Economic Regions of Alaska

Louis A. Wolfanger


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ECONOMIC REGIONS OF ALASKA

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ALASKA is the largest island possessed by the United States. Like all of our insular possessions, Alaska is physically detached by miles of distance from the mainland of the United States. The nearest corner, the southeastern, is separated by five hundred miles of land and water from the northwestern boundary of the United States. The only easy means of transportation thither is by steamer. Surrounded on three sides by water, the territory is connected peninsularly with Canada by a broad land base, and land routes are technically possible; but since Alaska is neither politically, economically nor industrially a part of Canada none are likely to be established. At present Alaska is more completely isolated with respect to routes of transport than the Hawaiian Islands.

Individuality of the territory is another insular quality. Islands in relation to mainlands commonly have distinctive peoples, peculiar cultures, characteristic industries, or other distinguishing traits which make them unlike their larger neighboring land masses. In this respect Alaska is also no exception, for it has peoples, industries and a culture exclusively its own.

EXTENT AND RELIEF

The most impressive physical feature of Alaska is its great size. Its peculiar configuration gives the territory unusual proportions in longitude and latitude. The spread in longitude is practically as great as that separating the states of Maine and Washington, about 2,500 miles. Its latitudinal expansion approximates that of the United States. The territory, however, is equal to only one-fifth of the area of the United States, but it is extensive enough to spread over as great distances as all of the states lying west of the Rocky Mountains.

Figure 1.—Sketch map showing the major physical regions of Alaska. The landform outlines, and topography are generalized. The most notable details are the well-known Yukon “flats” in the Central Plateau. Data: U. S. Geological Survey maps and publications.
The Central Plateau

The midland of Alaska is a gentle rolling plateau of moderate relief, strikingly suggestive of the well known piedmont country of eastern United States. Near Tanana this land stretches more than one hundred miles to the north and south, and widens fan-fashion to the east and west. On the east it extends into the Yukon territory of Canada, but on the west, four hundred miles away, it dips into the cold Bering Sea. This interior region, Mississippi valley-like in its relation to Alaska, is formed by the broad basin of the Yukon and Tanana Rivers (Fig. 1).

The Pacific Mountains

The southern part of Alaska is a large, crescent-shaped area of mountains, rising boldly from the edge of the Central Plateau. This mountain mass rises little higher than the famous Blue Ridge of North Carolina, although local ranges in the north average higher and Mt. McKinley approximates twenty thousand feet. To the southwest, the mountain prong runs off the mainland, where it first caps a narrow peninsula and then forms a line of giant, fog-shrouded, volcanic stepping stones which extend westward toward the Kamchatka Peninsula of eastern Siberia.

The Arctic Regions

The north-central part of Alaska is crossed by an east-west range of slightly lower mountains. In contrast with the Pacific ranges, this clubshaped highland, the Brooks Range, rises gradually from the Central Plateau. Beyond it lie the great Arctic Plains which slope northward from the piedmont plateau at the base of Brooks Range to a low, flat coastal strip, fringed by the Arctic Ocean.

ECONOMIC REGIONS

Four major economic regions may be distinguished in Alaska—(1) the Pacific
Industrial Region, (2) the Insular Fur Propagation Region, (3) the Central Agricultural Region, and (4) the Tundra Pastoral Region.

**THE PACIFIC INDUSTRIAL REGION**

The Pulp Industry and the Salmon Industry constitute the chief economic activities of the Pacific Coast Region. The latter is threatened with decline, but the former is in its infancy, and with large resource of suitable pulp timber at hand promises to grow into a great business.

**THE PULP INDUSTRY**

The Pacific Industrial Region (Fig. 2) embraces the central and southeastern prong of the Pacific Mountain division. The resources of its coastal slopes and plains have yielded the greatest wealth of Alaska, but the crests of its mountain ranges are barren, bleak and snow-covered (Fig. 3). Most of the lower slopes, not occupied by glaciers, are heavily mantled with evergreen forests like the Coastal Ranges of British Columbia and the Cascades of Oregon and Washington.

![Figure 3.—Alaska Range, head of Rusty Creek, a tributary of Valdez Creek. Serrate peaks, bleak, uninhabitable mountain tops, ice and snow clad slopes make up a large part of the “upland barrens” of the Pacific Mountains. Grasslands extend far up the valleys of many streams heading in these snow-covered mountains, the U-shaped valley form being a conspicuous element of the landscape. In Bolivia these mountain valleys would be supporting nomadic bands of sheep and llamas herded by hardy Indian shepherds. The “water holding capacity” of the snow and ice constitutes the most important asset to Alaska at the present time. (Courtesy of U. S. Dept. of Agriculture.)](image)

**The Evergreen Forests**

A glance at the climatic chart of Sitka (Fig. 4) will reveal not only why the growth is so luxuriant but also why the trees are narrow-leaved evergreens. The length of the columns indicates an excellent rainfall distribution with each month sharing proportionately in the heavy precipitation. In some places the totals run well above one hundred inches annually, no part of continental United States receiving so much precipitation as the southeastern portion of Alaska.\(^1\) Plentiful, well-apatportioned rain results in copious forest growths. The temperature curve in relation to the freezing line explains why the trees are largely narrow-leaved evergreens. Warming winds blowing from the neighboring Pacific Ocean make the general form of the temperature curve flat, but it lies low near the critical freezing temperature. Broad-leaved trees like the oak do not thrive under such cool, wet conditions, as do narrow-leaved evergreens, like the spruce and hemlock

\(^1\) Summary of Climatological Data of Alaska, U. S. Weather Bureau, Sec. 1, p. 2.
Economic Regions of Alaska

(Fig. 5). The principal stand, consequently, is composed of these species with hemlock dominant.° (Fig. 6).

Utilization of the Forest

The forest resources of this region are among the most valuable that Alaska possesses. Norway, with a similar climate and an equally mountainous topography, has forest resources like Alaska. Three-fourths of Norway’s lands are unproductive agriculturally, but forest products make up one-fourth of her export to other countries.

What would the forests of Alaska mean to the United States? The stand is estimated at eighty billion feet, board measure.° The United States has a yearly appetite for fifty-one billions.° Eighteen months spent in feeding this prodigious mouth would completely wipe out Alaska’s southeastern forests (Fig. 6). It is obvious, then, that Alaska’s great resource must be put to some other use. That use is pulpwood. While many of the trees are of saw timber size and will increase enormously in value for lumber in the future, the real worth of the forest lies in pulp production.

Under careful management, the National Forests of Alaska can produce two million cords of pulpwood annually,° or enough to manufacture one-third of the pulp products now consumed in the United States, which, as recent as 1919, was importing almost two-thirds of its newspaper print from Canada (Fig. 7). With the exception of developments in the forests under governmental supervision, however, crude or exploitive methods still characterize both milling and logging operations; a part of the best lumber, Sitka spruce, is used for making salmon cases.


Figure 6.—Total timber reserves of Alaska compared with timber removed each year from the forests of the United States, exclusive of destruction by fire, insects, etc. About 80% is used directly for lumber. On this basis the Alaskan forests would “last” a little longer than two years since four-fifths of the lumber consumed is softwood, but such a utilization is properly called “mining timber.” (Figures based on recent averages as given in “Report on Senate Resolution 311.” Forest Service, page 38.)

