SCIENCE

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PROBLEMS OF GEOGRAPHIC INFLUENCE[1]

FOUR points of view will be taken with reference to our theme: its importance, its difficulties, the related sciences, and fields of investigation.

We deal here with the heart of geography. The ties, infinite in number, which bind life to the earth lead surely up to man. No other phase is so insistent and so appealing as the earth's influence upon our kind. The plant and animal world joins itself to our physical habitat to enrich our environment and multiply our problems. The first members of this association came into it from the field of geology, and these men have, from meeting to meeting and from year to year, marched steadily up toward the human goal of our science. In Mr. Roorbach's recent symposium on the Trend of Modern Geography,[2] by far the larger number directed their call for research toward the field of geographic influence. Whether we speak of influence, or response, or adjustment, matters little. Terminology will grow unbidden, if we are exact in our thinking.

Here lies the weight of our theme. We all have a duty to do in view of the ill-founded and doubtful conclusions too often set forth, and in view of the vast extent of the unknown in this field. The factors of influence are not carefully isolated. What these forces really do and how they do it are not shown. Ripley holds it certain "that the immediate future of this science

[1] President's address before the Association of American Geographers, read at the eleventh annual meeting, Chicago, December 30, 1914.

[2] "The Trend of Modern Geography," *Bull. Am. Geog. Soc.*, November, 1914.

will depend upon the definiteness with which its conclusions are stated and illustrated."[3] The rich and sometimes noble and rousing periods of Ratzel leave us often in the jungle of thought. But he made a trail in the jungle, and we who follow the trail may not blame him for unexplored corners of the forest. What Ratzel thinks about definite knowledge appears in his criticism of the so-called "climatic philosophers."[4] Here too Brunhes adds his call for precision:

> How does the climate influence us . . . it is just as necessary here, as elsewhere, perhaps more necessary, to rejuvenate current assumptions by analyzing them, for they are far too slipshod and superficial.[5]

This call for definiteness presses on every student of geographic influence, be the phase climatic or other. It is not that we can draw mathematical conclusions in any science of man, but sharp eyes and good logic will at least lift us from chaos to order.

We are thus under bond to work this field for the perfection of essential geography. But we owe a further debt, or rather, there is a mutual exchange of help in which we must not fail of our part. Geography offers help and cooperation to all sciences that deal with man, anthropology, ethnology, history, sociology, economics, psychology and comparative religion, and from each of these geography will gather data for its own perfecting.

The historian, for example, needs from the geographer a more full knowledge of environmental working, and the geographer receives in turn much from the historian. The old geography knew little of the causal and historical, and some of the old history might just as well have been staged on a flat platform projected into the interplanetary ether.

If history is to strike deep roots into the earth, if it is to set forth with full discernment, the moulding, moods, motives and movements of men, the historian will need help from the geographer; and the historian, sceptical of generalizations that are too easy and scorning overstatement, will respond with open hand to every real offering of the geographer.

When geography was poorer than today, Parkman wrote the human story out of its environment. James Bryce has always and without stint placed geography in the running with historical movements. And if the generalizations of Bryce, like those of Ratzel, are sometimes tinged with vagueness, let us blame, not the historian of broad outlook, but the geographer whose work is yet in arrears. Other examples are not wanting. Winsor, in dedicating his Mississippi Basin to Mr. Markham, then President of the Royal Geographical Society, writes of environment,

> I would not say that there are not other compelling influences but no other control is so steady.[6]

Mr. Edward John Payne has written a "History of the New World called America." Being no historian, I do not know the craft's estimate of that work, but I am astounded at the author's deep and broad knowledge of environment in the lands whose story he tells. The surface, the climate, the possibilities of cereal production and of the domestication of certain animals appear in such wise in relation to early American civilization, to the arts and habits of the people, as to stir the geographer to admiration. Whether all of Payne's conclusions stand fire or not, he gives an example of effort aimed at preci-

[3] W. Z. Ripley, *Pol. Sci. Quar.*, 10, 640.

[4] "Anthropogeographie," I., 83–84.

[5] J. Brunhes, Inaugural lecture, *Scot. Geog. Mag.*, 29, 312.

[6] "Mississippi Basin," Justin Winsor, following title page.

sion. This is a call to every geographer. The geographic atmosphere in Professor Turner's story of our north central west is known to us, and Professor J. L. Myres, reaching at once broadly into the fields of classic lore, anthropology and geography, is, in his person and work, living testimony to the importance of our anthropogeographic task, and to the hopefulness that lies in our attempting it.

Some historical writers are influenced little if at all by the study of the earth and lower life as elements of human environment. Even volumes professing to deal with the geographic foundation of history sometimes fail of their goal, and one preface affirms that—"the general physiography of North America is familiar enough to readers."

This, I am sure, is quite too rosy a view of the geographic situation. But I cite the limitations of some histories in no mood of criticism. Let every man build the wall over against his own house. What of assured fact or proven principle we put before the historian he has neither the will nor the power to escape. Our light is in no danger of being put under a bushel. But we have good need to see that it is lighted.

Who can show me a good human geography of Greece? Perhaps it is now in the making by a member of this association. If there be such a work, should it be possible for a historian of Greece to liken Asia Minor and Egypt to enormous jaws about to swallow Cyprus, to describe the Egean and Adriatic as *fiords,* to liken southern Europe to a mastodon, Greece being a leg; to call Greece with its mountain spurs and bays a skeletonized leaf, to fill the peninsula with tiers, storeys, waists, claws, wheels, threads and tongues, and leave you not knowing whether this poor little country is a house of many rooms or a spider with sprawling limbs. But we are most gravely assured that the geography of Greece had results upon its history, and diversity of states formed by diversity of surface is the lone geographic captive shut up in this dark closet!

If we turn to sociology we meet the insistence on the importance of environment. Let us take Giddings's definition, that

> Sociology is an attempt to account for the origin, growth, structure and activities of society by the operation of physical, vital and psychical causes, working together in the processes of evolution.

Or we may cite the utterance of Small, that "this force is incessant, that it is powerful, that it is a factor which may never be ignored."[7] Yet Dr. Small in an extended chapter on environment mentions geography but once, and then not as a science which might contribute to sociology. Professor Ridgeway[8] thinks that failure fully to recognize man as controlled by the laws of the animal kingdom leads to maladministration of alien races and blunders in social legislation. He says, further, "As physical characteristics are in the main the result of environment, social institutions and religious ideas are no less the product of environment," and again, any attempt to eradicate political and legal institutions of an equatorial race "will be but vain, for these institutions are as much part of the land as are its climate, its soil, its fauna and its flora." Ripley, in reviewing the second volume of Ratzel's anthropogeography, criticizes the author for neglecting acclimatization, considering its importance in social theory, and in view of the fact that theories of race dispersion turn upon our judgment in this matter. Perhaps the real state of the case is seen in the appearance

[7] "General Sociology," A. W. Small, 417.

