

# American Anthropologist

NEW SERIES

---

Vol. 36

JANUARY-MARCH, 1934

No. 1

---

## NATIVE AMERICAN POPULATION

By A. L. KROEBER

THE following pages are an abstract of conclusions reached as to aboriginal American population in a study undertaken as part of a monograph dealing with cultural and natural areas in native North America. This memoir, like so many others, is being delayed in its publication by economic causes universally familiar. It contains a map of tribal territories and a grouping of these into some eighty cultural aggregations, which form the basis of all computations on population density. In the present paper only the summary results can be given, together with some discussion of their meaning.

A posthumous work by James Mooney<sup>1</sup> makes available the first careful and complete tribe-by-tribe series of estimates of the native population of America, north of present-day Mexico, for the period of early contact of each group with settling Caucasians. This invaluable study renders possible the examination of population density in terms of cultural or other areas.

The Mooney figures are here used with one consistent modification—a substitution of my total of 133,000 for California<sup>2</sup> in place of C. H. Merriam's<sup>3</sup> 260,000 which Mooney took over; hence with a reduction of the total for the continent north of Mexico from 1,152,950 to 1,025,950, or about 10 percent. I have made this substitution because my total is arrived at through a tribe-by-tribe addition or "dead-reckoning" method, like all Mooney's other figures; whereas Merriam uses a mission to non-mission area multiplication ratio for the state as a whole.<sup>4</sup>

---

<sup>1</sup> The Aboriginal Population of America North of Mexico, SI-MC 80, no. 7 (Publ. 2955), 1928; edited by J. R. Swanton. This is a brief version of a contemplated large monograph, for which Mooney had studies under way before 1908, but of which by his death in 1921 he had completed only the section dealing with the Indians of the states from Maine to Pennsylvania. The brief article Population in the Handbook of American Indians contains only totals by countries.

<sup>2</sup> BAE-B 78: 880-891, 1925.

<sup>3</sup> The Indian Population of California, AA 7: 594-606, 1905.

It proved necessary to convert Mooney's data for tribes and bands into terms of the ethnic groups recognized in my own tribal territorial map. This involved some consolidations. In other cases, Mooney gives only combined figures for tribes which I keep separate; thus, Southern Paiute and Paviotso. Accordingly there are overlaps as well as omissions; and an exactly authentic check-up on the conversions from his scheme is difficult. The result is that my rearranged totals fall about 10,000 below his. This discrepancy of 1 percent is negligible since the best of Mooney's estimates can hardly pretend to be nearer than 10 percent to the probable truth, and some may be 50 percent or more from it. It is of still less moment so far as it enters into population densities, because the boundaries of many tribal territories are imperfectly known or in dispute.

The areas in the lists that follow were calculated by planimeter on my tribal map. The figures given below for both areas and population are summations of those for individual tribes. All densities are computed to 100 km<sup>2</sup>, which are 38.51 sq.m., or about 7 percent more than a standard U. S. township of 6 by 6 miles.

Mooney's figures are probably mostly too high rather than too low, so far as they are in error. This is the opinion of Swanton, his posthumous editor. Mooney himself was apparently reducing estimates as his work progressed. Swanton mentions an earlier figure of 32,700 for New England as compared with the final one of 25,100. For part of the Southeast, Swanton's independent computation is 44,385, Mooney's 62,400.<sup>5</sup> Mooney allows 33,800 Pueblos, Kidder 20,000.<sup>6</sup>

All in all, however, Mooney's estimates and computations have clearly been made on the basis of wide reading, conscientiousness, and experienced judgment. Until some new, equally systematic, and detailed survey is made, it seems best to accept his figures *in toto*<sup>7</sup> rather than to patch them here and there. My impression is that Mooney's total of about 1,150,000, reduced to 1,025,000 by the California substitution, will ultimately shrink to around 900,000, but that the respective density ratios of the principal areas will not be very materially affected by such change.

The groups into which the tribal data have been consolidated are

---

<sup>5</sup> Mooney apparently had not himself worked at the data for California, and therefore took over Merriam's result in block, with the result that this is his one area without figures for separate tribes or groups. My computation of 133,000 appeared after his work was done.

<sup>6</sup> P. 9.

<sup>7</sup> Southwestern Archaeology, 39, 1924. "About 20,000" in some 70 towns at the time of the Spanish conquest.

<sup>7</sup> Always excepting California, where he does not deal with separate tribes or groups.

TABLE 1  
POPULATION DENSITIES OF PRINCIPAL AREAS OF CULTURE

	Culture areas	Popula- tion	Terri- tory 100 km <sup>2</sup>	Den- sity
	<i>Arctic Coast</i>			
1	Eastern Eskimo (W. to incl. Coronation Gulf)...	30,900	15,057	2.05
2	Western Eskimo (Mackenzie delta and west)....	58,800	7,231	8.13
	<i>Northwest Coast</i>			
1	Northern Maritime (Tlingit, Haida, Tsimshian, Haisla).....	28,100	1,666	16.8
2	Central Maritime (all other Wakashans, Bella Coola).....	17,300	594	29.1
3	Gulf of Georgia (Salish).....	23,700	725	32.6
4	Puget Sound.....	6,000	357	16.8
5	Lower Columbia.....	32,300	507	63.7
6	Willamette Valley.....	3,000	334	8.98
7	Lower Klamath (and SW Oregon).....	18,000	377	49.8
	<i>Intermediate and Intermountain</i>			
1	Great Basin (incl. Snake r. Shoshoneans).....	26,700	10,810	2.47
2	California (excl. NW and S California).....	84,000	1,941	43.3
3	Columbia-Fraser (incl. Interior Salish, Sahaptin, etc.).....	47,650	6,600	7.15
	<i>Southwest</i>			
1	Pueblo.....	33,800	446	75.7
2	Circum-Pueblo (Apache and Navaho).....	14,500	6,430	2.26
4	Sonoran area (Pima and Papago in U. S.).....	10,600	864	12.2
7	NW Arizona (Havasupai, Walapai, Yavapai)...	1,600	666	2.4
8	Lower Colorado (River Yumans, Cocopa to Mohave).....	13,000	416	31.25
9	Peninsular California in U. S. (Diegueño).....	3,000	166	18.1
10	Southern California (Shoshoneans, Chumash)...	26,500	683	38.7
	<i>Eastern and Northern</i>			
1	Southeast proper.....	87,800	5,983	14.7
2	South Florida.....	4,000	542	7.38
3	South Texas (coastal).....	6,400	2,057	3.11
4	Red River (Caddoan group) and Pawnee.....	25,900	4,563	5.67
5	Plains (high plains, short grass).....	50,500	13,978	3.61
6	Prairies (tall grass: C. Siouans, Dakota exc. Teton, etc.).....	53,000	11,692	4.53