Water Power

The abundant precipitation of this part of Alaska has given it not only a wealth of forests but also water power, the cheapest source of mechanical energy. The high Pacific Mountains catch the heavy rains. Their rugged elevations provide both the steep gradient necessary to secure the proper head, and the reservoir facilities for easy storage and ready release. The artificial construction of huge retaining dams is, in general, unnecessary. Since the maximum precipitation (Fig. 4) is in winter, and much of this falls in the form of heavy snow, snowfields and glaciers, for which this part of Alaska is so well known are common. Therefore, when the rainfall decreases during summer, these natural reservoirs, under the influence of the warming sun, release their waters in quantities inversely proportional to the decreasing rainfall. The streams, as a result, have their maximum flow at this season, and their power potentialities during this period are markedly superior to other regions not so favored.

The low flow of streams in their natural state can be advantageously increased.

Waterpower is the second chief essential of a pulpwood industry. About 500,000 horsepower of continuous available power are annually required to convert the estimated yearly yield of two million cords of pulpwood. The known projects in Alaska have a possible development of over 465,000 average horsepower, and the undetermined potentialities promise much more. The ascertained power is a sum approximately equal to four times the famous, but overestimated, Muscle Shoals project. The Forest Service estimates, moreover, that two-thirds of this Alaskan power, in sites or groups of 5,000 horsepower or more, can be economically developed for pulp manufacture at a relatively low unit cost. No other part of the United States offers a more promising opportunity for the development of a permanent pulp and paper industry. A large part of the forests belongs to the government. (Most of southeastern Alaska is included in the Tongass National Forest, and the Prince William Sound district is reserved as the Chugach National Forest.) This possession makes effective the general policy of the Forest Service; which, under its scientific management, guarantees a permanent supply of raw materials and a delivery of products when needed. Speculation and investment are thus reduced.

to a minimum. Finally, the operators are not forced to bargain with a host of different owners, to spend time and money in building up an operating unit or to solve cut-over land problems, for the government retains the title to the land and the Forest Service is their service.  

The Tidewater Position  
The coast of southeastern Alaska resembles Norway's in its deep bays, its fiords and its islands. Like the coast of New England, a large part is submerged by the sea. Many valleys, gouged deeper in some instances by great glaciers, are occupied by the sea, leaving the higher mountain tops and hills standing out in a most bewildering confusion of sharp, jagged peaks and nunataks of varying height.

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<tr>
<th>PULPWOOD PRODUCTS</th>
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<td>2 4 6 8</td>
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<tr>
<td>U. S. Imports in 1922</td>
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<tr>
<td>Alaskan Potential Annual Production</td>
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**Figure 7.**—Pulpwood used for paper manufacturing in the United States compared with imports and the Alaskan potential annual production. Imports and consumption include all grades of paper and woodpulp reduced to pulpwood basis. The most important grade is news print, about 60% of which is imported directly as paper. Only one-third of the pulpwood required for paper is obtained from domestic sources. Alaska is capable of supplying the deficit. (Data: U. S. D. A. Departmental Bulletin 1241, pages 23, 54.)

These waters make excellent harbors and the deeply indented, practically ice-free bays (note the temperature curve in relation to the freezing line, Fig. 4) are open throughout the year. This additional feature, indeed, favors the pulpwood industry. Fortunate is the enterprise which has tidewater, ice-free harbors, most of the timber on the lower slopes near tidewater, and mill locations within easy and cheap towing distances from adequate timber supplies. The contrast is significant when compared with the snow-bound, ice-locked pulp mills of the lower St. Lawrence region.

**Labor**
Except for capital, the principal human requirement of pulp and paper manufacturing is labor. This need will be met from several sources. The industry, like the saw-timber business so far developed in the region, will give some opportunity for stable employment to resident Alaskans who now work at fishing or in canneries during the summer but have little chance to find work during the rest of the year. Most of the skilled mill operatives and a large part of the wood workers, however, will be imported by the industry.  

Since construction from the ground up will characterize the development of pulp and paper manufacturing in Alaska, there is no reason why the latest instal-
increase the population of the territory by a permanent addition, but would also assure the Pacific Industrial Region of town development that is socially sound.

**Market Relationships**

An obvious asset of pulp and paper production is accessibility to market. British Columbia, Alaska’s southeastern neighbor, ships pulp and pulp products to our Pacific Coast, Japan, and even Australia; and Norway markets similar products throughout the world. For Alaska, a position on the west coast is no mean advantage, as the location faces wood-scarce China just interesting herself in forest policies and whose present consumption of about a quarter of a pound per capita is certain of increase.

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<tr>
<th>REGION</th>
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<tr>
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<td>30</td>
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<tr>
<td>Total</td>
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<tr>
<td>Alaska</td>
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<tr>
<td>British Columbia</td>
<td></td>
</tr>
<tr>
<td>Puget Sound</td>
<td></td>
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<tr>
<td>Columbia River</td>
<td></td>
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<tr>
<td>All others</td>
<td></td>
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**Figure 8.**—Pack of canned salmon on the North American shores of the Pacific Ocean from 1866 to 1924. The exceptionally favorable position of Alaska in the salmon industry is the most striking feature. In the last fifty years, the territory has accounted for more than half of the entire production of the American Pacific. "Total" does not include 1920-1924 pack of item listed "all others." (Data: 1866 to 1919 from Bureau of Fisheries Document No. 902, pages 152, 153; 1920 to 1924 from private correspondence, Bureau of Fisheries.)

A more important market is the United States, however, now importing two-thirds of her newsprint, the deficit of which might easily be covered by Alaskan output.

Obviously then, Alaska is impressive in her possibility of a permanent and profitable adjustment to her forest resources. Her raw materials are near tidewater, splendid water power sites are available, harbors are ice-free, rainfall is heavy and dependable, labor problems promise to be negligible, and her position is very advantageous for world markets.

**Figure 9.**—Salmon rock across Wood River, Alaska. This interference concentrates the fish at selected openings. In open waters many types of apparatus and methods of fishing are employed. The purse seine is the most important method in use in the Alaska and Puget Sound districts. (Courtesy of U. S. Bureau of Fisheries.)

**THE SALMON INDUSTRY**

The Salmon Industry of the Pacific Industrial Region has been a source of great wealth. The annual salmon pack
runs into the millions of pounds and millions of dollars.

The "Japan Current"
The warm North Pacific currents, sweeping eastward from Japan, turn toward the western coast of Alaska and bring in their waters a wealth of animal organisms and sea vegetation. Millions of fish accordingly abound, gorging upon this rich food supply concentrated along the continental shelf. King of them all, economically, is the salmon. Norway, of all nations the most dependent upon fish, has her cod and herring, but Alaska boasts the king salmon and red salmon, fish among the most valuable of the world.

No salmon fisheries on the Pacific Coast are Alaska's equal. During the past sixty years she caught three times this resource that its 1924 output exceeds by twenty-seven million dollars the corresponding value of gold, the mineral for which Alaska has so long been famous.

The River-Breeding Grounds
The fish spend the greater part of their lives, from two to five years and more, near the coastline of the neighboring sea and in its inlets, but fresh, salt-free water is required for breeding. In the spring the adults gather in huge schools or companies near the mouths of streams which are discharging their fresh, cold water into the sea. Some strange urge impels them to seek the headwaters and they fight rapids and leap high cascades to reach the little glacial lakes or upper stream reaches where, after depositing their eggs, they die.