[8] Wm. Ridgeway, "The Applications of Zoological Laws to Man," *Brit. Assoc. Ad. Sci.,* Dublin, 1908, 832–847.

not long ago of a serious and careful volume on the development of western civilization, which nevertheless exhibits an utter dearth of geographic data and principles.

We are safe then in saying that most authorities in these sciences of man recognize environment as fundamental, but the greater part, in a sort of absolution of conscience, name the subject and take leave of it.

We need not therefore expect the historians or the sociologists to develop in any full way the principles of environmental action. They admit the need of these principles, but have not the time, perhaps not the will, to develop them. It remains for us to put content into the word environment, so that it can not be overlooked or slighted and so that its meaning may become available in plain terms to all.

In his "Racial Geography of Europe" Ripley asserts that

> To-day geography stands ready to serve as an introduction as well as a corrective to the scientific study of human society.

This was written about twenty years ago, and yet it is to-day not so valid or truthful a statement as we could desire it to be. Our convictions are in the right place and much has been done, but we still suffer from a dearth of limited, local, special and proven data, and a surplus of generalizations announced with the enthusiasm of fresh discovery, or rediscovery, unsupported by adequate evidence. We are subject to Marett's criticism of certain generalizations of Ratzel and La Play—"too pretty to be true."[9] We are awaking to the importance of our field and this is well, but it is equally important to make haste slowly and to give human geography a content satisfying to ourselves and convincing to our fellow workers in adjoining fields.

The pursuit of our theme is as difficult as it is important. Professor Cramb in a recent book[10] comments on the causal idea so common in our modern thought about history. His word is equally good for us. He says:

> In man's history nothing is more difficult than to attain to something like a just conception of a true cause.

Universality and necessity are the criteria which he proposes. A stiff application of these principles would be a tonic for some geographical theorizing.

Here is an individual, X; What is he? He is first a bundle of anatomical characters. How did he get them? Why is he different in these matters from some other man? A single example will show how little we know. Professor Boas well says that "haphazard applications of unproved though possible theories can not serve as proof of the effectiveness of selection or environment in modifying types."[11] He calls for comparison of parents of one environment, with their children reared in another. He has made such investigation upon children of immigrants in New York City and concludes that distinct changes, as of head form, took place.[12] He has done well, no doubt, all that one piece of investigation permitted. But he does not analyze the factors of change nor show what any factor does. Alongside of these apparent changes in one generation we may put an opinion of Professor Myres, who, referring to a common belief that Alpine man originated in the Alpine region in response to environment, states his conviction that the time since the glacial period would not suffice for so great a change of head form.[13]

[9] R. R. Marett, M.A., "Anthropology," 98.

[10] J. A. Cramb, "Germany and England," 113.

[11] F. Boas, "The Mind of Primitive Man," 52.

[12] F. Boas, "Changes in Bodily Form of Descendants of Immigrants," Sen. Doc. No. 208, 61st Cong., 2d Sess., Washington, 1910.

[13] J. L. Myres, "The Alpine Races in Europe," *Geog. Jour.*, 28, 538.

Lester F. Ward is equally confident that

> There has been no important organic change in man during historic time.[14]

Our individual also embodies physiological and psychical activities which are affected by environment. Here the problem is immensely involved, for, as Brinton says, psychical development depends less on natural surroundings than on a plexus of relations of each man with many others.

Natural environment includes first the physical—soil, water, minerals, land form, temperature, moisture in the air, light, electricity, and all operative on an earth in interplanetary relation to the sun. Then is added the animal and plant environment whose daily pressure on the individual and the group has held in no small way the destinies of civilization. Interwrought with all these natural forces are the human-social factors ever more powerful since the dawn of history. Thus there is a total of infinitely variable factors producing infinitely diverse results upon the body and mind.

The environment of this day and hour is perplexing enough, but environments change: man exchanges one environment for another. The steady drive of our environment in its daily flux is replaced by the shock of a new environment entered in a day or a night or gained by long voyages across the sea. The sum of a man's heredity goes out into his new sphere with him. But how much of this is primal and persistent and how much can be shifted like a garment? The heredity doctors have not answered this question and geographers should have a care. It is a wholesome corrective to remember the number of our possible ancestors. According to Boas,[15] an Eskimo could not have so many as you or I. Royal families share this limitation with the polar man, and one European monarch, it is said, has in the past twelve generations only the meager outfit of 533 ancestors out of a theoretical 4,096. We, however, belonging to a large population of unstable habits might have in twenty generations more than a million each. We are too complex to come to an easy reckoning about ourselves.

By our social memory we carry the old environment into the new, and thus we "compound"[16] environments, and this ends in making environment coextensive with the world. The universality of modern environment for any civilized man appears in our commercial interchange and speaks to us in a war whose center is in Europe, whose circle takes in the world.

Ratzel in showing how Christianity conquered its realm not as direct from Palestine, but as modified on its way through Egypt, Greece and Rome, has given us a good example of such compounding of environments.[17] Geographers have by no means been blind to the difficulty of anthropic problems. Brunhes warns us that truth in geographic relations of man is approximate, and that to claim it as exact is to be unscientific.[18]

> The outstanding psychological fact then is the antithesis of a rigid fatalistic determination of human acts by climate and soil.[19]

And he then cites what he calls "antinomies," frontier, urban, racial and social. Ratzel has a most instructive passage on sources of error due to the neglect of middle members lying between visible workings and their remote causes, the inclination to take a direct line instead of the roundabout way of mediate working causes. This

[14] L. F. Ward, "Pure Sociology," 17.

[15] F. Boas, "The Mind of Primitive Man," 84–88.

[16] R. R. Marett, "Anthropology," 122–23.

[17] "Anthropogeographie," I., 175.

[18] J. Brunhes, Inaugural lecture, *Scot. Geog. Mag.*, 29, 362–63.

[19] *Ibid.*, 367.

leads either to false results or to the hopelessness of reaching the truth.[20]

Professor Myres in the closing lines of his little book, "The Dawn of History," admits and emphasizes the vagueness of results in trying to estimate the relations of history, geography and biology. But his final word is of good cheer,

> If the reader is moved to complain with that other, "I see men as trees walking," let him remember that he who said that, was well on the way to "see every man clearly."

Thus far our notice of our difficulties has been general. Let us look at the questions of race. "Race is the key to history—what is the key to race?" Thus Griffis inscribes the title page to a volume on Japan. In estimating the force of a given environment on a given time how much shall we allow for race? But we must go back of that. How did environment go into the making of race? But suppose we are not sure what a race is and can not with any agreement analyze and classify present races! Authorities agree neither upon race, nor upon the efficiency of race in relation to environment. Thus one authority assigns a race cause for the higher status of long heads as compared with broad heads in certain parts of France. The long heads have more wealth and pay more taxes than their brachycephalic countrymen. Is this really a racial result? Or is it due to a fortunate occupation of richer lands, bringing in its train the higher professional and social status and the urban tendencies of the northern blonds? The criteria of necessity and universality need to be pressed home.

