



These also are  
our country —Seward's folly can be a great land—  
Hawaii's problems and many assets—Puerto Rico: Change and  
progress

# Seward's folly can be a great land.

"Alaska" in native dialect means "the great land." We still do not know how great it is. Its remote expanses, which cover millions of acres, are practically unvisited. Its buried resources of minerals and hydrocarbon fuel are relatively unknown. Its waterpower potential is almost unused. Its forests and soils are only beginning to be utilized for permanent industry and agriculture. By *Hugh A. Johnson*, economist, Farm Economics Research Division; formerly head, Department of Agricultural Economics, Alaska Agricultural Experiment Station.

WHEN WE bought Alaska from Imperial Russia in 1867, the acquisition was praised by western expansionist interests and opposed by the eastern conservative bloc. Severe criticism was heaped upon Secretary of State Seward for his "folly" in buying "Seward's Icebox," "Icebergia," or "Wal-russia."

Actually, the conflict between Great Britain and Russia in the Crimea provided the opportunity for the United States to buy out Russia's interest in North America for a few cents an acre and by the same stroke to limit further British activity in the area and capture a prolific source of furs, fish, and trade. Opposition in the Congress was strong, however, and no legislation for administration of the new possession was enacted until 1884.

Former Governor Ernest Gruening, a longtime student of Alaskan history, said of this admittedly stopgap legislation: "The act was . . . specific in its limitations and prohibitions, indefinite and equivocal in its grants. No legislature, no delegate, no general land laws. . . ." It extended the current Oregon Code to Alaska "as it applied" and as it was "not in conflict with this act or the laws of the United States."

A measure of self-government and

Territorial status came only with passage of the Second Organic Act of 1912. Since that date many Alaskans have been working for statehood in order to obtain greater control in the management of their own affairs.

The Organic Act of 1912 grants to the Territory specific powers comparable to those of the State legislatures, although the Congress has reserved to itself certain functions, such as responsibility for fish and game. It has prohibited Alaska from establishing a judicial system and has also prohibited the creation of counties without congressional consent.

The Department of the Interior administers most of the laws passed by the Congress for the management and development of Alaska's publicly owned resources outside the national forests.

Alaska's location is a handicap to development. It is far removed from established trade routes and is separated from the United States by the Canadian wilderness and the rough waters of the North Pacific. These and other factors, combined with the abundance of resources nearer populated areas, have kept Alaska in the hinterland of national development.

The presence of extensive natural resources has created durable myths as

to their worth in the minds of some Alaskans. Advocates of local development often fail to realize that some resources cannot be developed profitably under present economic and technological conditions. That hope for the use of at least a part of these resources need not be deferred much longer, however, is demonstrated by the modern pulp plant at Ketchikan, the interest in several large ore deposits, the oil and gas explorations, and the recurring industrial interests in potential hydro-power sites.

Vilhjalmur Stefansson wrote in *Climate and Man*, the 1941 Yearbook of Agriculture: "If you are willing to be an old-fashioned pioneer—a Lincoln of Illinois, a Nordic of a Swedish inland valley, or a Mongol of Central Finland—you can make their type of living in the Alaska of today. But there are few places where it is more difficult than in Alaska to be a successful 'economic man.' The Finns and the Swedes colonized their northern lands when they were subsistence hunters, subsistence fishers, and subsistence farmers. . . . Alaska is a northern land which is at least open for development under our present culture—if a district can be called open that is fenced off by so many economic, sociological, and psychological barbed-wire fences."

The years and events that have occurred since Stefansson's observation have widened the economic gap. The old-fashioned pioneer is rarely found. Bulldozers and chain saws have replaced horses and axes. Airplanes have superseded dogsleds. Scintillometers explore terrain faster and more accurately than wandering prospectors.

FORTUITOUS PARTICIPATION in the Klondike and later gold rushes of men who were vocal and their bombardment of Congressmen with facts about Alaska and pleas for better government brought about the first serious appraisal of Alaska's resources by the Federal Government. Preliminary explorations were authorized to study the

geology of the country, to determine its potentialities, and to discover whether agriculture was feasible.

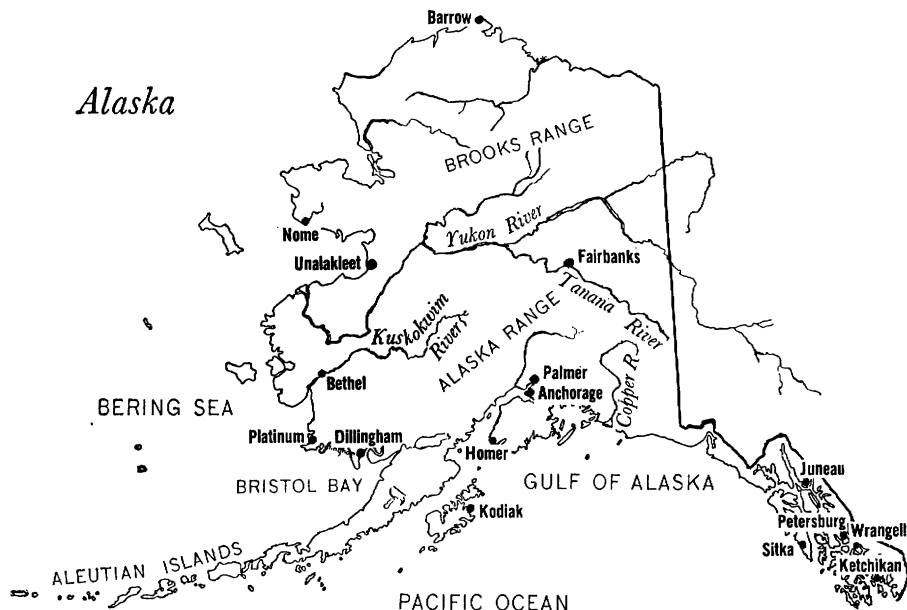
Three Federal agricultural experiment stations—Sitka, Kodiak, and Kenai—were authorized by the Congress in 1898. Later reservations were made for experiment stations at Rampart (1900), Copper Center (1903), Fairbanks (1906), and Matanuska (1915). A fur experimental station was established at Petersburg in 1938. Only the Fairbanks, Matanuska, and Petersburg stations remained in 1958.