Figure 10.—Salmon Cannery at Santa Ana, Alaska. These plants are scattered from southeastern Alaska to the Alaska Peninsula and the Yukon River. The history of the salmon industry is full of abandonments, consolidations and the establishment of new canneries, the variable runs accounting largely for this instability. This method of preservation is one of the most feasible in the salmon industry. From 2,500 to 4,000 cases a day are turned out by a well organized plant. Owing to the labor involved, the largest part of the operation is done by especially designed machinery. Sheet tin is commonly purchased and made into cans in the cannery. (Courtesy of U. S. Bureau of Fisheries.)
large catch being realized every other year. This variability has made concentration of a large part of the operations in the hands of only a few companies or groups of companies advantageous, in that only large capital can absorb the local and periodic losses successfully.

Labor

The migrant workers employed constitute the most unfavorable aspect of the salmon industry. This population is neither permanent nor stable, a social contrast with the fixed pulp and paper peoples. Those engaged in fishing and canning are the chief classes represented.

The labor is gathered from large coastal cities as far south as San Francisco. The crews and canners leaving "Frisco" each March form a motley, colorful crowd. The historic windjammers salmon packing flotilla is being gradually replaced by steamboats, however, which make the journey in fractional time and promise to bring about new adjustments in the industry. White men do the greater part of the fishing, many nationalities being represented, but a number of Indians are also engaged. The native-born Americans are few in number, their participation in the industry being largely of a capitalistic nature. This class of people therefore has contributed little to the permanent population of the territory.

The racial problem of the canning labor is particularly acute, Orientals constituting the largest part of the labor so employed. Japanese make up the major percentage of this element, but there are many other nationalities, and in some canneries, special quarters have to be provided to prevent racial hatred from engendering brawls and disturbances. While the industry employs a number almost equal to a fourth of the entire population, the composition, the nomadism and the method of employment are not quite favorable to the territory.

Canned Salmon

The excellent harbors, which are so beneficial to the pulp industry, are also invaluable to the fishing industries. Their waters are not only the homes of these shiny, valuable fish but they also carry them canned. Canned salmon constitutes over seventy per cent (1924) of the value of the exports of the territory to the United States and the whole is worldwide in distribution (Fig. 10).

As a result of subsequent disposition in the United States, every food-consuming center—from the world's metropolis by the sea to the sleepy hamlet by the cross-roads—finds a place on its shelf for the red-labelled cans of these choicest salmon in the world.

The Insular Fur Propagation Region

For centuries Alaska has been renowned for its wealth and variety of furs. It was the fur industry that drew the Russians to the land, and later justified America's purchase.

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THE FOX FARMING INDUSTRY

The wild furs, still a source of considerable revenue to itinerant trappers, are decreasing in annual value of catch, but scientific, controlled production of fur is assuming greater importance with each passing year.

Mountainous Grass-covered Islands

Climate has dealt less kindly with the Alaska Peninsula and the Aleutian Islands. The winds sweeping across the cold Bering Sea currents carry their chill to the islands and the northern half of the peninsula. The climate chart of Atka (Fig. 11) presents an annual temperature curve strikingly similar to that of Sitka (Fig. 4), but many of the individual days have much lower temperatures, for the cold Bering Sea lying to the northward has a most pronounced influence. Only grasses and shrubs thrive under such severe conditions of which the heavy precipitation of the islands ordinarily produces an abundance. "Mountainous in extreme and largely of volcanic origin, the islands of the chain are absolutely devoid of timber, but their lower slopes are for the most part covered with a luxuriant growth of native grasses."

The Aleutian Islands, moreover, are in many respects much like Ireland and Scotland, which lie between the same parallels of latitude and enjoy a similar moist climate. The Islands are not, however, a land of potatoes, pigs or oats. What small amount of soil is formed is fertile, but the frequent cloudiness and the comparatively low summer temperatures make vegetation, except native grasses, slow in growth. While snow occurs during the winter, the quantity is ordinarily not sufficient to interfere with grazing for protracted periods. Few domestic herbivora, however, have grazed these islands. Wild caribou formerly ranged over one, but even there the grasses are practically uncropped. The vigorous growth may some time be utilized by sheep and other domestic stock, but today there is no land animal of importance larger than the fox.

The Blue Fox

The shores of the Arctic have given rise to one of the most interesting of the fox species, the blue fox, whose brown, sooty coat is underlain by a fine, dull blue fur. This tint appears in patches in the foxes of all regions, but it characterizes the entire peltage of the Aleutian Island breed and gives it the name, Blue Fox. In

Summary of Climatological Data of Alaska, U. S. Weather Bureau, Sec. 3, pp. 1, 2.

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and recesses providing him with welcome shelter and isolation. The animals are free to run and so hunt a part of their own food which the native water fowl, birds and eggs supply. (Fig. 12).

This system of propagation duplicates, in some respects, the native life of the animal, and it is popularly assumed that the fox produced in the "wilds" has a superior pelt. Ranch organization, however, is also successfully employed. It fixes control in selective breeding and ultimately leads to standardization.

Ruthless trapping to supply the inordinate demand for furs throughout the world, has appreciably reduced the number of furbearing animals of the American continent, but Alaska seems destined to become a natural reserve from which the United States may derive a large part of her own supply of furs. Seventy-five years ago, the Russians, when Alaska was in their possession, passed rigid restrictions on the killing of blue foxes, hoping to stock the islands with these fur-bearing animals.9

The Fur Farm Islands

The colors of fox vary greatly—red, white, blue, black and silver—but, like the salmon among the fish of the Coast Mountains, the blue fox is the economic king fox. To date, the largest single group of islands producing him in this section is the Pribilof Islands, which lie to the north of the Aleutian Chain. These islands belong to the United States and have, under government ownership, what is probably the largest herd of blue foxes in the world. The greatest commercial development, however, has occurred in southern and southeastern Alaska. These divisions have three-fourths of the ranches in the territory. Since fish is the basic food in the diet of the mammals, the proximity of these sections to the canneries is a great advantage. The waste material from the industry is palatable, nutritious, and inexpensive. The many islands along the ice-free coastline of submergence are well suited to fox ranching, the freedom from ice bridging to the mainland being an important asset.

The relative significance of the industry

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<td></td>
<td>50</td>
</tr>
<tr>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>Greenland</td>
<td></td>
</tr>
<tr>
<td>Kamchatka</td>
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FIGURE 13.—Blue fox taken annually in leading producing areas. On account of the caprice of fashion, prices on blue fox skins have declined about 50% in the past two years, but prospects seem good for their return to popularity. (Alaska figure is for 1924, from correspondence with Bureau of Biological Survey. Greenland and Kamchatka estimated by Fouke Fur Company, St. Louis.)

is far more important to the Aleutian Chain, however, since it utilizes islands of little value to agriculture or forestry and represents one of the only commercial industries of importance for which the islands are suited. The demand is of such proportions that practically all the desirable islands under the control of the Department of Agriculture are leased for that purpose.