The present writer has difficulty, being a layman, in understanding the ethnologists when they classify races. It is increasing to one's comfort therefore and saving to self-respect to find a member of the anthropological fraternity saying of the development of races that it is "immensely difficult to separate the effects of various factors," and that, "it is not edifying to look at half a dozen books upon the races of mankind, and find half a dozen accounts of their relationships having scarcely a single statement in common. Far better to face the fact that race still baffles us almost completely."[21]

We may add a further observation, that much in this field depends upon paleography, if we are to decipher the origin and migration of races. But here, as Marett says, is a rather kaleidoscopic science, for the continents and bridges which it calls up out of the ocean have a way of crumbling.

Let us illustrate by the so-called Aryan question. It used to be an item in the ethnological creed that most European peoples using languages of cognate features came thither from central Asia by the way of India. But many years ago now it was shown that common language did not prove race kinship. Nor do names of trees and other plants suffice to trace migrations, for men change the names of their trees, and floras migrate in the long marches of time. It has been remarked that if we had no historical knowledge to the contrary, *tobacco* and *potato* might be taken as parts of a European tongue, rather than a loan from the Caribbean natives.

So come the measurer and the calipers in place of the linguist and set up the physical criteria of head form, stature and color, and put in place of a comfortable and discredited generalization the chaos of opinion which is often the precursor to more fixed and defensible conclusions. But such conclusions have not yet been reached. So uncertain is the status of the problem that one writer on the sources of the Germanic invasions says that while some put the origin in Africa, others trace racial dif-

[20] "Anthropogeographie," I., 54.

[21] R. R. Marett, "Anthropology," 61.

ferences to environment and others fall into skepticism about the whole matter.[22] This author thinks the Germans are diverse, as a Roman might be anything from York to New Carthage, Corinth or Damascus.

Brinton holds that the origin of this so-called Indo-European group was in the west, the central Celtic tribes moving from the Atlantic region through the Alps to the Danube, a southern series of offshoots peopling the Mediterranean, and the northern, moving southward and eastward from primitive seats on the North and Baltic seas:[23] Another authority thinks with Sergi and Keane that the Mediterranean stock came from Africa and that the dolicho-blond developed after the passage to Europe and the initiation of the Mediterranean water barrier.[24]

Ridgeway,[25] on the other hand, makes two non-Aryan races in Europe, Alpine and Neolithic, overrun by two Aryan races, once thought to have come from Hindu Kush, now believed to have originated in upper central Europe. He argues that to follow Sergi in making the Mediterranean race non-Aryan "leaves out of sight the effects of environment in changing racial types, and that too in no long time." He cites the cases of the Boers in Africa and of New World natives changing their latitude. There was gradual change from the short, dark men of southern Europe to the tall blonds of the Baltic. This means more than intercrossing and raises suspicions of constantly working climatic influence. He thinks environment the chief factor in stature and pigmentation. Attention to other animals, in Ridgeway's view, demonstrates this doctrine. He cites the white hares and bears and the tendency of the ptarmigan and the horse to turn white in winter. The horse is cited as shown in varieties from northern Asia to the Cape of Good Hope, and this writer concludes that environment is powerful not only in colorations, but in osteology, and that these changes may be very rapid. The blond Berbers are believed to owe their qualities not to mixing with Vandals and Goths, but to being cradled in a cool mountain region. The fair-haired people have poured for centuries across the Alps and yet hold their own only in the north of Italy. Woodruff does not think they were darkened, but that natural selection eliminated them because they went beyond their latitude range. *Homo Alpinus* is held by different authors as Aryan or as Mongolian from Asia, and as having evolved their brachycephalic character on European soil.

Marett, referring to Ridgeway, thinks he overrates environment, but admits it as premature to affirm or deny that in the *very long run,* round-headedness goes with a mountain life.[26]

To add other items of opinion, confirming the conviction that much fruit has set, but few specimens have ripened, Marett places in north Africa the "original hotbed"[27] of the Mediterranean race, who in Neolithic times colonized the north shore of the Mediterranean and passed by the warm Atlantic as far as Scotland. The same author, keeping close to cover, says that it is now fashionable to place the Teutonic home in northeastern Europe, though he regards it as still something of a mystery. The Scandinavian origin of Euro-

[22] C. H. Hayes, "Sources of the Germanic Invasions," Studies in Hist. and Pub. Law, XXXIII., 14–15.

[23] D. G. Brinton, "Races and Peoples," 151–52.

[24] "The Mutation Theory and the Blond Race," *Jour. Race Devel.,* III., 491–95.

[25] Wm. Ridgeway, President's Address, Brit. Assoc. Ad. Sci., Dublin, 1908, 832–47.

[26] Marett, "Anthropology," 107.

[27] *Ibid.,* 104.

pean peoples is held by some[28] while J. L. Myres shows the affinity of boreal and Mediterranean man and suggests their Euro-African origin,[29] and Gray's discussion of Myres's paper emphasizes the swift action of environment.[30]

Altogether it is hardly to exaggerate to say that you can find authority for placing the breeding grounds of the European peoples in north Africa, in central Asia, or in any part of Europe, for sending their wandering progeny in any direction of the compass, with any kind of racial mixture or linguistic evolution and with every possible shade of efficiency or inefficiency on the part of environment.

But suppose the Aryan business cleared up, there would remain earlier problems of Paleolithic differentiation and the prolonged twilight journey of man. And suppose we had threaded our way, geological, ethnographical, linguistic, and geographic, down through the differentiations and mixtures and migrations until we have the Teuton and the Celt in north Europe and the British Isles, are our troubles past? Let us see.

You would trace the evolution of the American, as effected by environment. Where will you begin? Not in New England or Virginia. Not altogether in old England. Not altogether in Teutonic Europe. Before we got through with the American we might like to cover all Europe with the network of our inquiry. But we can not move too broadly; let us turn to the British Isles. There are still the progeny of the pre-Celts of Neolithic age. There came at least three types of Celt, the Gael, the Briton and the Belgæ. Roman invasion and rule followed and in due time the Christian religion. Next came the Angles and Saxons and Jutes from across the North Sea, a new deluge of paganism, and a new contribution of racial traits bred in the long past. One would like to know how that old North Sea Teuton differed, fifteen centuries ago, from the Baltic Sea Teuton of the Prussian plain. Was it in the latter's great strain of Slavic blood, or were there other factors. When and where did the present sum of difference between Prussian and Englishman begin to emerge? At any rate, Jutland, Schleswig-Holstein and the lowlands of the Elbe were poured into our ancestry and were Christianized.

In the eighth century the Viking rovers came across the North Sea, with fresh cargoes of vigor and paganism. The Rhine, Scheldt, Seine and Loire as well as Britain felt their power. "From the fury of the Northmen, save us, Lord," runs an old litany. But pirate and robber though he was, here was an element of selection that must not be disregarded. Norway, Sweden and Denmark, says Greene, "were being brought at this time into more settled order by a series of great sovereigns, and the bolder spirits who would not submit to their rule were driven into the seas and embraced a life of piracy and war." But there had been bred into them "in a land that is one third water and one third mountain, where winter lasts six months in the year, endurance, ingenuity and daring."