TABLE 1 (*Cont.*)  
POPULATION DENSITIES OF PRINCIPAL AREAS OF CULTURE

	Culture areas	Popula- tion	Terri- tory 100 km <sup>2</sup>	Den- sity
7	Wisconsin (wild rice area) . . . . .	18,300	1,461	12.52
8	Ohio Valley (incl. Illinois) . . . . .	20,000	7,707	2.59
9	Southern Great Lakes (Iroquoian tribes) . . . . .	42,500	4,421	9.61
10	North Atlantic Slope (Micmac, Abnaki) . . . . .	7,300	3,285	2.22
11	Middle Atlantic Slope (Penacook to Conoy) . . . . .	46,800	1,828	25.6
12	South Atlantic Slope (excl. Yuchi, Creek) . . . . .	41,900	2,467	17. —
13	Appalachian Summit (Cherokee) . . . . .	22,000	1,344	16.3
14	N. Great Lakes (Ottawa, Algonkin, most Ojibwa) . . . . .	37,300	5,188	7.18
15	E. Sub-Arctic (Algonkins: Montagnais, Cree, Naskapi) . . . . .	23,000	25,677	1.11
16	W. Sub-Arctic (Athabascans: Chipewyan to Kutchin and Khotana) . . . . .	33,930	38,944	.87

TABLE 2  
POPULATION DENSITIES BY MAJOR AREAS

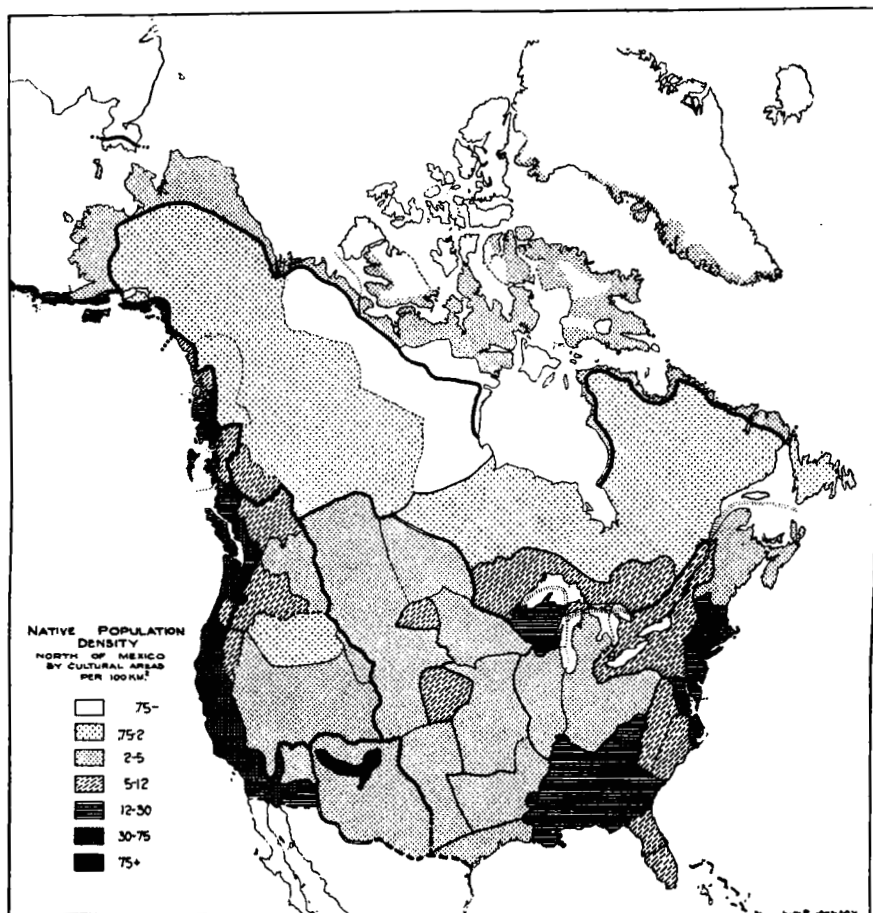
California . . . . .	84,000	1,941	43.3
Northwest Coast . . . . .	129,200	4,560	28.3
Southwest (part within U. S.) . . . . .	103,000	9,671	10.7
(Intermediate-Intermountain.) . . . . .	158,350	19,411	8.1
Columbia-Fraser . . . . .	47,650	6,660	7.15
Eastern . . . . .	426,400	61,328	6.95
Arctic Coast . . . . .	89,700	22,288	4.02
(Eastern and Northern.) . . . . .	520,630	131,137	3.97
Great Basin . . . . .	26,700	10,810	2.47
Northern . . . . .	94,230	69,809	1.35
Total, N. of Mexico <sup>8</sup> . . . . .	1,000,880	187,067	5.35

cultural ones, analogous to the "culture areas" currently recognized in American ethnology, but differing somewhat from the customary ones.

Condensing farther, into grand areas, we have the following. The areas are here arranged not geographically but in order of density.

<sup>8</sup> Coahuiltec in the United States are omitted, Apache and Papago in Mexico included.

I list the three main sub-units of the Intermediate-Intermountain area, because these are so diverse that the density of the whole area (shown in parentheses) is only a statistical mean. For the same reason I have given the Eastern and Northern areas separately, though adding in parentheses their joint mean.



Native population density north of Mexico

The outstanding fact is the exceptional density on the Pacific coast—both Northwest and California. Next comes the Southwest; but this also extends to the Pacific coast. Even the Columbia-Fraser region, a Pacific coast hinterland, more than holds its own against the fertile East. The Arctic coast, surprisingly enough, has a density more than half as great

as that of the East, though this was mostly agricultural; and one approximately equal—on the face of the figures even slightly superior—to the agricultural Eastern and non-agricultural Northern areas combined. This means of course that the latter had much the lowest density of all. The average figure for the continent (north of Mexico) falls somewhat below that for the agricultural East and somewhere above that for the Eskimo.

#### COAST LAND AND FARM LAND

Two generalizations are obvious: coastal residence did make for heavier population; agriculture per se did not necessarily increase density. The following summary will make these propositions more vivid.

We can first set off the wholly non-agricultural Pacific coast; next, the essentially agricultural areas of the Southwest and East; and then treat the remainder of the continent north of Mexico as a unit.

The Pacific coast may be conveniently taken as extending from the Malemiut Eskimo of Alaska to the Diegueño and Kamia just short of the mouth of the Colorado. The area is that of Pacific coast in the literal sense, not Pacific drainage. The whole Yukon, Fraser, and Columbia river areas are excluded, except for the Eskimo, Coast Salish, and Chinook at the mouths of these streams. California is included as a native culture area, not as a modern political unit; so is the northwestern margin of the Southwest, namely southern California.