The Status of the Industry

The blue-fox farming advantages of these island masses stand out as one of the major assets of the territory. Other regions of the world, notably Greenland and Siberia (Fig. 13), produce blue fox peltries of high grade and, while those of the Cape York district of Greenland are said to be the finest produced, those of fur-famed Siberia are considerably inferior in quality to the prime furs of Alaska. A large part of the foreign catch has little

FIGURE 14.—Fur seals on rookery, St. Paul Island, Pribilof group. This island is the “seal island,” as St. George is the “blue fox island.” The massing and great crowding on the bare rocky coasts is one of the most impressive and awesome phenomena. While the animals spend a large part of their time in the water, the land phase of the industry might well be called “seal farming.” An annual census is taken, scientific care is extended, and a certain number of the male breeding reserves are marked by branding or shearing a patch of fur from the top of the head. (Courtesy of U. S. Bureau of Fisheries.)

industrial organization, many of the skins being obtained from wild sources. In comparison with these regions and other places yet to be evaluated as future seats for the industry, it is certain that the Alaskan source will command an impressive position.

THE FUR SEAL INDUSTRY

Thanks to wise policies of conservation and production, the fur seal industry, once threatened with extinction, has again developed into a source of animal revenue.

The Polygamous Seal

The chilly, barren Pribilof Islands, distinguished for their blue fox herd, are more important in another economic aspect because the fur seals, that spend their winters far to the south, use their bleak shores for summer homes. They are called fur seals, although the name is peculiar for a creature so markedly different from the hair, or true seal. The adult males, are called bulls and the females, cows; the newly born are neither calves nor cubs, but pups; the young males are bachelors. The shores to which the seals resort are designated rookeries; the family unit is the harem, the average size varying from forty to ninety cows per bull.

Seal Conservation

When these animals came under United States supervision with the purchase of Alaska, they represented one of the most valuable marine resources we had ever possessed. The strength of the herd was variously estimated at from two million to five million animals. Like all abundant resources, however, they suffered the most reckless exploitation. Forty years after the acquisition of the islands, when their numbers were reduced to one eighth of a million, they became the subject of one of the few international conservation conferences that have ever been successful. The United States, Russia, England and Japan, all of whom also own diminished herds in and near the same waters, agreed to prohibit their killing under any other method except the strictest government supervision.

The rocky beaches of these cold islands in the North Pacific have for centuries
deficient in the fish life fed upon by the animals, and it is a remarkable habit which causes the seals to make their summer homes here, since they subsist chiefly on squid, herring, salmon and other small sea fry. The "Japan Current," however, which feeds southeastern Alaska, has also populated the waters of the Aleutian Islands with similar inhabitants. Ten or twelve days after the birth of the pup, the cow makes the first long trip to the feeding grounds, returning after three or four days to the rookeries. Throughout the season she continues to make regular visits every four or five days.

**The Ravaging Hunter**

Then came the great killing power of the rifle. In the hands of the improvident hunter, it threatens the doom of every wild animal prized for flesh, skin, horn or feather. Its death stroke

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**FIGURE 15**—The annual growth of the Pribilof seal herd. The increase is both gratifying and constant, although a certain per cent is taken each year for skins. The original herd has been estimated as high as 5,000,000 animals. With continued protection the animals should attain their original numbers within a few decades. (Data: Bureau of Fisheries.)

been the breeding grounds or rookeries of seals which, curiously, continue year after year to return only to these places (Fig. 14). Within two days of their arrival the cow gives birth to a twelve-pound, coal-black pup. The waters surrounding the islands are notably

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**FIGURE 16A**—Comparative strength of seal herds in North Pacific Ocean. According to the Bureau of Fisheries, the Alaskan herd constitutes nearly 90% of all existing fur seals. Only three of five islands in the Pribilof group have seals at present—St. Paul, St. George and Sea Lion Rock. Commander Island is located at the western end of the Aleutian Chain and Robben Island is in the eastern part of Okhotsk Sea. Size of Russian and Japanese herds estimated. (Data: Bureau of Fisheries, private correspondence.)

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**FIGURE 16B**—Average annual catch from leading seal herds. Alaska now has from 25,000 to 30,000 3-year-old males available for killing but not all of these are taken. The number shown is the quota approved for killing in 1923, but only 60% were killed. A herd located at the Cape of Good Hope is accredited to second place by the Fouke Fur Company, St. Louis, and is thought to yield about 8,000 annually. The balance of the catch shown is based on figures supplied by this company and the Bureau of Fisheries through private correspondence.
kill the animals migrating to and from their winter home, but they also intercepted the mother between the feeding grounds and the rookeries, with the result that not only she perished, and eight or ten future pups with her, but usually also the young pup on the island. The pup lives only on milk during the summer. With the loss of his mother he usually starves to death.

Today the fur seals enjoy full government protection and supervision. Only the young bachelors are taken, as the harem habits of these animals effect a large surplus of males annually. The herd is rapidly recuperating and by 1922 had nearly tripled its number (Fig. 15), although more than two hundred fifty thousand skins have been secured since 1910, when the last sealing lease issued to private corporations had expired.10

The Seal Furs

So successful is the management of the government that the quality of the seal is the best of all existing fur seals in the world.10 The most serious drawback to the more rapid growth of the seal herd is the large natural mortality of the animal. Naturalists studying the problem have estimated that only fifty per cent of the animals survive their third year, and some authorities state that the killer whale is the greatest natural enemy of the creatures (Fig. 16).

The skins are sent to St. Louis for dressing, dyeing, and sale at public auction. This city, the largest primary fur market in the world, not only receives the majority of the seal skins and all the United States Government blue foxes taken on the Pribilof Islands, but also a considerable proportion of the seal skins from other herds and blue foxes from all parts of the world. St. Louis then sends them to New York, the largest consumer of dressed, dyed and finished skins in the world, and to Chicago, which probably ranks second in the United States as a style market for these commodities.

10 The Fur Seals of the Pribilof Islands, Alaska, U. S. Bureau of Fisheries, October 1925.

The Central Agricultural Region

Agriculture is never likely to become the dominant Alaskan industry but in the central plateau and in the sheltered mountain valleys it will certainly be significant.

The Scrubland Reserves

A pauperate forest growth occupies much of the Central Agricultural Region.

FIGURE 17.—Climate chart of Tanana, Alaska. Lat., 65° 10'; long., 152° 06'; elevation, 220 feet. About 25% of the precipitation occurs as snow. The summer temperatures are delightful, being warm enough for comfort but not oppressively hot, although temperatures between 80° and 90° occur each summer. The winters are cold but not unbearable. Out-of-door operations are naturally restricted, but children attend school throughout the winter. In 17 years of record at Fairbanks, four Januaries and one December had temperatures of zero or lower on each day. Data: U. S. Weather Bureau.

It can never become important in a lumbering industry although it may supply much pulpwood.

The Cold Semi-arid Climate

The great interior plateau of Alaska, which is nearly one third more extensive than the piedmont country of Eastern United States, is a huge rolling upland mantled with grass and woodland. The broad Coniferous Forest Belt of Canada, sweeping northwestward along the eastern mountain front of British Columbia, enters Alaska through the Yukon-Tanana gateway, but the stately trees of the south are so shrunkened and shriveled at
the north that less than one-half of this huge "forested" area of eighty million acres in Alaska has timber of sufficient size for either cordwood or saw logs. The climate chart (Fig. 17) explains this feature so markedly different from that of the heavily forested division, the Pacific Industrial Region. The sharp rise and precipitous descent of the curve speaks of enormous contrasts between winter and summer temperatures—conditions too cold for broad leaves and too low for large, dense tree growth. The average winters and summers, however, are only five to ten degrees colder than Winnipeg, the outline of the temperature curve of which it most nearly resembles. Surrounded by water on all sides except the east, the narrow peninsular form of Alaska gives it a relatively small land mass, as compared with the huge American continent.