In two or three centuries more followed the Norman Conquest, in which the Viking brought to England all that he had taken on and taken in of French life. There follows the further coordination of Neolithic, Celtic, Teutonic and Norse men for five and a half centuries, until the early decades of the seventeenth century and the beginnings of British settlement in America. And this was a selective migration whose story can

[28] Richard, "History of German Civilization," Ch. II.

[29] J. L. Myres, "The Alpine Races in Europe," *Geog. Jour.*, 28, 537.

[30] *Ibid.*, 555–56.

not be told here, and has never been so fully told as the student of environment might desire. Suffice it to add that no mere paragraph can tell us what kind of people came to Massachusetts, or Virginia. Religious, economic and political changes in England, plus the attractions of a fresh world, brought across the sea the elements that have been formative in American life. American environment has not developed all the qualities which we consider as distinctively or typically American.

But in New England, and on the Hudson, the Delaware and the James, new physical and social pressures began to wield their power. After some generations in this environment in the eighteenth century, a new flow began through the passes of the Appalachians. To Timothy Dwight is ascribed the view that thus New England was rid of her restless and insubordinate spirits. Another interpretation is that the best and most progressive men went because they did not like the rule of the Congregational clergy. At any rate, it was another selective migration, by which picked families went into a new environment. Turner is our best authority for what the environment of the middle west made out of the emigrant from the East. It would be easy to show, I think, that in spite of what might seem predominating mixtures of Continental European migration, New England still pervades Wisconsin, that the New England mind was more powerful than the new environment, important as that was, just as the Puritan mind was more powerful than the New England environment.

The selective emigration moved on by prairie schooner and transcontinental railway to the Rocky Mountains, the intermont plateaus and the Pacific Coast. Here are mountains, deserts, mines, giant forests, irrigation and a new ocean. Whence came the Californian? From New England, Ohio, Iowa, Kansas, Colorado. Is that all? Every one of the following regions is there, with 5,000 to 200,000 representatives. Germany, Ireland, England, Canada, Italy, Mexico, Russia, Scotland, Sweden, Switzerland, Portugal, Norway, France, Denmark, Austria, Wales, Turkey, Spain, Greece, China, islands of the Atlantic, Australia. The German, Canadian, Englishman, Spaniard and Russian that wanted to be or do something new are there. And it is a compelling environment, of sky and mountain, ocean and plain, forest and desert, mine and field. Professor Royce, a native Californian, thinks the typical character there is a combination of strength and weakness, with wandering in the blood, lack of social responsibility, recognition of no barriers, desire for sudden wealth, love of difficulty, unaccented love of home, with more love of fullness of life than reverence for the relations of life.[31]

One more picture of this western life must here suffice—it is by a journalist—of the American of the far northwest, where New England and the *Mayflower* appear not, whose men followed the Missouri from Kentucky, Indiana, Missouri and Arkansas, tall, big-boned, and stalwart, self-assertive, nervous, quick in action, acting before they think and thinking mainly of themselves, their European origin so far behind them that they know nothing of it. Their grandfathers had forgotten it. In a word they are distinctly, decidedly, pugnaciously and absolutely American.[32] Making what allowance you will for Ralph's exuberant rhetoric, and Royce's habit of philosophizing, better to be solved in the twenty-first century than to-day is the

[31] J. Royce, "California," Am. Com. Series, 499–500.

[32] J. Ralph, "Our Great West," 141–42, quoted in abstract.

problem of the function of environment in shaping American life. As we have seen in this sketch, the geographer will not work alone, the historian, sociologist and philosopher will take a hand.

It's a long way from the primitive man to the differentiation of the white race, from the white beginnings to Briton, Anglia, Norway and Normandy, from Anglia and England to California and Puget Sound. Along this ancient and devious path our ignorance of the inner laws of human development is appalling. We see man, and earth, something called race, race continuity, one physical environment after another, human environments with innumerable mixtures of blood, in infinitely various compounds, in the grand march of humanity to one world center after another. The result, to carry out our illustration still, is the Pacific coast man, domestic, industrial, political, social, moral. It will take cautious steps and many torches to pick our way back along the road by which he came.

Let us take another example in emphasis of the difficulties which beset us—an analysis of the causes of Japanese character. Mental alertness has been asserted to be the chief trait of the Japanese. This must have originated in accordance with biological laws, in spontaneous variation, in mixture of races, or in environment, or we might add, by a combination of these. It is tentatively held that however this quality arose, it has been preserved by environment: first, by insularity, giving familiarity with the sea, saving from wars, intermixtures and invasions, in distinction from a continental land, like China; second, by physical features, affording small areas of cultivation, promoting industry, a land of such richness as to give certainty of reward, without drought or flood to destroy the prudent as well as the thriftless. Third, there comes climate, following a supposed law that the progressive lands are in the cyclonic domain of the Temperate zone.

This seems simple, interesting and suggestive, but is it true? Is mental alertness the chief trait in Japanese efficiency? Droppers, sometime professor in the University of Tokyo, thinks the secret of success is in the structure of society, devotion to family life, or to tribe and nation, the corporate versus the individualistic.[33] Dyer emphasizes community but denies that the main ability is in imitation. Loyalty and intellectual ability are the basis of achievement. Another authority marks the Japanese as sober, intelligent, enduring, patient, industrious, polite, skilful, ready to assimilate, not devoid of original genius.[34] Yet another says he is patient, persistent, cheerful, versatile, quick-witted, enterprising, original, imitative, progressive, industrious, artistic, humorous, cleanly, polite, honorable, brave, kind, calm, self-contained.[35] Whether any good human qualities have been left out of these catalogues, we do not know, but we are at least left in doubt as to what the main national trait is.

But suppose it is mental alertness. Would insularity make it or keep it? Miss Semple avers that insularity breeds conservatism, a quality that does not seem to be indissolubly tied to alertness. Insularity may give familiarity with the sea, but perhaps not greater than is true of the Dutch, who are not insular, and we do not think of the Dutch as distinctively alert. Insularity has not kept Japan free from invasion, though there have been periods of seclusion. And the modern Japanese are

[33] Garrett Droppers, "The Secret of Japanese Success," *Jour. Race Devel.*, II., 424.

[34] V. Dingelstedt, "Ruling Nations," *Scot. Geog. Mag.*, 27, 305.

[35] Writer in New Inter. Ency., Art. "Japan," 335.

"a very mixed people," Mongolian, Caucasian, Malay, and some say an infiltration of Negrito. If insularity breeds alertness, what other factors have apparently swamped this tendency in Madagascar, Iceland, Sicily, Cuba and Hawaii?

Nor can we be sure of the effect of small areas of rich cultivation and certain reward. Industry we can predict and a degree of comfort, but can we say more? Why not as well expect the Belgian farmer or the farmer of the Paris basin, or of the county of Norfolk to be mentally alert? Moreover, most Japanese are in a low state. "We imagine them" (the Japanese) "as intellectually homogeneous," but there are "five million highly cultivated people and nine times as many of lower type . . . the mighty mass still pagan, stolid, low in the scale of evolution."[36]

This little empire is indeed a good place in the temperate zone, and so are China, Switzerland, Spain, Austria-Hungary, Germany, France, and too many others to make the criterion of distinctive value. The inference for precise, detailed and prolonged research need not be elaborated.

