

## PRESIDENT'S ADDRESS.

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BY CHARLES REDWAY DRYER.

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## THE NORTH AMERICA OF TODAY AND TOMORROW AND INDIANA'S PLACE IN IT.

Among the twenty-six presidents who have served the Indiana Academy of Science since its organization, I have the honor to stand today as the first representative of geography. One out of twenty-six is hardly as many as the intrinsic importance of the science might justify, but it is as many as the standing of the subject among scientific men in Indiana calls for. However that may be, this is geography day in our Academy, and I feel like opening it with an invocation to Urania, the muse represented by that noble figure in the gallery of the Vatican, standing alert and at ease, with a globe in her left hand, a stylus in her right, and on her face an expression of dignity, interest and invitation worthy of a schoolma'am about to demonstrate the change of seasons. In view of the infrequency with which geographical topics are discussed before general scientific audiences, and in view of the vestigial and appendicular character of the position which geography generally holds in colleges and universities (where it has any position at all), it would not be out of place to enter upon an exposition of the nature, scope, and content of geography, and its logical place among the sciences. I will content myself, however, with saying that the grandmother of the scientific family, although often assigned the role of Cinderella, is alive, active and fairly keeping pace with the growth of her numerous progeny. Her greatest problems are no longer those of research, but rather those of the organization of the wealth of facts which her children, to the third and fourth generation, are continually pouring into her house. Geography is still a description of the earth; and how much that means now as compared with 400 or 100 years ago! Geography is still the science of distributions: and how the things distributed over the face of the earth do multiply! Geography is still the study of the earth as the home of man, and physiology, medicine, engineering, agriculture, economics and sociology vie with

one another in finding means to make that home more habitable, luxurious and utopian. Geography studies the relationships between the earth and its inhabitants, involved in the influences of natural environment and the reactions of plants, animals and men. Under the quickening power of the doctrine of evolution, biology has gone to studying "the reciprocal relations of organisms and the external world," and geography has been compelled to become a universal ecology. The very latest and happiest statement I have seen is that of Prof. Herbertson, that "geography is fast becoming the scientific study of environments." A distinguished geographer who is also a member of Parliament goes farther and defines geography to be not a science, but a state of mind, a way of looking at things in proper perspective, in relation to the world organism of which they form a part.

And so I have undertaken by way of both exposition and apology to present to the Academy a concrete example of the method and the results of contemporary geographic science, as applied to those regions with which the people of Indiana are most intimately concerned. Geography claims the right of scientific prevision, and therefore my topic is *The North America of Today and Tomorrow, and Indiana's Place in It*.

My theme might be very fully presented by a series of maps, almost unlimited in number, but arranged in a few groups. The first may be called the pedographic (Greek *pedon*, the ground) group, which would display the features of the ground, or substratum upon which plants grow, animals live, and men find their homes and do their work. It would include graphic expressions of the height, depth, outline, relief and structure of the earth crust. A second group would be hydrographic and display the features of the sea of water which acts not only upon the surface of the continent, but stretches through its substance from ocean to ocean. A third group would be climatic, and deal with the dynamic, thermal and hyetal conditions of the atmosphere. A fourth group would be biographic, (in a special sense) showing the distribution of plant and animal life. A fifth group would be economic and would reveal the secrets of household management, by which the human family makes a living, high or low, on this continent. A sixth group would be demographic, showing the distribution of people of all races, colors, languages, clothes, "diseases, accomplishments and sins," and would grade into a final sociologic group dealing with politics, education, art and religion. Of this possible gallery of maps I can display but half a dozen and make them exhibit details, for verbal mention of which time is lacking. The key to my thesis is map No. 4.

which divides North America into natural provinces, in each of which the conditions of environment are broadly uniform. What these conditions are, may be seen by a comparison of No. 4 with Nos. 1, 2 and 3.

North America in its world relations stands among the continents third in area and fourth in population. It is built on the triangular plan, presenting to the Pacific a high and forbidding back, but facing the Atlantic with a low and inviting coast. The body of it is made up of the largest continuous plain in the world, one-third of the continent being less than 660 feet above the sea. Its shores are washed by all the oceans of the northern hemisphere, and it is crossed by all belts of climate (Fig. 2). It contains an assemblage of land forms which include all varieties of structure, relief and mineral products. It would be difficult to name a plant or animal which could not find a congenial home in some part of it. More than half of it lies in those middle latitudes which are most favorable for a high degree of civilization. Its position, extent, character and complexity render it one of the most valuable assets of the human race on this planet. It constitutes by itself a world in which nothing essential for human welfare is lacking.