An opening wedge for agricultural settlement was forged in the Homestead Act of 1898. It limited land grants to 80 acres and required homesteaders to pay the expenses of surveying. No baselines for surveys existed, and no provision was made for surveys. No settler to my knowledge acquired title under this act. The law was amended in 1903 to permit entry on 320 acres of surveyed or unsurveyed land. Several good farms were developed from tracts entered under this law. The maximum size of a homestead was reduced to 160 acres in 1916 and has remained so.

Leasing for fur farming was first authorized in 1926. Grazing leases were authorized in 1927. Other widely separated acts over the years have regulated entry and use of land for mining, industrial and commercial purposes, homesite and headquarter sites, small tracts for recreational and residential uses, leases for oil and gas exploration, and for other special purposes. Tongass and Chugach National Forests, Glacier and Katmai National Monuments, and McKinley National Park were established by Presidential proclamation in the early era of conservation.

The depression-born Matanuska Valley Colonization Project established in 1935 generated interest in agriculture as 30 years of homesteading had not done. Wartime and postwar defense programs drew attention to Alaska as a place to live and work.

Alaska covers 586,400 square miles and more than 365 million acres of actual land area. Its great size and its



variable climate create problems of land utilization. Each region has unique resources and problems. From east to west, Alaska extends through four time zones and about 38 degrees of longitude. In a north-south direction, it extends over more than 15 degrees of latitude. The distance from Barrow to Ketchikan is comparable with that from Boston to Baton Rouge or from Washington, D. C., to Denver.

Nearest the United States lies a long, narrow strip of mainland and islands, called Southeastern Alaska. It has a marine climate similar to that of the Olympic Peninsula in Washington. Rainfall is heavy, and there is much cloudy weather. Primeval forests cover the lower island and mainland slopes and reach up the mountainsides to about 3 thousand feet. Small areas of fairly fertile soils occur in narrow glacial valleys and on some estuaries. Sporadic interest in homesteading has kept a few of these tracts in the public eye, but history shows that farming is submarginal on all except the tracts that are most favorably situated. Agriculture in this region is limited to a few

intensive poultry, dairy, and vegetable farms. Only three fur farms remained in 1957. Southeastern Alaska is better adapted to commercial forestry, fishing, mining, and recreation enterprises.

Nearly all of the area outside town-site eliminations, the national monuments, and the public-domain area around Haines lies within the 16-million-acre Tongass National Forest. Preliminary Forest Service estimates show 84 billion feet of timber on about 6 million acres of merchantable forest. Three-fourths of the commercial timber grows within 2.5 miles of tide-water. Although the region has considerable potential for sawtimber, the immediate interest and need lie in pulp operations.

By early 1957, four large, long-term sales had been made by the Forest Service to private corporations that agreed to harvest forest growth on a sustained-yield basis. Included in these sales were the Ketchikan unit of 8.25 billion board-feet, the Wrangell of 3 billion, the Juneau of 7.5 billion, and the Sitka of 5.25 billion—a total of 24 billion board-feet.

A large, modern pulpmill at Ketchikan and small sawmills at Wrangell, Juneau, and Ketchikan were operating in 1957. A plyboard plant at Juneau had suspended operations temporarily after several years of operation. A large pulp plant was under construction at Sitka. Additional plants and expanded operations are to be introduced for the remaining forested areas when more investment capital has been mobilized and more is known about the economics of plant operations.

Northward lies south-central Alaska, which reaches from the Gulf of Alaska to the Alaska Range and extends westward to the base of the Alaska Peninsula. It includes the 5-million-acre Chugach National Forest, the 2-million-acre (both public and nonpublic lands) Kenai Moose Reserve, the 2.7-million-acre Katmai National Monument, the Anchorage metropolitan area, several large military reservations, and the Matanuska Valley and Kenai Peninsula agricultural areas. The climate and vegetation of this region are affected by its position between the North Pacific marine influences from the south and the shelter of the Alaska Range on the north and west. Spruce, birch, and aspen grow to sawtimber size in commercial quantities. Native grasses and other forage grow luxuriantly on suitable sites. Dairy farmers of the Matanuska Valley have grazing leases for 39 thousand acres of the Matanuska-Susitna area. Areas of fertile soils are sufficient to support several hundred farm families in production of food for local civilian and military markets. Irrigation of crops in spring and early summer is increasingly important to commercial vegetable growers and dairymen.

Central Alaska lies between the Alaska Range on the south and the Brooks Range on the north and includes the 1.9-million-acre Mount McKinley National Park. It includes the drainages of the Upper Yukon, the Tanana, the Koyukuk, and the Upper Kuskokwim. It has a continental climate with long, cold winters and short,

mild summers. Summer temperatures of 100° or more have been recorded, but such days are rare. Precipitation ranges from 8 to 16 inches.

Commercial agriculture is practiced near Fairbanks, and family gardens grow well on suitable sites throughout the region. Irrigation of crops often pays in spring and early summer. Although the Fairbanks area in the Tanana Valley is currently desirable for settlement because it lies near a market, unclaimed potential agricultural soils in other areas are fairly abundant. Climate and soils are suitable for agricultural production in several valleys of the Yukon and Kuskokwim. With limited demand for farm products in these areas, however, there is no pressure for agricultural development.

Both the south-central and the central regions contain forested tracts, although much of the forest is not of a commercial size or concentration. Spruce, birch, and aspen occur on the well-drained ridges and benches. The Bureau of Land Management estimated that there were 40 million acres of commercial forest containing 180 billion board-feet and producing 1.5 billion board-feet annually in these regions in 1956. Another 85 million acres classed as woodland (unsuited to sawmill operations) contain about 170 billion board-feet. Only a little of the commercial-class forest is harvested. Small sawmills process low-grade rough lumber as the needs warrant.

Southwestern Alaska includes Kodiak and nearby islands, the Alaska Peninsula, and the Aleutian Islands. Climate is generally moderated by its marine position. Rainy, foggy weather encourages growth of plant species suitable for grazing. Most of the region is treeless, although some trees grow in protected spots. Several bird and wildlife sanctuaries are on the islands, and Katmai National Monument is at the base of the peninsula.

