

The
GEOGRAPHIC
BACKGROUND
OF CHICAGO

By
J. PAUL GOODE



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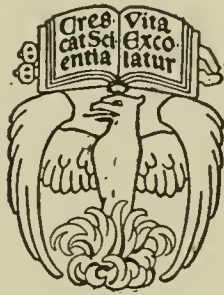
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By

J. PAUL GOODE

Professor of Geography, The University of Chicago



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FOREWORD

THE following analysis of the economic background of Chicago by Professor Goode is a part of a much larger study of certain units of regional planning, which has been undertaken by the University of Chicago's Committee on Local Community Research in co-operation with the Chicago Commonwealth Club and with the Chicago Regional Planning Association. The more comprehensive study includes an examination of the trends of population in the Chicago area, preparation of a much needed base map of the Chicago regional area and accompanying text on the economic geology of the Chicago region, and a somewhat elaborate study of the trend of certain basic industries in and around Chicago. In the same group of studies is included an inquiry by the Committee on Local Community Research into the government of metropolitan areas, with special reference to the Chicago area but with some incidental reference to the methods employed by other metropolitan communities in the United States and elsewhere. All these related studies have in common the purpose of aiding as much as possible in the intelligent planning and development of the Chicago area.

The publication of this volume is made possible by the generosity of the Chicago Real Estate Board, by whom the printing and distribution of this book is financed. The keen interest of the Chicago Real Estate Board in city zoning and planning and in regional development has made possible this piece of effective co-operation with the University of Chicago, the Chicago Commonwealth Club, and the Chicago Regional Planning Association.

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THE GEOGRAPHIC BACKGROUND OF CHICAGO

A City of Destiny

IT IS with cities as it is with men—if we may borrow a bit of wisdom from the *Twelfth Night*—“some are born great, some achieve greatness, and some have greatness thrust upon them.” To the third class, having greatness thrust upon them, belong such cities as Berlin, Madrid, and Leningrad, brought into existence by the fiat of a monarch. In the second class, achieving greatness, are cities like Cardiff and Glasgow, overcoming great physical handicaps and arriving at greatness by sheer human determination. Glasgow, for example, digging a ship channel for twenty-two miles, through pastures and grainfields, and making of itself one of the world’s great seaports. In the first class, born great, are such cities as Paris, London, New York, and Chicago, inheritors, all, of a generous list of geographic advantages, and destined from the beginning to play a great rôle.

THE PHILOSOPHY OF A GREAT CITY

The city is a vortex of human activity. The type of vortex is shown now and then by a smoker, who turns up his face and sends a little wreath of smoke up toward the ceiling. Observe that wreath. It is shaped like a doughnut. The particles of smoke go up in the center, turn out radially, come back into the center, and rise again. Yet the whole vortex has coherence, unity, individuality. It is a system

in dynamic equilibrium. And one may visualize the city in just these terms. It is a vortex, into which there is a continual flow of people and of food and other commodities, and out of which there is a flow of people and of goods more or less transformed.

In this sense and with an eye to commercial values, Professor Cooley long ago defined the city as "a place where commerce breaks bulk, and changes the agent of transportation," as from wagon to railway, from railway to steamship. And it is in this sense that we must study our Chicago, for the commercial advantages are fundamental in making the great Chicago metropolis. And why so great? We will discover that the size, the importance of any city, is in proportion to its advantage of position with relation to the exchange of the commodities of commerce—in proportion as the region immediately tributary to the city supplies the commodities or produces the wealth to *buy* commodities from other regions.

Let us apply these principles to the interpretation of Chicago. All the world knows that Chicago at the present time ranks fourth in size among the world's great cities, and that its entire history is compassed within the lifetime of men still living. A century ago it was merely a remote and inconspicuous trading-post at the mouth of the Chicago River, and that river little more than a muddy prairie creek. To this post came Indians and French *voyageurs*, with furs and skins for trade. What this post was, in its earliest days, the keen imagination of a Chicago artist, Mr. Edgar S. Cameron, has shown us in his mural painting called "Wolf Point."

THE FOUNDATIONS OF THIS CITY WERE LAID IN THE VERY MAKING OF THE CONTINENT

This marvelous growth of a metropolis is not without cause. Like the rare flower of the night-blooming cereus it did not just happen in its blossoming time. The final bloom was provided for long, long in advance. In the making of Chicago these influences have been accumulating through vast aeons of time, during the evolution of the continent. Speaking of the numerous vestigial organs in the human body, David Starr Jordan remarks that the human body seems unable to forget its past. Neither can we forget the geologic and geographic history of Chicago if we are to understand fully the reasons for our present exalted position in the world.

THE GEOGRAPHIC ELEMENTS OF THE CITY'S GREATNESS

We shall find the elements of the city's greatness: (1) in advantages of location; (2) in the flat surface of the surrounding region; (3) in the rich soil of the central plain; (4) in the nature of the climate of the region; (5) in the consequent wealth of forest and farm; (6) in the phenomenal wealth of the mineral resources of the tributary area; and (7) in the character of the people now occupying the region.

So with the geologist's vision, half in fun and all in earnest, we may claim that invitations were issued for a Chicago, over a hundred million years ago. For the making of the flat central plain and the Great Lakes was in progress that long ago, as a study of the continent as it was in

Ordovician time will show. In those days a continent stretched from northern Minnesota and the Adirondacks, through Labrador, Greenland, and Iceland to the highlands of Scotland and Norway. Outliers of islands lay where the future Appalachian Mountains were to be, and other outlying islands stood where the future Sierras and

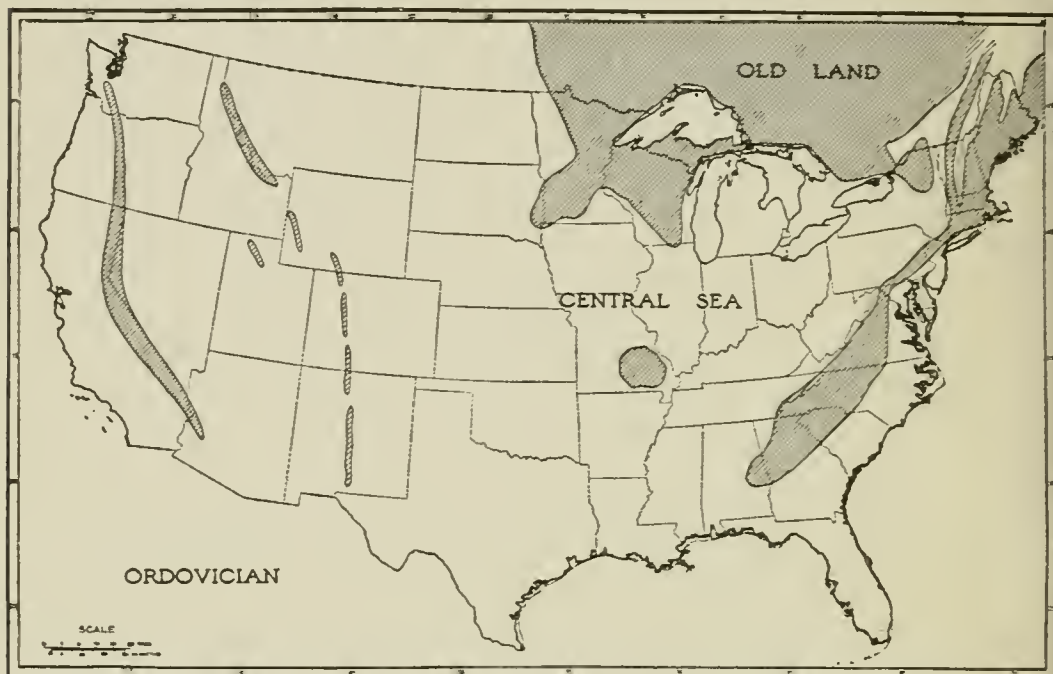


FIG. 1.—Map of the United States of America in Late Ordovician time, showing the margins of the old continent and the outlying lands of the Central Sea. (After T. C. Chamberlin.)

Rocky Mountains were to be. Between these outliers at the east and at the west lay a shallow flat-bottomed sea being gradually filled with lime-making material from the sea animals, and along all its margins receiving the muds and sands from the wasting continent alongside. The continent in later ages has been uplifted bodily, and the old sand deposits have become our sandstones, the old muds deposited in the sea bottom have become our shales and limestones.

In those days, so long ago, there was a deep trough folded into the margin of the continent, as a gulf, where Lake Superior now is. Let us call it the Superior Gulf. Just east of this was a broad bay, centered on the lower peninsula of Michigan. We will call that the Michigan Bay. Now this old gulf and bay were the first steps in the making of the great lakes—Superior, Michigan, and Huron. The Superior Gulf was soon washed full of sand from the adjacent continent, and forgotten. The Michigan Bay had its share of sands too, but later received much larger deposits of lime muds, which lay as beds of limestone for ages, until just last week as it were, geologically speaking, the continental glacier of the Great Ice Age found the sandstones and shales easy digging and scraped out the basins of the three upper lakes. And we may note just here, that without the Great Lakes there would be no Chicago.

THE GREAT RESOURCE OF IRON

The significance of the Great Lakes is apparent in the very first industry we turn to in a study of the resources which focus on Chicago. The industries of iron and steel rank second in the value of wealth produced in the metropolitan district of Chicago. And again the advantages which Chicago now enjoys were provided ages ago. The old continent we have spoken of was lying there over a billion years ago, a great crystalline mountain mass, wasting away under the summer sun and rain and winter snow. The old igneous rocks contained iron, and iron oxide is one of the most insoluble materials in the crust of the earth. So as the old continent was dissolved away under the falling rain, the iron oxide was left behind, and segregated into deposits of iron ore of exceeding richness. The great pro-

ducing beds in Minnesota, the Vermilion and Mesabe ranges, and in Michigan, the Gogebic and Crystal Falls deposits, all lie within sixty miles of Lake Superior or Lake Michigan, providing easy transit to the lower lakes, and enjoy the lowest freight rates ever known.

Now iron is one of the great foundations of the world's present wealth. In 1907 the International Geological Congress reported on the world's available deposits of iron ore known and workable under present conditions. Converting all the various grades of ore into the uniform product iron, the world's present reserves footed up to something over twelve billion tons. Of this total, one-quarter is in Brazil, just back of Rio de Janeiro; one-fifth is in the United States of America, mostly around Lake Superior; about one-fifth is in Newfoundland; and the iron credited to the other countries can be seen at a glance in the map Figure 2.¹ The major share of the world's iron is in the New World. And in the present state of the art, the iron ore is reduced by carbon, and therefore it goes to, or toward, the coal fields for reduction. And thereby Chicago is greatly favored, for Chicago is on the way to the coal and on the way toward the market for the resulting iron and steel.

Not only is there a tremendous quantity of iron ore in the Superior region, but in large measure it is rich ore. The richest of it runs over 65 per cent iron, and though at the present time leaner ores are being mined, the average for the Superior fields is over 50 per cent iron. The ore of

¹ NOTE.—Tremendous deposits of iron ore have been recently reported in the Kursk region of Russia, deposits so large as to change totally the world's alignment on iron reserves. These deposits are not yet estimated with sufficient accuracy to enter definitely in the chart.

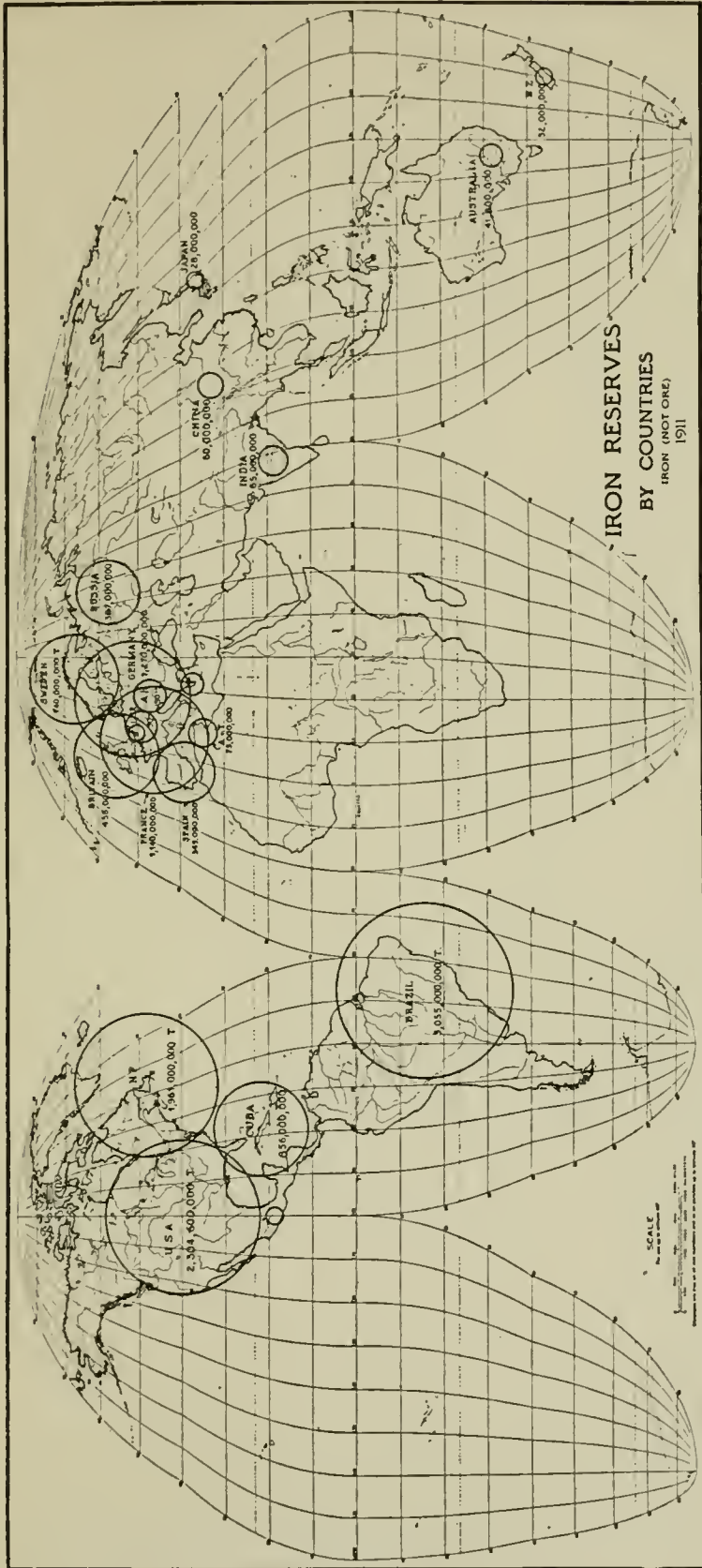


FIG. 2.—Map of the world on Goode's homolosine projection, showing iron reserves by countries

Minnesota is mostly hematite, and it lies in great bodies hundreds of feet thick, and may be worked from the surface with steam shovels. Such a shovel takes its bite every twenty seconds and lifts from five to ten tons at a time. A train of hopper cars is soon loaded and on its way down hill to Lake Superior. The train goes out on a tall pier and scuttles its load through the bottoms of the cars into great hoppers beneath. Then alongside the pier comes the steel ore-boat. Such a boat has a clear open space below decks, which will hold 12,000 tons of ore. The hatchways are drawn back all at once, by a motor; spouts are let down from the ore hoppers above; and the ore, like red dirt, runs in streams into the hold. The entire 12,000 tons of ore may be taken in within the space of sixty minutes, though it may take a while longer to trim. But in an hour or so the 12,000 tons of ore are on their way to the lower lakes. Reaching the dock at the lower end of Lake Michigan, great steel traveling cranes are waiting with clamshell hoists reaching over into the hold; and with electric power, each hoist may close on twenty tons of ore, lifting it bodily out of the hold and scuttling it into a waiting box car, or a hopper car which runs it out and dumps it on to the stock pile. In six hours or less the 12,000 tons of ore are unloaded, and the boat is ready for the return trip. Nowhere on earth is ore handled more expeditiously or more cheaply.

THE ORE TRAVELS TOWARD THE COAL AND THE MARKET FOR IRON AND STEEL

Up to the present time the most of the Superior ore has gone to the Lake Erie ports, since the major coal supply has been the northern Appalachian field, and the best

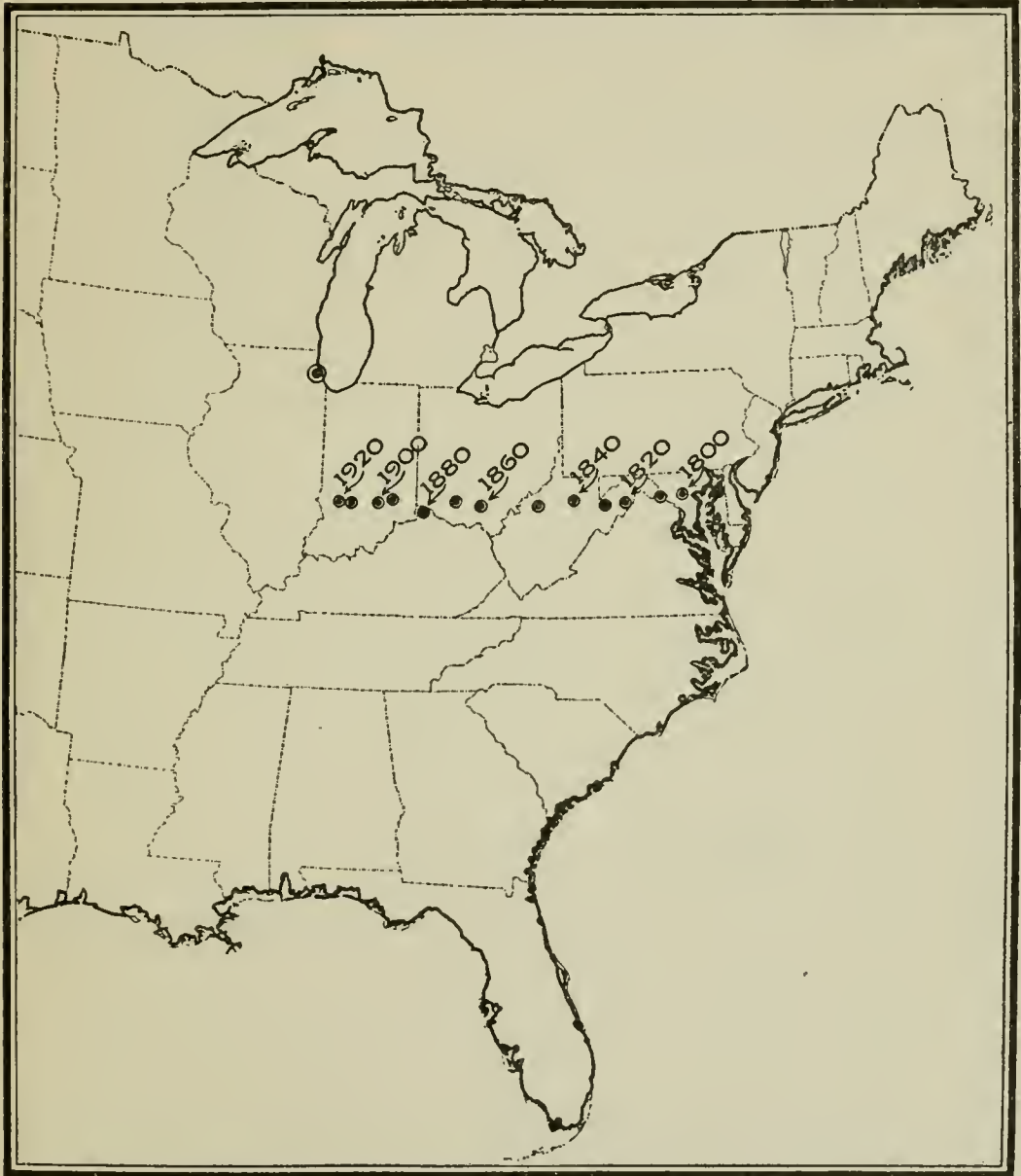


FIG. 3.—Map of Eastern United States, showing the westward migration of the center of population

coking coal that in the Pittsburgh district; and since, also, the larger market for iron and steel has been in that region. But these relations are changing. The population center