In the scientific study of environments extremes are the simplest. In provinces controlled by one dominant factor, such as the ocean, heat, cold, aridity or vertical elevation, the outlines of the pictures are clear and bold. Environmental influence and organic reaction, "the reciprocal relations of organisms and the external world," are apparent at a glance and leave little that is elusive or conjectural.

Greenland, the largest of islands, a broken block plateau capped with ice, is an absolute desert except around the margins, where a fringe of barren rock affords a perching place for sea fowls and Eskimos. Around its shores the lithosphere covers the hydrosphere in the form of a shifting crust of pack ice, where the seal, walrus, polar bear, and man live as ice-riding animals. The basis of subsistence is found in the water, which teems with life from microscopic infusoria to whales. Upon these birds and beast subsist, and man upon all of them. Metals are absent and vegetable material is negligible. The kayak, the harpoon pointed with a walrus tusk and tied with a rawhide-line to a bladder float, sealskin clothing, tents and boats, bone sledges, the snow igloo built in an hour and frost and bear proof, the arctic dog sleeping in all weathers with only his tail for a cover, blubber food and fuel, and the skill which men have acquired

in making use of these simple elements to maintain an enduring and cheerful life, form for the geographer one of the most interesting and satisfactory demonstrations in ecology. The Eskimos live upon the edge of things, where the struggle for existence is so nicely balanced that it is easily upset. The interference of the white man and the introduction of the utensils and habits of civilization, instead of improving their condition, is likely to lead to their ultimate extinction. The destruction of the seal and the introduction of coal stoves, baths and bacteria are sufficient to bring irretrievable disaster.

In the "barren grounds" of the arctic tundra the basis of subsistence shifts from sea to land, and the presence of lichens, grass, shrubs, the caribou and the muskox, brings new elements without materially complicating the problem. On the whole the barren land breeds a race of men inferior to those of the ice-covered sea.

In the great Canadian coniferous forest, the caribou plays the leading part, furnishing food, clothing, shelter and utensils, much as the seal does on the ice cap. Native human life is hardly less simple and severe than in the barren grounds. In the forest the snow shoe and the birch bark canoe have evolved as monuments of human skill, comparable to nature's handiwork in the double overcoat of the muskox and the concave spreading hoofs of the caribou. Europeans began 250 years ago to reap the harvest of furs. Trading posts and transportation lines were established all over the province, and every square mile of it has been the scene of the labors of the lonely trapper, greatly to the pecuniary advantage of the Hudson Bay Company, and to the luxury of European society, but with little gain in goods or morals to the Indian and the half-breed. The resources of the province in peltry have been so successfully conserved that the supply, except in the case of some species, such as the beaver, is scarcely diminished. The fur trade has bred men of iron who have spent their strength in getting more furs. An occasional exception, like Lord Strathcona, helps to ennoble the inglorious herd.

The lumberman has cut into the southern fringe of the forest and may be expected to extend his operations as fast as the demand for timber justifies the construction of new railroads. At a few points the lure of gold has led to the irruption of civilization in isolated chunks. The phenomenon of a city like Dawson or Fairbanks, with local railroads, electric lights, telegraphs, newspapers, police and dog sledge mail service.

has appeared almost in a day. Such communities are wholly artificial and precarious, but will probably be repeated many times as the assuredly great mineral wealth of the Laurentian peneplain and the Yukon plateau is prospected and exploited.

The Canadian province will always be a game country, and as it becomes more accessible, its thousands of lakes, streams and wooded islands will acquire new value as ideal play and recreation grounds, where the weary denizens of crowded marts will find a paradise for camping, boating, hunting and fishing, and will revert temporarily to the primitive and simple life.

On the ice cap, in the tundra and in the forest collective economy prevails to the exclusion of all others. Men produce nothing but live by plundering nature of plant, animal or mineral wealth. Yet these resources are subject to some degree of scientific conservation.

