole Frame Construction	Clearing Land of Brush and Stumps

OTHER AGENCY PUBLICATIONS

Market News (Alaska Division of Agriculture)

Information Relative to the use and Disposition of Public Lands in Alaska (Bureau of Land Management)

Private Premise Water Supply Systems - Drilled Wells (Alaska Department of Health)

Private Premise Water Supply System - Dug Wells (Alaska Department of Health)

Private Premise Water Supply Systems - Driven Wells (Alaska Department of Health)

Private Premise Sewage Disposal System - Septic Tanks (Alaska Department of Health)

Minimum Requirements for Individual Water Supply and Sewage Disposal System (Alaska Department of Health)