We have already spoken of certain related sciences as supplying motives to the human geographer. We turn now to examine the geographer's proper sphere of activity in relation to these sciences.

Our references to the race problem might seem superfluous, for if this field belongs essentially to the anthropologists, what right has the geographer there? Here we seem at once to need a definition of geography. But the present writer will not try to go where angels have trod with devious and faltering steps. Some time we shall have a definition of geography, but not now. Meanwhile we have enough to do, and if we are reviled as devotees of patchwork, as having no real science, we bear it with serenity.

I do not know of any one who proposes to rule us out of the human sphere and shut us up to the physical. If I can get my foot on what Brunhes calls the "Humanized surface"[37] of our planet, I am content. I shall have enough to do without quarreling with my neighbor, or resenting anything he may say to me. Brunhes also says that we are where roads meet, with facts from many sources, that we must not be a bazaar for retailing everything, but have our own domain and commit no trespasses. What the limits of this field are is not so clear, but why trouble about it, when no science has a fenced domain?

Ratzel makes a sweeping criticism of Buckle when he says that *evolution* is unspoken by him.[38] The great geographical philosopher of Leipzig made it forever imperative for us to "go back into the past." He speaks of differentiation, of bequeathed influences, of the migration of developed traits—he never lets you doubt that he is moving into the realm of Darwin. So the geographer, if he touches man at all, and the more if he opens the question of geographic influence, must be in daily contact with the principles of biological evolution, so far as the specialists have mastered them. I will not try to say how far he may supply useful data to the biologist; sure it is that human anatomy, physiology and psychology must be relied upon for light on the early (as well as late) stages of mankind. Should not this field be turned over to the anthropologist?

The first answer is that so far as environmental factors are concerned, the geographer alone is responsible for the knowledge of the total physical complex which the earth affords. But when this compre-

[36] W. E. Griffis, "The Japanese Nation in Evolution," 271, 386, 389–90.

[37] J. Brunhes, *Scot. Geog. Mag.*, 29, 313.

[38] "Anthropogeographie," I., 97–98.

hensive survey of the physical geography has been supplied, do not the geographer's duties, and even his rights, cease? If so, and if we must leave the action of environment to the anthropologist, to what kind of an anthropologist? The somatologist perhaps. The somatologist studies the natural history of the body. This is highly important, but it is only one point of view. He also studies man in his physiological development, but this is also partial. Your anthropologist may be primarily a psychologist, a philologist, or a student of early arts or of comparative religion. Or he may be an ethnologist studying the physical features, mental traits, linguistics, practical arts, legends and religions of a single tribe or people.

To which one of these will you look for a world view of the influence of environment on early or half-developed man? For your answer go through all the reports and books of the anthropologists, rich as they are, and tell me the result. In the nature of the case, the anthropologist, even if he could command all the departments of his own science, is not in a position to organize the principles of the influence of an earthwide environment on man. He offers indispensable materials and he may find other unities in his field but the inclusive bond of world environment belongs to the geographer.

Suppose we say that we do not need anthropologists because there are anatomists, physiologists, psychologists, philologists and students of art and religion. The answer is that anthropology aims at the natural history of man as a whole. The specialists work indeed too often in small and isolated fields and not always with the causal and comparative principle in full view. But man, the bond, is there, and the science receives its justification. In like manner, why should there be geographers, for there are geologists, meteorologists, oceanographers, astronomers, botanists and zoologists? We say because there is no other to organize the data of all these sciences in relation to the whole earth, as we see it and know it.

Taking the like case—there are anthropologists of many sorts, historians of several kinds, sociologists, economists and technologists in ample variety. Why a human geographer? Because there is no other to exhibit the human kind (not now but in some coming day) in its causal and distributional relation to the earth and its forces viewed as a unity.

Professor Adams in his presidential address before the American Historical Association manifests a little concern because of the entrance of political science, geography, sociology and certain other subjects into the arena.[39] But history, conceived on the modern scientific basis, opens so vast a field that collaborating sciences may well be welcome in the task. Equally may the geographer rejoice that every science of man contributes to his own and that he in turn has something to share.

There need be no hoarding of opportunity, where opportunity is infinite and no quarreling over line fences where none can exist. Professor Turner, referring to economist, geographer, sociologist and other fellow-workers, has thus broadly expressed the true attitude of the historian:

> The historian must so far familiarize himself with the training of his sister subjects that he can at least avail himself of their results and in some reasonable degree master the essential tools of their trade.

No one would accuse Professor Turner of advising over-expansion or superficial endeavor, but he seems to think it possible to be a historian and something more, by virtue of which to be a better historian. So say we of the geographer. Let him be

[39] *Am. Hist. Rev.*, Vol. 14.

"familiar with the whole earth," as demanded by Ratzel,[40] not in detail, but broadly familiar with causal principles and their regional illustration. Then let him know the methods and results of history, or of sociology, or of anthropology, or of some phase of one of these. Then he can cooperate in that study of environmental influence which must be common ground for all.

All this has its bearing on the higher education, for every human geographer should have his minor studies in some other science of man, and no young historian should be allowed to escape who is not grounded in the principles of physical geography and who has not looked through the geographer's eye at the impress made by nature on man.

Sociology is a science which equally with geography has aroused skepticism concerning its right to be called a science. Be that as it may, its devotees occupy ground which stretches into historical territory, on the one hand, and geographical and anthropological on the other. This is conceded by Small.

> The comprehensive science has the task of organizing details which may already have been studied separately by several varieties of scholars.[41]

The same author sets forth the influence of nature with an emphasis which if used by the geographer might call down a charge of excessive claim.

> Nature sets our tasks, and doles out our wages, and prescribes our working hours and tells us when and how much we may play or learn or fight or pray. Life is an affair of adjusting ourselves to material, matter-of-fact, inexorable nature.[42]

Small does not think we yet have an adequate story of the operation of cosmic laws in determining the course of human development.

Mr. E. C. Hayes, in a paper in the *American Journal of Sociology*,[43] discusses the relation of geography to sociology and the definition and scope of geography. He seems disposed to think that stating the effects of geographic conditions on social phenomena will be an integral part of sociology, but thinks

> it will still remain true that no science but geography describes the regions of the earth by bringing together into one description all the various facts separately studied by the different sciences.[44]

It is fair to say that only the geographer can know the physical conditions in a broad and deep way. It is just as fair to expect the sociologist to be superior in the strictly human field. But neither can dismiss the other, nor prescribe a legitimate boundary line of research. And there is always the possibility of a genius equally at home in both fields, scorning all petty frontiers of our so-called sciences, fusing and recreating the data and conclusions of lesser men, and recording for all time those large generalizations of which we dream and for which we strive.

After all that can be said on the relations of geography to other subjects, I am content to come back to a confessedly general, but safe and truthful word by James Bryce.