We have heard much of the coal, copper, gold and tin of the Alaskan coast province, and they are probably worth looking into. We have also heard marvelous stories of Alaskan agriculture, of the ripening of wheat at Circle City, and of potatoes and other hardy vegetables grown in apparently impossible places. Summer days are long on the Arctic circle, but that the province will never do more than furnish a limited and local supply of agricultural products, and have anything to export except timber, minerals, fish and mosquitoes, are among the certainties of geography. It possesses one literally invaluable asset which can never be exploited, syndicated, monopolized or in anyway diminished, and that is scenery. The combination of sea, mountain, fiord, forest, and glacier is unrivalled in the world. "If you are old," says Mr. Gammett, "go to Alaska; if you are young, postpone your visit, for after Alaska all other scenery is tame."

If our study of environments proceeds from the simple to the complex, the Arizonan, the "dry belt" province, stands next. The rainfall ranging from two inches to fifteen is so irregular in successive years and the evaporation so enormous that Arizona, Utah, Nevada, Sonora and southern and lower California constitute a desert area, saved from extreme Saharan conditions by the fact that there are two less dry seasons each year. The peculiar forms of desert relief and xerophilous flora were shown to the Academy by Dr. McDougal a year ago. Animal forms, being less plastic, are less peculiar and bizarre, but exhibit corresponding adaptation of habit. Among the extreme products of desert environment are



the Grand Cañon of the Colorado, the barrel cactus, animals that never taste water and do not know how to drink, men who can run 800 miles in five days, and the peaceful Pueblos, where men without guile, vice or crime, plead with the Great Father at Washington to be let alone, and to have the Yankee school teachers removed.

The desert is crossed by rivers fed by mountain snows, and supplying water enough to irrigate some portion of the area less than two per cent. Agricultural islands are springing up in the desert sea where seven crops a year are harvested, each acre supports one person, and wealth is assessed not so much by acres of land as by acre-feet of water. The lower Colorado valley will become a little Egypt without the pyramids. Mining camps will spring up and maintain their high pressure, uncertain existence, fed by automobiles instead of camel caravans. They will live their day and disappear, and the desert will remain the desert, with all its highest values untouched, its healthful climate, its inspiring scenery, and the lessons which the geographer, geologist, biologist, and artist may learn there.

The Mexican plateau, a bit of the tropics lifted into a temperate and semi-arid atmosphere, is the environment in which the American Indian, on a maize basis, without iron or domestic animals, attained his highest indigenous civilization. Perhaps for that reason the hand of the Spaniard was not wholly destructive, and a blending of European and American civilizations occurred. Of 15,000,000 people 80 per cent. are of Indian blood and more than half of those without a stain of white. With all his faults, the Mexican peon is not lazy or vicious, and remains now, as of old, the pure American at his best. Mexico is the land of cactus and agave, of tortillas and frijoles, of chili and pulque, of silver and manpower, of cockfights and revolutions, of opportunity and mañana, out of which a stable and prosperous civilization, more promising than that of Old Spain, seems to be rising as rapidly as tropical nature and human nature will permit.

The Caribbean province lies in the equatorial zone of volcanoes, earthquakes, perennial heat, heavy rainfall and tropical forest. These conditions attain their extremes for the continent in Central America, where 2,500,000 Indians, negroes, and mestizos are leavened with less than one per cent. of pure European stock. The natural and human conditions are less favorable than on the Mexican plateau. The most momentous things in the province just now are the Tehuantepec railway and the Panama

Canal. The Mexicans have bettered Captain Eads' scheme for a ship railway by constructing a first-class trunk line 192 miles long, with a summit level below 700 feet, and adequate harbor works at each end. The traffic amounted the first year to \$38,000,000. This route between Atlantic and Pacific ports is 1,000 to 1,500 miles and four to six days shorter than the Panama route, and in competition with it can hold mail, passenger and fast freight transit.

Concerning the consequences to follow from the opening of the Panama canal, no one can predict with assurance. Whether it is a great big bluff put up by the United States in response to the world's dare, and will be of value chiefly as a means of doubling the effective strength of our navy, or whether it will transform seaports and routes of trade between Europe, Asia and America, and even knock down transcontinental freight rates, remains to be seen. In either event, it will prove well worth doing. It is eminently fitting that the Great Republic should make real the dream of centuries, and should overcome the greatest natural obstacle to commercial progress that the world presents. The enterprise is more commendable and beneficent than the Crusades. Its execution is a victory of peace, surpassing in discipline, mastery of engineering and sanitary skill the achievements of Japan in war. The completion of the canal will make the Caribbean truly the American Mediterranean.