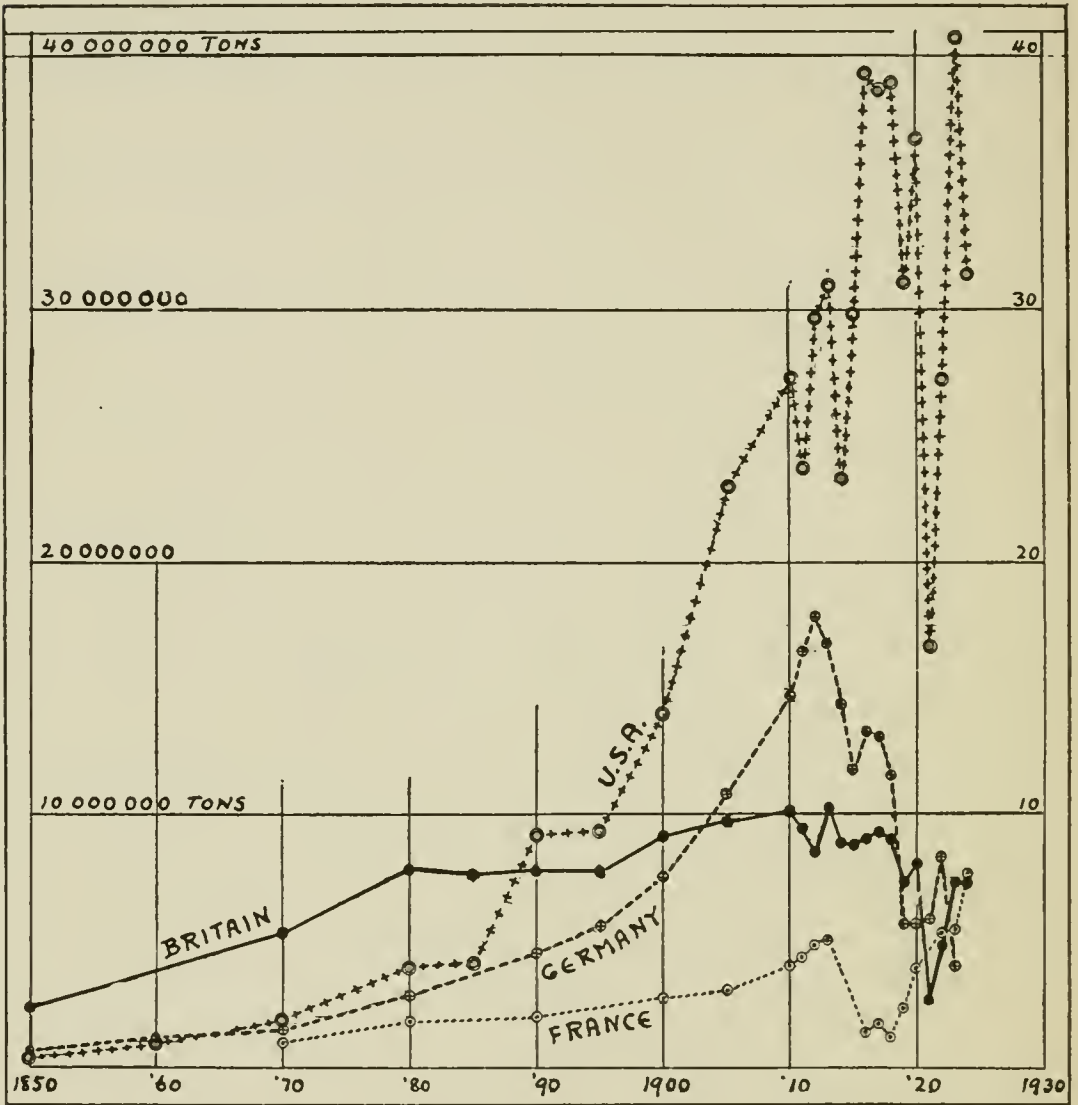


FIG. 4.—Graph: Trend of pig-iron production, 1860-1925; United States of America, Britain, Germany, and France.

of the country is moving westward. It is now in the central western margin of Indiana, with a slant toward Chicago. The center of manufacturing is likewise moving westward and is now in western Ohio. Manufacturing of all kinds is

rapidly expanding in the Chicago district, and the Superior iron ore is coming in larger measure to the Calumet district, the towns at the southern end of Lake Michigan.

Rich iron deposits, with high-grade ore easily won and moved by the cheapest transportation ever known; exceedingly rich deposits of the best of coal; and a population

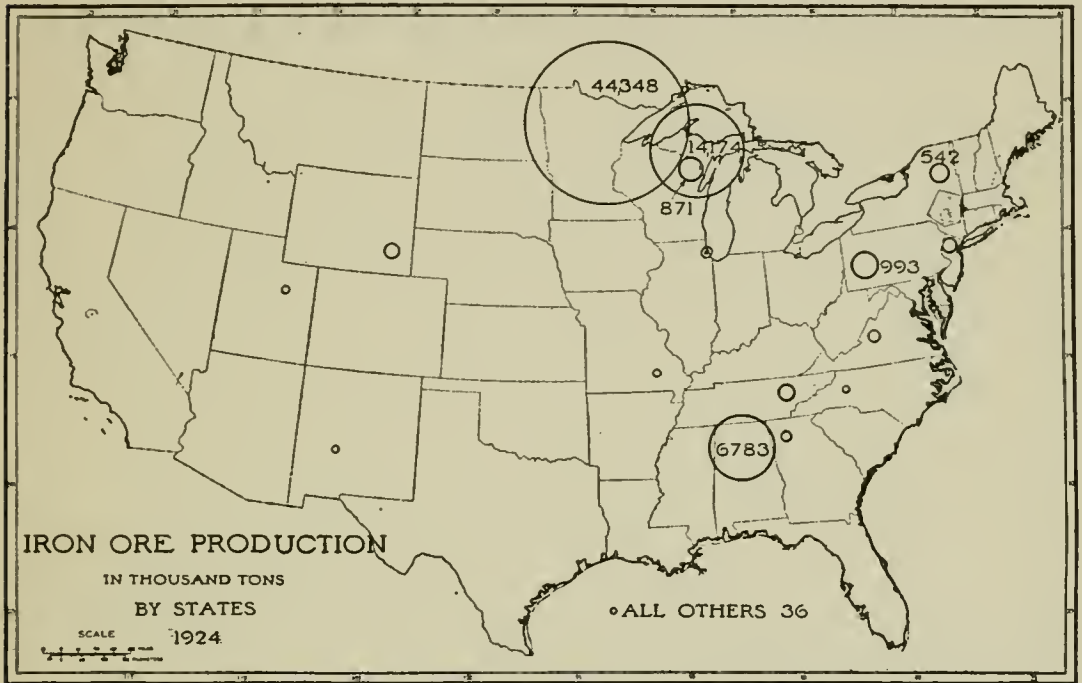


FIG. 5.—Map of the United States of America: Production of iron ore by states, 1924

alert and ingenious have put our country far in the lead of all the countries on earth in iron production. The curve of our iron production during the past two generations is exceedingly interesting.

In 1860 Britain was ahead of all other nations, and with a long lead, in the production of iron. Our country was only a short distance above zero. And for a number of years our increase was slow. But in 1884 the great Minnesota mines were opened; then we rose rapidly, passing

Britain in 1888 and going so far ahead of other nations that we are now producing about half of the world's iron and steel. In 1923 we produced over 40,000,000 tons of iron.

Now when we notice that over 80 per cent of the iron ore of our country comes from the Lake Superior beds and moves down the lakes to meet the coal and the market, it is plain to see that Chicago is exceptionally favored in location for the development of the industries in iron and steel. (For the past generation the industries in iron and steel have stood second only to the packing industries as wealth producers in Chicago.) And now with the removal of the Pittsburgh-plus restriction these industries are blossoming out in the Calumet district, and in no long time perhaps this district will be headquarters for iron and steel in America, and that will mean for all the world.

THE SIGNIFICANCE OF THE COAL RESOURCE

It has been observed that under present practice the iron ore goes to meet the coal. This locates the making of iron and steel near to the sources of coal, and in turn brings into existence in the regions of cheap coal a long list of manufacturing industries ancillary to the production of iron; so that the location and the magnitude of the manufacturing industries in general, comes to be a function of cheap and plentiful coal. The so-called Western civilization is in very large measure a steam-engine-and-labor-saving-machinery culture. And populations have grown large and nations have grown rich and powerful in about the measure that they have been blessed with a plentiful coal resource. Witness England, Germany, Belgium, and the northeastern quarter of our own country. The eminent

British economist, Stanley Jevons, making a survey of the British coal resource a generation ago, came to very sound conclusions when he said "Coal stands not beside but entirely above all other material resources. With coal almost anything is possible or easy; without it we are thrown back into the laborious poverty of early times." It has never been better said, and it is as true now as it was then. The great cities of the present day would be impossible without the constant use of the cheap and convenient energy of coal. Think what would happen to Chicago in its food supply, milk supply, water supply, and sewage disposal, if the steam engines should stop working. In our generation cities become great just in proportion as they are served with cheap and plentiful coal. And no great city can hope to continue to grow, or even to maintain itself on an even keel, without looking ahead and assuring itself of a continuation of the present coal supply, or of a supply of some substitute inanimate energy.

Now with the significance of coal in mind let us observe that at the present time our own country is producing—and consuming—about half of the entire world's output of coal. While Britain was producing most of the coal in 1850 and we were near zero in production, in the years since then we have increased our production more rapidly than any other nation. We passed Germany in 1881 and Britain in 1898, and the line-up in 1924 shows us with an output of over 500,000,000 tons, or nearly half of the world's output of coal in that year.

Let us repeat: This increased use of coal is the fundamental reason for the phenomenal increase in wealth and power of certain western nations in the last two or three generations. It is in the background as a cause for the

growth of industrial populations and of great cities; of the unprecedented increase in international commerce, and the financial wealth of the world. Coal-producing regions have

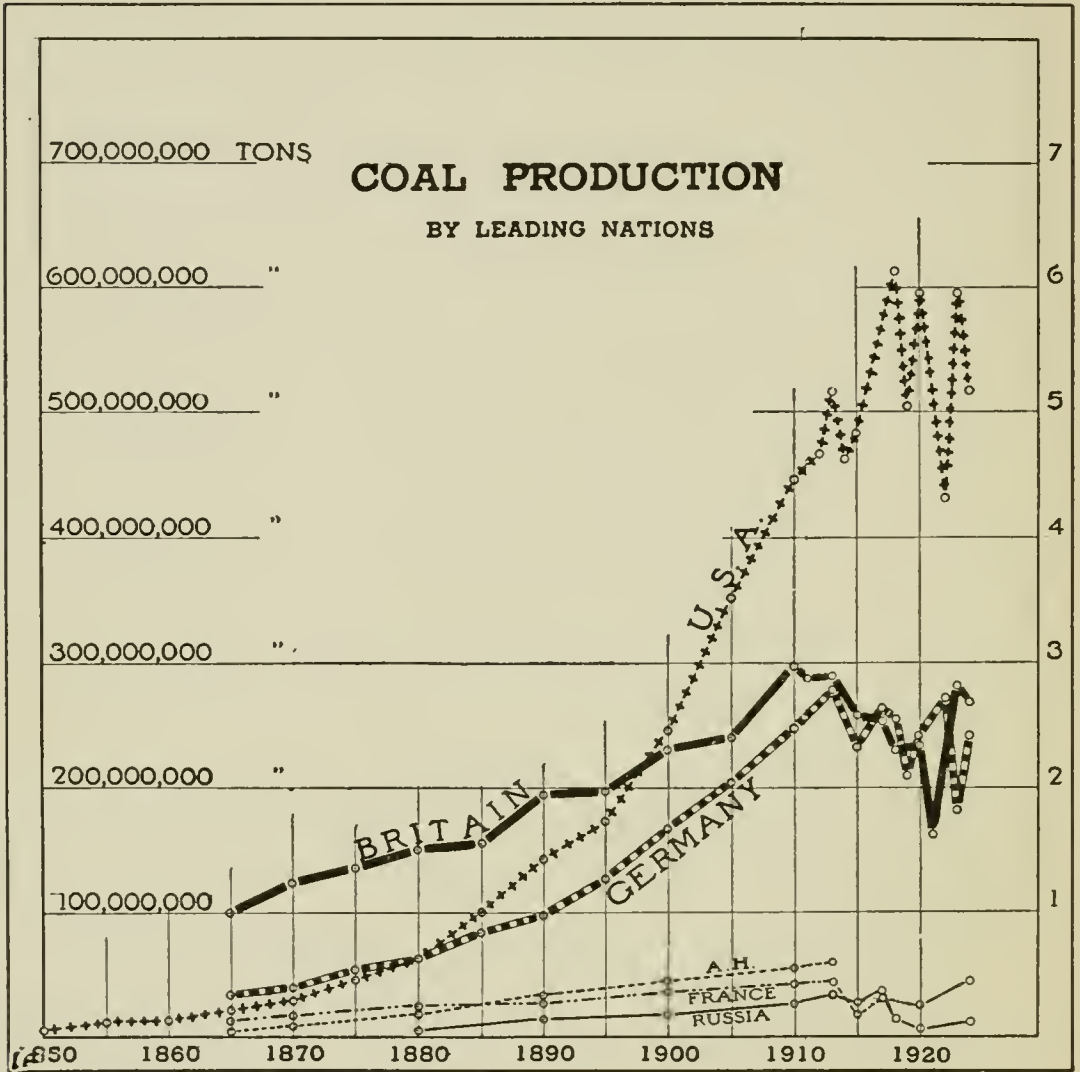


FIG. 6.—Graph: Trend of coal production by leading countries, 1850-1925; Britain, Germany, United States of America, Austria-Hungary, Russia, and France

become the areas of great population density, and the foci of world-trade.

We can read our own map in these terms. The most of our coal up to date has been taken from the Appalachian

and anthracite fields of the East. The anthracite fields, though very small—only 480 square miles in area—have furnished nearly one-quarter of our coal value; the Appalachian fields have furnished about half of all our coal. It is not surprising, then, to find our industrial cities thickly sprinkled in or near these fields; to find the great majority of our people in the northeastern quarter of our country, and the financial wealth concentrated there.

Of course a part of this concentration of people and of wealth is due to the fact that our country was colonized on the eastern coast, and population and material development have spread slowly westward. This is the influence of an early start, a bit of human inertia which has to be taken into the calculation. But it is a minor influence nevertheless, as a study of the spread of population and the accumulation of wealth in the southern states will show. The dominant influence at work is the great store of inanimate energy in the coal available and used. This has determined the location and growth of the industrial cities, the character and magnitude of the manufacturing to be established, and the place of production of larger and larger shares of national wealth.

CHICAGO'S ADVANTAGE WITH REFERENCE TO THE COAL RESOURCE

So let us take an account of stock for Chicago, and study the energy supply which has made possible the current growth and which has such a vital bearing upon future development. And again we will find that our country has inherited her great advantages from a remote geological past, and our bank account of coal, which is the greatest asset in power any nation ever had, was being laid down

for us in the marshes of the great central plain, over fifty million years ago. The old mountains of the earlier continent had been worn down to their very roots. Incidentally, the shallow sea where the central plain now lies had been partially filled up with the wash from the lands. Perhaps the continent had been lifted slightly, or the ocean level had been slightly lowered, leaving the old sea bottom just above sea-level. So there were great marshes a thousand miles long, stretching from Pennsylvania to Alabama and from Michigan to Texas. And in the stagnant water of the old marshes the vegetation of that day grew with luxuriance under the continuous sunshine of endless summer, and dying, fell into the stagnant water and was prevented from decay. So, great peat beds were accumulated for the making of the future coal. In a very real sense then, our coal is the pickled sunshine of ancient days, salted down as solid carbon, and now discovered and put to work by us.

As the map shows, these fields are widely distributed over the country, yet, because the older settled part of the country is in the East, the eastern fields have been better developed and have been called upon in larger measure for the fuel supply. Thus it is to be seen that it is the northeast quarter of the country where most of the coal has been produced and which has the great industrial and wealth-producing population. Chicago is on the western margin of this great industrial region and has by no means yet reached her stride in the use of coal.

Yet Chicago has a focal position with reference to the resource of available coal. Just over the horizon to the south of us lies a rich coal deposit, the Eastern Interior Field, which on any other continent would be the bank

account for the industrial and commercial development of a great nation. This field is producing at the present time more than twice as much as is produced by France and about three times as much as the total produced in Japan. Or let us say, roughly, the Eastern Interior Coal Field is producing (and that mostly in Illinois) as much coal as is produced by Russia, France, and Japan combined.

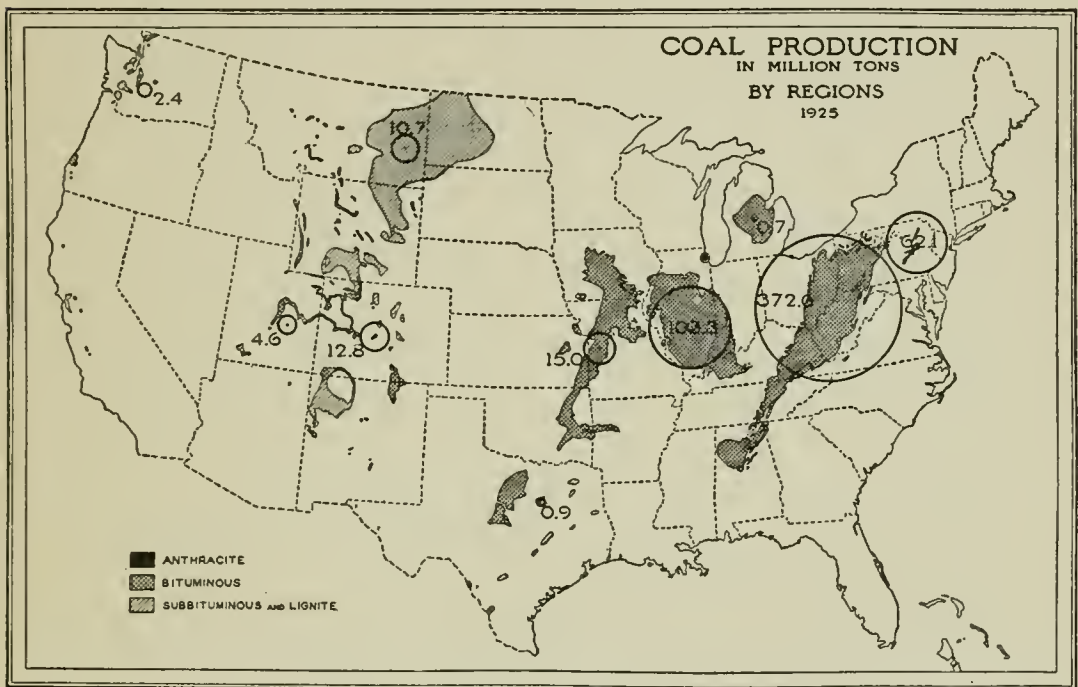


FIG. 7.—Map of United States of America: Productive coal fields, with rank of coal output by regions, 1925.

Now it is not at all necessary that all this coal should come to the end of Lake Michigan to serve as a basis for the growth of a metropolis. It will be burned in Terre Haute, Peoria, East St. Louis, and a hundred other industrial towns, and the more there are of such towns in the Chicago hinterland and the more prosperous they become, the better it is for Chicago. The same advantages of location which have made Chicago grow to its present size will

still be working for Chicago. It will continue to be the Great Central Market, a marvelous emporium, a focus of exchange between all the lesser industrial towns and the whole world outside.