Its rolling and mountainous grasslands and its relatively mild winters encourage some people to consider

possibilities of range cattle and sheep production. As of June 30, 1956, the Department of the Interior had in effect 26 grazing leases on 767 thousand acres in southwestern Alaska. Seven ranches on Kodiak Island had 990 head of cattle in 1956. Beeves are butchered and sold locally as 3-year-olds. In the early 1950's, the lessee on Chirikof Island began to butcher bulls descended from the original American stock. He shipped the meat to Anchorage by air. This herd included about 300 head in 1957. About 300 sheep had been added to the operation. The largest and oldest managed spreads are on Umnak and Unalaska Islands. These operators had about 50 cattle, 8,500 sheep, and small herds of horses in 1956. Livestock were butchered for local use, but the major sales were of wool shipped to Seattle by air. The limited supplies of winter feed and distance from market are obstacles to expansion of livestock enterprises.

The climate of western Alaska—or, more precisely, of Bristol Bay and the lower parts of the Kuskokwim and Yukon drainages—is moderated by the Bering Sea. Except where hills or other topographic features provide a good drainage, this is a vast, flat area of tundra interspersed with thousands of small lakes and meandering streams. I have seen good family gardens growing on sites protected from cold sea winds at Unalakleet, Akiak, Bethel, Platinum, Aleknagik, Dillingham, and Naknek. Physical opportunities for farming communities exist in a few localities of this region, but markets currently are small and strictly local.

The Seward Peninsula and the Arctic Slope generally have summers too short and cool for crops and for livestock production other than reindeer. Except for isolated stands of protected spruce and cottonwoods along the southern fringes, the region is a tundra wilderness.

A. E. Porsild, speaking before the Second Alaska Science Conference in September 1951, stated of this region: "Plant life, everywhere in the Arctic,

is too sparse, dwarfed, and poorly developed to make any considerable contribution to the food supply of man. Only a few Arctic plants produce edible and nourishing roots or stems, and only near the southern fringe of the barren grounds are there some that in favorable seasons produce appreciable quantities of small edible fruits. . . . The most promising and economically practical approach to the problem of utilization of the vast Arctic and subarctic tundra and taiga appears to be the wise and careful administration of the remaining wildlife resources."

Explorations for oil and gas, coal, and minerals may discover exploitable physical resources to form a basis for further settlement. But present knowledge and experience in Alaska and other northern areas of America, Europe, and Asia indicate that extensive food production is not economically feasible in these areas.

SOIL CHARACTERISTICS and cool climate are restrictive factors in present and potential crop production. Soils in Alaska are relatively young geologically.

Charles E. Kellogg and I. J. Nygard made a reconnaissance of Alaskan soils for the Department of Agriculture during the summer of 1946 as part of a task-force assignment to study agricultural problems of Alaska. A. H. Mick, of the Alaska Agricultural Experiment Station, later summarized their observations and his own knowledge of Alaskan soils in an article he and I prepared for the Arctic Institute of North America. These men stated that Alaska's mature soils include only the Podzol and Tundra great soil groups.

Tundra is Alaska's most widely distributed zonal great soil group. Vegetal cover subsists at very low levels of activity, and decomposition of organic materials by micro-organisms is still slower. The resultant carpet of tough, fibrous, peaty material increases in thickness year by year, unless it is disturbed by fire, drainage, or some other

mechanical change. The high insulating properties of this layer prevent summer warmth from penetrating mineral substrata, which remain frozen for long periods. Most Tundra soils are underlain to varying depths by permanently frozen ground. The frozen subsurface, plus the spongy organic surface materials, usually results in a waterlogged surface condition during the summer.

Intrazonal Alpine Meadow, Mountain Tundra, and Mountain-Half Bog soils occur at higher altitudes. These soils have little potential agricultural value, except for extensive reindeer grazing or possibly as summer pasture to supplement other sites capable of producing winter feed for livestock.

Podzols usually are found in well-drained sandy sites. Where very fine sands and silts were deposited, podzolization is feeble and is transitional to the intrazonal subarctic Brown Forest soils.

Most crop production occurs on the well-drained phases of these subarctic Brown Forest soils. These soils are high in potash but deficient in organic matter, nitrogen, and usually in available phosphates. The surface layers are usually acid. Subsoils are well supplied with calcium and magnesium, although free carbonates generally are absent.

New settlers often are disturbed by the extreme acidity of newly cleared soils. Some buy limestone to neutralize this condition. Specialists at the Alaska Agricultural Experiment Station caution that many fields gradually become neutral or slightly alkaline under cultivation. This process is associated with the breakdown of organic matter and a narrowing of carbon-nitrogen ratios. It occurs on any reasonably well-drained soil in Alaska wherever tillage is carried on. The alkaline reaction of older fields is of concern to farmers in the Matanuska and Tanana Valleys who find their potato crops increasingly afflicted with scab.

I saw an extreme example of this change in pH in a small garden at Bethel on the lower Kuskokwim. The

garden was on a small hillock in the Tundra where formerly moss, dwarf shrubs, and berries flourished. The strongly acid virgin soil had become almost neutral after only 3 years of cultivation.