In the West Indies the negro peoples are the most interesting. They number 2,500,000 and constitute nearly the whole population of Haiti, Jamaica and Barbados. Here the negro has had the longest time and the best opportunity to show in a congenial environment his capacity for civilization. The results under self-guidance in the black republics of Haiti and Santo Domingo are scarcely better than those in central Africa. In Jamaica and Barbados, the British Empire has no more orderly, industrious, intelligent, and loyal subjects than the colored people, a large majority of whom are members of the church of England. The Caribbean province has an area about six times that of Java and one-third as many people. If it were as efficiently manned and managed as Java, it could supply the continent with all tropical products, including rubber, coffee, sugar, cocoa, fruit and spices. Who will man and manage it?

Thus far I have tried to characterize briefly the provinces of extremes, those which may be called cold and dry, cold and wet, hot and dry or hot and wet. I now come to those medial provinces which are called temperate, but are in a sense the most intemperate of all. The climatic

map (Fig. 2) shows that the isotherms of 70 degrees for July and of 50 degrees for January cross near San Francisco and spread widely apart, bounding a belt which belongs to the torrid zone in summer and the frigid zone in winter. The climate is best characterized as intemperate, having an annual range of 40 to 60 degrees. Maximum temperatures of 110 degrees and minimum of -50 degrees are not unusual. The belt is swept by a procession of cyclones and anticyclones which bring rapid changes from cool and dry to warm and wet and vice versa, two or three times a week. The weather is perhaps the most variable and uncompromising in the world. Cold waves and hot waves intensify the seasons and give everybody something to talk and read about. The atmosphere furnishes a perpetual turkish bath, running the gamut from hot to cold and cold to hot in the most stimulating and irritating manner. Our European friends say that American hustle and restlessness and the strained expression on our faces are due to the uncertainty and intensity of American weather.

The eastern half of the intemperate belt is saved from aridity by cyclonic winds from the gulf and Atlantic, which carry a rainfall of 20 or more inches to Hudson Bay. The western half catches its moisture as catch can and puts up with the dribblets left from the load dropped on the eastern plains or the western mountains. The line near the 100th meridian where the 20-inch isohyet and the 2,000 foot isohyps coincide is one of the most strongly marked natural boundaries in the world. It is the western limit of forest, prairie, agriculture without irrigation and dense population. The medial belt of North America is divided into three pairs of provinces, the Pacific, Interior, and Atlantic. The simplest is the Interior, including the Arizonan, already noticed.

The Interior province is composed of two plateaus separated by the broad system of the Rocky mountains. There is not a square mile in it below 2,000 except in the lower Columbia valley, and most of it lies above all but the summits of the Appalachians. On the west the smaller Columbia plateau is a frozen sea of lava, trenched by the Snake and Columbia rivers in gloomy cañons. Most of the scant rainfall sinks into the crevices to reappear along the cañon walls in voluminous springs. The dominant plant formation is sagebrush, which is neither grass nor shrub nor tree, but just artemesia. The eastern plateau, commonly known as the Great Plains, but better characterized as the High Plains, is nearly 2,000 miles long and 300 to 500 miles wide. It is broken here and there by



islanded uplifts of ingenious intrusion, such as the Black Hills, and carved into the fantastic forms of the Bad Lands; but over much of it the landscape has no feature but the bounding curve of the horizon. Overloaded and dwindling rivers from the mountains wind across it in tortuous or braided channels. It is semi-arid steppe, a transition between forest and prairie on the one hand and desert on the other. It is the domain of bunch grass, fitted by nature for the home of nomad herdsman.

The first chapter in the eventful geography of the steppe is concerned with the buffalo and the plains Indian. You know the story of the millions of "humpbacked cattle" and the thousands of fierce and restless red men who lived upon their tongues and hides, and with an economic basis and an energy that might have made them masters of the continent, expended both in killing one another. The white men brought them horses, firearms, firewater and smallpox, a combination which probably shortened their career.