But this Eastern Interior Field, great as it is, is one of the lesser of the American fields, and it is well to observe that Chicago is very favorably placed with reference to the coal of the great Appalachian fields. Between Chicago and this great supply of coal lies an exceedingly flat plain, already splendidly knit up with a railway net and carrying coal to Chicago at the present time for industries in successful competition with the eastern seaboard. And to make transportation all the cheaper there is the potential competition of the Great Lakes which may bring the coal from Ohio and West Virginia from Lake Erie ports, an advantage which is likely to become greater as time goes by.

AMERICA HAS MORE THAN ONE-HALF OF ALL THE WORLD'S COAL

But we, as a nation, have only begun to use our coal. And we have over one-half of the world's total coal reserves inside our own country. The Twelfth International Geological Congress, assembling reports and estimates from all nations, in 1913 made a tentative estimate of the world's total coal reserves. It foots up to about seven and a third trillion tons. Now that is a lot of coal, and most of us cannot think in trillions. But we do think in simple fractions, and it is impressive to see the good fortune we were born with. In round numbers we are credited with nearly four trillion tons of coal, considerably over one-half of all the known coal. Next in rank as an owner of coal comes Canada with about one and a quarter trillion tons,

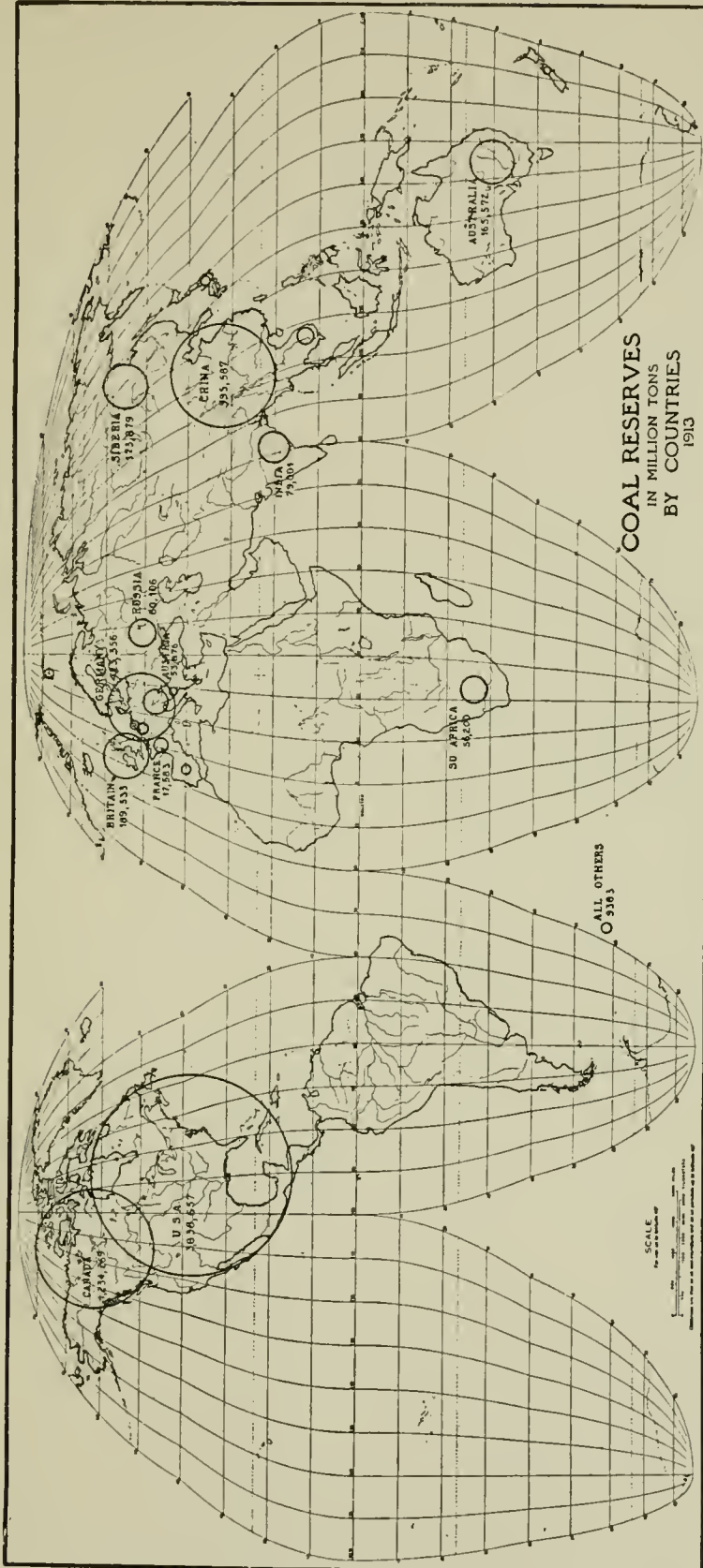


FIG. 8.—Map of the world on Goode's homolosine projection: Coal reserves by countries

most of it in southwest Canada. And next in line comes China, with nearly a trillion tons. And far below China comes all Europe, with only 726 billion tons—that is, China has a third more coal than all of Europe. But by the same token we, the United States of America, have more than five times as much coal as all the countries of Europe put together. Now that is an inheritance of material good fortune, greater many times over than has been allotted to any other nation whatsoever. It not only accounts in large measure for our present great wealth and power among the nations, but it compels us to look forward to a relatively greater power in the near future. So far as anyone can see, when, a thousand years from now, all the coal of Europe will be gone, we will still be going strong with a resource left at that time greater than all Europe has now.

This brief glance at the distribution of the world's coal should give us our bearings as to what is happening in the world at the present time. It is perfectly clear that the nations with the coal are now doing the major part of the manufacturing for the entire world, and in addition they are carrying on most of the overseas commerce; and the profits in industry and the earnings in commerce are flowing in golden streams into the treasuries of the nations who own and use the coal. We are already far and away the largest manufacturer on earth, and we are only just beginning our career in foreign commerce. From now on, our increase in the manufacturing industries and in commerce will be due in large measure to our development of foreign trade. And the regions in our country which will grow most rapidly in population and in wealth will be the regions, first, which are located most favorably to make use of the great supplies of inanimate energy—at the present time,

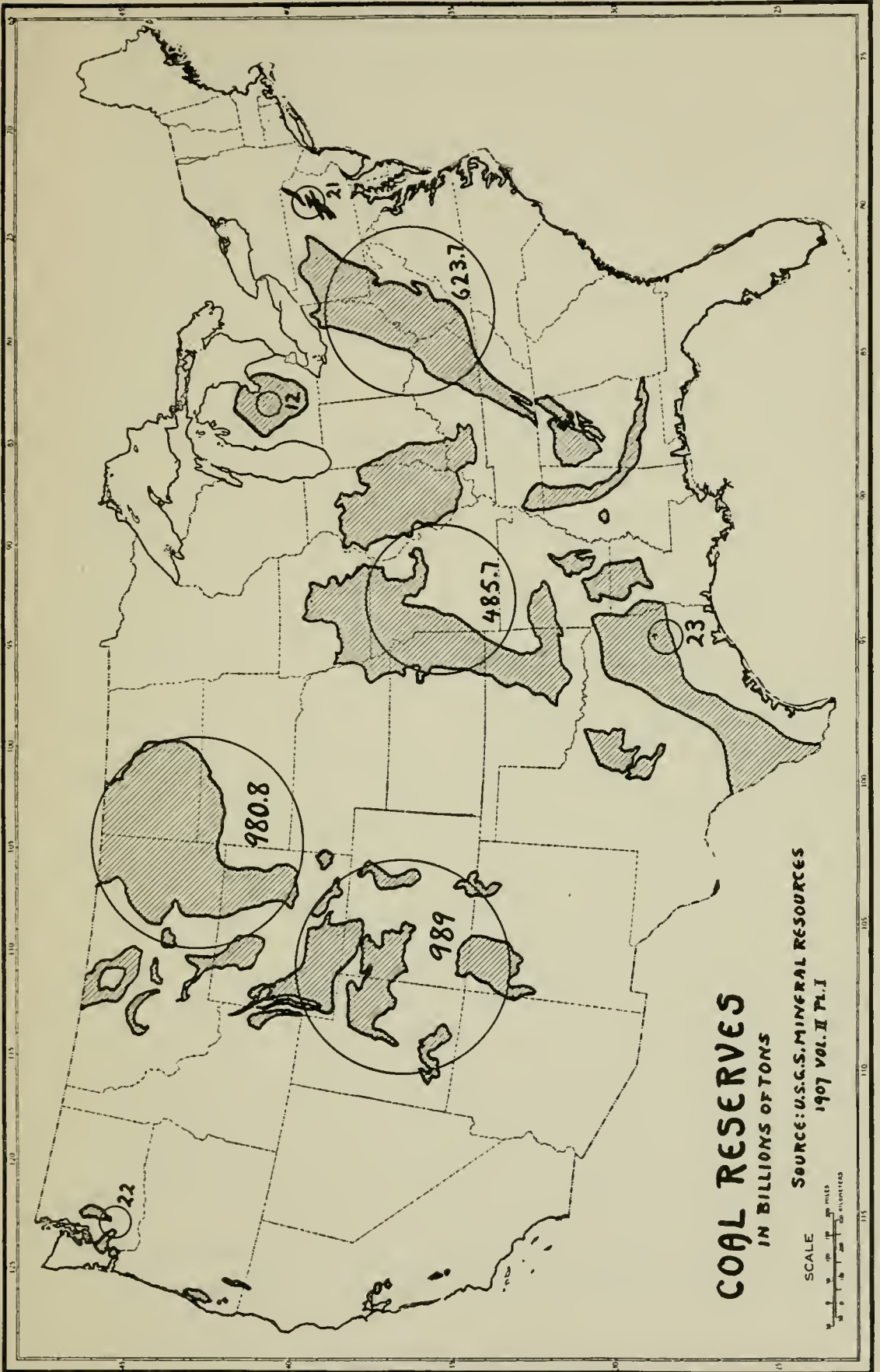


FIG. 9.—Map of United States of America: Total coal reserves by regions

coal—and second, which have marked advantages for carrying on commerce, especially foreign commerce. Let us again study the map with reference to the location of Chicago in regard to these two great advantages. In the accompanying map showing the total available coal by fields, Chicago occupies a strategic position. Within convenient reach at the southeast is the great Appalachian field with a resource of 624 billion tons of coal, or more than all the available coal of Britain and Germany combined. Within reach, and just as conveniently placed, are the Interior Fields in two great lobes, eastern and western, with a total resource of 486 billion tons, or more than all the coal of Germany and Russia combined. And all of these great fields, with once and a half the coal of all Europe, are but the minor part of our total reserves. For in the northern Great Plains and adjacent mountain flanks, a group of fields is credited with 981 billion tons, and in Colorado and adjacent states 989 billion tons more. The two great regions together have 1970 billion tons, or more than two and a half times all the coal in Europe.

These great reserves lie largely untouched and waiting development. Some day they will be put to service. If this coal is used on and near the fields, almost all the products manufactured with it will move out to the dense populations in the eastern part of the country, and to the waiting foreign markets in the outside world. In all this development Chicago will continue to hold a leading place as a commercial focus in the trade between the great industrial regions some day to be established on these great fields, and the world outside. And we must not forget that these fields have a power of wealth production and population concentration equal to two and a half times that of all

present-day Europe, as indicated by the coal energy lying dormant and waiting development.

But if a dream which is being indulged in by some great engineers comes true, the energy of this western coal will be transformed on the spot into electric energy for transmission and sale in a market far to the east. It may not be long before we may see the whole country covered with a network of electric distribution lines, a veritable grid of great copper bars extending from ocean to ocean. And into this grid, the electric energy from the coal and from the developed water powers will be pumped, to be drawn out as wanted, by a consuming public located anywhere the country over. Even so, the element of distance in transmission cannot be overlooked. And while the energy *may* be drawn from the superpower grid one or two thousand miles away, there is a very definite current loss in transmission, which will always invite the use of the current close to the place of its origin. Therefore, these great western fields are likely to be drawn upon for use in industry west of Chicago, perhaps in the states of Montana, North and South Dakota, and Colorado. But even in that case the bulk of their product will have to travel to markets in the East and in foreign lands, quite like the wheat and the meat produced in these same regions at the present time. And it is not difficult to see that the same geographic advantages of position which have made Chicago the great merchandising focus it is, will still be in operation then as a marvelously greater entrepôt and distributing center, with its great banks financing an extensive trade with every land on earth and with its fleets of merchant ships on every sea.

Consider then the coal available within the radius of

service by the Chicago merchant as five times the coal available in all Europe; consider the strategic central position of Chicago as a basis of transportation and commerce; realize that the major service of this coal is to be in manufacturing for a foreign market; and we will begin to realize that Chicago is better located as a merchandising focus than is any other city on earth, and has a better hold on the future than any other metropolis whatever.

We have spoken so far of two mineral resources only, coal and iron, but in the region tributary to Chicago, there are also rich resources of copper, lead, zinc, clays for the fictile arts, cement materials, building-stone, and others, the production of which runs into millions of dollars per year, thus adding significantly to the wealth and buying power of the region.

THE FLAT CENTRAL PLAIN AND THE FERTILE SOIL

But rich as these mineral resources are, they pale somewhat, in their significance to mankind, when we compare them with the rich soil of the flat plain of which Chicago is the focus. The coal once used is gone forever. The mine produces but one crop. But these rich soils are so generous that, as the funny man observed a generation ago, you need only to tickle them with a hoe and they laugh with a harvest. And such harvests the world has never before known. And these soils will continue to bless mankind with their favors as long as the sun returns in his annual rounds.

But here again, we were born rich, and inherited the agricultural advantages of this plain without thought, and in large part without inquiring why or how such riches

were here, ready for our taking. Perhaps it will add a bit of romance to our possession of this soil wealth to know that in large measure we are indebted to the Great Ice Age and its continental glaciers for this richest soil area on the continent, of which Chicago is the natural focus.

A short time ago, as geologists count time, perhaps less than a million years ago, the climate for some reason grew cold, so cold that the ice cap of Greenland spread over on to Labrador and Kewatin and then kept on growing, until, with the local ice fields developed on the northern Rocky Mountains, half the continent of North America lay under a great field of ice. This ice was very thick and very heavy and moved slowly southward until its advance was checked by melting in the warmer climate along its southern border. At its greatest advance its southern margin lay approximately along the Ohio and Missouri rivers. At that time, as Chamberlin estimates it, the ice was over a mile deep over the site of Chicago and was moving perhaps not faster than the end of the hour hand of your watch.

With this tremendous pressure and slow movement, the ice pushed off the tops of the hills and filled up transverse valleys. It denuded the crystalline lands of Canada, carrying its plucked blocks of granite with it, using them like sand grains in a great sheet of sandpaper, in smoothing the land surface over which it passed. It gouged out the outcropping sandstones and shales of the basins of the Great Lakes, and crushed and ground all this material as it moved slowly forward, until it was finally dropped where the ice melted at the southern margin. Thus the ice, finally receding when the climate became warm again, left all the surface over which it had passed smoother than it may have been before and mantled with the ground-up rock

débris, which contained contributions from all the rock outcrops which the ice had passed over in its journey down from Canada. In this way the surface of the Central Plain was made very smooth and was mantled with the extremely rich soils of the Central Plain.

The Ice Age was not all one period of cold, for the ice margin advanced and retreated a half-dozen times, before its final retreat to Greenland. The last great advance is known as the Wisconsin sheet, and it is to this sheet we owe most of the rich soil in the Chicago region.

THE GREAT LAKES CAME INTO BEING

It was to the Wisconsin ice sheet also that we owe in large measure the present form of the Great Lakes. The old forgotten Superior Gulf, filled up with sand so many million years ago, was discovered by the ice and promptly scraped out to a depth of six hundred feet below the present sea-level. This basin, presently to become Lake Superior, diverted the flow of the ice to the southwest and was responsible for a long ice lobe reaching beyond the heart of Iowa. The Keweenaw peninsula in the southern flank of Lake Superior stood up like a great wedge, a veritable mountain, and split the front of the ice sheet to the west into the Iowa lobe and to the east into the Lake Michigan lobe; and in its lee, at the south, the ice thinned out and melted away, leaving a great area in southwestern Wisconsin entirely unglaciated, an area as large as the state of Connecticut. This unglaciated area is a maturely dissected region with thin soil, showing us what the entire Chicago region was before the great ice sheet smoothed it and provided it with a new soil. It is not worth half as much per acre or per county as the glaciated areas all around it. It

helps to demonstrate that, so far as agricultural wealth and transportation facilities are concerned, the work of the great ice sheet was the best thing that ever happened to the Chicago region. It made of the great plain of which Chicago is the focus the richest agricultural area of its size on earth. The margin of the ice-covered part of the plain can be discovered in a hundred economic and human maps, written so plainly that he who runs may read.

It was easy digging for the ice to remove the sandstone and thereby make the basin for the present Lake Superior. Easy digging was found also around the margin of the old forgotten Michigan Bay, where sandstones and shales gave way under the glacial scour, leaving the basins of the present Lakes Michigan and Huron. In similar fashion the basin of Lake Ontario was carved out, and in part the basin of Lake Erie also, though in the latter case the depression is in part made by the dumping of material in moraine form south of the Lake Erie depression.

INLAND WATER TRANSPORTATION PROVIDED FOR

As the Wisconsin ice sheet melted away and its margin receded to the north, a totally new system of drainage was imposed upon the uncovered land. The ice in its advance had reached beyond the Arctic and St. Lawrence River basins into the Mississippi Basin; and as the ice receded northward, lakes were formed at the ends of the various ice lobes, draining out to the Gulf of Mexico. The basin of the Red River of the North was ponded into what we call the glacial Lake Agassiz, draining out through the Minnesota River Valley to the Father of Waters. A lake formed at Duluth, draining south through the St. Croix

River. At the end of the Lake Michigan lobe, Lake Chicago was formed outflowing to the southwest by way of Illinois River. This was the beginning of the preparation for the future Chicago Drainage Canal, and the making of the trench which will some day become a great barge canal, carrying freight between Chicago and the Gulf. When

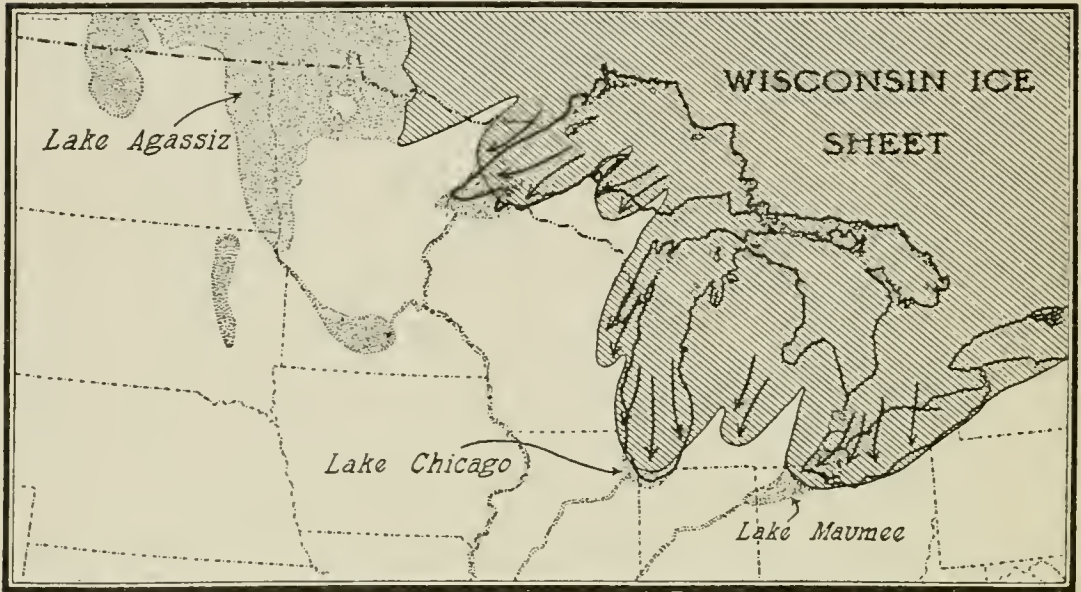


FIG. 10.—Map: The receding Wisconsin ice sheet; glacial lakes Agassiz, Duluth, Chicago, Maumee, and the Chicago Outlet. (After Upham, *U.S.G.S. Mon. 25*; and Dryer, *Indiana Geography* [Taylor].)