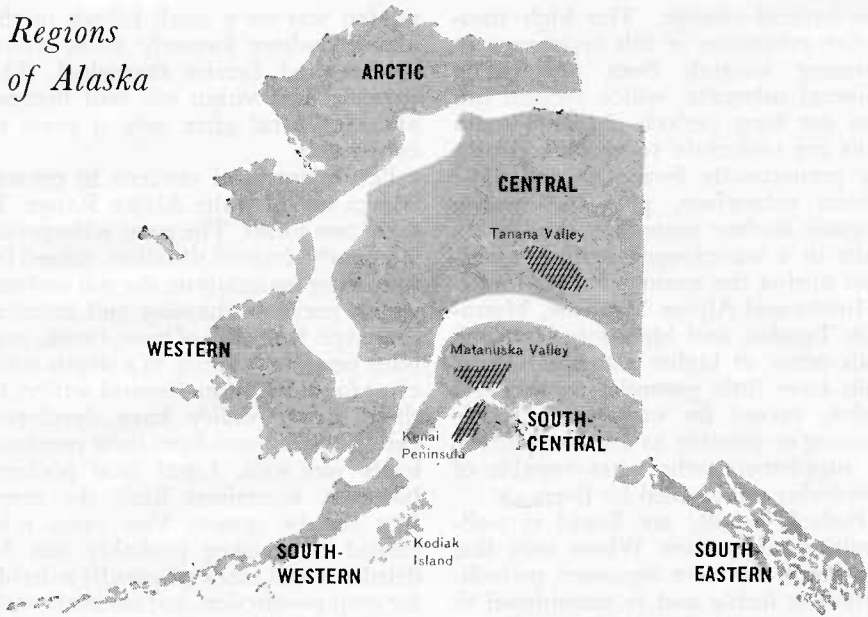
Permafrost is of concern in central Alaska north of the Alaska Range. It takes two forms. The most widespread is a poorly drained situation, caused by insulating materials on the soil surface, which prevents thawing and internal drainage. Removal of trees, brush, and moss permits thawing to a depth sufficient for cultivation. Several settlers in the Tanana Valley have developed excellent cropland from these mechanically wet soils. Local frost pockets, however, sometimes limit the crops that can be grown. Vast areas now classed as muskeg probably can be dried out and made physically suitable for crop production, but microclimatic conditions still would be unfavorable on many sites. Extensive drainage of these wet lands eventually might affect ground-water supplies adversely and create serious erosion problems on associated light podzolic soils.

The second condition in permafrost is the occurrence of large blocks, or lenses, of solid ice under the soil surface. Disturbing the insulating materials permits heat to penetrate; the ice melts, leaving holes of various sizes. Sometimes the thermal action causes no particular loss, but it can be so extreme that the fields become untillable. Parts of older fields at the Fairbanks Agricultural Experiment Station are now too rough to be used even as pasture, and a few new fields on homesteads have become too rough for tillage.

The United States Geological Survey conducts studies designed to aid in locating areas where these conditions occur. Their investigations in 1948 helped to show that the Dunbar area, which was under consideration for a group settlement area, was submarginal because of frequent occurrence of these ice lenses.

Frozen ground is of concern also as it affects availability of potable water and

## Regions of Alaska



sewage disposal. Farmers in the Tanana Valley sometimes cannot develop livestock farms because of the high cost of developing adequate water supplies.

MORE THAN 99.9 percent of Alaska's land is owned by the Government.

Vacant, unreserved public lands estimated at 270 million acres, reserved lands at 28 million acres, and 185 thousand acres of unperfected homestead entries are controlled by the Bureau of Land Management. The Bureau and the Navy jointly manage 23 million acres of oil and gas reserve. Another 18 million acres are under the control and management of the National Park Service, the Fish and Wildlife Service, the Bureau of Indian Affairs, and the Bureau of Reclamation. The Forest Service has nearly 21 million acres in two national forests, and the Department of Defense has nearly 4 million acres in military reservations. Land withdrawals of all kinds amounted to 92.3 million acres in 1956.

The Department of the Interior is responsible for 93 percent of the Federal lands, the Department of Agricul-

ture for 5 percent, the Department of Defense for about 1.5 percent, and other agencies for a small percentage.

About 450 thousand acres had been patented by June 30, 1956. Homesteads account for a major part of this acreage, but trade and manufacturing sites, homesites, and similar nonagricultural uses account for about 25 thousand acres of privately owned lands. Alaska has no real-estate taxes, except in school districts and municipalities, and there is no convenient way of ascertaining the proportion of patented lands that are currently used. We do know that absentee ownership and land abandonment are serious problems in the major settlement areas. The revised land registration act of 1957 may help to make absentee-owned lands available to farmers.

Before June 1954, veterans of the Second World War who had had 19 months or more of military service could acquire 160-acre homesteads after 7 months of residence and construction of habitable dwellings. They were not required to cultivate any land. Hundreds of veterans entered



tracts under these regulations, but many of them abandoned their entries before patent, and nearly as many more abandoned their holdings after patent was acquired.

The obvious need for nonfarm holdings and for enabling legislation other than the homestead laws have been recognized by the Congress and the administrative departments. Townsites, small tracts, industrial and commercial tracts, and recreation and public-purpose sites are authorized under special legislation, and their development is promoted within the Department of the Interior.

In 1954, I studied 110 predominantly veteran homestead entries made in the Matanuska Valley between 1945 and 1950. Eleven entrymen were full-time farmers, 20 were part-time farmers who combined farming with off-farm work, 22 were in businesses other than farming, and 57 had left the valley. Most of those who had left had applied for entry at the Land Office but had not established residence on their tracts.

The Alaska Agricultural Experiment Station, cooperating with the Bureau of Land Management, in 1955 made a detailed study of agricultural settlement on the Kenai Peninsula. Homesteading had been going on in the Homer area for 40 years. Yet we found that 59 percent of all entered or patented land on the Peninsula was unoccupied and abandoned in July 1955. Another 31 percent was used solely for rural residences by persons who had no intention of farming. This left only 10 percent of the homesteaded land occupied by persons who were farming or planning to farm. Only 1.3 percent of the occupied land was cropland—and nearly half of this had been cleared since 1950, when we made a study here. Only 14 percent of all income reported by homesteaders in 1955 came from sales of farm products.

Detailed study of the Homer community showed that 60 percent of all homestead entries from 1915 to 1945 had been canceled, relinquished, or

closed by decision. Abandonment, in the sense that the entryman failed to carry through to patent status, increased from 44 percent of all entries before 1930 to 72 percent for the entries made in the 5 years ending in 1945. Activity picked up between 1946 and 1950, when 172 entries were made, 84 patents were granted, and 95 homestead entries were relinquished.

An additional 237 entries were made between 1950 and 1955. Three-fourths of these were relinquished, canceled, or terminated otherwise than by granting patent before June 1956. Several tracts had a long record of entry and abandonment—one had been entered and abandoned 9 times before it was patented to an institution that still had not occupied it by 1956.