The first serious invasion of the country was that of the cattle kings and cowboys from the south, who drove their herds over "the long trail," and inaugurated the strange, brief, pastoral episode of the steppe. The conflict between the Indian and the cowboy raged for a decade with no decisive results until the prairie schooners of the Mormons, Oregon emigrants, and gold seekers bound for California and Pikes Peak, brought new elements to turn the scale. For another decade the life of the steppe was a chaotic welter of Indian, cowboy, emigrant, miner, hunter, freighter, coach driver, pony express rider, outlaw, soldier and engineer, which lives in literature and fascinates young and old as the most adventurous and romantic chapter in American history. The civil war demonstrated by how slender a thread the Pacific States were bound to the Union and spurred Congress to tie them with iron bands. The completion of the Union and Central Pacific lines in 1869 insured the speedy extermination of the buffalo, the suppression of the Indian raider and the dawn of an era of law, order, and peace.

The Indian dozes on his reservation or works on irrigation dams, the open range has gone, cowboy life has become tame ranching, irrigation and dry farming are displacing bunch grass with alfalfa, kafir corn and durum wheat. Through all the shifting scenes in the strange drama of the steppe, aridity has been stage manager and will remain so to the end.

The Pacific provinces are but a narrow fringe hemmed in between the sea and the mountains beyond which desert and steppe begin abruptly.

California has the only bit of truly temperate climate where the monthly temperatures are always between 50 degrees and 70 degrees on the continent. The long, dry summer and mild, moist winter invite to a free, outdoor life, where men may take long breaths and live close to nature. Dr. Jordan claims for California three most valuable assets, climate, scenery and freedom, and the claim may be allowed in full, and to its items may be added Stanford University and San Francisco Bay. The Oregon province differs from the Californian chiefly in having more rain, cloud and fog. Here the coniferous forest reaches probably its highest floristic and economic development. Fruit trees and vines are so luxuriant and prolific that an astute, though amateur scientist, conjectured the presence of more radium than the average in the soil. Here the Columbia river makes the only complete gap in the mountain barrier between the tropic and the arctic circle. Here also the Strait of Fuca and Puget Sound break 200 miles inland. In the eyes of the geographer the better part of the Pacific provinces is water. The productive area is small, the great valley of California being about the size of Indiana. The land is narrow and rough and has no hinterland, but it forms a sufficient base for sea-power on the Pacific and a strong but gentle grasp upon the Orient.

And thus by a roundabout road I come finally to the core of the continent, the part of North America that really counts, around which the other provinces stand as natural and economic tributary vassals. The Atlantic provinces between the Laurentian heights and the gulf of Mexico, between the sea and the critical line of the 100th meridian stand out boldly on every map. The area of the two is nearly 2,000,000 square miles, or one-fifth of North America, and is half as large as Europe. The population is about 90,000,000 or 70 per cent. of the total of North America.

This region is the most densely populated large area in the western hemisphere and the most important center of civilization outside of Europe. This preëminence is due to many causes, geographical and historical.

(1) *Position.* It lies on the west side of the North Atlantic ocean and north of the American Mediterranean. The long, low coastline, with many drowned valleys, and the number of navigable waterways which penetrate the interior render it easily accessible by water from the better half of the world.

(2) *Structure and Relief.* While its relief is sufficiently varied, not more than a tenth of it is too rugged for cultivation. Four-fifths of it is a smooth plain below 2,000 feet in elevation, almost everywhere arable

and traversible by roads and waterways. Its crust includes the most valuable coal, petroleum and iron fields yet developed in the world. Two-fifths of its area is covered with the best of glacial soils.

(3) *Climate.* It lies in that part of the so-called temperate zone where the summers are long and warm enough to ripen the cereal grains, and the rainfall in the growing season is everywhere sufficient for agriculture.

(4) *Vegetation.* The natural vegetation includes large areas of coniferous and summer forests and prairie. The summer forests are easily converted by clearing into grass and agricultural lands.

(5) *People.* The bulk of population is of Baltic Caucasian stock, which the presence of negroes, and the recent influx of Alpine and Mediterranean immigrants, have not yet notably modified. In race and culture the region is an oversea colony of western and central Europe.

Here then we have an environment with influences and reactions sufficiently complex to task the powers of the most accomplished scientific geographer. I cannot in a part of an hour undertake to do it justice and shall attempt only to touch upon a few points. I can sum up its economics in a brief table.

LEADING PRODUCTS OF THE ATLANTIC PROVINCES OF NORTH AMERICA.