Lake Chicago was at its full, the present site of the city of Chicago was under water, and the waves beat upon the bluffs at Beverly Hills and Palos Park, and the outlet river below Forest Island was perhaps as large as the Mississippi River at Keokuk at the present time.

Some thousands of years later, when the ice sheet had receded down the St. Lawrence Valley beyond Lake Ontario, a still mightier river took all the drainage of the Great Lakes Basin by way of the Mohawk Pass to the estuary of the Hudson River at Troy, thereby smoothing

out the trench across the Appalachian Highland, which in recent decades has determined the route of the Erie Canal and the New York Central Railroad. Thus in post-glacial times, the final shaping of the Great Lakes and the Mohawk Pass determined definitely that the two great transportation foci should be New York City, at the



FIG. 11.—Map: A late stage of recession of the Wisconsin ice sheet; the great Lake Algonquin, with outlets at Trent River and the Mohawk Pass. (After Dryer, *Indiana Geography* [Taylor].)

mouth of the Hudson estuary, and Chicago, at the head of Lake Michigan in the heart of the rich Central Plain—New York with the finest harbor on earth, on the direct commercial highway to the dense populations of Europe and at the present time far and away the greatest seaport on earth; Chicago at the focus of the richest wealth-producing area anywhere, and at the head of a great system of inland seas, and destined at no distant day to become a seaport in her own right, to try conclusions in ocean traffic with any other port.

THE PRESENT SITE OF CHICAGO

We can see now how we have come by a number of our strategic advantages. It is obvious that there must be a great city somewhere at the head of Lake Michigan. The exact site was determined by the little, inconsequential Chicago River, a glacial after-thought, which gave a channel across the sandy shore line, supplying a haven for lake boats. There were other streams in the vicinity, but this one lay so close to the Desplaines River that a slight portage took the early boatmen to the highway of the Mississippi. And when our fathers came this way they recognized the old Chicago Outlet as the place for a canal from the Lake to the Gulf. We haven't yet lived up to the dreams of our fathers, but a great barge canal will be coming some day soon.

The receding lake, dropping from its old outlet at Forest Island to its present level, has, by wave action and undertow, smoothed the surface of the uncovered land to the extreme flatness we see about us. The only relief upon it is the occasional beach ridge, which determined the routes of the early roads, but even these beach ridges have largely disappeared in the built-over areas. Calumet Lake, Fox Lake, and much of the marshy land in the Calumet district are merely unfilled and undrained parts of the exposed bottom of the old higher-level Lake Michigan. But this flatness, with its surface of clay and sand, offers the simplest of problems in the laying out of streets, in the provision of municipal water supplies, in sewage disposal, and in building projects. The veneer of clay and sand is not very deep. In the Loop district, it is only about eighty feet below the surface to the solid limestone, flat and smooth as a floor. The great buildings are all planted upon

this limestone floor, and the ease of removing the clay has provided the down-town section with a marvelous system of freight tunnels and two- and three-level basements under the larger buildings.

THE CLIMATE IS MOST FAVORABLE IN THE CHICAGO REGION

We have spoken of the fertility of the soil of the Central Plain. But one must be well aware that soil fertility cannot be discussed apart from the climate. If we were to have an area equal to our Central Plain, flat and smooth as it is and covered with the richest soil material, but located in the heart of Sahara, there would be no great metropolis in it, or any wealthy population, nor would there ever be. Before such flat land and rich soil can function in terms of human life and wealth, it must be served with just the proper mixture of sunshine and rain, and this the Chicago region has.

A map of the annual rainfall of our country shows plainly that it is the eastern half that is well watered. The line of twenty inches of rainfall per year, which just about marks the western margin of profitable agriculture without irrigation, nearly coincides with the 100th meridian; and it marks also about the eastern limit of the Great Plains, or short-grass country. Now observe that Chicago with an annual rainfall of thirty-four inches is in the heart of the well-watered eastern half of the country and more than five hundred miles east of the twenty-inch dead line.

And all the Chicago region has its rainfall well distributed through the year, a very vital matter. We are all well aware of the sequence of rainy and sunny days, and perhaps most people let it go at that. But it is of interest

to know that for this fine distribution of sunshine and rain we are under obligation to a procession of cyclonic storms. Every day in the year our weather is determined for us by the position of some cyclone or anticyclone. In fact, the world's greatest highway of cyclones crosses Lake Michigan just north of Chicago, as will be seen by inspection of the

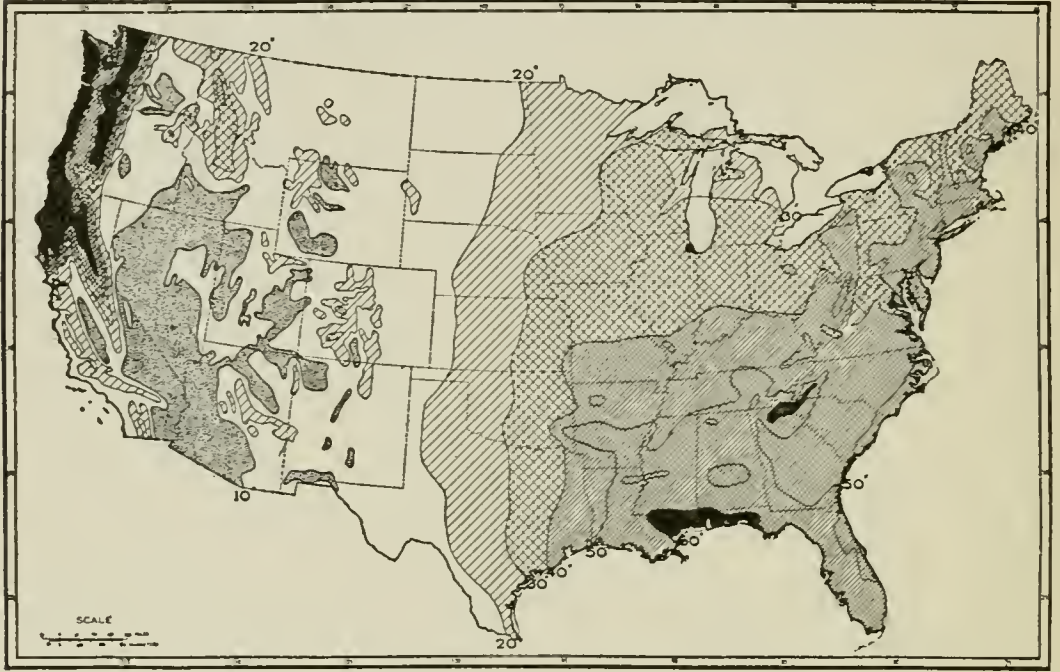


FIG. 12.—Map of United States of America: Annual precipitation. (After U.S. Weather Bureau.)

map of paths of cyclones in the Northern Hemisphere. This great highway fringes the Pacific Ocean, the storms entering our country at the northwest between Puget Sound and Alberta, passing eastward across the Great Lakes, and leaving the country by way of the St. Lawrence, headed for Iceland.

Now a cyclone is a great low-pressure area in the atmosphere, into which the surface winds are flowing on long spirals, just as the water flows through a funnel. Ahead of the cyclone, that is east of it, there are south

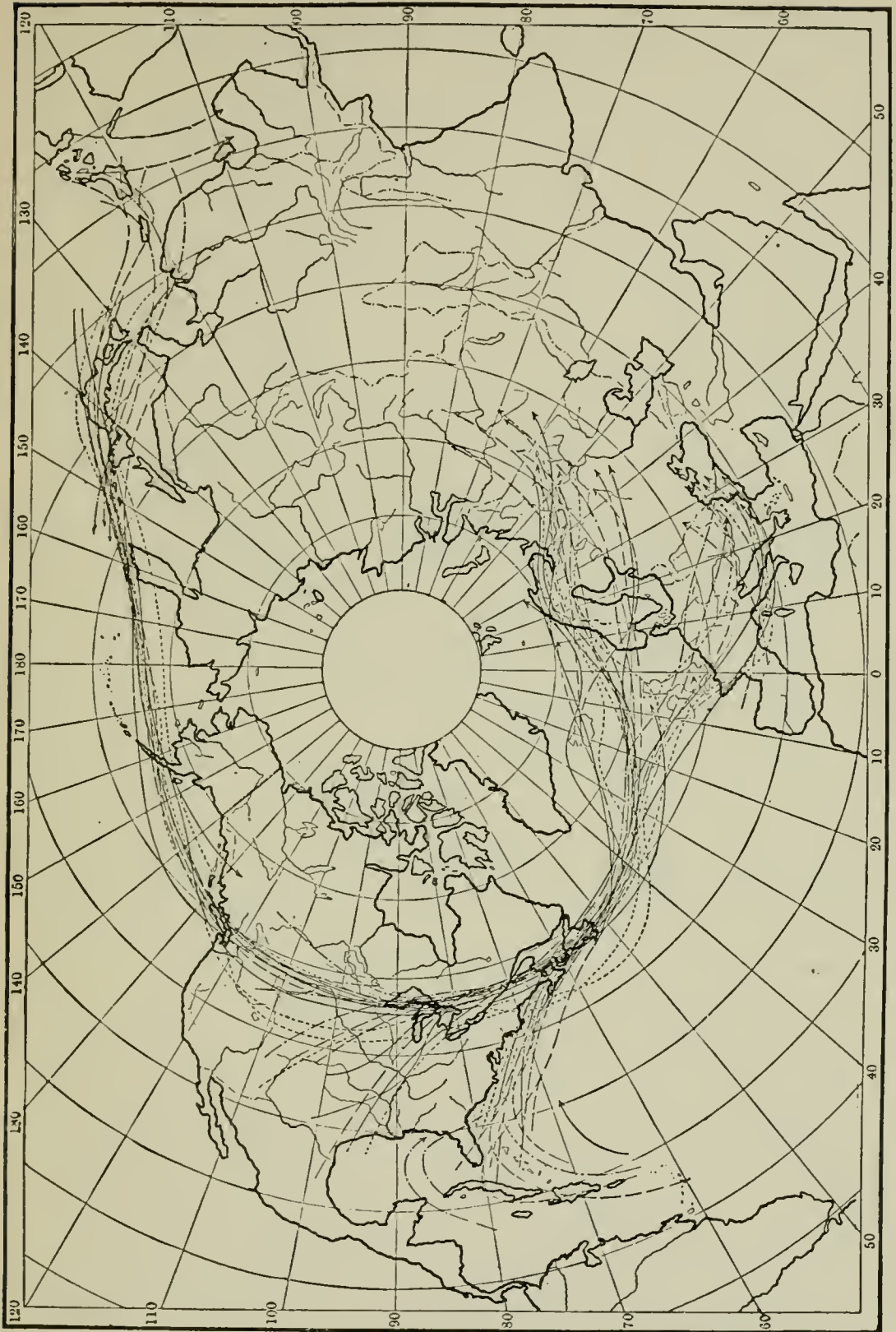


FIG. 13.—Map: Paths of cyclones in the Northern Hemisphere.
(After U.S. Weather Bureau.)

winds. Behind it—west of it—there are north winds. When a cyclone is approaching Chicago there may be south winds at Chicago, hurrying the moisture from the Gulf of Mexico to drop it as rain anywhere between the Gulf and Canada. But the cyclone travels on an average of five

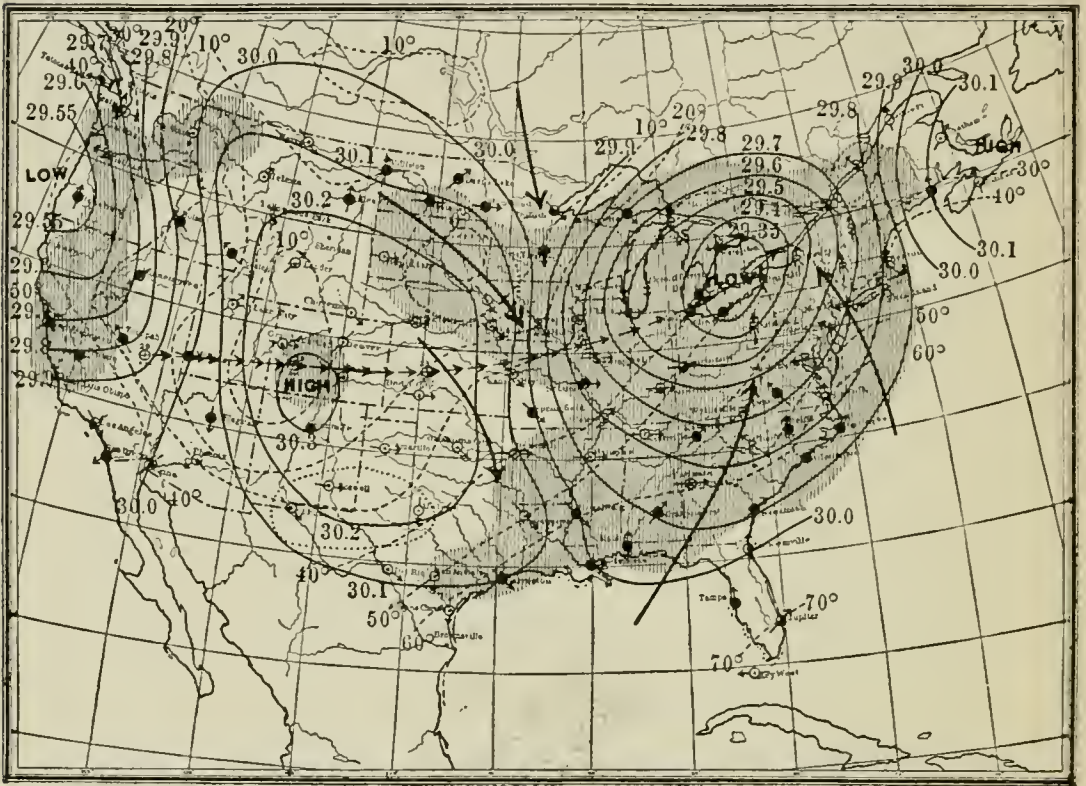


FIG. 14.—Weather map of United States of America, showing a cyclone passing Chicago. (After U.S. Weather Bureau.)

hundred miles a day, and it is soon past Chicago. Then come north winds and sunshine again.

This is a type of climate ideal in these latitudes for grass and the cereals, for various fruits, and for forests.

THE FOREST WEALTH

When our forefathers came to this continent, a great forest stretched almost without a break from Chicago to the eastern sea and to the Gulf of Mexico. At the south and

east it was largely of hard woods. Along the northern lakes from the Red River Valley to the Atlantic it was of conifers, largely white pine. The broad-leaved forests have been mostly destroyed to clear the land for agriculture. The conifer forests of the north were a tremendous source of wealth, while they lasted. The trees could be cut in the winter, when marshes, rivers, and lakes were frozen over, and the logs easily transported over the ice, to be floated down the rivers in the spring. Then the Great Lakes swarmed with lumber schooners, and for some decades Chicago was the greatest lumber market on earth.

The plentiful lumber supply made possible a great development in manufacturing, especially in farming-machinery and furniture. And though the farming-machinery now calls more for iron and steel than for wood, the furniture market still calls extensively for wood; but it calls on all the continents for its supply, and Chicago outranks all other cities in the country in the manufacture of furniture. The great Furniture Mart is one of the largest buildings on earth and one of the greatest markets, and it is a monument to the strategic importance of Chicago in the furniture trade of the country.

So far as the local forests are concerned, the best we can say of Chicago is that we were "in at the death." Some day, who knows, we may be civilized enough to plant back the devastated forest areas not fit for cultivation and lying idle in weeds, and win from them continuous crops of forest products, as our betters, the Japanese and the Saxons, have been doing these eight hundred years.

THE INEXHAUSTIBLE WEALTH OF THE FARMS

In all the continent the agricultural land is richest in the Chicago area. Over 91 per cent of the states of Illinois and Iowa is arable. And these rich lands run on into southern Wisconsin and Minnesota, South Dakota, Nebraska,

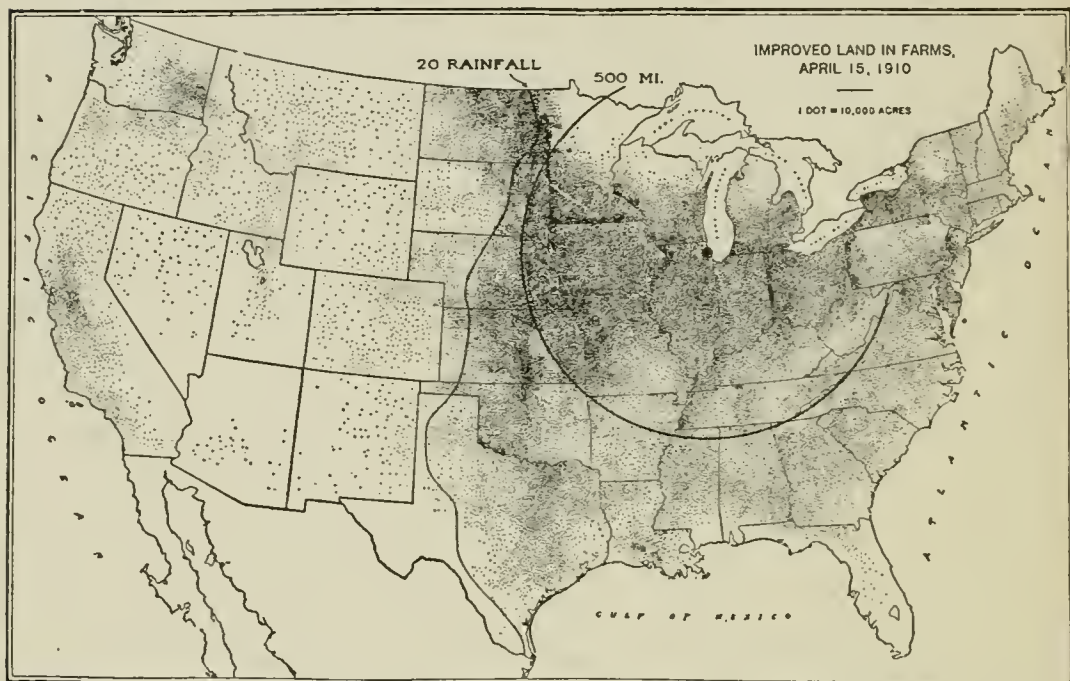


FIG. 15.—Map of United States of America: Improved land in crops. (From U.S. Census.)

and Kansas. In fact the crop productivity plotted in dots upon the map discloses a zone of maximum agricultural wealth which is coincident with the glaciated plain, and stops off quite abruptly at the dead line of twenty inches of rain per year. In the accompanying maps, the arc of a five-hundred-mile radius from Chicago is shown in a bold curve; also the margin of the glaciated area, in a broken line. When one studies the map of improved land in farms, it is quickly patent that the region of maximum improve-

ment lies east of the twenty-inch rainfall line, and largely within the glaciated area. The northern parts of Minnesota, Wisconsin, and Michigan lie on land, some of which has been so denuded by glaciation as to have little agricultural value, though much of it is where the great conifer forest stood until just now, and is only beginning to be cleared and developed agriculturally.