The Kenai Peninsula story is repeated with variations in the Matanuska and Tanana Valleys. The question logically follows, "What happens to change homesteaders' minds?"

Unsatisfactory subsistence from the land and lagging development of markets provided a low level of living in the 1930's. Wartime and postwar defense activities drained active potential farmers from their undeveloped homesteads in the early 1940's.

Publicity about new opportunities to be found after the war brought hundreds of veterans and nonveterans alike to Alaska. Many combat veterans seemed to have had a psychological need to get away from the pressures of modern urban society. Many were deeply interested in farming. Some were lured by stories of possible new Government-aided settlement programs akin to the Matanuska Colonization Project. Many of those who came—veterans and nonveterans alike—lacked fundamental knowledge of modern agricultural methods, and most had overlooked the difficulties of clearing land and getting into production. Very few were financially equipped for the task, and costs proved to be prohibitive. Too many learned from hard experience that productive land is not free, that the raw homestead is not the

finished farm. Between the two lies a heavy investment in labor, money, management, and time.

Speculation was another strong influence. With no tax on real estate, hunger for landownership and a rural way of life, publicity about development programs, activity in oil and gas explorations, no land-clearing requirement, and only a 7-month residence requirement, it looked as though relatively unsettled veterans had much to gain and little to lose. Some thought they could live off the land by hunting and fishing.

Both the Department of the Interior and the Department of Agriculture spent considerable effort, thought, and money to help veterans choose the best available lands after the war. Areas known to contain the best soils were surveyed and mapped by technicians of the Soil Conservation Service. The Department of the Interior built roads into settlement areas and attempted by available means under existing limited authority to guide homesteading activity to tracts known to contain areas of tillable soils and away from noncultivable lands.

EARLY SCIENTISTS in Alaska estimated its agricultural potential at 200 million to 300 million acres based on what could be observed from boats or trails and gleaned from hearsay. Their reports were too optimistic. We now say that probably 2 million to 3 million acres are physically suitable for cropping. Another 3 million to 5 million acres would be usable for summer pasture in conjunction with cropland; 2 million or 3 million acres more of grassy islands are suitable for year-round use as rangeland, although preservation of forage as silage for winter use and some feeding of concentrates would be desirable on most of them.

Employees of the Departments of Interior and Agriculture work together closely on problems of land settlement and utilization. Absence of legal authority to classify lands according to indicated best use is a handicap in ad-

ministration of public land-development programs. The Bureau of Land Management through reconnaissance delimits areas that are obviously unsuitable for settlement and locates others that appear to have possibilities.

Specialists in the Department of Agriculture make detailed studies of soils, cover, terrain, and other features. Priorities for work are established, and tasks often are integrated. Delineations of potential agricultural land by the Bureau of Land Management tend to be high, as they are usually of a preliminary reconnaissance nature. The more detailed surveys made by the Soil Conservation Service show the physical limitations of soils. Their estimates of potential agricultural land might be interpreted as low, if productive soils were in short supply. We know that lands considered to be unsuited to agriculture under present conditions might be made to produce under different economic circumstances.

Surveys to date cover the known best lands in or near present settlement areas. They have helped to guide potential farmers away from such marginal areas as the Dunbar area near Fairbanks and the Fritz Creek withdrawal area on the Kenai Peninsula. Their efforts, however, did not prevent entry for nonfarm purposes in the Fritz Creek area under veterans' rights provisions of the homestead laws. The Soil Conservation Service has mapped other withdrawn areas where enough tillable lands exist to support farm enterprises. The Bureau of Land Management used these reports as guides when developing areas for settlement. The Alaska Road Commission used the combined recommendations in planning its expanded road system.

Of more than 2 million acres mapped by field parties, roughly 35 percent is in class II or III and about 10 percent is class IV land. Slightly less than half of the area mapped thus is physically suited to some type of cultivation. No judgment is passed on the economics of the situation in this type of analytical study. Some of this land lies in

small blocks that cannot be developed economically. More can be utilized only in carefully balanced conjunction with other resources on areas much greater than the present 160-acre homestead.

THE FIRST FARMS were developed by disenchanted miners during the gold-rush era. They found growing grain and hay for freighters' horses and food for roadhouse tables easier and more profitable than searching for gold. Much of the acreage developed during this heyday later was abandoned and reverted to brush. Its extent was not to be duplicated in Alaska until after the Second World War.

During his visit to Alaska in 1914, H. H. Bennett estimated that a minimum of 1 thousand acres had been cleared for cultivation in the Matanuska Valley. M. D. Snodgrass, a former superintendent of the Matanuska Agricultural Experiment Station, reported about the same acreage (though on other farms) about 1934. Acreages in the Tanana Valley reached a peak of around 1,760 acres on 107 farms in the early 1920's and then declined steadily until after the war. Surveys in 1948 and 1950 found only about 30 full-time and part-time farmers remaining. Farming in the Homer area was largely fur, livestock, and subsistence. Little cropland had been developed. Stagnation in mining, railroad construction, and general activity caused stagnation in agriculture. Small farming areas that had been developed in the Chilkat Valley, at Gustavus, at Point Agassiz near Petersburg, in the McCarthy area, and elsewhere, disappeared from the scene. Fur farming has almost disappeared from the islands and the mainland.

The only significant land clearing from 1935 to 1941 was done in the Matanuska Valley Colonization Project. About 4,300 acres were cleared, although part of the land was used for nonfarm purposes. Only 3,926 acres within the colony were tillable in March 1940. Much of this was idle because many men were working on

defense projects. A strong effort was made to fulfill commitments to the remaining colonists after the end of the war, and by 1948 an estimated 8,500 acres had been cleared. More than 12 thousand acres in the valley had been cleared by 1957.

Land clearing and breaking cost 150 to 200 dollars an acre—and much hard work. Money was scarce, and individuals could not afford to expand their farms. Efforts were made therefore to find sources of public funds for farm development.

Legal limitations and administrative policies never intended for homestead development have prevented the Farmers Home Administration and the Farm Credit Administration from meeting Alaskans' needs for credit. These lending agencies will not advance funds because most applicants do not have title to their land and do not get more than half of their income from agriculture. Until recently, banks as a rule loaned available funds for nonfarm activities only.