The agricultural region comprises the tribes in whose economy farming plays a significant rather than sporadic part. Excluded are the Walapai,

TABLE 3  
GRAND POPULATION DIVISIONS NORTH OF MEXICO

	Population	Area 100 km <sup>2</sup>	Density	Percent of total popula- tion
Pacific coast, Bering strait to mouth of Colorado.....	295,700	11,745	25.2	29.6
Essentially agricultural areas, E and SW.....	404,600	39,884	10.1	40.4
Remainder.....	300,580	135,438	2.1	30.0
	1,000,880	187,067	5.1	100.0

Havasupai, Yavapai, Apache, Navaho, Ojibwa, Abnaki, and the tribes of south Texas and south Florida.

In round numbers, the Pacific coast had 300,000 inhabitants out of a million north of Mexico, or 30 percent of the population in 6 percent of the area, with a density of 25 per 100 km<sup>2</sup>; the farming regions, 40 percent in 20 percent of the territory with a density of 10; the remainder, 30 percent on nearly 75 percent of the land, with a density barely exceeding 2.

That among non-farming natives a coast or coast-plain habitat was normally far more favorable than interior residence in conducting to an aggregation of population, is not only indicated by the much greater density in the Pacific areas, but by two other facts: first, that the Arctic shore Eskimo are, per area, more numerous than their inland Athabaskan and Algonkin neighbors; and second, certain density figures for adjacent Atlantic and Gulf tribal areas. Such are: Massachusetts, coastal, 105, Nipmuc, interior, 14; Montauk 158, Iroquois 7; Powhatan 38, Monacan 9; Chitimacha 32, Natchez 19.

A sharp line of division between coast and interior cannot easily be drawn in the Eastern region, because tidewater in many places runs far inland and because tribal adhesions and territories are so often uncertain. But a review of the itemized tribal data leaves little doubt that on the whole the population density in the farming parts of the Atlantic and Gulf region was perhaps twice as heavy on the coast, including habitats on tide-water or within a day's travel of salt water, as immediately inland thereof.

This means that for the continent as a whole (always unfortunately excluding Mexico), coastal residence, inclusive of that on coastal plains or along the lowest courses of rivers, led to a populational density from five to ten times greater than in the interior as a whole, in non-agricultural regions; and probably at least twice as great even in agricultural areas.

This finding may be expectable; but that the non-farming Pacific coast should overtop the farming areas with a two-and-a-half times greater density, is certainly surprising. It means, obviously, that the relation to the land in terms of agricultural utilization by the United States Indian was fundamentally different from our own. He was not a farmer in our sense of the word. Not only did he derive possibly half his subsistence through non-farming; but he utilized for his farming no more than a very small percentage of the land capable of being farmed.

This is particularly true of the East; and the Southwest should be excepted in this connection. The agricultural total in table 3 breaks up thus: East 347,200 souls 3,799,762 km<sup>2</sup>, 9.1 density;<sup>9</sup> Southwest, 57,400, 172,200,

<sup>9</sup> Spinden (cited below) computes, also from Mooney, 348,700 inhabitants in about 1,375,000 m.<sup>2</sup>; which comes to 3,561,000 km<sup>2</sup> and a density of about 9.8.

33.3. Not only is the gross density nearly four times as great in the Southwest, but the larger part of the territory assigned on the map to the Southwestern agricultural tribes is desert or mountain and unfarmable, or actually unfarmed by ourselves. The native Southwesterners, so far as they farmed, therefore pushed the exploitation of the land to a much higher pitch than the Easterners. This fact implies a different history, and thus further justifies the current sharp segregation of the Southwestern and Eastern native cultures. These essentially different histories, in turn, reinforced by the non-agricultural geographic gap between the areas, indicate separate origins, or at any rate separate branchings from the same southern stem of maize culture.

#### THE AGRICULTURAL EAST

The basic situation as regards native farming in the Eastern area may be made clearer by a comparison with our agriculture. The average yield of maize per acre today throughout the United States is between 25 and 30 bushels of 56 pounds of shelled corn. Maize notoriously increases its yield per acre but little under improved methods of farming. The improvements which we have made over Indian methods have been mainly in the direction of reducing production costs, especially in labor. The Indian therefore may be assumed to have derived nearly as many bushels from each acre of planting as we. He probably planted somewhat farther apart; but not unduly so, because of the difficulty of clearing and cultivating unnecessary area with his tools. A yield of 15 to 20 bushels therefore seems a fair estimate. This is 840 to 1120 pounds, say 1000, or a little under 3 pounds per day. This should more than sustain the average person in a community composed of men, women, and children. Beans and pumpkins would vary the diet as partial substitutes for maize without seriously affecting the acreage cultivated. The quantity of farm food consumed was probably less than here computed, because of the supplement of game, fish, mollusks, berries, wild seeds, and roots, which over much of the Eastern region is estimated to have contributed half of the food supply.<sup>10</sup> However, let us keep to our figure of nearly three pounds of maize or equivalent in farm products per head. Since this involves only about one acre cultivated per person, and we reckon 347,200 population in the Eastern agricultural area, the total native plantations in this region aggregated in round

---

<sup>10</sup> The heavier density in the Wisconsin Wild Rice area as compared with adjacent areas suggests the influence, in a farming area, which even a single wild food plant might have if systematically gatherable.



numbers only a third of a million acres. Against this, we today plant a hundred million acres of maize alone in the United States—not all, but nearly all, within the native agricultural areas here called Eastern. We add another two hundred million acres in wheat, oats, cotton, and hay—many of these acres perfectly suitable, though not profitable to us, for maize. True, part of our total lies outside the region of systematic Indian farming; but it is a minority part. It does not much matter whether our total is one or two or three hundred million acres and the Indian total one-third or two-thirds of a million: the conclusion remains that the eastern Indian cultivated less than one percent of the area on which he could successfully have grown crops satisfactory to his needs and standards. My own opinion is that the figure was under rather than over one-half of one percent.

Here is another way of conceptualizing the situation. The Eastern agricultural density was 9.1 per 100 km<sup>2</sup>, a little under 9 souls—say 2 families—per township. We allot 144 quarter-sections to 144 families or some 700 persons in a township; and these earn through their crops not only their food but their clothing, tools, vehicles, furniture, taxes, and luxuries—and often support a town in addition. The ratio comes out about the same.

It is clear that two things were fundamentally different in the Eastern Indian and our economics: the land use, or relation to the land; and the place of agriculture in life. "Improvement" of land was confined to minute specks in the landscape. They were comparable in size to oases, although not in the least enforced by nature, being in fact simply selected by convenience or habit from among a hundred times as many sites about equally well utilizable. In other words, there was a hundredfold surplus of good land over farming population.