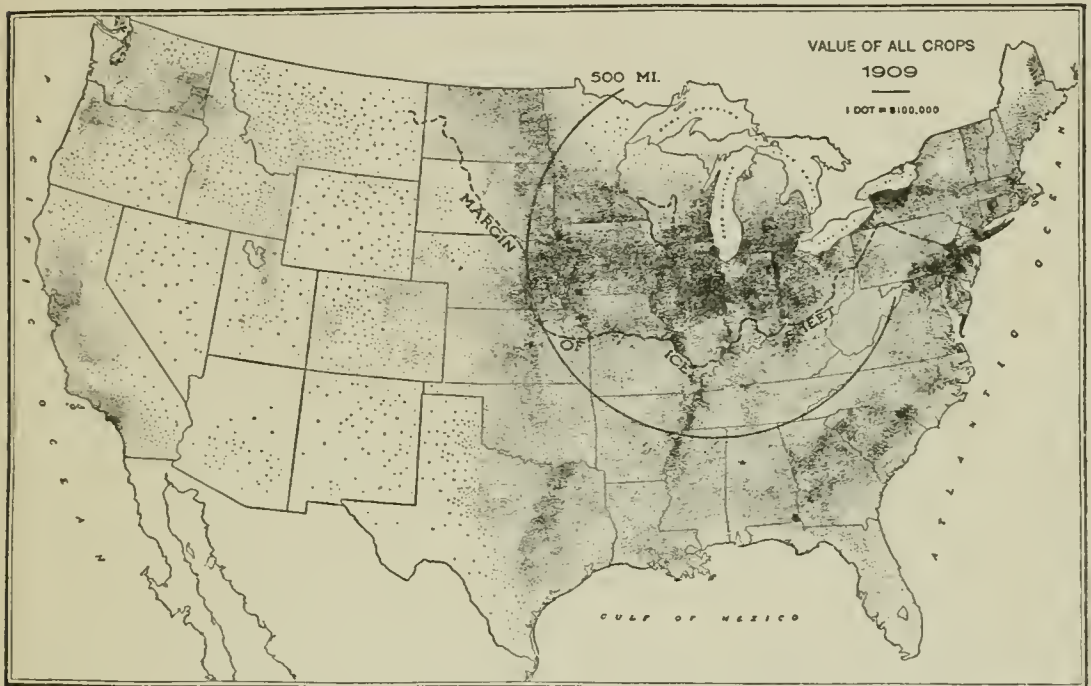


FIG. 16.—Map of United States of America: Value of all farm crops. (From U.S. Census.)

But let us come at once to dollars. We think most easily in dollars and cents. In the map showing the value of all crops per square mile, the Central Plain speaks up eloquently. Again the focal position of Chicago is clear. What we know as the Chicago region, or Chicago hinterland, the region of Chicago's greatest merchandising opportunity, is black with dots, where each dot stands for \$100,000 worth of crops. This map puts on record *all* crops

—the citrus and other crops of the West, the cotton and tobacco of the South. At a glance one sees that the lion's share of all crop values is produced within the glaciated plain, where the people sell their crops to Chicago buyers, buy their necessities largely from Chicago, and read Chicago papers including the advertisements. That is, Chicago is the center of merchandising advantage for the farmers who produce three-fourths of the crop values of the whole country.

And these farm crop values are not negligible by any means. In recent years the value of the major crops, at the farm and in their raw state, has run to over twelve billion dollars in the year, and in some years to nearly eighteen billion dollars. The states within whose area lies the glaciated part of the Central Plain produce well over half of all this wealth, and in the case of corn, more nearly three-fourths of it. This is one large element of the wealth upon which the "Great Central Market" fattens.

WHEAT AS A MONEY CROP

Let us consider two of these great crops as types. The wheat crop in America has been throughout our history one of the largest sources of wealth. At the present time its value at the farm runs about \$800,000,000 per year, though one war year it ran to over two billion dollars. The center of wheat production at the present time is in northwest Iowa, and the area of maximum production lies along the margin of the Great Plains, just east of the twenty-inch rainfall line. The regions of greatest wheat production are areas of relatively sparse population. Therefore, nearly all the crop moves out of the place of production to market in the densely populated regions in the northeastern part

of the country and in Europe beyond the sea. The center of wheat production in this country has been moving westward for three generations or more. Wheat grew to be our chief money crop when the rich Central Plain in the Chicago area was served with labor-saving farm machinery and with railway transportation. From the beginning

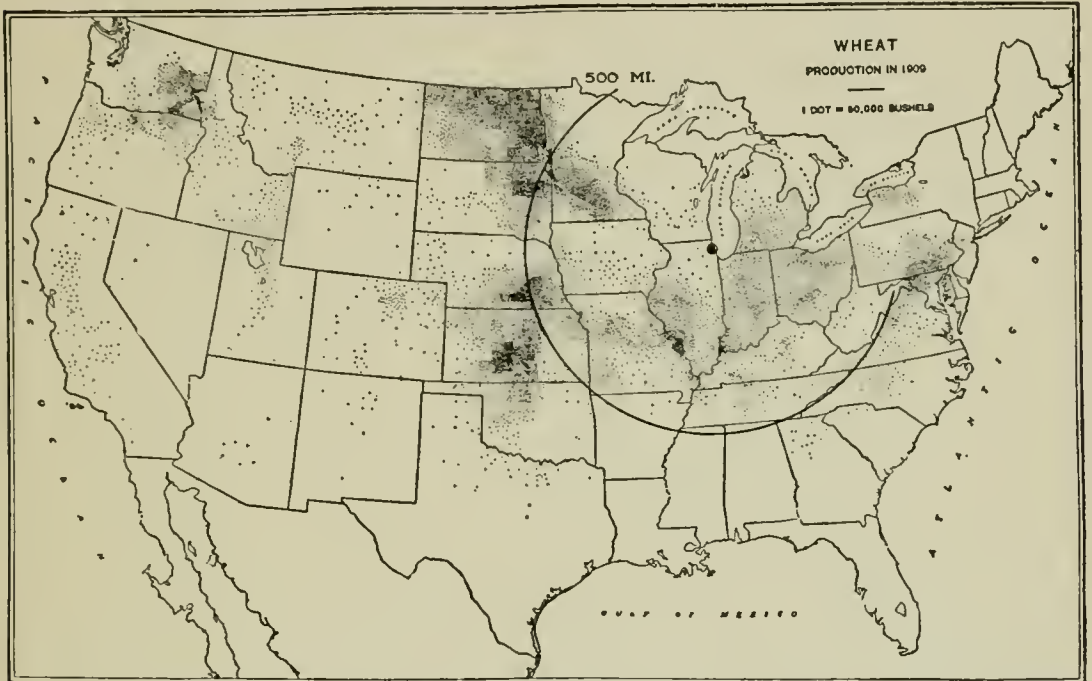


FIG. 17.—Map of United States of America: Wheat production. (From U.S. Census.)

Chicago has been a focus of wheat-marketing. Because of the railway network with its lines of steel radiating from Chicago, the wheat has been bought and sold in Chicago and has moved through Chicago to its eastern market. And every bushel of wheat thus bought and sold has paid a bit of tribute to the merchants of Chicago—a very considerable contribution to the growing wealth of the metropolis. The Board of Trade has to its credit a fine long list of millionaires because of this traffic, and the game is still

on. In recent years more and more of the grain has gone from the northwest by way of Duluth or other ports and some of it by southern ports, but the buying and selling

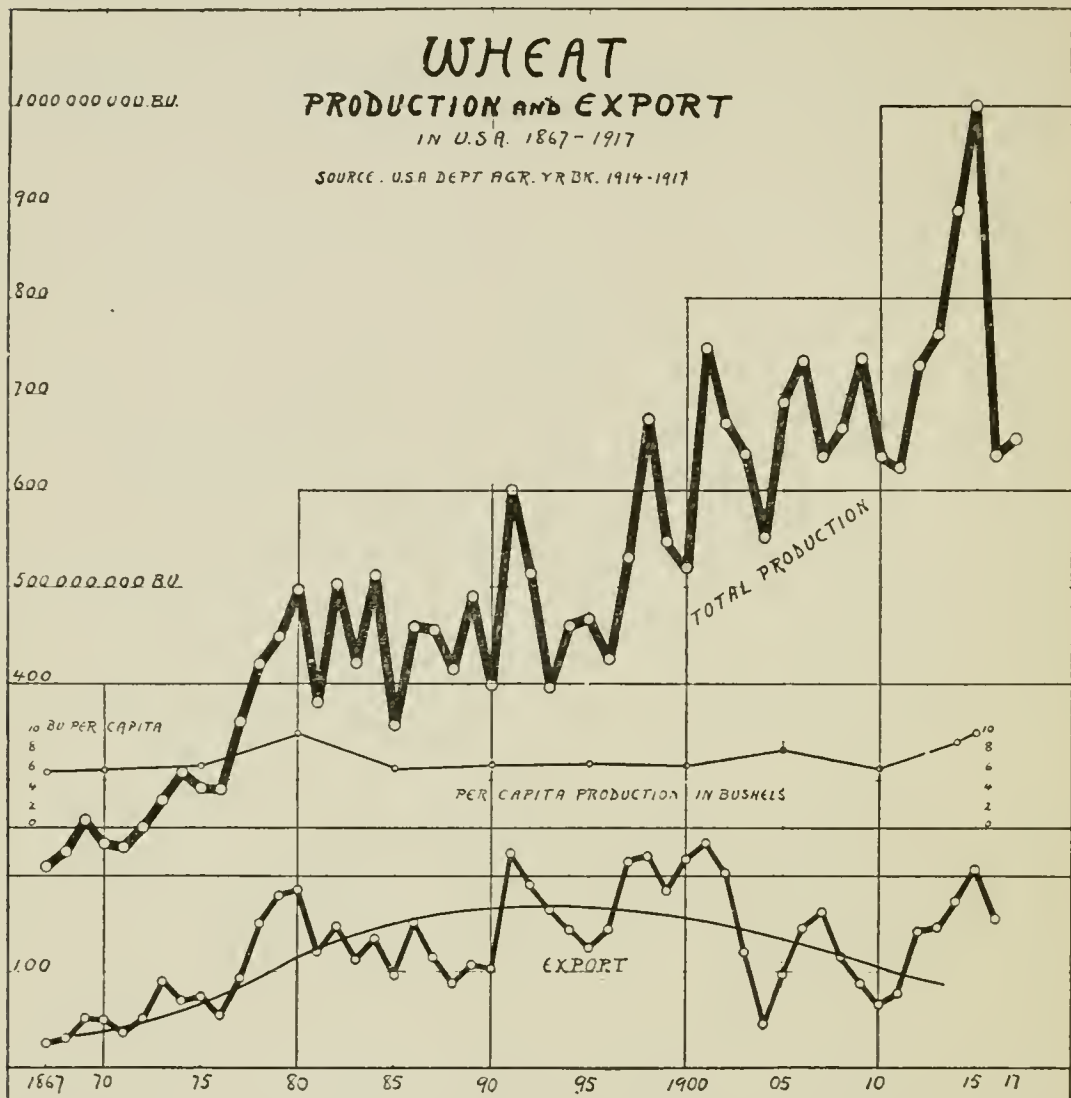


FIG. 18.—Graph: Trend of wheat production in United States of America, and export wheat, 1867-1924.

have been done in Chicago just the same—another illustration of the inertia of an established market.

The curve of wheat production and export shows a strong up-curve in wheat production since 1867, a record of the extension of cereal agriculture into and across the

rich central plain; it shows a record of the development of labor-saving farm machinery and the perfection of freight transportation; it shows also the rapid increase in population of the wheat-growing states; and for all these reasons, it shows, as well as any record can show, one fundamental

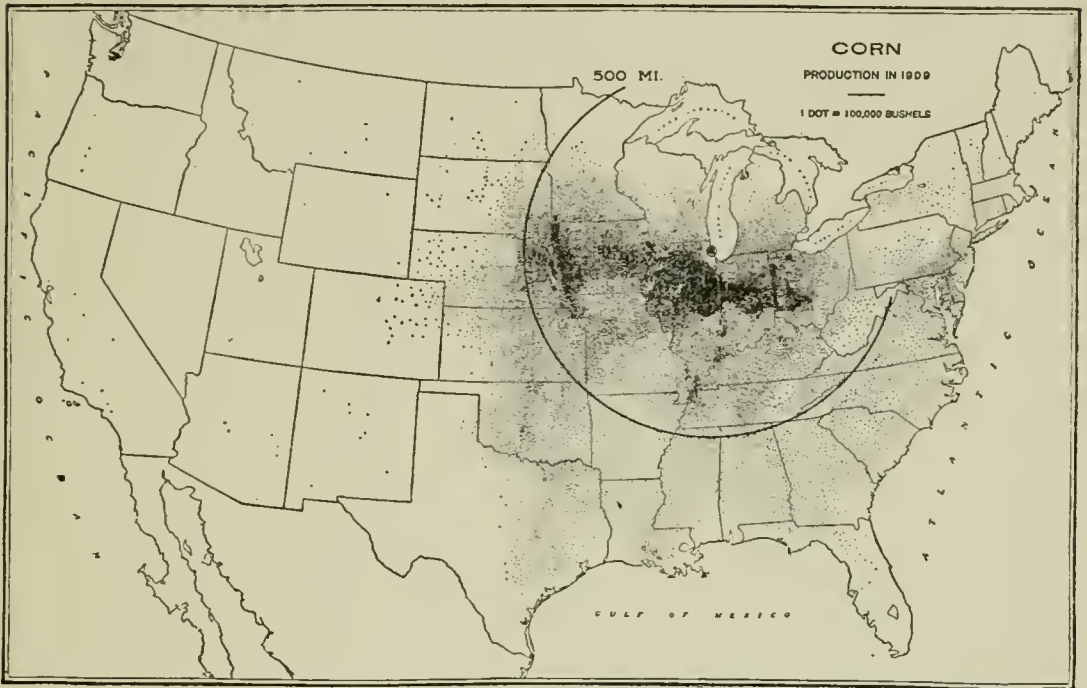


FIG. 19.—Map of United States of America: Corn production. (From U.S. Census.)

reason for the rapid growth of our metropolis. For it cannot be emphasized too strongly that Chicago's growth in population and wealth is but a reflex of the development in wealth of the region tributary to the city.

THE CORN CROP, MOST SUPERB OF RESOURCES

Great as the wheat resource is, it is a relatively small matter compared with the magnificent crop of corn grown in our area. Corn is the most superb of resources. In the

last few years the crop in bushels has repeatedly passed the three billion mark, worth at the farm considerably over

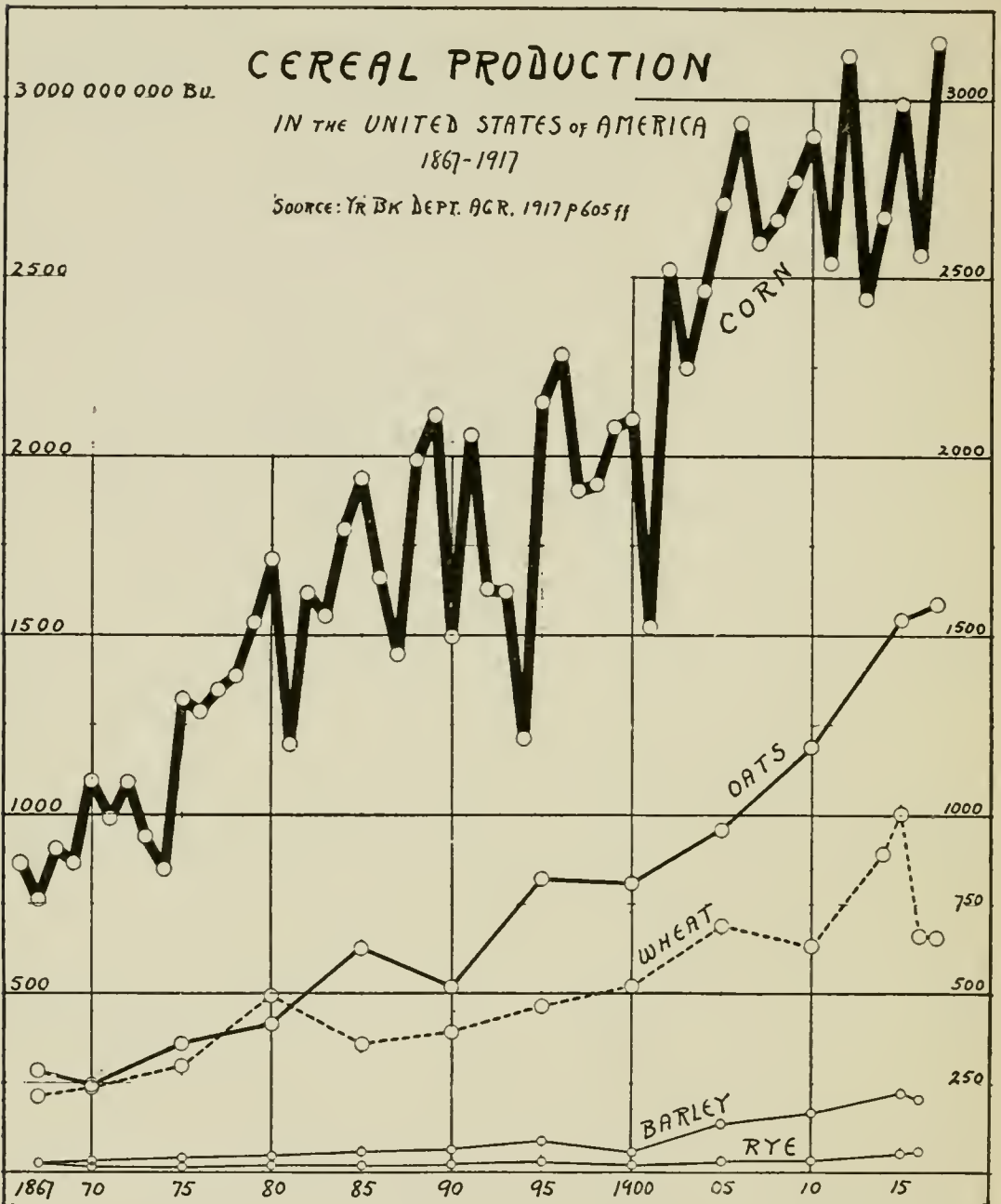


FIG. 20.—Graph: Trend of cereal production in United States of America, 1867-1924; corn, oats, wheat, barley, and rye.

two billion dollars on the average, and in the war years reaching almost four billion dollars. Next to coal it furnish-

es the largest annual increment in our national wealth. In average years its value at the farm is nearly twice that of the entire world's annual output of gold and silver, and it enters at once into the production of wealth in the livestock industry, running into additional billions of dollars.

The center of corn production for this country is near Quincy, Illinois. The map of corn production per square mile shows, as nothing else can, the superlative wealth-producing power of the glaciated part of the Central Plain, the "corn belt," of which Chicago is the merchandising focus. Nearly all of that tremendous annual crop is produced within a radius of five hundred miles from Chicago, one night's railway ride. And all that wealth is merely another item in the list of Chicago's opportunity for buying and selling, another stone in the foundation of the Great Central Market.

In the graph showing the trend of production of all the cereals in the country, the supremacy of corn is plainly seen. And again, these rapidly rising curves present a very real reason for the rapid growth of the metropolis.

But, rich as the annual crop of corn is, it is afflicted with a very serious handicap. It does not keep or travel well in bulk, as other cereals do, therefore, most of it is consumed within the county of its origin. The farmer long ago learned that "corn goes best to market on all fours." One-third of the crop is fed at once to the hogs, and as much more to the cattle, thereby creating tremendous values in the livestock industries.