Small Trees and Forest Fires

The low rainfall is also unsuited to large heavy forest growth. Its semiaridity is alleviated by the summer precipitation and by the high latitude
position with its resultant low evaporation. Shrubs, saplings, woodland and small trees are quite common, and large tree growths occur in some of the foothills, along many streams, and in similar favorable situations in the lowlands (Fig. 18), but regionally, saw timber is not plentiful. Moreover, the scanty rainfall of interior Alaska has furnished ill protection from fires, and these areas have suffered ruinous destruction which the Pacific Mountain Forests with their drenching rains, heavy snows, and soggy underbrush have completely escaped.

Pulpwood or Animal Sanctuary?

This “forest” region does not offer a basis for a permanent lumber industry. will reduce seriously the useful birds and mammals, or even cause the total disappearance of many beneficial forms. Conservation is teaching the cost of unnecessary interference with the established plans of nature. Untold effort, time and money have been wasted because man has often acted in complete ignorance or disregard of the interrelations between the many aspects of plant and animal life.

THE LIVESTOCK INDUSTRY

It is likely that Alaskan agriculture will always be closely associated with the raising of livestock. Rigorous climatic conditions and distance from market preclude the possibility of a widely-developed crop agriculture.

Tree growth is slow and species tend to be small in size. What tree growth there is offers pulpwood possibilities, but lack of power and relative inaccessibility to market is a serious handicap. Furthermore, the world has many areas of good rainfall and rapid tree growth, superior for permanent pulp and paper industries. In fact, the use of these scrublands for pulp should be deferred indefinitely. They are useful for local firewood and building purposes, but, like the tundra and other northlands, they play a more important rôle in the animal world. It is not only the habitat of numerous fur-bearing animals but also the summer home of many migrant birds from the South and the winter resort of many other species from the far North. There is reason to believe that its destruction

**The Cold Arctic**

Fifty-nine years ago, when Alaska came into our possession, no one was interested in her agricultural resources. She was worthless, an extreme marginal land, derisively dubbed “Seward’s Folly,” by the opponents of the administration, particularly of the Secretary of State. Her extreme northerly position was generally accepted as conclusive evidence of her non-agricultural possibilities.

New standards are now employed in evaluating Arctic, desert and tropic lands. In fact, all lands formerly classed as worthless or uneconomic are now recognized as “good for something.” The new attitude is a natural result of (1) an increasing population which has “multiplied,” “filled the earth,” and is seeking new
resources for its children; (2) an aggressive scientific research, seeking to discover and appraise correctly every fact of the universe.

Central Alaska is not by any means the coldest, the snowiest nor the iciest land of the earth. The highlands are cold, but the Central Plateau seldom rises above four thousand feet, and much of it is less than one half that altitude. Great land masses in high latitudes are also cold, but Alaska is a small land area bordered by the sea on three sides. Heavy snows occur in regions of high precipitation, but the rainfall of central Alaska is not only low or semi-arid, but it also comes largely in the summertime when snow is climatically unusual. In fact, this section has no more snow than Winnipeg in the heart of the Canadian Wheat Belt. Furthermore, what snow does fall (about one fourth of the precipitation occurs in this form) is really prized by the agricultural folk of the region, as it furnishes a protective covering to the ground and a spring moisture that augments the light summer rain.

The Growing Season

The ultimate economic worth of agricultural lands, granted adequate rainfall and favorable temperatures, is the length of the growing season. Reckoned in days, central Alaska has a short growing season, most weather observation stations reporting less than one hundred frostless days annually, while yearly records show minima of sixty to seventy-five days. The true value of a growing season lies not in the number of frost-free days, however, but in the total hours of sunshine occurring above 42.6° F. during that season. Experiments conducted by the United States Department of Agriculture show that plants subjected to short daylight periods grow slowly, mature late, and form seed reluctantly even though all other climatic conditions may be favorable. Reversed light conditions accelerate movement in the opposite direction. Plants living in tropic lands, with relatively long daylight periods and the growing season never ended by frost or lack of rain, grow quickly, become “ever-blooming” and make heavy vegetative growths.

The Midnight Sun

The Central Plateau falls both within and without the area of the Midnight Sun. While Texas has but thirteen hours of light daily in mid-summer, this division has twenty and twenty-four hours. Plant life, therefore, becomes mushroom-like in development. It grows and matures with surprising speed. With the inauguration of the long daylight periods, vegetation develops so rapidly that one writer has said, “When spring approaches, it comes with a shout.”

Animal Agriculture

The agriculture of Alaska will be characterized by animal industries. Two determinants so decree, (1) the position of the territory, and (2) the climate in the region.

The position of Alaska results in commercial isolation for its central uplands. Lying at the northwestern edge of the North American continent, it is located upon a branch line of ocean commerce. Furthermore, the great mountain wall along its southern margin cuts off the central region from easy market outlets, and necessitates the conversion of all agricultural products destined for outside markets to those of high value and easy carriage. Animals and animal products are agricultural commodities which lend themselves well to these requirements.

The climate, moreover, also conspires to make man an animal husbandman, for it limits agriculture to crops of which the major part of the production is best utilized by animal industries. The crops are oats, barley, rye, roots, alfalfa, and natural hay, the characteristic crop association of cool, semi-arid agriculture. Only one grain, spring wheat, is a large acreage crop which can be successfully grown for direct human consumption. Otherwise, barley (Fig. 19) takes the place of corn in middle latitudes; oats and alfalfa are

the cultivated hay (Fig. 20) and forage crops; winter rye, sown with peas and vetch, is the pasturage;\textsuperscript{12} and roots and natural hay are the accessory feed crops.

\textit{New Animals}

The far northern position of central Alaska results in conditions that are severe for most of the animals domesticated by man for middle and low latitude environments. The development of a livestock industry, therefore, demands either the evolution of new varieties and the pure-bred cattle.\textsuperscript{12} In the meat varieties few animals have been run on the open range all winter, owing to the severe conditions of that season, but no stock offers more favorable breeding qualities than the burly Asiatic yak (Fig. 21) which the harsh plateaus of Tibet have provided with bulk, shaggy coats and extreme resistance. Sheep, goats, alpaca and similar long-haired and long-wooled ruminants present breeding material for these types of animals, but more interesting possibilities exist in the domesti-

\begin{figure}[h]
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\caption{Two heifer cattleyak. Dam lying down, yak sire in background. Wainwright National Park, Alberta, Canada. Both Canada and Alaska have taken up the crossbreeding of yak and domestic cattle. (Courtesy of U. S. Dept. of Agriculture.)}
\end{figure}

types of animals adapted to the rigorous local conditions, or the domestication of resident species. For the derivation of new varieties, two classes of animals, dairy and meat types, present themselves as possibilities; and for domestication, wild sheep and goats and caribou.

The most suggestive dairy animal bred to meet Alaska conditions is the Galloway, of which the hairy coat has been developed by years of outdoor life in cool Scotland. The breed is not a good milker, but crossed with Holstein-Fresian, its sturdy rustling qualities are transmitted to cows whose yield and butter-fat content of milk are intermediate between cation of bands of local wild sheep which browse on the sparse vegetation and are adapted by nature to the vicissitudes of the climate.