Second, while every native household in the area farmed, it becomes doubtful whether many of them did so from real necessity. If the Pacific coast from Bering strait to the Imperial valley desert could support 25 souls per areal unit without farming, it is not unreasonable to suppose that the uniformly fertile East might have supported 10 without farming. Agriculture then was not basic to life in the East; it was an auxiliary, in a sense a luxury. It made possible increased accumulation of food against the future, a living in permanent sites and in larger groups, and therefore joint undertakings, whether of council, ritual, war, or building. It thus no doubt contributed somewhat toward the enrichment of cultural life; but there is nothing to show that the culture in its fundamental forms was really resting on agriculture.

Does this mean that agriculture was a recent introduction in the East,

not yet fully acculturated and its potentialities still mainly unconceived? Theoretically such might well be the case, but it is not a necessary inference. As long as any other factors kept an originally light population light, the relation to the land, the part-only farm-use of this, might go on indefinitely. The answer to the question of the age of Eastern agriculture should not be given deductively. The direct evidence to be considered is archaeological; the indirect, social factors bearing on population.

As regards archaeology, we are still handicapped by our almost disgraceful inability to interpret eastern prehistoric data in sequential terms. Still, the gross fact remains that the Ohio and middle Mississippi valleys were found occupied by an exceedingly thin and scattered population, but full of thousands of mounds and other structures which probably required a somewhat more concentrated population to erect. Allowing for all possible shifting about of this earlier farming population, and an abnormal readiness to leave one site as soon as its structures were completed in order to begin over again elsewhere, a minimum of several centuries must nevertheless be allowed as the duration of the mound building; and to all major intents, this period was not only over but forgotten when the first whites entered. Since the mound culture was agricultural, it is accordingly hard to see how less than 500 years could have elapsed between the introduction of maize and the coming of Caucasians into the East. If agriculture in itself tended automatically to produce a marked increase of population density, it was long enough in the land to have achieved this effect to a much greater degree than was the case at discovery. Rather we see a positive thinning out of numbers, in at least part of the area. The indicated cause then is not mere shortness of duration of agriculture, but "social" factors of some sort.

Of such social factors, the most direct may be considered to have been warlike habits. Reference is not to systematic, decisive war leading to occasional great destructions but also to conquest, settlement, and periods of consolidation and prosperity. Of all this the Eastern tribes knew nothing. They waged war not for any ulterior or permanent fruits, but for victory; and its conduct and shaping were motivated, when not by revenge, principally by individual desire for personal status within one's society. It was warfare that was insane, unending, continuously attritional, from our point of view; and yet it was so integrated into the whole fabric of Eastern culture, so dominantly emphasized within it, that escape from it was well-nigh impossible. Continuance in the system became self-preservatory. The group that tried to shift its values from war to peace, was almost certainly doomed to early extinction. This warfare, with its attendant unsettlement,

confusion, destruction, and famines, was probably the most potent cause of population remaining low in the East. It kept agriculture in the rôle of being a contributor to subsistence instead of its basis. On the other hand, such farming as was practiced yielded enough added leisure, concentration, and stability to make pretty continuous warfare possible. A population of pure hunter-gatherers would probably, except on the immediate coast, have been too scattered in minute bands, too unsettled in a country of rather evenly distributed food possibilities, too occupied with mere subsistence, to have engaged in war very persistently. Just such seems actually to have been the case among Montagnais, Cree, and Ojibwa, for instance, as compared with Muskogians, Iroquoians, and Siouans. The latter were caught in a vicious circle, which at the same time gave them a stable adjustment. Agriculture made their wars possible; but their warfare kept the population down to a point where more agriculture was not needed.

Back of all this must lie another, though negative, factor: the absence of all effective political organization, of the idea of the state. Effective of course means effective from our point of view, or a wide historical one; it is not denied that the native organization was effective as regards its needs within the cultural system in which it found itself. Had controlling authority, in the form of a ruler, or of a cohesive, smoothly self-perpetuating group, ever developed in the East, war objectives other than revenge or personal status might also have developed: conquest, pacification, tribute, economic accumulations, further exploitation. From among many such beginnings, no matter how humble in scope, there could sooner or later have emerged, through mutual eliminations, larger units, and from these, true states, stable, internally peaceful, capable of producing wealth, growing in population, and thereby increasingly productive and profitable. Just as something of this sort happened in China and Egypt, it happened in Mexico and Peru; but it did not happen in any consequential degree in what is now United States. The political systems of the Iroquois, Creek, Cherokee, Natchez either grew up mainly in historic times under Caucasian influence and pressure, or look like possible fragmentary remnants from the Mound-builder days of heavier population and quasi-states. If there were such days, and it seems there were, it may well have been the introduction of agriculture that made their state system possible. But once the system crumbled, perhaps because of being a foreign import and not deeply enough rooted in the culture of the region, there would be a relapse to interminable, economically vain fighting, rendered, however, more persistent and wasteful than ever by the fact that agriculture gave an added margin allowing greater wastage. In the North, where farming could not be or was

not introduced, the limitation of purely natural food sources was perhaps the main factor imposing an upper limit to the human population. In the East, where the combination of fertility and agriculture made possible the comfortable subsistence by native techniques of a population a hundred-fold greater, the causes must have been cultural; and of these the outstanding ones were the paired ones of high social premium on war for its own sake and the absence of value for political organization of more than a rudimentary kind.

Incidentally, the cultural dependence of the Plains on the East, historically, is again indicated by the fact that the whole socio-political system and motivation of the Plains are at large a replica of those of the East. The acquisition of the horse gave the Plains tribes, while the buffalo lasted, a food-margin and a leisure parallel to the agriculture of the East, and which enabled them to duplicate the customs of the East with only minor modifications such as the replacement of torture by coup-counting.

We must then think of the East as agricultural indeed, but as inhabited by agricultural hunters, not by farmers. There were no economic classes, no peasantry to exploit nor rulers to profit from a peasantry. Every man, or his wife, grew food for his household. The population remaining stationary, excess planting was not practiced, nor would it have led to anything in the way of economic or social benefit nor of increase of numbers. Ninety-nine or more percent of what might have been developed remained virgin, and was tolerated, or appreciated, as hunting ground, as waste intervening to the nearest enemy, or merely as something natural and inevitable. There was nothing to prevent a clan, town, or tribe from shifting its houses and fields to any one of a hundred about equally satisfactory other sites in its acknowledged territory, or if strong enough, to several hundred in land of its neighbors. There was as a rule nothing much gained or lost, other than for immediate considerations, by such shifts; and they were freely made—not perhaps mainly from sheer restlessness, but at least for trivial reasons. The consequence is the strange contrast of a relatively unstable, mobile agricultural population in the East and a rather highly sessile non-agricultural one on the Pacific coast.