THE LIVESTOCK INDUSTRIES FOCUS ON CHICAGO

The American hog has been proved to be the most efficient machine ever invented for transforming bulky, cheap, and common place food into very high-class human foods, such as lard, bacon, ham, and sausage. By inspection it will be seen that the map of swine production is

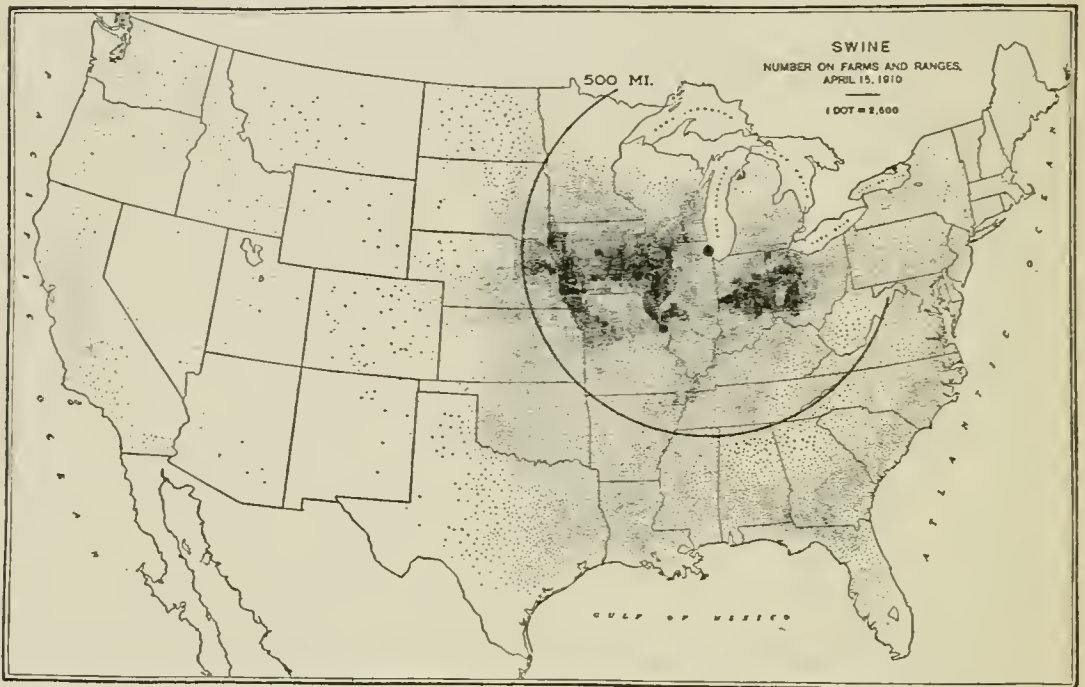


FIG. 21.—Map of United States of America: Swine production. (From U.S. Census.)

almost identical with the map of corn production. There is a “hog belt” as truly as there is a “corn belt”; and, as before, it focuses on Chicago. The total number of swine in our country at the present time is not far from 66,000,000 valued at about \$700,000,000 at the farm, and in some recent years the farm value has run to over twice that sum. Moreover, the hog crop has been developed into practically an annual crop, so the present value comes to be nearly

the same as the annual increment of wealth production. Like the surplus wheat crop, the hogs and the hog products move on to market to the dense industrial populations in the eastern part of our own country and to the world beyond.

And because Chicago is on the road to market, and by reason of the railway network and the specialized live-

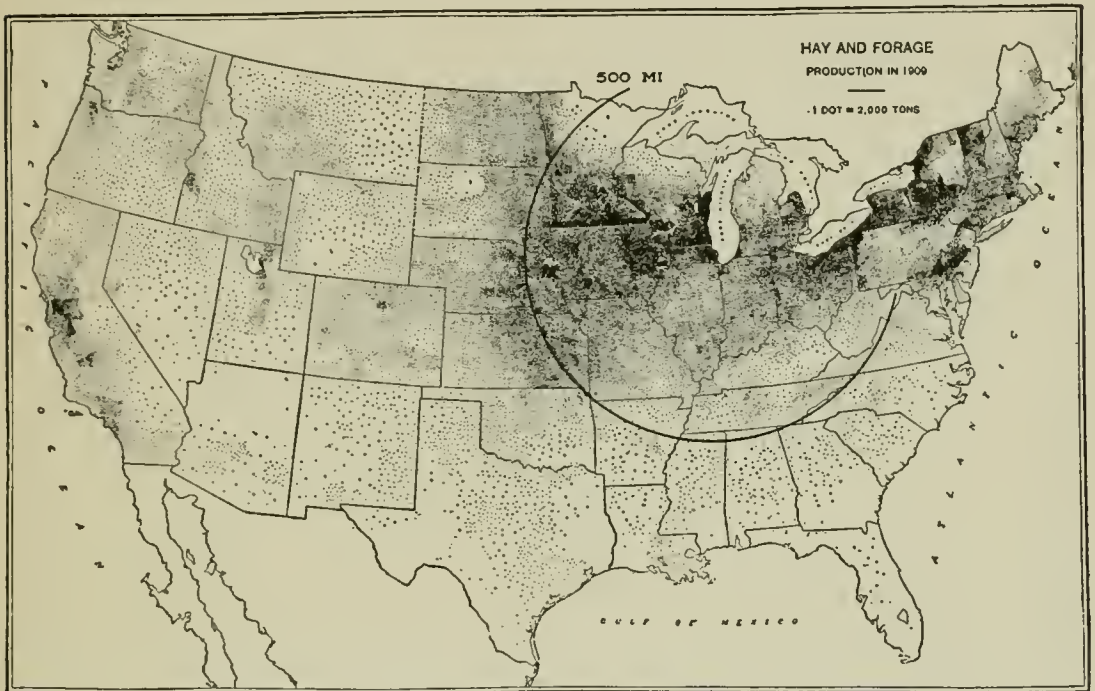


FIG. 22.—Map of United States of America: Hay and forage production. (From U.S. Census.)

stock market developed here, the packing industries at Chicago have become the greatest in the world. Everywhere on earth Chicago is known; and everyone who learns of Chicago, almost in the same breath learns of the marvelous stock yards and the packing industries. Ever since 1862 Chicago has led the procession of cities in pork-packing, standing head and shoulder above every other city in the field.

But cattle and sheep figure extensively in the packing industry as well as swine. The map of cattle per square mile shows intimate relationship to the corn map, but quite as close a relationship to the distribution of hay and forage. The dot map of distribution makes visible again the margin of the glaciated area of the flat Central Plain and the line

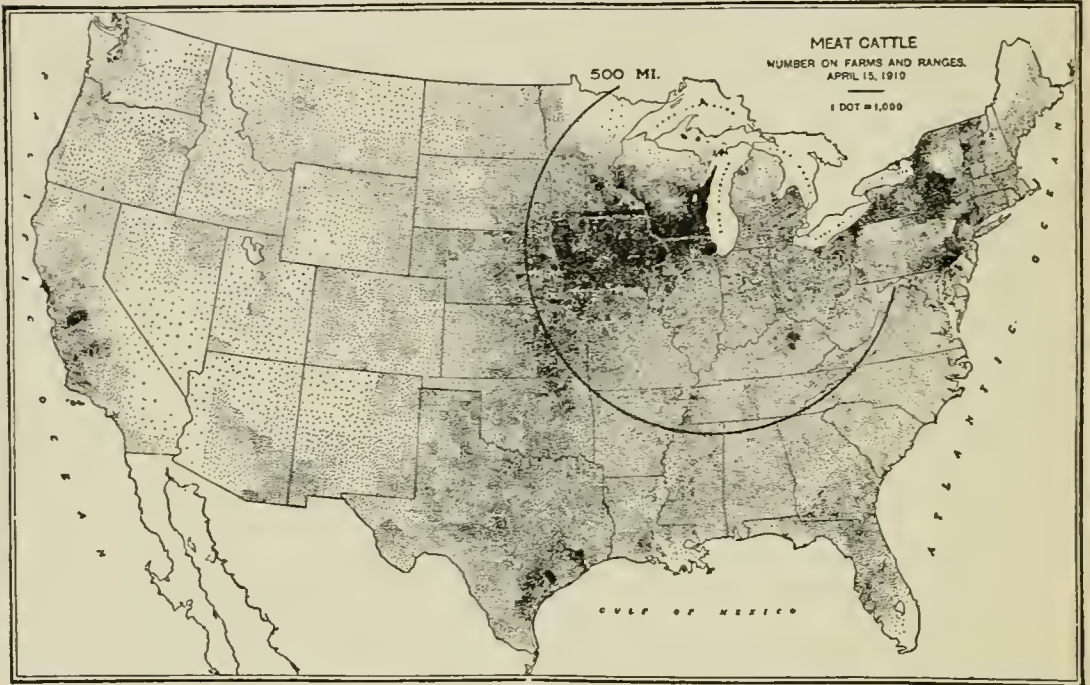


FIG. 23.—Map of United States of America: Neat cattle; number on farms and ranges. (From U.S. Census.)

of twenty inches of annual rainfall. And, just as in the other farm crops, the major part of the country's wealth in this crop is well within the Chicago hinterland. And though hay and forage, as such, rank near the top of the list of crops in farm value, they express their value best in the livestock industries, especially in beef cattle and in dairy products.

Look now at the map showing the distribution of cattle on farms and ranges, and see the great density of cattle

upon the Central Plain, in the Chicago hinterland. See how the cattle thin out at the line of twenty inches of annual rainfall, where the short-grass country begins. Many people have been thinking that the great cattle country was on the Great Plains, beyond the twenty-inch rainfall line. This map discloses the fact that all the cattle on the Great Plains are a small item in the total cattle resource. And the region of great cattle wealth coincides closely with the corn belt and with the hay and forage belt, with wealth of production concentrated into the rich plain of the Chicago hinterland.

There are in this country at the present time, in round numbers, 65,000,000 cattle, worth as they stand about \$2,250,000,000. Nearly half of this number consists of dairy cows, worth considerably over half the total value. And again, the surplus production of beef and dairy products goes to market in the industrial urban centers of the East, and to other lands beyond the seas; and as before, Chicago is on the road to market, hence the stock yards of Chicago have grown great because of a strategic location. The butter center of the country is at Elgin and Chicago. The cheese center is in southeastern Wisconsin. And the value at the farm of the milk, butter, cheese, cream, and butter fat is nearly \$2,500,000,000 per year, and rapidly increasing.

The Chicago buyers of livestock and dairy products draw on an area as large as half of Europe, and vastly richer in its productive possibilities. Is it any wonder that the stock yards have been for many years the largest wealth producers in the metropolis? For nearly a generation the values have run to over a million dollars a day for every day in the year, and then some. And the region

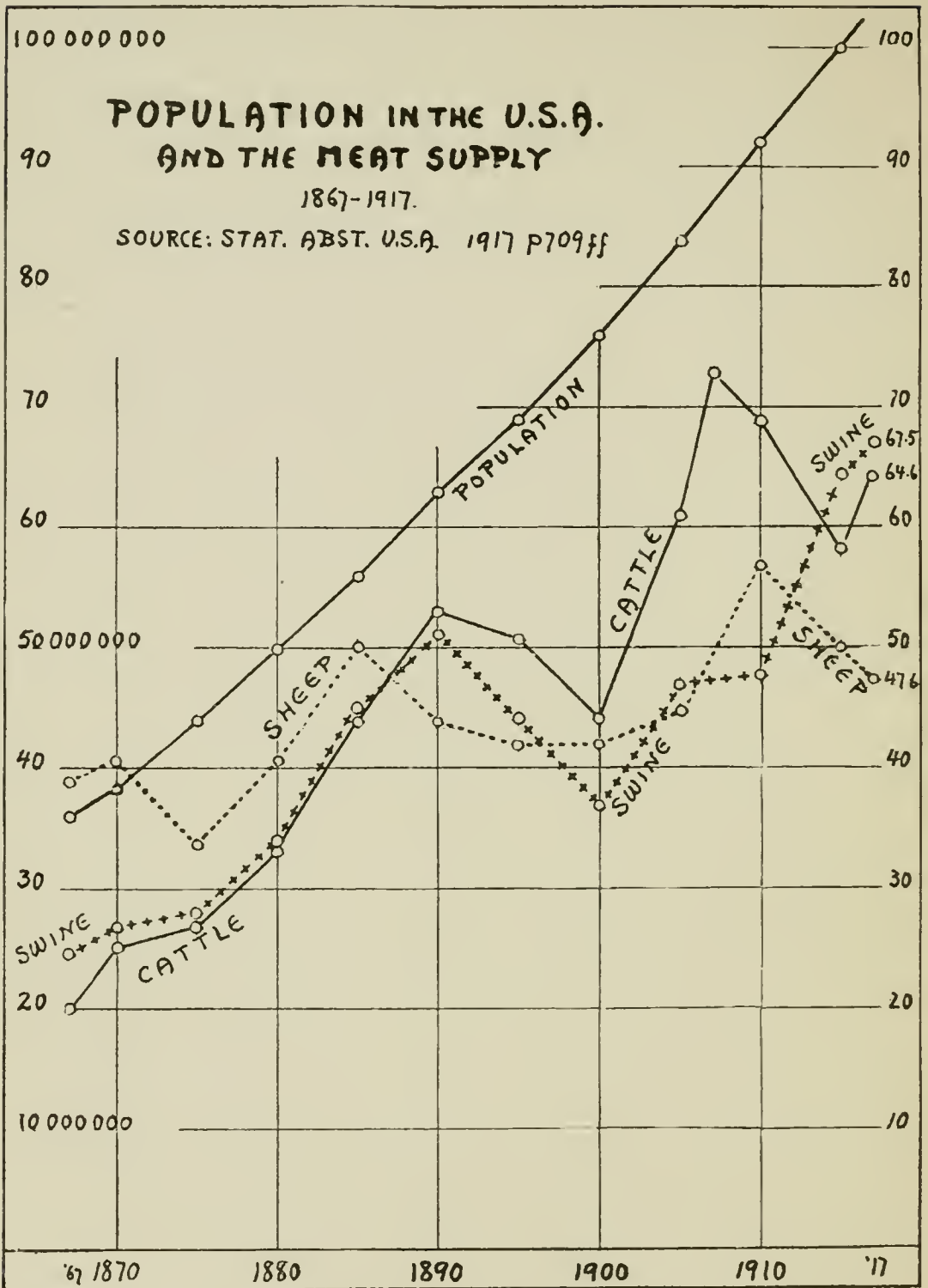


FIG. 24.—Graph: Population in United States of America and the meat supply; cattle, sheep, and hogs.

has by no means reached its climax of production, though the population in our country is increasing faster than the number of livestock which we are calling upon for our food supply. Not only that, but our urban population is increasing faster than the rural population. The implication here is that as the cities grow, the farmer will get better prices for the food he produces, and in just that measure he will be a larger buyer of the wares manufactured or supplied by the cities. Great as Chicago's merchandising opportunity is now, it is in line for much greater things.

The Chicago buyers bid against all comers for the cattle far across the Great Plains to the mountains of Western Canada, and as far southwest to the ranches of Mexico. Within the last twenty years far-sighted men, taking advantage of the strategic position of Chicago as a transportation focus and a livestock market, have made here one of the world's great wool-buying markets—a lead which is being followed at the present time by the establishment of great wool manufacturing industries.

THE TREMENDOUS WEALTH OF THE FARMS

We have spoken of only a few of the great sources of agricultural wealth. The ones mentioned are typical of many which find their maximum development in the rich Central Plain, of which Chicago is the merchandising focus. The total wealth on our farms at the present time, consisting of annual crops produced and stock held, runs to about \$18,000,000,000, a very large fraction of which consists of annual crops and products. In large measure this represents the buying-power of the agricultural population, and Chicago is the great merchandising focus for nearly

one-half of it. The agricultural industries are fundamental to the development of the population and wealth of the entire country. The industrial cities would not grow very

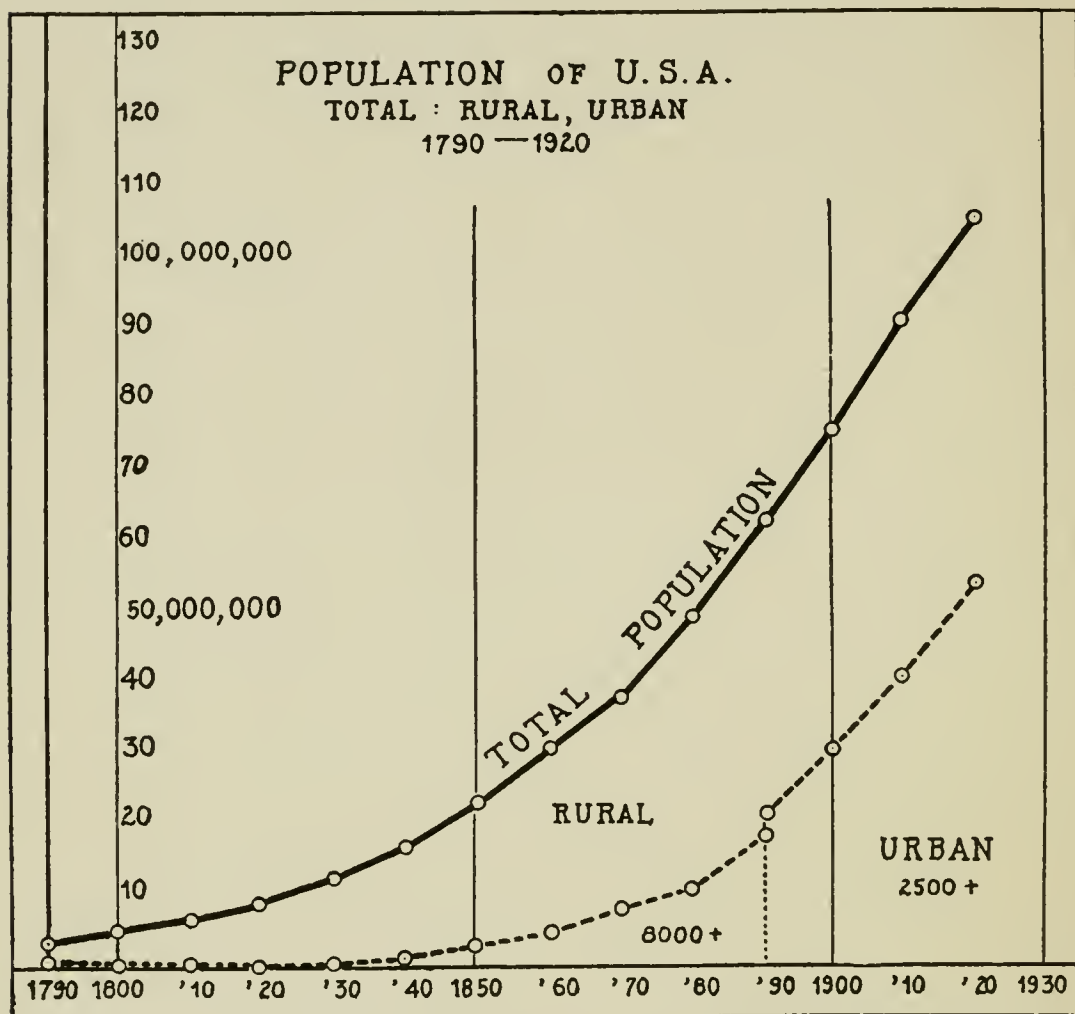


FIG. 25.—Graph: Trend of population increase of United States of America, 1790-1920; total, rural, and urban.

large or last very long without the food and clothing produced upon the farms. At the present time something more than one-half of our population is urban, and as the energy of coal, oil, and waterpower is put to work industrially the urban fraction is rapidly increasing. But just in proportion as the urban population grows in numbers and in prosperi-

ty, the demand for the products of the farms increases, with benefits to the farmer. It is a case of what the biologist calls "symbiosis," the two groups of our population are mutually dependent and mutually beneficial. The growth in prosperity and buying-power of the Chicago hinterland is the stuff out of which Chicago grows great, and the growth of the industries in the cities is the farmers' opportunity to market profitably the products of the farms.