\textit{An Undeveloped Reserve Region}

Conditions, then, seem to call for the pursuit of the animal industries, but their actual development is far from realized at the present moment on any but the most modest scales. The Central Agricultural Region, with a maximum count, has a scarce three hundred farms, most of which are still confined to valley situations where

\textsuperscript{12} Report of Alaska Agricultural Experiment Station, 1923, pp. 6-13, 23-25.
water for man and beast is easily obtained. Large tracts of the interior are unmapped, unoccupied, and public-owned. Most of the region is still "forest" or scrubland, and a large part of the land cleared for farming is associated, for market purposes, with the mining and other small industries operating in the territory. Like the balance of Alaska, the region is only "in the making," although experiment stations and other agencies are performing a most commendable pioneer service in working out the detailed scientific facts upon which an orderly industrial development in a new land alone can rest.

Other areas in the world, under present economic conditions, are more favorably located with reference to climates suitable for the animal industries and to industrial regions consuming animals and animal products. The all-important outside market to whose favorable nod every large industry the world over is subservient offers little to Alaska at present. Finland, to which this part of the territory has often been compared, has an outlet to the industrial countries of northwestern Europe. The corresponding region on the American North Pacific Coast is still in its infancy, however, and the central region of Alaska, to parallel Finnish success, must wait for a larger expansion in this area. For outside trade the meat industry of the territory must serve in a reserve capacity.

The local demand furnishes the only immediately accessible outlet. This is small and insignificant, although the future is promising, since the growth of the pulp and salmon industries in the Pacific Industrial Region, the increase of fox farming in the Fur Propagation Region, and the development of the tundra lands to the west and north will bring increased population and a greater local demand for foodstuffs. Under this situation, the acreage in wheat and subsistence crops will probably be stretched to the limit.

A Peculiar Region

A comparison with Finland, however, is difficult, owing to significant differences in physical conformation and natural resources. In fact, no country in the world offers conditions adequately comparable for economic development to those of central Alaska. The north-south mountain axis of the Fennoscandian Peninsula permits Finland to look southwestward into open water, but the high Pacific Mountains of Alaska run east-west along the southern margin and expose its central region to the chilly Bering Sea. Finland thus has easy access to the great industrial markets of northwestern Europe, reached by easy transportation on land and sea, while the Alaskan Central Plateau lies behind a mountain barrier, is two thousand miles from the North Pacific Industrial Region of the United States, and the journey from farm to seaboard, in terms of modern transportation, is long and difficult. Invaded by the Gulf of Bothnia on the west and washed by the Gulf of Finland on the south, Finland, furthermore, has a higher summer rainfall and a warmer fall, winter and spring. The topography is a lake-dotted, marsh-flooded lowland terrain, most of which is covered with
woodland and forest growth, while central Alaska is a rolling upland shut in on the north and south by mountain ranges and covered with scrub growths.

Five months in Finland, May to September, have average temperatures above the minimum ecologically favorable for plant growth, but Alaska has only three months, and, with the exception of June and July, the temperatures of these months are from two to seven degrees cooler. As a result, growing possibilities are necessarily quite different in the two regions under consideration. From the forest viewpoint, Finland's wet lowlands support growths whose annual crops of wood and saw timber account not only for one-twelfth of Europe's production, but also for a very large per cent of Finland's exports. In an agricultural way, the grain and forage output is so great that Finland is renowned for dairy products, a large part of its farm crops being sent to market in the form of butter, cheese and milk.

**The Fur and Livestock Farmer**

The Alaskan farmer is primarily a stockman. His farm holdings are large rather than small, for, like all regions of low rainfall in which peoples are dependent upon animals, large acreages are necessary. His farmstead is a composite of (a) fields of grain and roughage, (b) blocks of pasture lands and hay fields and (c) an assemblage of silos, barns and feed lots. In the winter, unlike the Finnish farmer who is then a lumberman or a factory worker, he must turn to fur farming—an industry of unlimited possibilities in cold northlands like those of Alaska. As in most of the semi-arid farming districts, his crop production has elements of hazard, and the risks are not essentially different from those of
many agricultural regions in the United States. Crops in Kansas suffer injury through droughts, hot winds, cloudiness, wet weather or killing frosts, while deficient or excessive precipitation, lack of sunshine or early frosts are recognized causes for yield curtailment in the Yukon. It is a matter of extreme irony that the first crop failure on record in this cool semi-arid region was due to excessive rains.\textsuperscript{13} Forage crops, however, are always dependable.

**The Tundra Pastoral Regions**

As in Eurasia the Tundra Region bids fair to become a land of pastoral nomad-

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<th>COUNTRY</th>
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<td>Alaska (1922)</td>
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\textsuperscript{13} Alaska Agricultural Experiment Station, Circular No. 1, p. 14.
THE REINDEER INDUSTRY

Fringing the Arctic Ocean and the Bering Sea is a long strip of lowland country, the “true north” of Alaska. These flat, monotonous lands are typical coastal plains composed of mud, sand, gravel and sand dunes. With the Brooks Range and its northern piedmont these lowlands constitute the great “barrens” of the Tundra Grasslands.

The High Latitude Lowlands

Like the Yukon, the grasslands are in a high latitude, and winters are correspondingly cold. Lowlands, however, make up the largest part of the region and approach sea level on their margins. They are, therefore, adjacent to large bodies of water, the Arctic Ocean and the Bering Sea, but their precipitation is light and aridity follows, the yearly precipitation varying from five inches at Point Barrow to fifteen inches along the Bering Sea lowlands14 (Fig. 22).

The Vegetative Covering

This region is but moderately mantled with snow and that, as in the Yukon, occurs only in winter. With the coming of spring, the warm temperatures melt the snow, driving it into a thousand little ponds and lakelets dotting the lowlands. The soil thaws and opens and hundreds of flowering plants of the most brilliant colors spring into being under the long day. Mosses and lichens there are, too—several hundred varieties of each—but the flowering plants not only outrank them in species but bury them alive in tonnage. For every ton of mosses and lichens there are ten tons of flowering plants and these plants have the advantage of rapid recovery. Grasses and sedges grow afresh each year but certain lichens cropped by plant eating animals require many years to replace themselves, only to suffer the same fate over again.15

A Wet Swamplike Surface

When the spring sun moves northward in this land, driving before it the blizzards of winter, summer suddenly advances and the air is filled with an army of the hungriest mosquitoes imaginable. Mothers in the swamps, lakes and boggy soil which the sun has thawed, these insects fairly devour every animal and human being, within reach, not endowed with the toughest of hides or thick sweltering clothes through which the drills of the mosquito cannot penetrate. Later in the summer there are sandflies which get inside one’s clothing and crawl all over the body. The only escape is to wear such tight fitting clothes that the insects cannot crawl under them—a very pleasant prospect with the temperature around seventy degrees!

Although the growing season with the full midnight sun is long enough to mature small fruit crops under favored conditions, and wild berries and wild vegetables grow in great abundance, this region is poor for agriculture, as the land cannot be plowed. Lucky is the man, Stefansson says, who can walk one mile of three in the direction he wants to go, for the abundance of lakes, swamps and marshland.