Payments for land clearing became authorized practices under the Agricultural Conservation Program, beginning in 1945. An average of 587 acres a year was cleared under this arrangement between 1945 and 1954. Allotments were divided roughly in proportion to the agriculture in each area. Inadequate controls during the early years of this program permitted some diversion of cleared land immediately into nonfarm uses.

The Alaska Legislature in 1953 passed an agricultural loan bill with a million dollars authorized and 200 thousand dollars appropriated. In 1955 and 1957, respectively, 150 thousand dollars and 125 thousand dollars were appropriated. These funds are administered by the Commissioner of Agriculture and a five-man board for both development and production loans. The Board of the Alaska Rural Rehabilitation Corporation authorized 50 thousand dollars for land-clearing loans in early 1955. All were allocated by May 1955.

Favorable repayment experience on farm loans held by these agencies encouraged liberalized local bank policies on short-term agricultural loans, and a slight easing of funds resulted. More and more settlers were able to clear enough land for efficient farm units. Progress was particularly notable in the Tanana Valley during the mid-1950's. In the Matanuska Valley, new farms entered commercial production and older units were expanded. Activities in the Kenai Peninsula still lagged.

THE 1940 CENSUS OF AGRICULTURE showed 7,305 acres harvested in Alaska during 1939. The 1950 census showed only 6,450 acres harvested, 3,586 acres idle or without a crop, and 2,449 acres of cropland pastured in 1949. Nearly half of the statistical decline in harvested cropland between enumerations was accounted for by a decrease in the reported acreage of wild hay. It occurred despite the 2,637 acres cleared in 1945-1949.

Statistics on agricultural production have been compiled cooperatively by the experiment station and the Territorial department of agriculture since 1953. This annual series shows 8,123 acres harvested in 1953 and 15,743 acres in 1957. Land-clearing activity under the Agricultural Conservation Program was at about the same average tempo, but other funds were used also. Less than half of the clearing in 1955 was supported by the Agricultural Conservation Program. More than 1 thousand acres a year were cleared in 1953 and 1954; 1,710 acres were cleared in 1955 and 2,292 acres in 1957. Estimates of the total acreage of cropland have increased from an optimistic 12,385 acres (because of a questionable figure of 2,449 acres listed as "cropland pasture") in 1949 to 14,764 in 1955 and 20,000 in 1957.

Idle cropland and acres on which crops failed have continued at about 2 thousand acres a year, much of it in raw cleared status and on nonfarm tracts. This figure has declined in sig-

nificance from 28 percent of cropland reported by the 1949 census to 14 percent of that reported in 1955 and 10 percent in 1956.

ABOUT 350 COMMERCIAL farmers were concentrating on dairy, potato, poultry, and vegetable types of farming in 1957. A few beef and sheep enterprises were on the islands.

Another 500 to 700 part-time and "nominal" operators (of underdeveloped homesteads) were in varying stages of farm development. This net estimate recognizes that roughly half of the present homestead entrymen will not acquire patent and that others will become absentee owners of undeveloped land. It compares favorably with the breakdown of 525 farms into 217 commercial, 14 grazing or fur, 58 part-time, 52 residential, 5 abnormal, and 179 nominal farms from the 1949 census tabulations in "Agricultural Land Use in Alaska," by Robert J. Coffman and Hugh A. Johnson.

The rapid increase in numbers of commercial farms during this 5-year period reflects the vigor instilled into the agricultural scene by a new generation of farmers, a new program of basic agricultural research and extension, a modern marketing program, liberalized credit, and a strong market.

The gross value of farm products sold increased from 1.6 million dollars in 1949 to 2.7 million dollars in 1955 and 3.3 million dollars in 1957. Production of milk accounted for 49 percent of farm sales in 1957, followed by potatoes, 25 percent; eggs and poultry, 11 percent; other livestock products, 8 percent; and vegetables, 7 percent. The Matanuska Valley-Anchorage area supplied 67 percent of this production; the Tanana Valley, 16 percent; South-eastern Alaska, 9 percent; the Kenai Peninsula, 4 percent; and Kodiak and the Aleutians, the remaining 4 percent.

TYPES OF FARMING IN ALASKA vary by regions and within regions according to degree of farm development.

We must first rule out an undeter-

mined number of entrymen whose tenure is too new to show what they will do finally—367 homestead entries, for example, were made at Anchorage and Fairbanks Land Offices in fiscal 1956.

The Tanana Valley probably will develop into a region that is largely self-sufficient in milk, eggs, feed grains, forage, and acclimated truck crops. It may sell feed grains to the Matanuska Valley and Kenai Peninsula. In the 1950's, however, its roughly 100 established homesteaders and farmers were far from this goal. About 30 families depended on potatoes for farm income. About a dozen grew potatoes and small patches of vegetables, a half dozen were full-time general truck-crop farmers, 3 were dairymen, and 2 or 3 specialized in poultry. The rest were part-time farmers, who depended on nonfarm income while they cleared land and grew small acreages of potatoes or other truck crops.

The pattern in the Matanuska Valley appears to be fairly well established. Dairying predominates and is probably the climax type of farming. It is followed in importance by potato, poultry, vegetable, and mixed or general small farms. Farm ownership and occupancy were changing rapidly in the mid-1950's as families adjusted to the Alaskan situation. New farmers, rather than those with long experience, are the rule. Only a few farms were retained by the second generation of a single family. These rapid changes hinder overall, long-range planning on farms and detract from the group decisions so necessary in an agricultural economy.

Richard A. Andrews, of the Alaska Agricultural Experiment Station, determined from a study of farm-management records in the Matanuska Valley that it took an average full-time dairyman in the valley 13 years to develop a dairy farm of adequate size from wilderness. Methods of financing and stocking varied. Most had started with small acreages of vegetables, shifted to potatoes as they cleared more

land, and finally dropped the potato enterprise as their acreages and livestock numbers became sufficient to support their families. Shifts to dairying from other enterprises were made in 4 to 7 years. Increases in cropland cleared or rented generally paralleled livestock increases at a rate of 5 acres per animal unit.