With all this gamut of geographical advantages before our eyes, it is not difficult to see that Chicago has come to its present proud position as a perfectly natural process of development, and that the opportunities for future growth are almost limitless.

THE CHARACTER OF OUR PEOPLE IS A VERY GREAT RESOURCE

It is interesting to observe that the site of Chicago has lain here with all its natural advantages through yesterday's ten thousand years, and no great city came into being. It was only when our fathers came, bringing with them the economic and social culture inherited from forty centuries of European civilization, that the great transformation came to the Central Plain. In a very large measure the phenomenal development we are reciting is due to the character of the people who came into the wilderness to make it over to their hearts' desire. In a very significant way they have shaped the material and social development of the region. They were pioneers, and sons and daughters of several generations of pioneers. And who are pioneers? They are a chosen people—young men and women of physical and intellectual courage and ambition; strong, resourceful, hard-working, temperate, self-respecting men and

women. They have had the courage to pick up and leave the comforts of the old home and to brave the dangers and discomforts of the wilderness, to make new homes and fortunes for themselves and their families. The "Great Trek" of the eighteen hundred thirties, forties, and fifties was one of the most remarkable exhibitions of human-swarming which history has to record. The major part of that human stream was from the northern Atlantic seaboard, or from the Appalachian valleys and eastern forests, the product of a continual process of selection through several generations of pioneering ancestors. They set the standards and became the leaders, giving us a priceless heritage of culture and ideals.

In the early eighties they had reached the dead line of twenty inches of annual rainfall, the short-grass country, and the last frontier was occupied; since which time the actual frontier has moved to the industrial cities, where the great opportunity for fortune and fame for energetic young men and women is now found.

Chicago has the pick of the energetic from wide tributary regions in our own country and from the entire world outside. A very large proportion of our total population has come into Chicago from the outside because of great opportunities here. And here, as in the Central Plain at large, the leaders among the early pioneers have set our standards and have given us our bent.

In getting the grasp of our material advantages, we have discussed briefly the significance of coal and iron as typical minerals, and of wheat and corn as typical cereals. Let us now make grateful mention of a few individual Chicago pioneers, who will stand as typical of the dominant element in our rapidly fusing human blend, men

who typify the "I Will" of an energetic and unconquerable people.

Cyrus H. McCormick, the founder of the present Chicago family, was born a farmer's boy in Virginia. He was a boy of brains, who could think for himself. He watched his father and the neighbors, sweating in the sun, cutting the grain with a cradle, while the horses and cattle grazed contentedly in the nearby pasture. An inspiration came to this lad: Why not make a machine that will cut the grain, and let the cattle and the horses draw the machine? So he invented a sickle, which made the horse-drawn mower and reaper a success, and his reaper raised the curtain on the era of American labor-saving farm-machinery.

Other pioneers such as Oliver of South Bend, John Deere of Moline, and Marsh of Illinois followed with significant contributions, and made the wild prairies blossom into the richest agricultural area on earth.

When the young McCormick set about to manufacture his reaper, with keen geographic insight he chose Chicago as the place of greatest advantage for manufacture and distribution. And from this beginning has grown the tremendous service of the International Harvester Company, with capital investments running into many millions, and supplying a wide variety of farm machinery to the farmers in every agricultural region the world around.

In another field of tremendous development we have such men as the elder Armour and the elder Swift, men of vision and courage, studying the merchandising of meats. They came west in the Great Trek, saw the tremendous possibilities of Chicago as a center of collection and distribution in the livestock industries; and out of this

vision the great stock yards and packing industry have grown.

Another pioneer of the New England strain, Marshall Field, saw the merchant's opportunity in the growing Chicago metropolis and realized his ideal, becoming the outstanding merchant prince of the great Central Plain. The magnificent establishment founded by him has become the country's model, and has turned out a handsome string of millionaires in a widely expanding service.

The types of pioneer so far presented have been practical men, doing great service in the every-day work of the world and expressing their success largely in the creation and accumulation of great material wealth. But lest it should be implied that Chicago is predominantly material in dreams and accomplishment, let us hasten to mention some stout-hearted pioneers who have striven against all manner of obstacles in a frontier land for intellectual and aesthetic ideals. In music one great name will stand out permanently in high relief, the name of Theodore Thomas, who brought us the full perfection of orchestral music, and whose symphony orchestra under the leadership of his pupil Frederick Stock is bringing to thousands of music-lovers in Chicago as perfect symphonic orchestral music as the world has to offer. Now in music and the fine arts Robert Ingersoll's wish has come true, "good health is catching." The grand opera also has come to stay, bringing the finest musicians in the world to Chicago year after year.

Thanks to the vision of our men and women of wealth, we have not only a symphony orchestra and the grand opera, we have also the Art Institute, a palace of art treasures from every period and nation. And with it an art school with the largest student attendance of any school

of its kind. Associated with it, to mention only a single name, is Lorado Taft, a pioneer and son of pioneers, who in sculpture is immortalizing his inspirations in marble and in deathless bronze, planting sunshine and happiness in the hearts and souls of countless thousands.

One of the strong traits of our fathers and mothers in the Great Trek was the unquenchable urge to educate. Over and over again in laying out a frontier town on the unplowed soil of the prairie a site was reserved for the "college" or "seminary." A pride in higher education was part of the inspiration of every community. As the second and later generations have come along, it has been difficult to get money enough and to make buildings fast enough to provide the education demanded by the oncoming boys and girls. The knowledge of this great hunger and thirst for education gave the opportunity to a great leader to create one of our most important institutions.

William Rainey Harper was a professor in Yale College. In 1889 a great inspiration came to him to create a real university with a threefold function—research, instruction, and publication of the results of research. He enlisted the sympathy and financial backing of Mr. John D. Rockefeller, a man of great wealth and vision, and was given a free field. When it came to choosing a location in which to materialize his great dream, with all the country to choose from he chose Chicago. We must admire his grasp of the rare geographic advantages of the location as we admire the educational vision of the man. For out of that vision has grown one of the world's great universities, the University of Chicago, with an endowment passing \$50,000,000; with a present enrolment of over 13,000 students in the year; with over 20,000 alumni scattered all over the earth;

and with a total student enrolment from the beginning of over 120,000 young men and women.

Surely no city has better occasion for pride in its institutions of culture and refinement than have we in our Art Institute, our symphony orchestra, our schools, our great universities, and our parks and playgrounds. And in these things, as in so many lines of material development, once we survey the horizon of our opportunities we can see that we have made only a beginning.

CHICAGO HAS A STRATEGIC LOCATION FOR COMMERCE

Of the greatest advantage to Chicago is its location with reference to the carrying on of commerce. It is in the focus of the rich central plain, and at the western end of the greatest highway of world-trade. On a world ocean map one may study the flow of ocean traffic. Far and away the greatest ocean highway of freight movement is across the North Atlantic, between the ports of northwest Europe and our northeastern ports, principally New York. There is no other international ocean-traffic highway to compare with this. The explanation is not far to seek. In the long run no nation can buy much more than it sells. And this map shows plainly that our country sells enough into the outside world to buy back from Europe enough to make the North Atlantic the world's greatest ocean highway. And when one examines what it is we are selling in Europe he will find that a very large share of it comes from this rich Central Plain, of which Chicago is the focus.

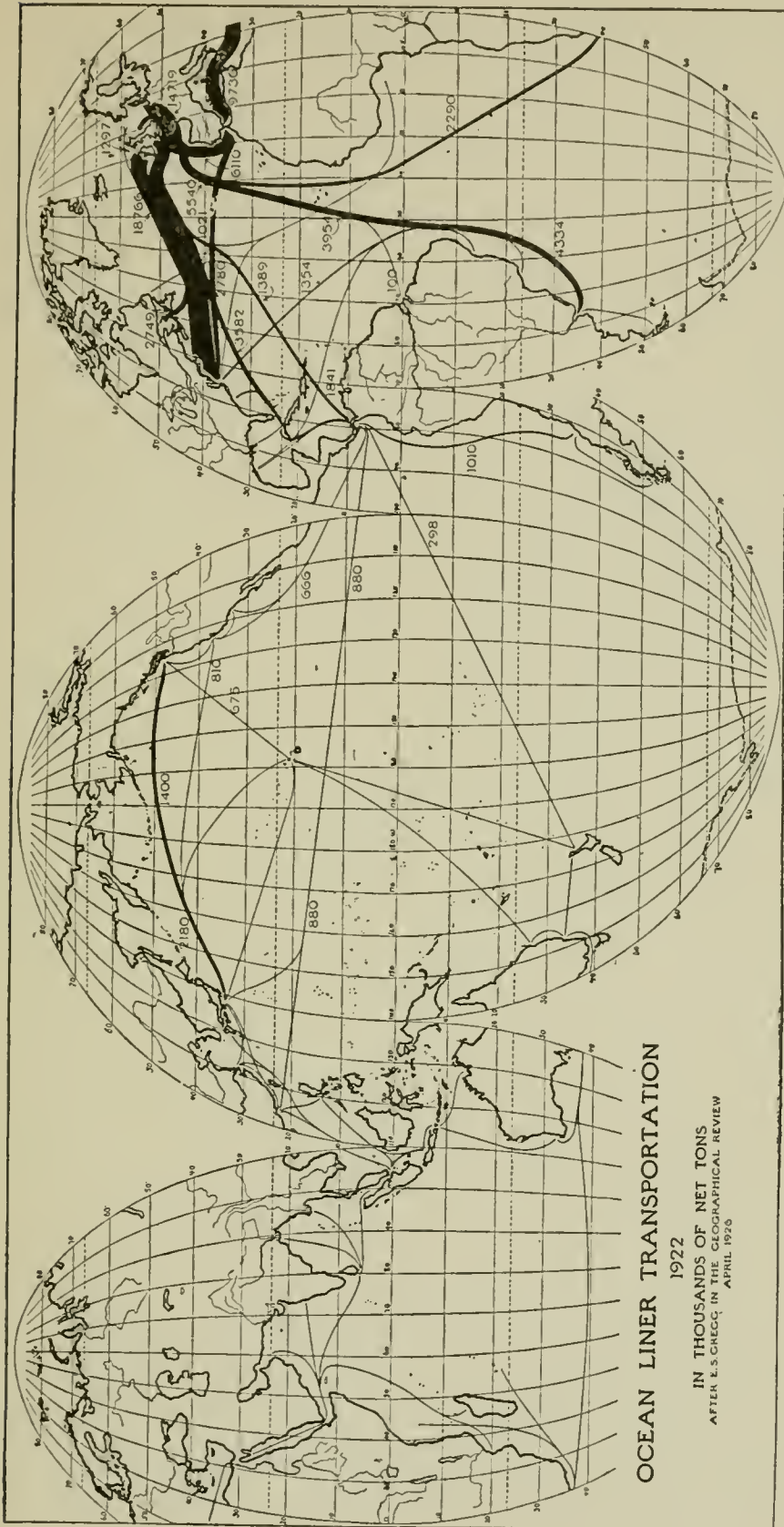


FIG. 26.—World map: Ocean liner traffic (after Gregg), on the homolographic projection, interrupted for ocean unity.

CHICAGO HAS GROWN IN AN ERA OF EAST-WEST-MOVING TRAFFIC

This calls attention to another very important fact, and that is, that Chicago has come into being and has waxed great in an era of predominantly east-west-moving traffic, which so far as Chicago is concerned is merely a matter of good fortune. For if the predominant movement of commerce were along the meridians, as it may ultimately come to be, St. Louis would be the metropolis of the Central Plain. But the great commercial interchange of the Central Plain has been with the North Atlantic states and with Europe beyond the seas.

CHICAGO AND NEW YORK HAVE WORKED AS A "COUPLE"

Because of this, in all the period of growth of Chicago, New York City and Chicago have worked as a "couple." The same influences which have been at work in the expansion of Chicago have benefited New York. A map with the 500- and the 1500-foot contours puts an emphasis upon the Appalachian barrier, which has been so severe a handicap in the intercourse between the Atlantic seaboard and the Central Plain. But it will be observed that because of the Mohawk Pass there is no barrier between New York City and Chicago. There is no perceptible grade between New York City and Albany, a distance of ninety miles, and but little grade and practically no curves between Albany and Chicago. Between Chicago and the other North Atlantic ports, Boston, Philadelphia, Baltimore, and Norfolk, very serious mountain barriers intervene, serving as a permanent handicap in the trade with the Central Plain.

Thanks to the Mohawk Pass, the Erie Canal was built in an early day, providing cheap water transportation between New York City and the Great Lakes. And thanks

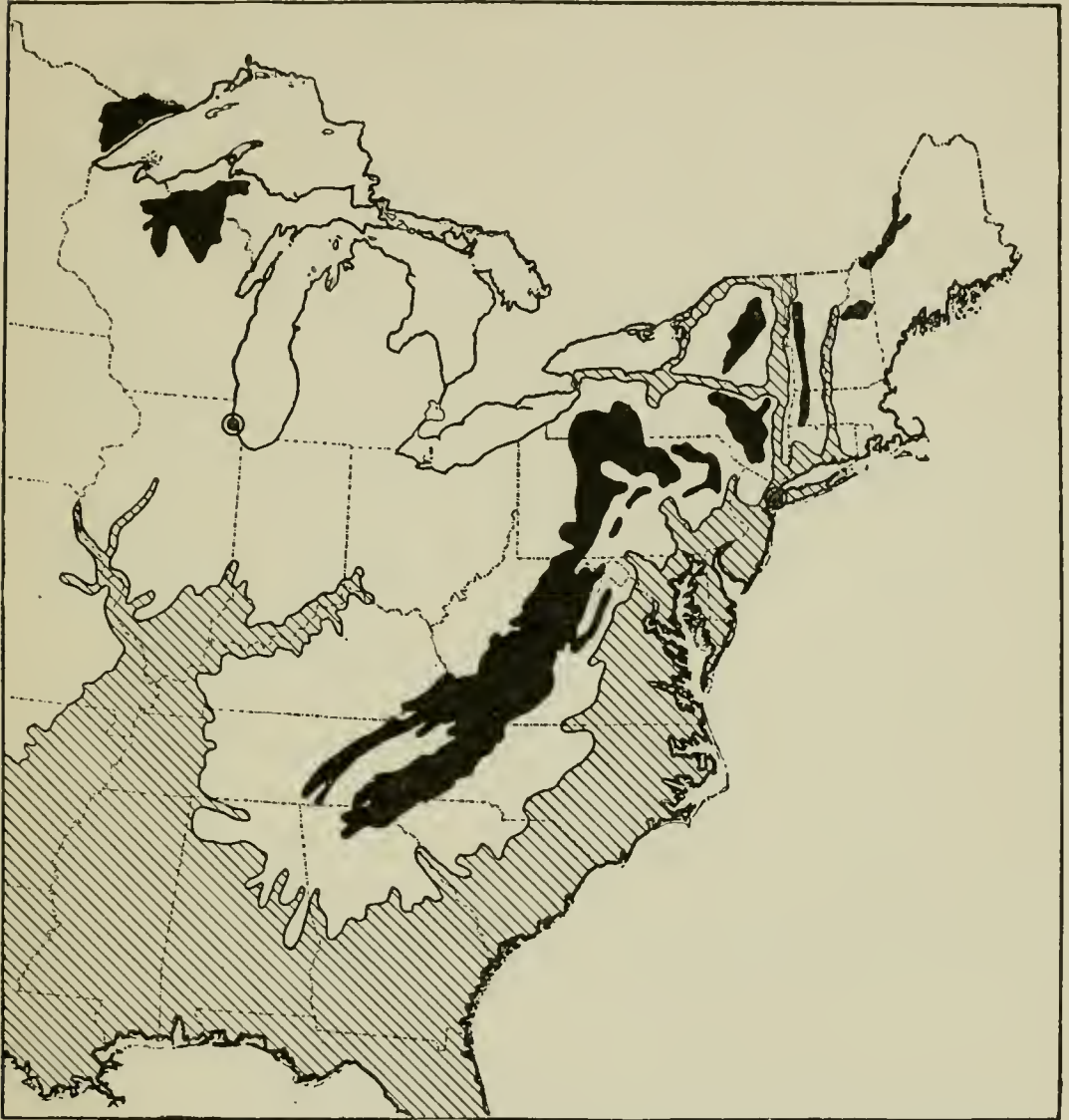


FIG. 27.—Map of Eastern United States of America: Appalachian Barrier and Mohawk Pass.

to the Erie Canal, New York City, not Philadelphia, became the eastern metropolis. Because of the Canal and the Great Lakes, New York City has always had an advantage over the other eastern seaboard cities in cheap rates to the Central Plain.

But these advantages of New York have focused equal advantages upon Chicago. Notice that Lake Michigan sprawls its awkward 330 miles of deep water directly athwart the potential lines of east-west land traffic, thus turning this east-west traffic of nearly half the area of the country through Chicago. Land routes, both highways and

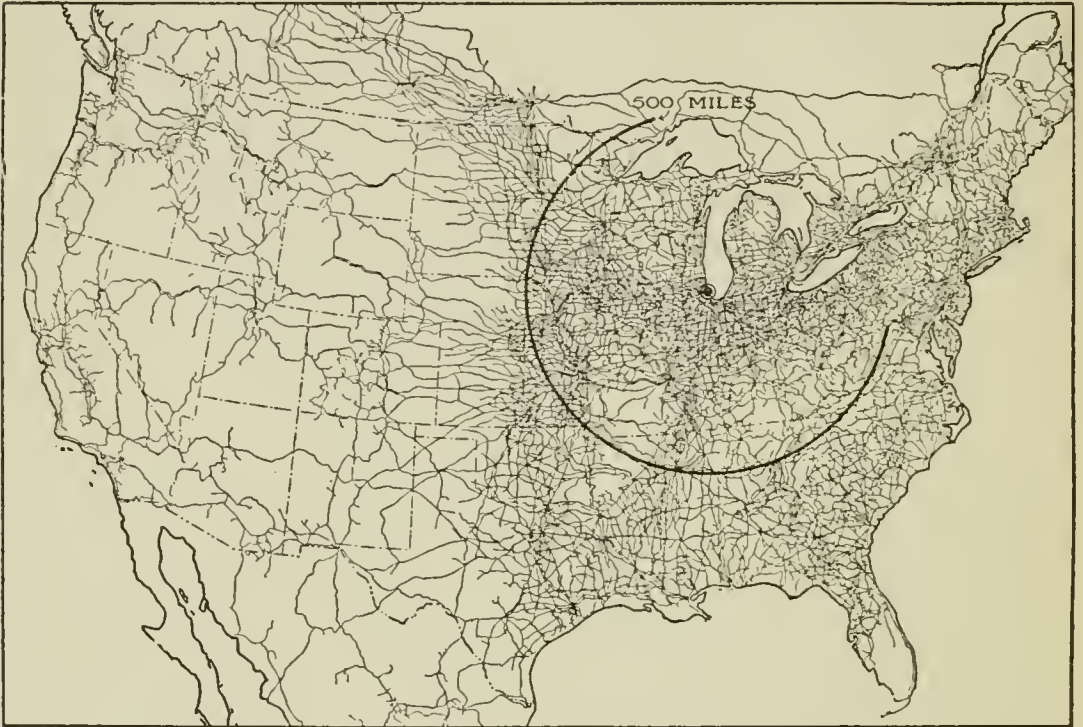


FIG. 28.—Map of United States of America: The railway network. (After the War Department.)

railways, are brought to a focus at the head of the lake, making of Chicago the greatest railway focus on earth. Thirty-three great trunk lines end at Chicago and radiate to all parts of the country. Perhaps it has been noticed that no one can go directly *through* Chicago. One must get off of his train and pay Parmelee or someone else to take him across the Loop and board another train, on another road, in order to continue his journey. That is, one must *stop* in Chicago, and spend some money. It is a good game

—for Chicago—that the early railwaymen provided, and the game still works.