Enter, therefore, the ranch, the reindeer and his brother, the muskox. Nature has given these animals large, broad hoofs which make excellent “mud shoes” for getting over the boggy ground of summer; which serve admirably for scratching away the snow covering the dead grasses and mosses of winter (Fig. 23).

The Eskimos

The Tundra Grasslands are the peculiar home of the Eskimos, who make up one-fourth of Alaska’s population. They have lived there for years, hunting the caribou, the rabbits and the wild ducks in the tundra and catching the true seal and the walrus in the ocean. In winter they live in snow houses but in summer, in tents made of skins.

We have the most polite habit of thrusting our civilization on peoples who are
better off when left alone. The Eskimo also has been a target for our solicitude. In Stefansson’s words, the Eskimo “considered fur clothes entirely satisfactory, and nearly everyone had at least one complete new suit that had never been worn,” but we did not consider him “emerged from this savage state” until he “became thoroughly dissatisfied with his country and conditions, and learned to complain to us, in broken English, about his inability to buy canned goods and ready-made shoddy clothing in the quantity he desires.”

The rifle—like the seal killer of the Bering Sea—did the rest. The Eskimo Indians, who were almost the sole inhabitants of the tundra, learned to shoot, and a few white men helped. Together they so thoroughly cleaned out the wild caribou and native game of the interior that the Eskimos, deprived of their land-food, and driven to the sea coast for sustenance were slowly diminishing in numbers, starving and freezing to death in the “civilized” homes which the white man had taught them to build.

But, thanks to Reverend Sheldon Jackson, fortune smiled again upon the Eskimos. He saw the possibility of using this vast grassland and thirty-three years ago, Captain Healy, under the direction of our government, secured sixteen head of reindeer from the reluctant, superstitious Siberians who feared to release a single animal to the white strangers. Later, twelve hundred more reindeer were obtained, and today the Alaskan herds number over a quarter million, although thousands have been killed for food and skins.

The Reindeer Ranches

These animals promise to turn the tundra into a vast ranchland. They double in numbers every three years. Four years’ apprenticeship makes an Eskimo a full fledged herder in charge of his own animals, a flock of thirty-four.¹⁶ No animal which man has domesticated within historic times is better adapted to his environment than this fellow. Our cows need care, barns and crops, but the reindeer is at home in a snowstorm, contentedly eats the food of his clime, and needs very little care, as 1,000 to 1,500 head are easily handled in one band.

The future of these animals, remarkably self-supporting, is interesting. Like the steer of our southwest ranges, each head requires about thirty acres annually, and it has been estimated that the vast tundra grasslands of Alaska can support twenty times their present number—a herd approximately equal to the beef cattle which Texas has today. What scientific grazing and the feeding of hay


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**Figure 26.**—The musk-ox in his native environment. Photo taken between Artillery Lake and Great Bear Lake, N. W. T., Canada. In spite of his formidable appearance, the musk-ox is naturally mild and gentle. Under domestication, he is not unlike native cattle. His domestication possibilities are further favored by his tendency to remain indefinitely in areas where food is available, as he is not a migratory animal. He has a preference for grass, but where this is not available, lichen, mosses and willows are readily consumed. (Courtesy of Natural Resources Intelligence Service, Dept. of the Interior, Canada.)
and tame forage grown in the Yukon Basin, what cross breeding (Fig. 24) with the sturdy wild caribou, whose carcass dresses three hundred pounds of meat to the one hundred and fifty of the reindeer, will offer, is only suggestive of the industry. So rapidly have the Alaskan reindeer multiplied that they are gaining rapidly over all other lands in numbers and are challenging the great Russian herds, their only big competitors (Fig. 25), for first position.

The Musk-ox

The musk-ox (Fig. 26) or ovibos, as Stefansson prefers to call him because "musk," in the modern sense, is misleading, provides meat that is most excellent. This beast, once a wild inhabitant of Alaska, but wiped out many years ago, can be introduced from neighboring northlands. He is easily domesticated and has three advantages over the reindeer—he is larger, he is wolf-proof, and he has wool which makes a fabric of the softness of cashmere. Like the reindeer, he is a complete factory for the Eskimo, as he has meat, hide, milk and power. He will not only pull a load, but he can also carry a pack. He is aptly called "the camel of the frozen desert."

A New Meat Supply

For the white man the reindeer and musk-ox mean another food capable of augmenting the increasing scarcity of meat. Reindeer are already performing this service. The animal, which resembles the sheep in its flocking tendencies (Fig. 27), cattle in its grazing habits, and the horse in intelligence and activity,

Figure 27.—Round-up herd at Norton Sound. When rounded up, even in the open, reindeer crowd into a compact mass like sheep. Their early domestication saved them from extinction at the hands of the hunter. As is the case with many herds in regions of poor transportation, the animals are driven to market. (Courtesy of U. S. Biological Survey.)

The musk-ox offers to the world a new dietary item. Nine years ago the reindeer appeared on our markets and twenty years hence Alaska will send us annually thousands of animals. Hundreds of tons derived from Lapland are sold each year in Stockholm, Sweden, at prices very close to the corresponding cuts of beef. The Alaskan shipments to the United States are limited in part by present demands and in part by the cold storage facilities of steamers running to Nome and other coastal points. On the coast deep layers of permanently frozen earth and underground ice offer natural cold storage facilities readily available by digging a simple pit,


now surprisingly little used. Twenty to sixty cents per pound is the remarkable New York price considering its novelty, the cost varying with the choice of cuts. Prosperity is truly dawning for the sturdy Eskimo. The Northern Ice Desert of Alaska, like the great American desert of the West, is disappearing.

MINERALS

Alaska was once spelled in gold and mineral wealth, but the importance of these resources is gradually shrinking not only in quantity and value but also in ratio to growing permanent wealth. Economically, Alaska is slowly passing the mineral stage of development with its familiar transitory exploitive characters, and is knocking at the agricultural and pastoral door of the world.

The Decline of Gold

Gold is widespread in the territory and its production has been equally extensive, the areas of outstanding interest occurring in the Nome district, the Yukon Valley and the Pacific Industrial Region (Fig. 2). Most of the metal has been won from cheap placer mining, the process of washing out the heavier gold from the sand and gravel which move away in running water (Fig. 28). In the Yukon and Nome districts the summer emphasis of rainfall, over half of which occurs from July to September, has been most favorable for this phase of the industry, although in years of low rainfall the streams do not furnish enough water for sluicing.¹⁹

The trend of the annual production shows the usual sporadic character attendant upon the development of this metal (Fig. 29). Nineteen years ago it reached its peak and the decline since that time is significant. During forty-four years of operation, combined lode and placer methods have yielded more than a third of a billion dollars worth of gold. The fact that this sum is no more than equal to the combined corn crop of Iowa and Wisconsin (1924) is suggestive of its relatively small importance. Various authorities place the future reserves at one-half that quantity to double the amount. Whether

the gold of Alaska lasts until 1950 or 2000 A.D. is of no great significance. Not only has it served its day in returning the purchase price of the territory from Russia but it has repaid the cost nearly fifty times over.