#### COMPARISON WITH MEXICO

A comparison with Mexico seems worth while. There, conditions were different. It is known that population was denser, and that social classification and political organization much more developed. However, there are only fragmentary or general gross estimates of the ancient Mexican population, and those varying. We may therefore attempt to proceed by

working backward from present conditions. The area of modern Mexico is roughly three-quarters of a million square miles or about 480 million acres, of which a fourth, or 120 million, are considered or are nominally cultivable, and 30 million are actually cultivated, although for only about half of these 30 million is a crop specified, so that the other half may be considered as in a condition of latent cultivation or devoted to products like maguey or henequen. The largest area is in maize, 7.5 million acres in 1926. Next come beans with 2.2, wheat 1.2, cotton 0.6. The total is astonishingly small compared with the United States, whose maize acreage alone is more than three times as large as Mexico's total acreage in all crops. There is nothing to show that any considerable areas now unused were planted at the time of discovery. Rather should the hacienda system and modern engineering have tended to add acreage. If we assume, as before, that an acre will support a person, the present total in maize and beans, if utilized to the limit, would have provided sustenance for 10 million souls. The addition of other acreage now actively in crops would bring this up around 15 millions, or the present population.

This is probably considerably too high for the past. It would mean that the country at the time of discovery was settled up to the very limit of the population which it would support with the agricultural techniques at its command. Of this there is no indication. I would prefer to reduce the figure by three-fourths or more. Yet even this means that a fourth or a fifth of the most available farm land, perhaps the majority of the best, was being worked. About the larger centers of population, as in the Valley of Mexico, there was probably little waste except of distinctly inferior tracts. The native historical records show that in Mexico Valley farm land was at a premium, and either in the form of tribute in produce or by direct appropriation was a prize of conquest. There existed here, then, a condition resembling that of modern civilized countries; and even in the less densely settled areas of central and southern Mexico, one approximating this. That the land was owned by towns or barrios or family aggregations instead of individually, is socially and juridically important, but does not affect the population and subsistence picture. Where the Eastern Indian farmed a fraction of one percent of his available land, the Mexican farmed a considerable fraction of his total,<sup>11</sup> and in congested, politically dominant, and affluent areas, practically all of it. It was almost inevitable therefore that

---

<sup>11</sup> The reference is to the areas recognized as culturally Mexican, not to the modern republic of Mexico, the northern half of which was much more thinly populated and in considerable proportion non-agricultural.

in Mexico there should be economic classes, political organization, large communal works, and war for profit. There were in Mexico the equivalents of peasants and aristocracy. Without such classes, the population could hardly have accumulated as it did; and on the other hand, its growth must have tended to make organization desirable if not necessary. However free in principle, the average Mexican citizen of 1500 A.D. was no longer free as a Creek or Iroquois or Illinois was free. He could not farm if and where he pleased. He was bound by economic necessities of subsistence as well as by his state and rulers. The Spaniards probably found more essential peons in Mexico than they made.

#### THE SOUTHWEST

The Southwest was different from both Mexico and the East. It had maize as far back as Basket Maker times—less long than Mexico, no doubt, but longer than the East, where though agriculture was evidently at least some centuries old, there is nothing to show that its import goes back to the pre-Christian era. Population density in the Southwest, also, was intermediate, so far as genuinely agricultural peoples are concerned. The distinctive feature of the Southwest is the presence in it, side by side, of two kinds of population—the fairly densely settled farmers and the very thinly sown non-farmers around and between them. How far back this condition goes historically, is difficult to say, because, as might be expected, the farmers have left abundant and striking archaeological remains, the gatherers few and scattered ones. The farming population of Pueblo type is known to have been more widespread in Pueblo 2 time, say in the general period of 500 to 900 A.D. But there probably were non-farmers near them, if not in immediate contact, even then.

The basis of this duality of the Pueblo-Southwestern economic system, whether it is relatively recent or ancient also, lies obviously in the nature of the land. The Southwest is an arid region, steppe and mountain or semi-desert where not desert. Farming, with patience, can be made to yield a fairly reliable subsistence; but only in selected spots. The vast majority of the surface of the Southwest was as useless to the Pueblos, for crops, as it is to us. They could and did farm many spots which we do not farm; but that was because they sought only their food, we a civilized living. Allowing, as before, an acre to a person, the 34,000 Pueblos whom Hodge and Mooney estimate for 1680 would have had under cultivation a total of only some 53 square miles—a township and a half. We may double the allowance of land per head to permit of wider spacing of planting or lower yield in the arid Southwest. We may enlarge the population somewhat to

accord with the wider extent of the culture in Pueblo periods 2 and 3. Even this, however, brings the actually farmed land up to a total of only one or two hundred square miles in two or three hundred thousand. This is just about the ratio utilized in the East; but there most of the great unused remainder was farmable, in the Southwest it was not.

The Pueblo, then, resembled the Mexican in using for his crops, if not every inch of productive land, at any rate considerable of the best of it. This makes his subsistence appear more directly of Mexican origin, with but slight transmutations. Where he differed was in that so little of his land was cultivable, and that scattered. He could not become numerous. He therefore did not need states and rulers and a peasantry; the more so as the scattered distribution of his farmable land kept his communities small. On the other hand, once given a concentration in towns, his agriculture became a necessity to him if he was not to starve. This in turn engendered an attitude, a lack of leisure and lack of sense of freedom and enterprise, which would keep him from plunging into chronic warfare as a social mechanism. His population was kept down not so much by being killed off or expelled and disrupted, as by clinging to a narrow shelf of subsistence mechanism without leeway or recourse.

So far, discussion of the Southwest has been in terms of Pueblos and the non-agricultural tribes immediately enclosing them. But populationally, this part of the Southwest forms only a smaller half of even that part of the Southwest which lies within the United States, without counting the related parts of Sonora and Chihuahua. It held 48,300 souls out of 103,000 in the American Southwest. Pima-Papago, Lower Colorado Yumans, and Southern Californians alone, in the non-Pueblo sphere, with 10,000, 13,000, and 26,500 souls, outnumber the combined Pueblo, Apache, and Navaho, even with the Pueblo counted at Mooney's high figure of nearly 34,000. Numerically, then, the preponderant half of the American Southwest was the Gila-Yuman-Southern California sphere, not the Pueblo one. As regards density, the disproportion is even greater; nearly 20 for the former, against a little over 7 for the Pueblo sphere.<sup>12</sup> It is true that the density of the pure Pueblo territory alone was the highest—around 75. But against this in the other half are figures like 31 for Lower Colorado, and 39 for non-agricultural and semi-desert Southern California. The Pueblo-sphere density as a whole is brought down by the abnormally low density (2.3) of the large included area occupied in historic time by Athabascans. This expresses again the oasis-like distribution of the important

---

<sup>12</sup> 54,700 in 279,500 km<sup>2</sup> = 19.6; 48,300 in 687,600 = 7.2.

population in the Pueblo sphere, and the contrast between town-dwellers and mescal-gatherers, which recalls nicely in many ways the relation of town-farmers and herders in the Sahara, Arabia, and inner Asia. As against this, the Gila-Yuma-California sphere was much more evenly sown with population, irrespective of whether this was agricultural or not. In one sense therefore this area may be considered as having made a healthier adjustment with its arid environment than the Pueblo sphere.