Notice again the railway network. How like a great spider web it covers the Central Plain, with Chicago in the home of the spider. There are over 10,000 miles of railway line in Illinois alone, and one may notice that the area of thickest web is exactly in the flat, rich, glaciated plain which we have repeatedly observed is the richest cereal-producing area. See how the network thins out at the twenty-inch rainfall line and at the forest area at the north. And remember the transportation maxim, "railroads are built where it pays to build them, where there is ample freight to be hauled." No other city on earth has such a concentration of railway net; and hunt the globe over, one cannot find another spot that may hope to rival Chicago in this advantage.

THE INFLUENCE OF THE GREAT LAKES IN LOWERING FREIGHT RATES

During the most of the time since the railways first came to Chicago, the merchants of Chicago have been greatly favored by low railway rates to the Atlantic seaboard. For much of the time these rates have been the lowest rail rates on earth. And this tremendous advantage has been due to the influence of the Great Lakes.

The Great Lakes are virtual inland seas, and they bring deep-water transportation to the very heart of the continent. Water transportation as a rule, the world over, is cheaper than land transportation. A study of the rates on wheat from Chicago to New York will illustrate this. At a glance it can be seen that the rate by all water has been quite regularly from one-half to one-third the all-rail rate.

So from the beginning of railway services there has been a strong competition between the railways and the Great Lakes–Erie Canal service. To get the business the rail-

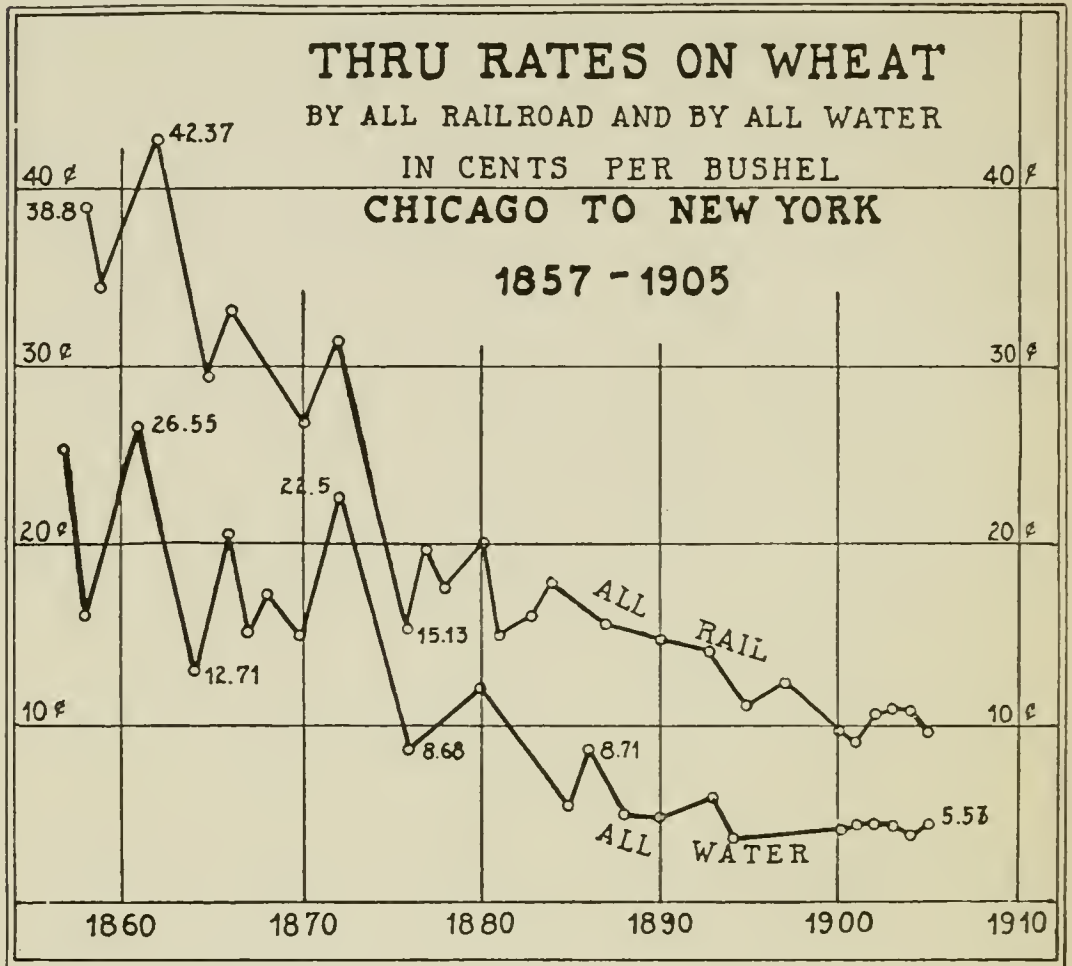


FIG. 29.—Graph: Through rates on wheat in cents per bushel, by all water and by all rail, Chicago to New York.

ways have had to make a low rate between Chicago and New York. This has diverted freight from a wide tributary area to Chicago to take advantage of a low rate. A congestion of freight between Chicago and New York ensued. Then other railways were built to compete for the prize of freight, and the railways have bid against each other for the business—all to the advantage of Chicago. Then pres-

ently the Interstate Commerce Commission was established, and legal rates published to prevent cutthroat competition.

But the competition goes on just the same. We can imagine how easily it is done. The traffic agent of a railway calls on a Chicago merchant and says, "We would like to carry your wheat, or your meat, to the seaboard." "All right," the merchant says, "what rate can you make me?" The legal rate is quoted. "Go to!" the merchant replies, "if you cannot do any better than that I'll ship by lake"; and the deal is off. Nevertheless there is a later meeting, perhaps at lunch at the club, and an arrangement is arrived at by which the railway hauls the freight, in spite of the lower all-water rate. Some years ago the writer was told by one of the largest wheat brokers that he was shipping his wheat to Liverpool at eight cents a bushel, when the legal rate to New York was eight cents.

The significance of this business is clear when one knows that those inside rates are not given to the merchants of Indianapolis or St. Louis. Have the railroads loved the Chicago merchants more than those of St. Louis? On your life! The lower rates have always been given to the Chicago merchants rather than to the St. Louis merchants because the Chicago merchants are *free*, they have a *choice*. Remember the maxim—"Economic freedom consists in having a choice." The St. Louis merchant cannot choose to send his freight by the Great Lakes. He must take the freight rate offered him by the railways.

Now let it be noticed that in spite of the fact that the all-water rate has always been lower than the all-rail rate, not very much freight has gone by way of the Lakes. It has not been essential in the past that the freight should

go by Lakes. The potential competition has been sufficient to favor the Chicago merchant.

A TALE OF THREE CITIES

Notice also, that all this favor to Chicago has at the same time been a favor to New York. The all-water route

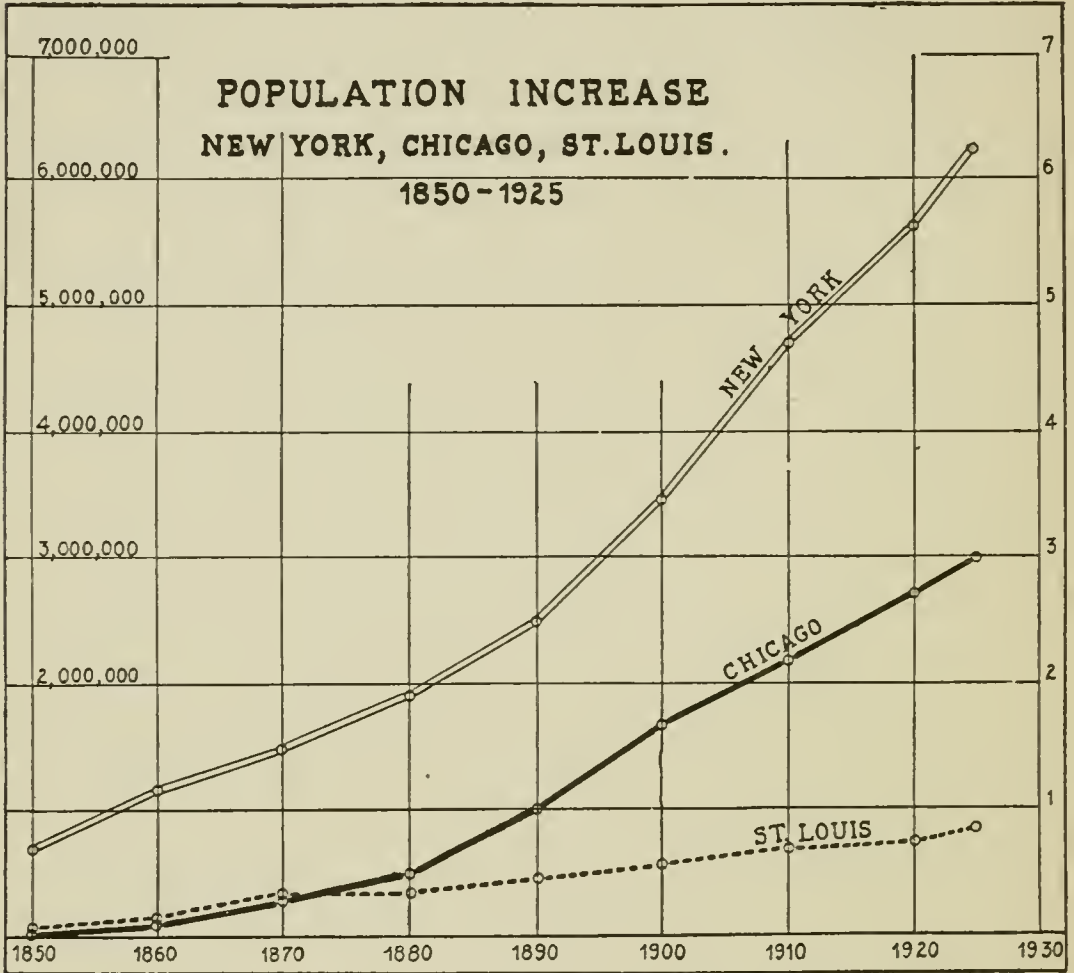


FIG. 30.—Graph: The trend of population increase, New York, Chicago, and St. Louis.

led to New York, not Boston nor Philadelphia. So New York has become the great metropolis on the eastern seaboard, and Chicago has waxed great in the Central Plain. The curve of growth in population of New York, Chicago,

and St. Louis will be instructive in this connection. The graph may very well be considered a "tale of three cities." Notice that so long as the Mississippi River was functioning as a great highway, St. Louis was ahead of Chicago in importance. But as soon as the railways had hit their stride, Chicago ran ahead of St. Louis in population and wealth, and since then the race has been between Chicago and New York. And we must not forget that a very large fraction of the growth of New York has been due to its advantage of position, which has enabled it to serve as the gateway between the rich Central Plain and the rest of the world overseas. The transportation interests, the merchants, and the bankers of New York have sat on the highway of world-trade, like the German barons on the Rhine of old, levying tribute on every ton of goods that has passed their way. It has been an exceedingly profitable game, and wealth and power have come to them in phenomenal measure.

THE MAJOR SERVICE OF THE GREAT LAKES IS YET TO BE GIVEN TO CHICAGO

Up to the present time the larger service of the Great Lakes to Chicago has been as a potential competition, keeping railroad rates low. That is an ignoble service, as compared with what they might do. They are large enough and deep enough to furnish safe highways to the bulk of the shipping of the outside oceans. The major part of the freight in ocean commerce at the present time is carried in ships of 8,000 tons burden or less. The larger ships in service on the Great Lakes at present carry loads of 12,000 tons and more. A thirty-foot channel between Lakes

Huron and Erie, in the Welland Canal, and down the St. Lawrence River would let the great bulk of the world's ocean freighters come to Chicago, and every lake port might begin to build a world commerce of its own.

Mr. Herbert Hoover assures us that "a twenty-five-foot waterway will admit seven out of eight of all ocean-going vessels coming to our harbors," and that when the St. Lawrence ship channel is provided "it will return benefits far in excess of its costs every year."

The St. Lawrence will be deepened soon, it cannot be long deferred; and the sea will come to Chicago. Then Chicago may become a great ship-building center. It has all the requisites. Then cargo for every port on the Seven Seas may be loaded here at Chicago. Then our merchants will negotiate their sales and purchases in every land directly and not through New York brokers. Then Chicago bankers will back the foreign ventures of her own merchants, and our financial houses will grow apace on much of the food upon which New York is now fattening. Chicago will grow mightily, as her eastern rival has been growing, and the disparity in size and wealth and power between the two cities will be reduced rapidly as the decades pass.

THE PROMISE OF THE FUTURE

We can sum it all up. Chicago is now a great merchandising focus, one of the greatest the world has ever known. But when we run the gamut of all the advantages focusing upon this city site, we will begin to realize that we have barely begun to grow. Think of the wealth of the area served by this great network of railways. Within the magic circle struck with the radius of one night's railway

ride from Chicago, there are now over fifty million people. Within that wonderful ring lies the largest area of continuously fertile land on this or any other continent. It is served by a climate ideal for forests, grass, and cereal agriculture. The major part of the American crops of wheat, corn, oats, barley, rye, hay and forage, flax, apples, and potatoes are produced in it. Within it also are the richest producing iron fields in the world, at present being worked. Within it is a coal field with a reserve greater than that of all France, Belgium, Russia, and Japan combined. And close enough to it to supply it with power and for development in an area that will look to Chicago as the metropolitan market are deposits of coal between four and five times as large as those of all Europe. Add to all this, a land so flat as to be served with a better network of railways and highways than any other area on earth; and better still, a land with provision already made for inland water transportation to the Mississippi and the Gulf, which may be easily made into the finest system of barge service in existence. Then to have inland seas at hand soon to be made part and parcel of the outer ocean in service—it is no wonder that we have grown rapidly in population and wealth. But greater things are in store.

Those who have traveled through our pleasant motherlands of Western Europe cannot journey out from Chicago hither and yon without feeling that ours is an unfinished landscape, that ours is a land only partly developed. In Britain, Germany, France, Switzerland—the list runs on—splendid specimens of manhood and womanhood are developed, and they have what the world calls a high standard of living. It will be interesting to compare the area of the Chicago hinterland with an equal area of these

Western European lands and foot up the populations in the two cases. The area of our country shown has something over 50,000,000 population. Were this area as carefully cultivated and cared for as are the Western European

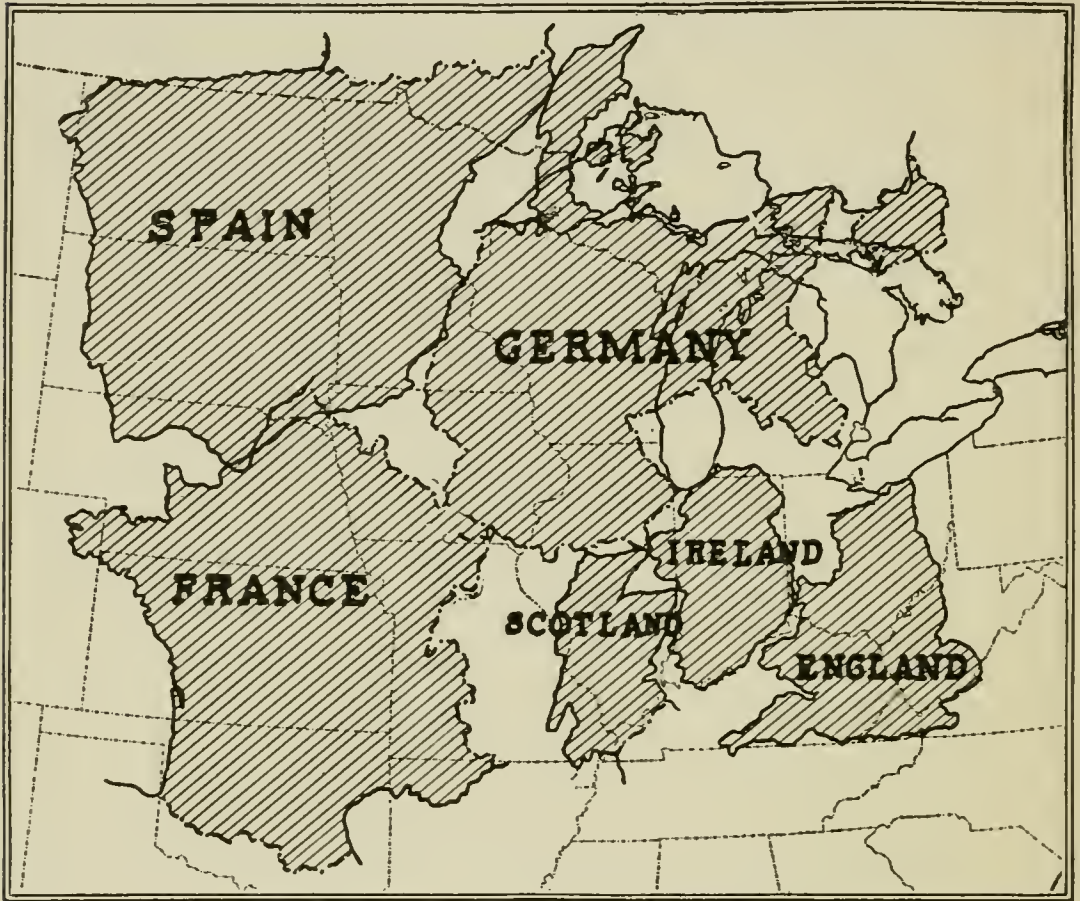


FIG. 31.—Map: Part of the hinterland of Chicago, with areas of certain Western European lands superposed.

lands, it would support a population as large as those lands, and in some parts of the area, vastly larger populations.

For example, the Spanish peninsula has a population of about 27,000,000. Its area covers North and South Dakota and part of Minnesota—a much richer land, and better able to support such a population. Germany has a population of 60,000,000. Its area covers Wisconsin,

Michigan, and parts of Minnesota, Iowa, and Illinois—a much richer land. France has a population of 40,000,000. Its area covers parts of Nebraska, Kansas, Oklahoma, Iowa, and Missouri—a region vastly better able than France to support so large a population. Britain has a population of about 47,000,000, England is the size of Iowa; Ireland is the size of Indiana; and Scotland could be tucked away in the toe of Illinois. The spaces left uncovered on our map by these countries could hold Belgium, the Netherlands, Switzerland, and Northern Italy. If now we foot up, we find that the European countries covering part of the area served by Chicago merchants and manufacturers have a population of 216,000,000. When this area of ours is developed to compare with modern Western Europe, it will have, not 50,000,000 people as now, but more likely 250,000,000. And at the rate at which the population of our country is growing, it will not take long, as the history of nations goes, before our area will hold that many people. And if Chicago merely keeps pace with the growth of this area it will have then five times its present population, or fifteen million people.

But we must not overlook a tendency well marked in all the growing Western world, and that is, that urban populations are increasing faster than rural populations. Not only that, but the large cities are growing faster than the smaller ones.

The prospects for the future growth of Chicago are certainly bright. So far as anyone at present can see, Chicago may well become the greatest city the world has ever known. But being big and being rich are not much to boast of, as human values go. We *may* have a beautiful city, a wholesome city to live in, a government we will not

have to apologize for. We have brains enough, and energy enough, and wealth enough. We are already well started on plans for a City Beautiful and are realizing our ideals at a remarkable rate. There is not a shadow of doubt but that when we put our shoulders to the wheel, we will accomplish marvels also in civic, social, aesthetic, and spiritual ways. We need only to invoke the "I Will" spirit of Chicago to accomplish our hearts' desire.