	North America.	World.
	Per cent.	Per cent.
Corn .....	99	80
Wheat .....	86	21
Oats .....	90	
Barley .....	75	
Rye .....	94	
Potatoes .....	79	
Cotton .....	98	62
Tobacco .....	70	32
Rice .....	91	
Coal .....	90	40
Iron Ore .....	98	40
Petroleum .....	70	46
Natural Gas .....	98	
Foreign Commerce .....	80	12
Population .....	70	5.6

The total value of its agricultural products in one year approaches nine billion dollars, a sum which Secretary Wilson says nothing short of omniscience can grasp. The net value of manufactured products is well over ten billion dollars. However approximate these figures may be, they show the order of the magnitudes.

When goods are produced in such quantities, the circulation of products and people must be on a corresponding scale. In the way of this, the Appalachian highland offers the only barrier. This is broken through by two gateways, the St. Lawrence and the Mohawk-Hudson valleys.

The gap of the Laurentian lakes and river plays the part of the Baltic sea in Europe. It lets tide and shipping 900 miles inland to Montreal, and smaller vessels penetrate to the head of Lake Superior, 2,000 miles by water and 1,000 miles in a direct line from the sea. Modern improvements have made this the greatest commercial waterway of the world, next to the North Atlantic ocean. The total tonnage passing through the "Soo" canals in one season of less than eight months is about 60,000,000 tons, or more than four times that of the Suez Canal, and equal to the combined tonnage of New York, London and Liverpool. The total traffic of the upper lakes through the Detroit River amounts to 70,000,000 tons.

The Mohawk-Hudson gap is even a more important gateway of the continent than the lower St. Lawrence. The New York barge canal now under construction may be regarded as a half-way measure toward a future ship canal at least 24 feet deep.

Time is lacking to discuss the waterways of the Mississippi system. Improvements will be made, but the complete control and utilization of the Mississippi is a larger proposition than mankind has yet anywhere attempted, and may prove too costly for even the richest country in the world to accomplish. I venture only to mention as probable future waterways of considerable magnitude: Lake Erie to Lake Ontario, Buffalo to Troy, Georgian Bay to Montreal, Cleveland to Pittsburgh and Cairo, Chicago to New Orleans, Kansas City to St. Louis, Winnipeg to Lake Superior. The strategic points on the seaboard are Montreal, New York and New Orleans. Among those inland, Buffalo, Cleveland, Pittsburgh, Detroit, Chicago, St. Louis and Winnipeg are plainly conspicuous. I want to call especial attention to Winnipeg. It stands in the wasp-waist of Canada, through which all currents must pass. If I were a capitalist I would look for investments in Winnipeg.

New York already looms up as one of the modern wonders, with a reasonable prospect of becoming within twenty years the metropolis and financial center of the world. The vision of a city of ten or twenty million people appalls the imagination. The growth of the seaboard, Cleveland-Pittsburgh, and Chicago manufacturing districts sustains the prophecy of H. G. Wells that there will ultimately be a continuous urban industrial district, extending from Boston, New York, and Philadelphia to Chicago and St. Louis, with various outliers along the Mississippi.

For the general map of future economies or use of land, Fig. 6, we are indebted to Raphael Zon of the U. S. Forest Service. (Circular 159.)

The question of future population is not only a fascinating subject of speculation, but a serious practical problem of vital importance to all students of the conservation of natural resources. It is not at all a question of space. If all the people in the world could be herded in Texas, every man, woman and child could have a domain 70 feet square, equal to an ordinary city lot. Even in Rhode Island they could stand in rows 4 feet 6 inches apart both ways. The population which any region can support is fixed, according to Dr. McGee, not by land area or limitation of atmospheric nitrogen, but by water supply, a proposition sustained by a comparison of the rainfall and population maps, which might almost serve one in place of the other.

He calculates that the "duty of water" in relation to human population is "the maintenance of one human life a year for each five acre feet used effectively in agriculture." The annual rainfall of the United States is five billion acre-feet; therefore the capacity of the United States for population is limited to one billion, giving a density about half that of Belgium, a figure which may be reached in less than three centuries. Several statisticians, calculating from known rates of increase, place the population of the United States in the year 2000 at 250 to 350 millions.