**Copper Production**

Copper (Fig. 30) has been largely the product of the Pacific Mountain Division, where it is distributed among several districts (Fig. 2). In contrast with gold, its production (Fig. 31) is not decreasing, the youth and industrial value of the metal assuring its greater stabilization. All the copper mined in Alaska is equal in value to less than one-half of all the gold; or in terms of corn crops, the 1924 production of Missouri. Although longer lived, it is, like gold, a transition stage in the early development of the territory.

While these minerals will continue to be mined for years to come, and the mining industry is now being built up on a stable basis, their youth is spent and they have lost forever their dominating ratio to the more basic wealth of forest, fish, farm and reindeer. This declivity is the...
typical trend of all new countries whose frontiers are opened through mineral exploitation. The fact that gold mining is gradually turning from placer to lode deposits and that the output of copper is largely dependent upon a favorable market price of the metal are but normal criteria pointing conclusively to the slow passing of the pioneer stage in Alaska's history.

*The Promise of Coal*

Coal, the modern basis of national power and industry, has in the past, unlike gold and copper, been of small total value. In forty-three years of mining, Alaska produced only one-fifth of the coal she consumed (Fig. 32). She has, however, fair reserves, and the low production in the past is an added finger pointing to her precious mineral exploitation stage. The reserves which are approximately equal to the French deposits are suggestive of her future possibilities. While the beds are widespread, only two of the economic regions have noteworthy deposits. The Lisburne Peninsula has both anthracite and high-grade bituminous coal near the coast. While the quality is good, coal is of little value to the reindeer industry and beyond local use, its only future appears to lie in outside commerce.

The other coal fields occur in the Pacific Mountains. These fields, the Bering River and Matanuska, are the areas of greatest economic importance. Their high grade anthracites are the only coals on the Pacific Coast suitable for our navy. In addition, there are good coking, blacksmith and bunker coals, although the major portion of Alaska's coals are sub-bituminous and lignitic types (the Cook Inlet fields). If Alaska is capable, nevertheless, of producing the coal in the future, she has a market open to her equal to ten times her present output, the success of her competition with established developments from other sources depending largely upon the cost of production. Her reserves of anthracite and semi-anthracite alone are large enough to supply this quantity until 3500 A.D.—fifteen centuries hence—should she be able to mine it to the last ton. The fact that some of these beds are badly folded and broken, however, adds proportionate costs to their market value.

**Development**

The future of Alaska depends upon the intelligent development of her great resources, adequate to form the basis of industry and wealth for a large population.

*A Region of Sparse Population*

The permanent resources are capable of supporting a population of moderate density, but as yet no large possession of the United States is so thinly peopled, even Nevada, the state of minimum density, possessing seven times the number of people per square mile. In fact, the territory bids fare to rank with the most scantily populated land of the earth having political organization. The total population, widely disseminated, is no larger than that of Little Rock, Arkansas.

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*Figure 32.—Annual consumption of coal in Alaska. Until 1916, coal mining in Alaska was insignificant owing in part to restrictive legislation and in part to market conditions. The future seems to favor a large expansion in the industry, however. Figures are not available on imports before 1900. (Data: U. S. G. S. Bulletin 773-A and correspondence.)

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The greatest concentration occurs in the Pacific Industrial Region, approximately sixty per cent of the inhabitants living in this section. Nationality is about equally divided between whites and Indians, the Eskimo stock composing one-half of the latter race. Urban development is confined to small towns, the largest of which, Juneau, the capital, has 3,000 people. The balance of the inhabitants is scattered in rural sections, hamlets, villages and towns, only five of which range from 1,000 to 2,500.

In estimating population possibilities in new lands, geographers commonly make comparisons with developed regions of like or similar environment. The method has limitations for Alaska, however, since the European peninsula corresponding to the territory (Norway, Sweden and Finland) has but superficial resemblances. The population density of this country, therefore, will merely serve in making a broad generalization.

The total area of the Fenno-Scandian Peninsula is only three-fourths that of Alaska, but its population is two hundred times as great. For every one person living on eleven square miles of Alaska, this peninsula has an average of twenty-eight living on one square mile. Yet the actual amount of forest and agricultural land is, in a general way, equal to Alaska’s. In so far as regions in similar latitudes and continental positions have “equivalent” economic possibilities, Alaska seems capable of sustaining at least twenty-five people to the square mile.

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<th>YEAR</th>
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**Figure 33.**—Total exports and imports of Alaska during the last five years and the pre-war year, 1913. This chart shows in another way the great wealth of the territory. The abundance exhibited on the export side is neither advantageous to the territory as a whole nor to its permanent population, for most of the industries have been developed by outside interests. (Data: Commerce Yearbook, 1924, page 564.)

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**Export of Raw Materials**

Most of the territory’s trading is conducted with the United States, the trade balance favoring the export traffic (Fig. 33). While the value of this class of goods is approximately twice the imports, the character is not very favorable. The exports are largely salmon and copper (Fig. 34)—the first won from the sea and the second from the mine. The leading imports, on the other hand, are iron and steel (almost one-half of which is “tin” for the canning industry), machinery, mineral oil, meats and butter.

This type of trade is normal for a new country, but neither particularly advan-
tageous to, nor necessary for, Alaskan development. Her agricultural resources are such that she is capable of supplying herself with many of the food materials now imported from outside markets and her Pacific Industrial Region offers manufactured goods of permanent basic value to the export trade. The total agricultural area, including the lowlands of the Pacific Mountain System, is equal to one and one-half times that of Finland.

![Diagram](image)

Figure 34.—The trade of Alaska during 1924. This commerce makes it appear that Alaska has but three resources—fish, copper, and furs—and that it is essentially dependent upon outside sources for most of its needs. Even lumber and other forest products appear upon the detailed import list. (Data: Commerce Yearbook, 1924, page 564.)

While the agricultural resources of the two countries are not accurately comparable, the Alaskan region, nevertheless, like the Finnish area, should be reasonably self-sufficient for the territory. Alaska, moreover, has not only coal, water power and petroleum, but also iron, copper and other metals whose fabrication will some day lead to expansion in the Pacific Industrial Region; and it is interesting to note that market gardening areas so essential to such regions exist in the wet Pacific Mountain valleys which are preeminently well adapted to this agriculture. Potentially also, in so far as natural environment "determines" these assets, she has all the "brains" and quality of the Norwegians to develop her resources, although it is highly improbable that Alaska will ever become a carrier nation and produce the skilful sea-faring folk of Norway.

**Transportation**

Trade calls for internal as well as external transportation facilities. Both means are insufficient to care for the future development of the territory, although they are probably adequate for present economic growth. Internal movement is largely effected over rough roads, trails and a small mileage of improved highways. Railroad transportation is supplied by five hundred miles of costly, but important, government-built lines running from Seward on the Pacific Coast to the interior, and by several short branches serving the Industrial Region and the Seward Peninsula. In summer, about five thousand miles on the Yukon and its tributaries are open to navigation. Most of the territorial movement is, consequently, accomplished over somewhat primitive highways, owing to the pioneer conditions prevailing in the region. Evolution in this element of economic expansion, however, is contingent simply upon industrial growth.

In international trade routes, watercraft leaving San Francisco for Japan rarely touch Alaska. The territory is ordinarily and conveniently reached by boat from Seattle, the trip through the famous Inside Passage including one of the most scenic in the world. This section of Alaska is the best known part of the territory; its forested islands, innumerable streams and picturesque shores offer ideal recreational opportunities to the population of the growing Pacific Industrial Region of the United States.

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