An efficient, family-sized dairy farm, therefore, requires about 150 acres of cropland and a tract of 300 acres or more if the soils are distributed in average proportions. Potato, vegetable, or poultry farms require smaller acreages, although the better producers find that grains and grasses must be included in the rotation to insure proper tilth.

Agricultural development on the Kenai Peninsula is in its early formative stage, although parts of this area were occupied almost as early as were the Matanuska and Tanana Valleys. Half of its full-time farms in 1955, nearly all of which were in the Homer sector, were primarily livestock operations. None of the beef or dairy farms was sufficiently developed to provide a satisfactory family living. The largest number had beef enterprises, followed in order by poultry and dairy. Greenhouse, potato, and truck farms were found, particularly among the part-time group.

Climate, soils, and competition probably will encourage farmers in the Homer area to specialize in dairy, beef, poultry, possibly wool, and a few vegetable and greenhouse enterprises. Farther up the coast in the Kenai-Kasilof sector, potatoes, vegetables, dairy, poultry, and some general farming may develop. The climate and marketing conditions will encourage development of grassland farming in the Homer area and probably of truck farms in the Kenai area. They will prevent extensive culture of small grains on the Kenai Peninsula.

Beef and sheep enterprises based on use of native forages are practically exclusive on Kodiak and the islands to the westward. This situation probably will continue. A few dairy and poultry

farms may develop from time to time to fill local needs. Limited local markets and expensive transportation to other markets are major limiting factors in this region.

Types of farming in Southeastern Alaska historically have involved dairy, fur, poultry, beef, potatoes, and mixed truck crops. Markets are local, and the success of enterprises apparently depends on the operators' resourcefulness and energy. Relatively little land exists for extensive use as cropland.

TENURE in a frontier area differs from the tenure pattern of established communities. Most farms are operated by their owners, and most owners have debts. Raw land is available. Few families are willing to rent. Few farms are large enough to warrant paid managers. Various arrangements for renting fields are common in the Matanuska Valley and to a lesser extent in the Tanana Valley. This tends to affect "part-owner" status by the census definitions.

The census of 1950 showed 85 percent of farm operators were full owners; 10 percent, part owners; and the rest, managers or tenants. No later tabulation has been made. I estimate that the proportion of tenants has increased in relation to that of managers and that the proportions of part owners and full owners have remained about the same from 1949 to 1957.

The average mortgage of 3,655 dollars per farm on 22 percent of all farms shown in the census of 1950 provides no guide to the present debt load. Most of the mortgages were on colony farms in the Matanuska Valley and possibly on some of the large island operations. The proportion of mortgaged farms may have declined, but the proportion of farmers having developmental debts of other kinds has increased because of the kind of loan funds available and because many loans are made on a man's character and reputation rather than on the tangible assets in his balance sheet.

The capital value of land and build-

ings, equipment, and livestock in Alaska increased after the war, particularly after 1953. No total estimates are available. Farm management studies begun by the Department of Agriculture in 1948 and continued by economists at the experiment station disclosed that farms are in all stages of development. The average investment in buildings and equipment on 27 potato farms in the Tanana Valley in 1953 was 8,400 dollars. Their average of 37 acres of cropland and 194 acres of other land was worth another 8 thousand dollars to 9 thousand dollars. Few of these farms would support a family as yet.

Thirty-six dairy farmers in the Matanuska Valley had an average investment of 13,500 dollars in buildings and equipment and another 7,900 dollars in livestock. They had about 20 thousand dollars in an average of 288 acres, of which 104 acres were cropland. Most of these farms still were not fully developed but largely supported their operators.

Sample farm budgets prepared by the experiment station and the Bureau of Land Management agree that the equivalent of 40 thousand to 60 thousand dollars must be invested before a family has an efficient 20-cow dairy farm. Almost as much is needed for a commercial potato or truck farm. A beef or sheep ranch that can support a family usually requires a greater investment.

EMERGING PROBLEMS of landownership and control in an area so huge and with problems so diverse mean that the limited capital resources must be husbanded and efforts must be concentrated.

No useful purpose can be served by unwarranted hopes that the great balance of unreserved public lands in Alaska will enter private ownership within the foreseeable future. Most of this land has no known economic use in private hands. The best allocation attainable will occur under intelligent, prompt, and equitable administration

when economically feasible enterprises appear—as true under statehood as under Federal control.

Alaska's population is clustered in widely separated areas and communities. Any frontier or sparsely settled area has basic requirements for an economic-social "infrastructure"—a minimum set of facilities required for living and for production.

Harold Jorgensen, of the Bureau of Land Management, summarized the situation thus: "Experience has shown that it is only when effective land and mineral laws, efficient public land administration, and a basic economic-social infrastructure are provided that orderly, economical, and permanent settlement and development occur on America's northern public lands in which private initiative plays its full part, and then only if all are carefully knit into a suitable pattern of area development."

The social costs of isolated settlement have received too little attention.

Alaska has the soils and the climate to permit production of large quantities of grains, forage, cool-weather vegetables, and certain fruits. Under the present economics of trade and transportation, however, products from its farms and interior forests must be consumed locally. Its market, therefore, is limited by the numbers of civilians, military dependents, and military personnel within its trade areas. Only certain crops and livestock products can be produced in competition with goods shipped to Alaska from the United States and other countries. The varied diet of our modern society requires importation of many foods from other producing areas just as in any State. Alaskans can hope to meet about half the total amount of food required by a modern population from the products they can produce.

Analysis of the production and consumption potential in 1949 by Wendell Calhoun and me showed that between 3 thousand and 4 thousand acres of cropland would supply all local farm products needed for each

10 thousand effective consumers at current yields. These estimates were generally verified by independent studies by the Bureau of Land Management. This relationship has not changed basically. Thus, a future consuming population of 200 thousand persons would utilize the products from 60 thousand to 80 thousand acres. Alaska now has between 15 thousand and 19 thousand acres prepared for production and a large unfilled market for certain items. It has several hundred underdeveloped farms and homesteads in private resident or nonresident ownership. Sudden development to full-time farm status on half of these farms and homesteads would create serious surpluses of farm products.