Even more momentous than the question, How many? is the question What shall we be? In 1830 the people of the United State and Canada numbered about 14,000,000 and were, except the French on the lower St. Lawrence, of almost pure British stock. Shortly after 1830 immigration began on a large scale, and with some fluctuation has increased until the present, when in some years a million aliens land upon American shores. The total number amounts to about 28,000,000, of which 90 per cent. have come from Europe. Previous to 1890, 75 per cent. of them were Baltic



and Teutonic people. Since 1890, 60 per cent. have been Alpine and Mediterranean people. This influx of people who differ widely from the original stock in temperament, habits, language, and religion, makes the problem of assimilation and blending a serious one. The most efficient agent of Americanization is the public school, where the children learn the English language, absorb American ideas, and undergo a change even in head form. The Alpine people are noted for their domestic virtues and devotion to family, divorce being almost unknown among them. The Italians have a native talent for art and music. These are qualities in which the typical American is often lacking, and desirable contributions to the society of the future.

A rapidly developing country like ours has an almost unlimited capacity to absorb and use labor supply, and there is no indication of a surplus. The number of colored people in proportion to the total population is decreasing, and it is possible that in time even the "black belt" will fade out. At the twelfth United States census the native whites of native parents formed a small majority, the foreign whites and native whites of foreign parents a little over one-third. The tardy returns of the thirteenth census will probably reverse these proportions. The United States is the melting pot of the nations.

The relative and absolute decrease of the rural population, the increase of foreign born, the relative decrease of food supply, the approaching limit of food production under the present systems of agriculture, the steady rise in prices, all indicate that the days of plenty and profusion are passing, and that the American standard of living must decline toward the European standard.

In Canada, with a population of about 7,000,000, mostly in southern Ontario and Quebec, there are too many unknown factors to make prediction justifiable. The greatness of Canada is chiefly visionary. Their official literature gives one the impression that they have learned the art of boom and brag until they can go us one better in claiming everything in sight and more beyond the horizon. In calculating such big round figures as I have given for the Atlantic provinces, in most cases Canada is almost negligible. Dreams of a large agricultural population on the Peace River in latitude 60° and on the "clay belt" around James Bay seem to have the same kind of a basis as that of a railroad to Hudson Bay and regular lines of steamers from Churchill to Liverpool. The geographic

probabilities are that Canada's most valuable assets lie in the great forest, and the unknown mineral wealth of the Laurentian peneplain.

Standing upon the broad principle postulated by Geddes, that "geography in the long run disposes," geographers should not hesitate to express the general trend of geographic influences. While taking into account the contravention and annulment of these influences by historical, racial, social, political and even personal forces, they are disposed to regard apparent violations of geographic laws as local and temporary, or as manifestations of some higher law. Jefferson was a geographer as well as a statesman when he prophesied that the Mississippi basin "will ere long yield more than half of our whole produce and contain more than half of our inhabitants," and declared that any foreign possessor of the mouth of the Mississippi is "our natural and habitual enemy." Lincoln and the loyal people of the north were geographers when they maintained that a separation of the northern and southern States would be a calamity to both.

The Canadian election is over, and we know what our next door neighbor thinks of us. Nevertheless I venture to predict that the two nations will ultimately become one. Annexation of the United States to Canada might be preferable to the inverse process; but geographic influences of maximum intensity crowd the two peoples together with the persistent pressure of gravitation. "No sane man," says Prof. Grant of Kingston University, "would, if asked to divide North America into three nations, draw the present boundary line between Canada and the United States."

The habitable area of Canada consists of a strip 4,000 miles long and 200 to 400 miles wide, almost cut into three fragments by the northward projections of Maine and Lake Superior. The provinces are held together like beads on a string by the Canadian Pacific Railway. Is it not probable that the enormous mass of wealth and kindred population on one side of the most unscientific boundary in the world will in time attract and dominate the economics and politics of our northern neighbors, and Canada be peacefully absorbed by economic rather than by diplomatic or military conquest?

The scientific frontier along which a geographer would divide the continent is, of course, the crest of the Rocky Mountains. That is the natural line of cleavage, but the Pacific States of America, as a world power, would incur the danger as well as enjoy the strength of their position. If there are ever as many people and as much wealth between Los Angeles

and Prince Rupert as between Chesapeake Bay and the Gulf of St. Lawrence, it will be when San Francisco is the capital of Japanese or Chinese America.