> Geography is the point of contact between the sciences of nature taken all together and the branches of inquiry which deal with man and his institutions.

I think it is a sociologist, Ward, who likens the progress of science to the progress of a prairie fire. No doubt he means that it moves irregularly but surely. The figure is not altogether good, as indeed no figure is, for we do not move with a rush, neither

[40] "Studies in Political Areas," *Am. Jour. Soc.*, 3, 302.

[41] A. W. Small, "General Sociology," 7.

[42] *Ibid.*, 408.

[43] Vol. 14, 371–407.

[44] *Ibid.*, 400.

does our going leave a zone of destruction behind. Our work is constructive and slow. Whether the worker be a geographer or bear some longer name, is not material. If he have no name at all, let us accept his fact, his principle, in good faith that as workers and half-thoughts come and go, the body of truth gathers volume, order and power.

We come now to the last phase of our discussion, the most important and difficult of all—lines of investigation. What is our present status? It would be a good work if some one would review historically the progress of the idea of environmental influence. Here the barest sketch must be the preliminary to our inquiry.

We may pass by the fragmental notices of ancient and medieval writers. Modern seed thoughts are not uncommon, and some harvest could be gathered from the philosophers and literary writers, Hobbes, Montesquieu, Kant, Herder, Hegel, Comte, Taine, and others. Humboldt, Ritter and Guyot laid the foundations of our modern human geography, and then came Darwin, pointing the road to fruitful study for all the sciences of organic nature and of man. Ratzel, in the spirit of Darwin, kept the unfolding of geography abreast of the progress of anthropology, history and other human sciences in the last half century, and now Miss Semple has placed all geographers in her debt in the expansion and precision which she has added to the work of Ratzel.

General works of lesser scope, some of them regional, have appeared in this country and in Europe. Mackinder, Herbertson, Lyde, Chisholm, and others in Great Britain, and Vidal la Blache, Brunhes, Partsch, Penck and many others on the continent, have made important contributions. Already we have a large and rapidly growing list of small monographs dealing with limited phases or regions in this country. In America this work is largely the achievement, direct and indirect, of the members of this association, and the present program is sharp evidence of the force of an impulse that has gathered power among us during the ten years of our cooperative endeavor.

My first hint is in the direction of climatology in its relation to man.[45] Here is a new science, with a growing body of observation, generalization and record, made available in description and in maps. Climatology is beginning to be appreciated in relation to other fields of physical geography. We begin to value and to express in text-books the relation of the atmosphere to the origin of land surfaces, glaciers, aridity and the waves and currents of the sea. We see its functions also in relation to the mineral contents of the earth, and in relation to the origin and use of soil.

Even more pronounced is the growth of ideas in relating the atmosphere to fauna and flora, to plant and animal types and societies, to bacteria, and to forests, steppes and deserts. Involved in all this relation to the inorganic and organic world is an immense indirect influence on man.

There is also direct influence on man, through temperature, varying constitution, variations of pressure, moisture content, movements, optical effects and sound waves. And we can not stop short of psychical, social and economic phases of influence, all tangled in difficult fashion. When the consumptive goes to Colorado for help, and finds it, what has accomplished the result? Is it rarity and increased lung expansion? Is dryness and a non-relaxing quality uppermost? And how much is due to new hope, new effort, fresh scenery, new and glorious land forms, clear skies, gray desert and new social environment? Let

[45] J. Brunhes, *Scot. Geog. Mag.*, 29, 312; C. R. Dryer, *Jour. Geog.*, Feb., 1913, 178; Ratzel, "Anthropogeographie," I., Ch. Das Klima.

us move, but move cautiously, heeding Professor Ward's emphasis on doubtful elements in the relation of climate to disease. Perhaps there is no subject, unless it be politics, on which men say so much and know so little as about climate.

Geography has a considerable body of good knowledge of climate in relation to modes of living in typical parts of the world. We know that the Eskimo is carnivorous, the tropical savage vegetarian and that the denizen of temperate latitudes brings both foods to his table. We know the climatic results in clothing and shelter, in nomadic and pastoral, agricultural and static life, and among hunters of the forest. These are all important, but more or less indirect climatic effects, so well set forth by Herbertson in "Man and His Work."

But what of direct effects of climate? I hesitate to use the word direct of such activity. Such is our ignorance of the precise efficiency of these forces, that apparent direct agents may turn out to be mediate, after all.

How much exact knowledge have we in the field of coloration? Grant that this is mainly a physiological problem, so far as man is concerned, will it ever be solved, and the results broadly stated except in collaboration with geography?

> Color almost certainly developed in strict relation to climate. Right away in the back ages we must place the race-making epoch, when the chief bodily differences, including differences in color, arose amongst men.

This is from Marett and he adds that natural selection had a clear field with the body before mind became the chief factor in survival.

Now, how much is definite here? What is this "strict relation" to climate? And what element of climate does the work? Is it heat, or light, or moisture, or a combination of these? What does each climatic factor do, and does it do what it does, independently, or by the aid of some non-climatic factor? Why is the Malay brown, the Chinaman yellow, the American Indian coppery and the negro black? And how do the osteological features and the facial features correlate, if at all, in origin, with the color? Here is a vast field. What, of assured answer, is on record?

Brinton says that climate and food supply are the main causes of the fixation of ethnic traits. He adds that temperature, humidity and other factors bear directly on the relative activity of lungs, heart, liver and skin. This seems to come near to the core of things, but no precision is reached and I suppose can not be in the present state of knowledge. Ratzel was not wrong in citing the negro's dark skin as illustration of the fact that the search for causes goes after hard and deep-rooted things.

The study of the races of Europe teems with conjectures about blonde and brunette, but the physiological basis is wanting. We should like to know whether the Mediterranean longhead is a darkened Teuton, or whether the Teuton is a bleached African. Here is joint work for physiologist, anthropologist and geographer.

Ward notes the fading of hair, beards and skins of polar explorers.[46] The same author, leaving open the origin of color, quotes Darwin on the accumulation of color through natural selection and contents himself with the assured fact that color, however obtained, is an advantage in a hot climate. This field therefore is almost unworked. I hesitate to say that the door for research is wide open, but one would hesitate even more to believe that the problem can not be solved.

Suppose now we leave these primitive and racial puzzles and come down to possible effects of climate that can be seen and registered in a few generations, if there be

[46] R. DeC. Ward, "Climate, Considered Especially in Relation to Man," 216.

such effects. Here is the question of acclimatization and tropical disease, in short, of the white man's burden.

Here again Ward proceeds with instructive caution. It is a complex subject, he says, conclusions are contradictory, curves may be made to show anything. There are many weather elements and there are many other factors, such as sanitation, foods, water, habits, altitude, soil, race, traffic and other controls. Microorganisms intervene to make climate largely an indirect influence.[47]

Thus we have a group of problems for the medical observer, but either in him or with him must the geographer share the task whose successful accomplishment affects the destinies of every colonial empire and the ultimate place of the white race. Brinton speaks of the hopelessness of the problem,[48] and Ripley recognizes the importance of it by criticizing Ratzel for inadequate attention to it in the second volume of the "Anthropology."[49] We have an interesting discussion in Woodruff's "Effects of Tropical Light on White Men." It is for a more competent hand to estimate its value. Some of its generalizations seem too sweeping and too easy to be true. Altogether in this whole field, a field of high practical importance, there has been much sincere effort, but no great harvest.