The archaeological evidence indicates that in the past, in Pueblo 1 and 2 periods, say until about a thousand years ago, the Pueblo proper population was much more widely and scatteringly distributed in numerous small settlements. In other words, its distribution type then approximated that of the Gila-California area. This distribution began to be abandoned with the concentration into larger towns in Pueblo 3 period. This concentration may have been in part due to the pressure of preying tribes first intruding then. But whatever the causes—invasion, drought, inner cultural tendency, or a combination of these factors—once the concentration had begun, it left ever larger areas open to the “nomads,” that is, thinly-sown mescal-gatherers with only sporadic farming, and enabled them to establish themselves and their subsistence adaptation more firmly. The very flowering of Pueblo culture therefore tended to shrink its area, to embody it geographically in a culture of very much lower intensivity, and to put it on the defensive against this. Nothing like this occurred in the western Southwest, where farmers and non-farmers remained in adjustment, and the whole of any given tract continued to be exploited more or less to the limit by whatever subsistence-mechanism was most feasible, without notable “class” differentiation of its culture. The one exception was the Casa Grande type of concentration in the Gila valley, when Pueblid polychrome pottery culture impinged on native red-on-buff; but this was evanescent, and on its collapse, culture returned to its former adjustments.

So far we have been speaking, of necessity, in terms of the American Southwest. If the Mexican portion, for which we have no population data, could be included, the area and population of the Southwest would be increased by approximately half, and its Pueblo-sphere part would presumably shrink in numbers from a minor half to no more than a third. Which goes to show again what different historic concepts “Pueblo” and “Southwestern” are, and the need of their not being used interchangeably.

#### NORTHWEST COAST

The figures for the areas within the Northwest coast also carry a story, though they must be used with a certain reserve because in some of the



areas the land itself was so little or secondarily used that length of frontage on shore or river was evidently the decisive factor as regards population. Still the areal densities mean something. They are:

*Areas*

Lower Columbia (Chinook, etc.).....	64
Lower Klamath (Yurok, etc.).....	50
Gulf of Georgia (Coast Salish).....	33
Central Maritime (Wakashan, etc.).....	29
Northern Maritime (Northern tribes).....	17
Puget Sound (Coast Salish).....	17
Willamette Valley (inland).....	9

*Sub-Areas*

Central Maritime, South (Notka, Makah, Quinault).....	65
Northern Maritime, Archipelago (Haida, S. Tlingit, Tsimshian)....	22
Central Maritime, North (Kwakiutl, Heiltsuk, B. Coala).....	17
Northern Maritime, River (Niska, Gitskyan, Haisla).....	10
Northern Maritime, Mainland (N. Tlingit).....	10

The Willamette area is a wholly inland one. We do not know with certainty whether it should be reckoned as part of the Northwest Coast or the Columbia-Fraser plateau. Puget Sound, although salt water, also extends its inlets far into the interior, and the area is a quasi-inland one. Apart from these two minor areas, the other five range almost in geographical order, with density decreasing from south to north. The sub-areas within the two northern areas again show almost the identical arrangement. Even if Mooney's computations for the Chinook and Gulf of Georgia Salish are taken as somewhat high, the generally greater density of the south as against the north remains fundamentally unimpaired. On this point, too, shoreline density would not invert the situation, the northerly areas having the more irregular, indented shore, whose ratio to the already lighter population would go up faster even than their land areas. The difference seems to lie in this: The northern groups were essentially maritime, mostly lived fronting the beach, and made little use of the land which they owned. The southern groups lived on river and tributary as well as on the shore, perhaps more largely so in fact,<sup>13</sup> and often made genuine

<sup>13</sup> In Handbook of California Indians, 117, I have computed a population per shore mile of salt water of 10 and 15 for Wiyot and Yurok, and of 20, 35, 25, and 30 per mile of navigable river for the same two groups and the Karok and Hupa; or a mean of 28 versus 12 in favor of river. All the groups are in northwest California.

use of their land holdings. Their habitat utilization and culture remained more generalized and simpler, those of the northern groups were more specialized and extreme. As in the Southwest, on comparison of Gila-California with Pueblo sphere, the more generalized method in the long run allowed of a heavier aggregate population.

This set of facts also seems to re-enforce an interpretation of Northwest Coast culture development suggested elsewhere.<sup>14</sup> If the generalized southern areas represent, as seems reasonable, the survival of an earlier phase, it is the northern areas which have specialized away from this, and their type of culture must on the whole be the more recent. Whether this specialization was mainly the result of an internal development leading to a shift from river to inlet to ocean shore where the shore was most favorable, or was brought about by Eskimo or Asiatic or trans-Oceanic contacts and influences, is another and difficult problem, but one which may prove soluble to those in position to analyze intimately the whole of Northwest Coast culture; though they also can hardly come to a final conclusion without taking into detailed consideration the geographic setting. For the present we can content ourselves with the findings that it is the southern half of this major area which was the more densely populated, more generalized in its subsistence adaptations, and more ancient in its type of culture; and that the habitat and subsistence adjustments of the northern half, and the intensity of its development in art, ritual, and property distribution, were relatively recent.

#### ESKIMO

For the Eskimo areas, the range of land-area densities is:

Aleut.....	65
Pacific Coast (excl. Bering sea).....	19
Western (Bristol bay to Mackenzie river).....	4.9
Central-Eastern.....	2.3
Caribou.....	.4
Total Western.....	8.1
Total Eastern.....	2.1

Land areas mean particularly little in comparison with shore line in the case of the Eskimo, whose life depends on water and ice far more than on what the land bears. Still, the figures give a crude approximation to shore-mile density, even if the Aleut population of 16,000 should prove too high. How far the higher latitude of the three low-density areas may be a factor must also be considered.

<sup>14</sup> In the unpublished monograph on areas.

Still, the figures on their face show this: Nearly a third of all the Eskimo lived on open Pacific ocean frontage—27,300 Aleut, Kaniagmiut, Chugachigmiut, and Ugalakmiut out of 89,700. From the Malemiut south, that is, roughly, in Alaska from Bering strait south, were almost 60 percent all members of the stock—53,000 out of 89,700. This is the region of masks and wooden houses and grave monuments and property distribution festivals and war fleet expeditions, traits which we are wont to regard as characteristic of the Northwest Coast. It is also the region where ice-hunting of seals, the sledge and the snow-house, and many other "typical" Eskimo traits are lacking or nearly absent.