Emphasis on technical, financial, and marketing assistance is needed for the farm families that are already partly in production. No economic need appears to exist for new or additional homesteading lands in the next few years. It would seem wiser to consolidate present gains before additional areas are opened to settlement.

An almost untapped market exists both in Alaska and in the States for specialty products such as low-bush cranberries (similar to European lingonberries), blueberries, smoked and dried salmon, sheefish, ling cod, shellfish, reindeer meat, artifacts, and other local products.

One enterprising firm at Homer has processed local berries successfully and developed a national luxury market for its products. A homesteader on Iliamna Lake hired Indian women to gather cranberries to be shipped by air to Anchorage and Seattle. Similar enterprises offer hope of cash income in currently distressed areas.

Problems inherent in this type of enterprise are almost insurmountable for persons without capital and contacts. Assistance from public and private agencies in establishing necessary production standards, perfecting transportation schedules, and developing market outlets and loans for development would open the way for a possible mul-

timillion-dollar industry based on harvesting and processing the products of natural resources.

Stateside experience in the West under the homestead acts demonstrated that individuals, unless prevented by law, will settle and try to farm land unsuited to agriculture. The western provinces of Canada had this problem, which was aggravated by the scattered population. The foresighted Canadians closed to settlement their public domain that was not in well-defined blocks. Public services thus could be concentrated within prescribed areas.

The experience with homesteading in Alaska demonstrates anew the need for guided and controlled settlement. New legislation is needed to permit classification of land for efficient and economical administration of future settlement and development. Only through this process will it be possible to keep costs of governmental services within bounds.

A tax on real property would aid development of concentrated areas. Non-resident owners currently can hold good undeveloped land, and there is no way to make them bear a share in community expenses. This problem is particularly critical on the Kenai Peninsula, although it exists wherever title has passed to absentee owners. Scattered families have great difficulty in developing stable communities. The intervening vacant and idle tracts often contain land that is better than average and should be developed and used before the margins of settlement are extended. The new land registration law may help to alleviate this problem.

Despite the impression in some quarters that policies of the Bureau of Land Management and past slowness in some of its operations have retarded use of resources, the facts show that the Bureau has been generous in its administration of public lands. The principle behind the Homestead Act was to encourage the development of productive farms from the public domain. Pressure to open more lands to entry is constantly brought to bear. Data

show that farms develop from about 10 percent of the tracts homesteaded. Of 49 grazing leases in effect on June 30, 1956, covering almost a million acres, most were stocked below the lease requirements. Many were stocked at less than 50 percent of the number scheduled in the leases, and several had no livestock, although the leases had been in effect for at least a year.

THE MAJOR PROBLEM is not to get more land under private control but rather to get into development and use the lands already appropriated or patented. Too many people are trying to develop farms and ranches without adequate financing or knowledge of farming.

Problems of financing have been made less acute in recent years through the half-million dollars of Territorial and Alaska Rural Rehabilitation Corporation revolving funds made available for production, expansion, and development loans. Some local banks are venturing into short-term agricultural loans. Federal lending agencies still lag in their Alaskan programs. Some additional funds are needed to speed worthy operators of underdeveloped farms toward full-time, efficient farming status.

Alaskan consumers are cosmopolitan in their tastes and sophisticated in their requirements. They demand and will pay for high-quality products only. Market development and improved marketing techniques must occur simultaneously with increasing production.

Through the agricultural research program, which was revitalized in 1948, outstanding gains have been made in solving problems of physical production in adapted crops and in dairying. The marketing and consumer-preference problems have been described. Future emphasis focused on storage conditions, packaging, and processing probably would be desirable. The extension program needs strengthening in its technical aids to farmers and expansion of its informa-



tion service to retailers and housewives. The marketing, grading, and information programs of the Territorial department of agriculture have been expanded in recent years. However, the department has a key role in the future of agriculture and needs further expansion and strengthening in conjunction with a vital extension program.

Relations between the public and its officials in charge of land settlement and development programs may be strained at times, because neither fully understands the problems faced by the other. Greater use of advisory committees and consultation on economic development programs would be mutually advantageous.

**IN CONCLUSION:** Resident Alaskans want action. They want the opportunity to develop agriculture, trade, and industry. They live among potential resources that they believe could form the foundation for growing and prosperous communities. They want to make Alaska a settled, integral part of the United States. They become impatient at restrictions that appear to them to limit the growth of population and, therefore, of trade and business opportunities.

The frontier attitude toward land and resources still thrives in Alaska, where soils await farmers while foodstuffs are shipped in from other places. The forests, the minerals, the water-power of Alaska are potentials still to be developed. To Alaskans, any prospect of eventual economic overproduction seems far in the future. They believe that resources should be developed now to meet present needs and in anticipation of continued growth.

It should be evident from the record briefly developed here that no simple solution exists for land problems in Alaska. The Federal Government has seemed to move slowly and not always in the direction desired by many Alaskans. But real progress has been made in many fields. Extension of the

mining and homestead laws and specific legislation enabling entry and use of land for homesites, recreation, commercial and industrial development, oil and gas exploration, and other purposes has made land resources available for use.

I have tried to demonstrate or illustrate the hard economic facts with which land users in Alaska have been faced. More than laws are required to convert wilderness into prosperous farms. Local markets for farm products are necessary to economically successful farm development.

A majority of the homesteaders who have failed did so because they lacked the necessary capital to develop farms from raw land, the requisite technical knowledge of agriculture, and the tenacity and singleness of purpose required to overcome hardships common on any frontier. Getting additional land into private ownership does not guarantee that food production will follow.

Farm families who have overcome their problems and developed commercial farms within transportation distance of urban areas have a market for nearly anything they can produce. More recent settlers are finding loan funds a little less tight, much more information available about technical production problems, a much larger market, and a market more favorably inclined toward local products.

The potential market for farm products is not unlimited. The problem is to encourage farm development to the point within the available market at which the greatest number of farm families are making satisfactory incomes from their efficient methods.

In this light, one can better understand the current conflicts of interest in landownership and use. Alaska can be a great land. Common understanding, mutual good will, responsible planning based on careful research, and recognition of economic facts are necessary for sound development of its land resources in the best interests of all the people.