We want narrower fields of investigation and better proven results. Only thus will be gathered the data for great generalizations. In this direction we may cite a passage of Hahn on the physiological effects of diminished pressure,[50] and the studies of E. G. Dexter and H. H. Clayton on the sociological effects of climate.

Let us look at the field of biogeography in relation to man. The distribution of plants and animals as forming large elements in environment can not fail to involve man and to uncover many interesting relationships. This study is now in a hopeful state of vitality and progress. Our own association has a good number of workers in this field.

A wealth of pertinent facts awaits discovery and coordination as regards the coincident distribution of man with plants and animals. Payne, in the history of early America already cited, uses this as a basal principle, showing the migration and presence of organic forms in causal relation to man. Here again, Ripley finds occasion to criticize Ratzel for insufficient attention to the theme. A few suggestive illustrations may be given. Kirchoff in his "Man and Earth"[51] coordinates the Mediterranean spread of the Phœnicians with the occurrence of the dye-yielding mollusc. Dr. C. Hart Merriam once surprised the writer by saying that the beaver was the most important fact in early American history. The more one considers this the less one is disposed to consider it as an outburst of a biologist's enthusiasm.

In Hansa days tens of thousands of people dwelt in the Peninsula of Schonen, in the towns of Falsterbo and Skänor, at the most southwestern tip of Sweden. To-day an old church, a few cottages and a summer hotel make up Falsterbo, while Skänor is a sleepy village of a few hundred people. Why should this throbbing Baltic market of centuries ago have suddenly declined to insignificant shore villages? Because the herring migrated to other waters. A new harbor has been built at Skänor and it will be seen whether modern conditions can restore the prosperity which the runaway fish destroyed.

Dr. Scharfetter in a work on the dis-

[47] "Climate," 180 et seq.

[48] D. G. Brinton, "Races and Peoples," 278–83.

[49] W. G. Ripley, *Pol. Sci. Quar.*, IX., 323.

[50] J. Hahn, "Handbook of Climatology," trans. by Ward, 224 et seq.

[51] Trans. of "Mensch und Erde," 30–31.

tribution of plants and man sets the Roman boundary in Germany at the edge of the Franconian forest and cites the fact that the Arabs went wherever the date palm would grow.[52] The practical biologist, such as the agricultural explorer, turns the problem around, shows how to control the distribution of lower life and thus to modify the distribution of man.

Such results must flow from the work of the department of botanical research of the Carnegie Institution, and Dr. McDougal of the Desert Laboratory well sets forth the interrelations of the sciences when he likens the work to the making of a cantilever bridge whose further ends may rest on chemical, physical, geological or geographical piers.[53] A good illustration of this finds immediate place in the investigations by Professor Huntington, in western forests, of climatic events.

The climatologist asks for definite climatic effects on man. The ethnologist or sociologist finds traits in man which might have a climatic origin. The geographer wants all that all types of specialists can give him, both in the physical and psychical spheres. Thus we may approach from the point of view of causes or of results and follow down or up the stream of effects.

We have made a hasty survey of two fields of causation, the one physical, the other organic. Let us turn to certain groups of phenomena in the realm of effects or results. The most important and surely the most baffling problems here are in the psychic field. Here the geographer will be peculiarly dependent on workers in sister sciences and the gap may be hard to bridge. Geographers are not as a rule specialists in psychology, and there is no reason to believe that many students in psychic fields are specially versed in geography. If we can offer a stimulus which shall lead these kinds of scholars to struggle up the stream of causality, it may be safer than for us to drift down through rapids and among rocks. But the work ought to be done, and the geographer can at least show its worth and encourage the doing of it.

In this research we are not to think that the earth was all powerful with early man, but is helpless to-day. Color or other race features may have been fixed, but this is not all. If there is something in man that is found in every man, wherever he is, he is not thereby released from the pressure of environment. Psychic reaction on nature does not destroy nature's efficiency, but in a degree directs, refines and uses it. When Professor Lester F. Ward says that "the environment transforms the animal, while man transforms the environment,"[54] he utters but a partial truth. Perhaps he was attracted by rhetorical form, for in a later passage he recovers himself, recognizing the psychic effects of environment, for,

> Courage, love of liberty, industry and thrift, ingenuity and intelligence, are all developed by contact with restraining influences adapted to stimulating them and not so severe as to check their growth.[55]

If a hard winter is a "great Teutonic institution," if rains, dark skies and winter have made more serious peoples in the north of Europe than are found along the Mediterranean, if Geikie rightly ascribes the heart of Ossian's poems to nature in the West Highlands,[56] these qualities of environment are pressing on the human spirit to-day as in Neolithic or Celtic time, moderated, perhaps, by modern skill in getting protection from nature, and by greater contact with all the world. We will not deny the assertion of Thomas that "the force of climate and geography is greater in the

[52] Paper is noticed, *Scot. Geog. Mag.*, Vol. 27, 39–41.

[53] An. Rep. of Director, 1912.

[54] L. F. Ward, "Pure Sociology," 16.

[55] *Ibid.*, 58.

[56] A. Geikie, "Scenery of Scotland," 407–08.

lower stages of culture and that ideas play an increasing rôle," but we do not know on what ground he makes the further claim that the peculiar cultures of Japan, China and India were in the first place the results of psychic rather than geographic factors.[57]

There is a beautiful passage in Ratzel which I now commend to those historical and sociological philosophers who think that psychic qualities and powers are released from environmental influence. If ethnographers utter the view that the development of culture consists in ever wider release from nature, we may emphasize that the difference between nature and culture folk is to be sought not in degree, but in the kind of this connection (Zusammenhang) with nature. Culture is freedom from nature not in the sense of complete release, but in that of much wider union. The farmer who gathers his corn in the barn is really as dependent on his ground as the Indian who harvests in swamps wild rice which he did not sow.

> We do not on the whole become freer from nature while we deeply exploit and study it, we only make ouselves in single cases independent of it, while we multiply the bonds.

Not to do Ratzel injustice, it is he who has also called "the spirit of man a completely new phenomenon upon our planet," and has asserted that

> No other being (Wesen) has worked so permanently and upon so many other existences as man, who has profoundly changed the living face of the earth.

We are to interpret cautiously similar human phenomena in different parts of the world. We can not here follow the evolutionary axiom that if a species of trilobite is found in England and in New York, there has been one point of origin and a migration. The same things appear in many places, either through the unity of the human spirit or the likeness of environments, or from both causes. This is stated by Fewkes,

> Identity in the working of the human mind is recognized by all anthropologists, and the tendency to ascribe cultural identities . . . to contact or migration is much less prevalent now than formerly.[58]

In like manner Boas shows that some ideas are so general that they could not have been diffused historically through migration and contact, but must have arisen independently in different places.[59]

Tylor is no less emphatic:

> Researches undertaken all over the globe have shown the necessity of abandoning the old theory that a similarity of customs and superstitions, of arts and crafts, justifies the assumption of a remote relationship if not an identity of origin between races . . . there has been an inherent tendency in man, allowing for difference of climate and natural surroundings, to develop culture by the same stages and in the same way.