In other words, "pure" or characteristic Eskimo culture obtains only among two-fifths of the members of the stock. Three-fifths live in a culture heavily charged with elements usually regarded as Northwest Coast or Asiatic, and lacking much of the inventory of "typical" Eskimo life. It is obvious that our concept of what is Eskimo is due to a first approach from Greenland, and next Labrador, Baffinland, and the Central region. Had our knowledge begun in Alaska, where population centers, and where the comparative density is overwhelming, our most "typical" Eskimo would probably seem merely peripherally reduced and atypical. Just what this means for the origin and history of the culture is hard to say. Most such evidence can be read two ways. The final word must be by specialists on the Eskimo. But the population distribution cannot be left out of account.

#### SHORE LINE POPULATION DENSITY

The obvious importance of tidal shore line population density, especially in connection with the Eskimo, has led me to inquire into the problem. United States data are from Coast and Geodetic Survey figures. Canadian data were courteously furnished directly by the Hydrographic Service of the Dominion. The allotment of the shore line among tribes is by myself, according to the basic tribal map. I have also had to estimate, in a number of cases, what portion of a tribe was to be counted as living on or actively using the shore, and what portion as essentially interior. The detailed results are scarcely of significance here, so I give only a summarized tabulation.

On the whole, the shore-line densities agree rather strikingly with the areal densities of coastal regions. In a rough way, the native population for each mile of tidal shore line was about the same as that of 100km<sup>2</sup>. The concentration of the Eskimo in the west is as notable on a shore-line as on an areal basis. The same is true of increasing density as one proceeds

TABLE 4  
SHORE LINE AND POPULATION

Area	Peoples	Miles of shore line	Population	Persons per mile
	<i>Arctic Coast</i>			
1a	Greenland, inhab. part.....	6,000	10,000	1.7
1a	Labrador.....	2,450	3,600	1.5
1a	Central Eskimo.....	17,150	16,600*	1.0
1b	Caribou Eskimo.....	500		
2a	Mackenzie R. to Alaska peninsula.....	14,400	31,500	2.2
2b	Aleut.....	3,500	16,000	4.6
2c	Pacific Ocean Eskimo.....	4,000	11,300	2.8
	<i>Northwest Coast</i>			
1	Northern Maritime.....	6,100	23,300	3.8
2	Central Maritime.....	2,600	17,300	6.7
3	Gulf of Georgia.....	1,200	23,700	19.7
4	Puget Sound.....	1,000	6,000	6.0
5	Lower Columbia, coastal part.....	650	12,000	18.0
7	Lower Klamath, coastal, incl. S. Oregon....	300	6,000	20.0
	<i>Intermediate</i>			
2	Mattole to Salinan.....	800	14,000	17.5
	<i>Southwest</i>			
9, 10	Chumash to Diegueño.....	600	15,000	25.0
	<i>Eastern</i>			
3	Coahuiltec to Atakapa.....	1,900	6,300	3.3
1a	Southeast proper: Chitimacha to Apalachi..	3,000	23,000	7.7
1c	Timucua.....	1,200	8,000	6.7
2	South Florida.....	1,500	4,000	2.7
1a	Southeast, Stono to Yamasi.....	1,600	4,400	2.8
12	Southern Siouan to Powhatan.....	3,700	18,500	5.0
11	Conoy to Delaware.....	2,050	8,700	4.2
11	Montauk to Pennacook.....	1,800	21,100	11.7
10	Abnaki and Micmac.....	5,250	7,300	1.4
	<i>Northern</i>			
15	Montagnais.....	600	1,000	1.7
15	Beothuk.....	3,050	500	.2
15	Cree.....	1,300		
16	Caribou-Eater.....	100		
16	Cook Inlet Athabascans.....	500	500	1.0

\* Includes Mooney's 6,000 on "islands west of Baffinland." Without these, the density is only 0.6.

southward along the Northwest Coast. The high density of the southern Northwest Coast is maintained along the shore of the California and Southwest areas. Here, in fact, the continental maxima (Mexico excluded) are attained. Atlantic coast densities are on the whole lower than Pacific. The farming tribes run a shore-mile density two or three times that of the non-farming ones of Texas, Florida, Maine, and Nova Scotia. Wholly unexplained is a peak of density for the stretch from New York to Boston—not so high as that along the Pacific coast from Cape Mudge to San Diego, but easily the highest on the Atlantic side.

North of Mexico there may be reckoned some 80,000 to 90,000 miles of inhabited shore, occupied, or regularly used at least seasonally in native times by about 300,000 people—around three-tenths of the total population of this major portion of the continent. The density thus was under 4 souls per mile—say 6 per km. Of the total, the Eskimo held well over half of the mileage, but constituted little more than a fourth of the population, their average density being less than 2, as against 6 for all the rest. Evidently the skillful and intensive exploitation of their coast by the Eskimo did not enable them to maintain more than a fraction of the population which milder shores plus land utilization sustained elsewhere. The grand averages are: Eskimo, 1.7; northern Northwest Coast, 4.7; southern Northwest coast, California, Southwest, 16.4; Eastern areas, 4.6; Northern areas, 0.4.

#### MEXICO AND CENTRAL AMERICA

For Mexico and Central America there exists nothing like Mooney's complete group-by-group series of population figures. The contemporary and documentary data seem never to have been gone over systematically, let alone assembled. The estimates here given therefore represent nothing more than opinion based on impressions and somewhat moulded by comparisons with densities north of the Rio Grande.

My areal measurements and population estimates run as follows:

For present purposes, four main areas may be recognized in Mexico-Central America: (1) Northwest Mexico, which affiliates with the "Southwest" of the preceding pages, in fact is in the larger sense a part of it culturally. (2) Northeast Mexico, mainly non-agricultural and of low culture, a large area, interior and on Atlantic drainage, north of the Mesa Central. (3) The region of higher culture, comprising the Mesa Central and adjacent parts of Mexico, together with Guatemala and Salvador. (4) Area of lower culture to the southeast, about corresponding with Honduras and Nicaragua. Costa Rica and Panama belong to South America, ethnically and probably culturally.