Whatever may be the changes and chances of the coming centuries, ours is a big country. We are not to blame for its bigness, and we must accept its awkward bulk and make the best of it. To live in a large country requires large mindedness. The American people have fallen heir to the largest fortune in natural resources and virgin lands that ever came to any people in the world's history. It is an opportunity larger than can ever come again on this planet. Every influence tends to foster in us a spirit of extravagance and arrogance. If we can survive the period of adolescent exultation and riot, and with spirit undimmed and powers intact, attain a sober and dignified maturity, all geographic influences conspire to make the Atlantic provinces of North America the home of a people united in blood, spirit, economics, government, institutions and civilization, equal in number to the population of Europe, and to make that people not only dominant in North America but able to divide with Europe the hegemony in the confederation of the world.

Let me cap my climax with the words of a French sociologist, Edmond Desmolins, who places in the United States and Canada the home *par excellence* of the development of the particularist social formation, where the Baltic and Teutonic peoples, expanding upon new and vacant lands, are able not only to develop freely, normally and without foreign influence, but also to acquire an ever increasing personal initiative. "By the processes of private life alone," he says, "they have established and will maintain parliaments, self-government and the predominance of the individual over the State. They absorb, assimilate or eliminate numerous and diverse elements from the old world. They are a society of intense life, of individual energy and aptitude for progress raised to their maximum. They are the society of the future."

*And what of Indiana?* The prepotent geographic quality of Indiana is its centrality. It is not in the center of North America, but near the center of its richest province. We, here at Indianapolis, are nearly midway between the critical line of the 100th meridian and the Atlantic coast, between the Laurentian peneplain and the gulf coastal plain, between the Appalachians and the Mississippi, between Lake Michigan and the Ohio, between the July isotherm of 70° and the January isotherm of 50°, be-

tween the isohyet of 20 inches and that of 60 inches, between the isopleth of 250 and that of 8. Indiana sits astride the Cincinnati arch with one foot over the edge of the interior coal field and the other on the oil and gas belts, and astride the boundary of glacial drift and the boundary between summer forest and prairie, with the balance on the right side in both cases. No State hits more exactly the golden mean. Its position makes it, like France, a "bridgeland" between north and south, east and west. It has been happily called the "midland gap" traversed by many lines of human interest. The mid-parallel of the United States, the 39th, triangulated and leveled by the geodetic survey, crosses it. The centers of cereal production and farm values have crossed it into Illinois. The center of manufactures is in Ohio headed this way. The center of population has been stuck in Indiana for twenty years and is likely to stay here indefinitely. The National Road, the Wabash and Erie canal and a score of east-west trunk-lines cross it, and ship canals both ways are more than possibilities. Everything comes our way because it must. The happy mean involves an absence of startling extremes. Few superlatives can be applied to Indiana, but it is not therefore commonplace. Its central position implies a moderate variety and complexity. In Indiana cold waves are not too cold, hot waves are not too hot, and tornadoes are not very frequent; yet the climate is by no means monotonous or enervating. There are no volcanoes, geysers, earthquakes or glaciers, but the moraines and lakes of the north and the hills, knobs, bluffs and caves of the south provide a pleasing variety of landscape beloved by the artist. The strongest contrasts in Indiana are between north and south separated approximately by the boundary of the Wisconsin drift, which also is or was the color line, the mule-horse line, the neckyoke and chain-trace line, the corn-shuck and corn-busk line, the tinpail-bucket line, the "thataway" line and the "right smart" line. In the north the winters are severe enough to compel a proper degree of foresight and care. In the south a family might live as Thomas Lincoln's did, with only a blanket for a door to the cabin. In the days of slavery Indiana was the right of way of the underground railroad, and during the Civil War no northern State was more evenly balanced in its sympathies. In party politics no presidential candidate can count upon it with assurance. Many great men start or stop in Indiana; not so many stay there. To trace the environmental influences which have given rise to a banner crop of oratory, poetry, fiction and humor

would be a fascinating problem, but something must be left for my colleagues who are to follow on this program. Indiana is too much in the way to be isolated, antiquated or one-sided, yet not in danger of being swamped by foreign elements. If it should ever cease to be the home of a prosperous community of enlightened and happy people the event will not be due to adverse geographic position or environment.





Fig. 1.



Fig. 2





Fig. 3



Fig. 4.



Fig. 5.





Fig. 6