Citing the pyramid-building of Aztec and Egyptian,

> Each race developed the idea of a pyramid tomb through that psychological similarity which is as much a characteristic of the species man as his physique.[60]

We leave this topic with the single suggestion that in the psychic field, a useful and difficult piece of research is open to the student of comparative religions, who is at the same time interested in anthropogeographic problems and has the needed geographic training. How far the essential content of religious aspiration and thought, as well as the ritual of worship has been influenced by environment, has, I think, never been shown in any full synthetic

[57] W. I. Thomas, "Source Book for Social Origins," 130–31.

[58] J. W. Fewkes, "Climate and Cult," 8th Inter. Geog. Cong., 670.

[59] F. Boas, "The Mind of Primitive Man," 151–64.

[60] E. B. Tylor, Ency. Brit., Art. "Anthropology."

way. It is a task of no common difficulty, not to be lightly undertaken, but worth the doing.

Another field of effects, much more accessible to the pure geographer is the distribution of population studied in the causal way. Enough practise in statistical method for this inquiry can be readily acquired and the results should be most fruitful. Jefferson's recent papers have been suggestive in this field of research, which involves in intimate combinations, physical, economic, racial and social conditions. Akin to this study is the classification of towns and cities, developing the principles of origin, growth and differentiation, as in a recent valuable paper of Chisholm. The city as a geographic organism may be freely taken as an inexhaustible theme.

Another great sphere lies in regional studies, such as states, physiographic units, and countries. The number of such studies, maturely developed, now available may perhaps be counted on the fingers of one's hands. The aim should be not alone directed upon the more obvious matters of route and industry, but also upon deep and underlying principles. What rich and alluring subjects for the intensive student would the state of Pennsylvania offer, of Kentucky, Minnesota or California! Who will develop for us our coastal plain or piedmont, treating town sites, roads, soils, crops, industries, racial composition and social status? Who will do a like work for the great Appalachian Valley, that magnificent and little understood unit of our east—its trails and roads, its agriculture, towns, migrations and historical significance in colonial and current life? There is room for more such studies as those of Whitbeck upon glacial and nonglacial Wisconsin and of von Engeln on the effects of glaciation upon agriculture.[61] The latter, indeed, is not regional except as it naturally deals largely with principles as illustrated in our own country.

Will Mr. Mackinder, or some one else, take up Great Britain, omitting the purely descriptive, as he could not in Britain and British seas properly do, and discuss more fully questions of geographic influence as regards agricultural distribution, the localization of industries, the distribution of population in general, and the effect of various factors such as insularity, climate and world position in the development of British character, British political unity, and British social conditions.

Or in the United States, there are racial compositions, new physical environments, offering new social and economic conditions to population groups as seen in comparison with conditions in the parent lands of Europe. Finally, there are innumerable beckoning fields, of a small and local sort, out of whose diligent study general principles will rise and become established.

Our goal is broad generalization. But the formulation of general laws is difficult and the results insecure until we have a body of concrete and detailed observations. Quoting Brunhes,

> We must then make up our minds to put aside generalities and vague analogies between nature and man. We must make it our business to search for facts of interaction.[62]

From Boas also,

> It goes without saying that haphazard application of unproven though possible theories will not serve as proof of the effectiveness of selection or environment in modifying types.[63]

Detailed investigation of single problems, in small and seemingly unimportant

[61] O. D. von Engeln, "Effects of Continental Glaciation on Agriculture," *Bull. Am. Geog. Soc.*, XLVI., 241–64, 336–55.

[62] J. Brunhes, *Scot. Geog. Mag.*, 29, 311.

[63] F. Boas, "The Mind of Primitive Man," 51.

fields, must for a long time prepare the way for the formulation of richer and more fundamental conclusions and general principles than we have yet been able to achieve. We should not wait for some one to state or demonstrate these laws. This is yet, even for a genius, impossible. We must contribute in partial, microscopic, sometimes unconscious ways to the emergence of such laws.

Professor Adams, speaking of the available and most useful tasks of the historian, has a word which is equally good for us,

> To furnish materials, to do preliminary work, is to make a better contribution to the final science than to yield to the allurements of speculation, to endeavor to discover in the present state of our knowledge the forces that control society, or to formulate the laws of their action.[64]

Not only is this a model principle, but it emphasizes the value of our goal, for the real philosophy of history will not be written until geographic factors have had broader and deeper recognition. Here I do not speak as a geographic enthusiast, nor in denial of the supremacy of the human spirit.

Such then is the mode of advance of our science—the old story of interest, hypothesis, test, correction, publication, criticism, revision; progress by error, by half truth, by zigzag, spiral and apparent retrograde; by aero-flight, by patient tunneling; some at the salients of progress, and some in the ranks of humble endeavor, the goal in front of all.

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LEWIS LINDSEY DYCHE

LEWIS LINDSEY DYCHE, professor of systematic zoology and curator of the collections of mammals, birds and fishes, at the University of Kansas, died in Topeka, Kansas, Wednesday, January 20, 1915. Professor Dyche was intimately associated with the life of the university for nearly thirty-eight years, having seen nearly every class graduated from the institution. His first connection with it was as a student in the preparatory department. He entered the middle class of the preparatory department in September, 1877, at the age of twenty years, being registered from Auburn, Kansas. James Marvin was then chancellor of the university. There were 12 members of the faculty and a total attendance of students of 361, of whom 110 were of college grade. Mr. Dyche finished the senior preparatory work at the end of the next year and in September, 1879, became a freshman in the collegiate department, enrolling as a student in the classical course. In the year 1880, however, on entering his sophomore year, he changed his work to that of natural history. He became a junior in the collegiate department in the regular course of events in September, 1881, still enrolled in his newly chosen field of natural history.

In 1882 Mr. Dyche was made instructor in natural history, but retaining his place in the junior class. He continued his connection with the instructional side of the university until his death. Mr. Dyche was graduated from the university in June, 1884, receiving two degrees, that of Bachelor of Arts and that of Bachelor of Sciences, he having combined both the classical and scientific work then offered in the university. He continued his study in natural history at the university of Kansas by entering the postgraduate course in September, 1884, receiving his Master of Arts degree in 1886 and his Master of Science degree in 1888. His teaching title was during these years "assistant," being equivalent to the title of assistant professor at the present time.

In September, 1888, he was advanced from the rank of assistant in natural history to that of full professor of anatomy and physiology, taxidermist and curator of mammals, birds and fishes. In 1890 zoology was added to his list of teaching subjects. We must remember, however, that in the nineties the number of both students and teachers was small and

[64] Geo. B. Adams, *Am. Hist. Rev.*, 14, 236.