TABLE 5  
MEXICO-CENTRAL AMERICA

	Km <sup>2</sup>	Population	Density
"Southwest," i.e., northwestern Mexico: Sonora, California, parts of Sinaloa and Chihuahua: Opata, Pima, Cáhita, Tarahumar, Seri, Cochimí, etc.....	357,300	100,000	28.
Northeastern Mexico: Zacatec, Tepehuan, Concho, Lagunero, Guachichil, Pame, Tamaulipéc, Coahuiltec, etc.....	666,700	100,000	15
Region of higher culture (incl. Huastec, Otomí, Jalisco, S. Sinaloa).....	1,025,800	3,000,000	292
Nicaragua and Honduras.....	247,700	100,000	40
	2,297,500 <sup>15</sup>	3,300,000	

These are some justifications for the populations estimated:

The American Southwest, as per Mooney, had 103,000 people in a million km<sup>2</sup>. For the Mexican "Southwest" an allowance of 100,000 in a third of a million km<sup>2</sup> seems liberal.

A hundred thousand also seems liberal for the two-thirds million km<sup>2</sup> in mainly non-farming northeast Mexico. The resulting density of 15 is about the same as in the agricultural southeastern United States, and five times as great as in non-farming south Texas.

High-culture Mexico, whose area is not quite 5 percent of the continent, is by my estimate given 70 percent of the native population. Its average density of nearly 300 is 55 times the average density north of the Rio Grande, and far heavier than that of the most populous and restricted tribal territory there. It outweighs the California density 7 times, the Northwest Coast density 10 times. All this is no proof of how many Indians there were in Mexico; but it does suggest that there are likely to have been no more than here assumed.

Comparison with the historic period shows some interesting results.

1. After the first shock of conquest and epidemics, the native population seems to have increased, owing perhaps to cessation of intertribal war-

<sup>15</sup> Includes c. 60,000 km<sup>2</sup> of Coahuiltec territory in U. S.; excludes c. 100,000 km<sup>2</sup> Apache territory; corrected, 2,337,500 km<sup>2</sup> by planimeter measurement, as against 918,000 m<sup>2</sup> or 2,378,000 km<sup>2</sup> usually given for the five countries.

fare, and then remained about stationary. Willcox<sup>16</sup> computes 5,115,000 in Mexico and Central America in 1650, 5,400,000 in 1793 (per Humboldt, New Spain from 10° to 38°). The present population, exclusive of Costa Rica and Panama, is about 22 millions. In the four or five generations since 1793, with much internal disorder instead of the profound Spanish colonial peace of the preceding two centuries, the population thus quadrupled. The fact is more striking than intelligible as to its causes.

2. Mexico is about 60 percent Indian in blood, Guatemala more so, if one counts not only recognized Indians but their equivalents in mestizos. This proportion gives about 10 million Indians today in southern Mexico and Guatemala, the region of ancient higher culture, as against 3 million in native times. The change of course is in reverse direction from that in the United States. The primary cause of the difference seems to be that in New Spain the settled Indian was fitted into the Colonial (and nineteenth century) economic scheme, which in fact was built upon him; whereas in Anglo-Saxon America, broadly speaking, the Indian did not fit into the economic plan and was thrust aside.

3. On the local distribution of densities there are certain considerations, too lengthy to be gone into here, which indicate that relative to one another, these have on the whole changed rather little. Cushing's map of modern population in Mexico in the *Geographical Review* for 1921 may therefore be considered as giving an approximate picture of the distribution of population in Mexico before the Conquest, subject to the following two modifications: (1) the density symbols are to be read with a value of about one-fifth in central and southern Mexico, about one-tenth in the north; (2) northern urban concentrations due to mining, industry, irrigation, or government are to be omitted.

#### THE HEMISPHERE

By pushing a little further, we can add one more to several estimates recently made as to native population of the hemisphere.

Sapper<sup>17</sup> reckons about 40 to 50 millions in pre-conquest days. This total includes half a million north of the Great Lakes, 2 to 3 millions to the Rio Grande, between 17 and 21 in Mexico and Central America, 3 to 4 in the West Indies, 12 to 15 in the Tropical Andes. By Mooney, Sapper's impressions are three times too high for north of the Rio Grande. At the same ratio, his hemispheric total would shrink to around 15 millions.

<sup>16</sup> Increase in the Population of the Earth and of the Continents, pre-printed from *International Migrations*, vol. 2, National Bureau of Economic Research (1930).

<sup>17</sup> ICA (the Hague, 1924), 21: 95-104, 1924.

Spinden<sup>18</sup> discards impressions as to population and density for argument justifying multiplication by hypothetical factors. His article is stimulating and imaginative but soars far away from facts. He settles on 50 to 75 millions around 1200 A.D., less at the time of conquest.

Willcox<sup>16</sup> is concerned with world population growth in the last three centuries, but his computation for the Americas in the mid-seventeenth century is of interest because it allows approximate reference back to the native period.

U. S., Canada, Alaska.....	1,002,000
Mexico and Central America, total.....	5,115,000
West Indies.....	614,000
S. A., central Andean plateau district (400,000 m <sup>2</sup> ).....	3,036,000
S. A., remainder.....	3,334,000
<hr/>	
Hemisphere, all races, c. 1650 A.D.....	13,111,000

My own estimates rest essentially on the assumption that the relation of Peru to the remainder of South America was similar to the relation of Mexico to the remainder of North America; and on the nature of the latter relation, as just discussed.

TABLE 6

## PRE-CAUCASIAN POPULATION OF THE HEMISPHERE

North of Rio Grande, Mooney detailed total reduced by impression.....	900,000	
N.W. and N.E. Mexico, probably less than.....	200,000	
C. and S. Mexico, Guatemala, Honduras.....	3,000,000	
Honduras, Nicaragua.....	100,000	
Native North America.....		4,200,000
Inca Empire.....	3,000,000	
Remainder of S. America, incl. Panama, Costa Rica.....	1,000,000	
West Indies.....	200,000	
Native South America.....		4,200,000
<hr/>		
Western Hemisphere, 1492 A.D.....		8,400,000

These figures are of course not to be taken too literally: 8,400,000 means essentially somewhere in the neighborhood of 7 to 10 millions as the most probable number.

<sup>18</sup> Geogr. Rev. 18, no. 4, 1928; reprinted SI-R 1929: 451-471, 1930.



I hope that the lowness of these figures will challenge to correction, if correction can be produced. I admit that it may prove that my total of 8,400,000 will have to be doubled. But I believe it just as likely that it may ultimately be halved. I set it up as my best present opinion and as a mark to be shot at.

Real progress in this subject will come only in one way: by the intensive examination and analysis of sharply localized documentary evidence of as early date as possible. The astonishingly excellent archival system of Spanish America brought it about that many pertinent data were recorded, and a fair number of these are undoubtedly extant, some perhaps already in print. The first and most arduous task is probably the finding of these data and their evaluation in terms of the precise areas and groups involved. The principal other requisite is a certain tact in interpreting such scattered and localized records into a larger picture with constant reference to both terrain and cultural habits, and with a minimum of the mechanical multiplications which are so likely to conduct to misleading and usually exaggerated results.

UNIVERSITY OF CALIFORNIA  
BERKELEY