

SMITHSONIAN MISCELLANEOUS COLLECTIONS

VOLUME 100 (WHOLE VOLUME)

ESSAYS IN HISTORICAL ANTHROPOLOGY
OF NORTH AMERICA

PUBLISHED IN HONOR OF JOHN R. SWANTON

in Celebration of His Fortieth Year with the
Smithsonian Institution



(PUBLICATION 3588)

CITY OF WASHINGTON

PUBLISHED BY THE SMITHSONIAN INSTITUTION

MAY 25, 1940



John R. Swanton

SMITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 100 (WHOLE VOLUME)

ESSAYS IN HISTORICAL ANTHROPOLOGY
OF NORTH AMERICA

PUBLISHED IN HONOR OF JOHN R. SWANTON
in Celebration of His Fortieth Year with the
Smithsonian Institution



(PUBLICATION 3588)

CITY OF WASHINGTON
PUBLISHED BY THE SMITHSONIAN INSTITUTION
MAY 25, 1940

The Lord Baltimore Press
BALTIMORE, MD., U. S. A.

FOREWORD

It is a real satisfaction for the Smithsonian Institution to publish this collection of papers in historical anthropology in honor of Dr. John R. Swanton, on the occasion of his fortieth year with the Institution. Diligence, modesty, and kindness combine with great ability in his make-up, and lead all his colleagues and friends to love him, at the same time that they honor his scholarship and his basic contributions to American anthropology.

While the attractive field of deductive speculation has in the past lured many American anthropologists, Swanton has been content to gather information and, sifting it, to lay a foundation where others may securely build. Treating particularly the history of cultures and of tribal movement in the Southeast since the discovery of America, Swanton's publications in this field will ever be the classic sources, basic to future advances.

C. G. ABBOT,
Secretary, Smithsonian Institution.

CONTENTS

	PAGE
The work of John R. Swanton, by A. L. Kroeber.....	1
Introduction, by Julian H. Steward.....	11
Some historical implications of physical anthropology in North America, by T. D. Stewart.....	15
Developments in the problem of the North American Paleo-Indian, by Frank H. H. Roberts, Jr.....	51
The historic method as applied to southeastern archeology, by M. W. Stirling	117
Virginia before Jamestown, by David I. Bushnell, Jr.....	125
Problems arising from the historic northeastern position of the Iroquois, by William N. Fenton.....	159
Archeological perspectives in the northern Mississippi Valley, by Frank M. Setzler	253
Culture sequences in the central Great Plains, by Waldo R. Wedel.....	291
From history to prehistory in the northern Great Plains, by Wm. Duncan Strong	353
Some Navaho culture changes during two centuries (with a translation of the early eighteenth century Rabal Manuscript), by W. W. Hill.....	395
Progress in the Southwest, by Neil M. Judd.....	417
Native cultures of the Intermontane (Great Basin) area, by Julian H. Steward	445
Southern peripheral Athapaskawan origins, divisions, and migrations, by John P. Harrington.....	503
Outline of Eskimo prehistory, by Henry B. Collins, Jr.....	533
Bibliography of anthropological papers by John R. Swanton, compiled by Frances S. Nichols.....	593

THE WORK OF JOHN R. SWANTON

By A. L. KROEBER

Forty years ago, when Swanton was about ready to enter upon his professional career with a position in the Bureau of American Ethnology, the roster of institutions carrying on researches in anthropology was a short one. Oldest, largest, and much the most productive in printed results was the Bureau itself, with the National Museum as a half-sister under the parenthood of the Smithsonian Institution. Rivaling the Bureau in age was the Peabody Museum, which had gradually expanded from an object-gathering agency until there budded off from it the anthropological division of Harvard, with F. W. Putnam filling both the Museum directorship and the professorship. Publication was in papers—often important but always brief—appended to the annual reports of the Museum. In Chicago, the Field Museum, still “Columbian” in name, had the formation of its enormous collection well under way and was beginning to print. Dorsey had succeeded Holmes and Boas, who in turn had followed Putnam when the anthropological division of the Chicago Exposition of 1893 (whence the “Columbian”) was replaced by the Museum. The interlocking of personalities and institutions, and also their jealousies, were more conspicuous in those days than in our contemporary and placid ones. From Chicago, Putnam had gone to the American Museum as superexecutive—always in addition to his permanent double-barreled Harvard position—to organize the subject there, and, with Boas as lieutenant, was just launching the Jesup Expedition, the largest specific research program yet undertaken. Alongside the Museum, Boas was founding the Columbia department, with Farrand as associate. In Philadelphia, Brinton was nearing the close of his distinguished free-lance career. Bandelier was temporarily lost in Peru; Laufer, Bogoras, and Jochelson were being imported from Europe; Fowke, Moorehead, Volk, and others were digging in Mississippi drainage.

Swanton's training and doctorate were from Harvard. As part of the standard Peabody apprenticeship, he was sent to one of the interminable diggings in Ohio, with half a following winter to wash skeletons in the museum basement. Putnam believed in young men learning their profession practically and manually. I assume he also

had Swanton at Pueblo Bonito under George Pepper for one of the many seasons there. The net effect seems to have been to drive Swanton away from archeology. His later and often fruitful contacts with it were through the second-story approach of history and ethnology. It must be conceded that most archeologists of those days had little sense of problem, solution, and new problem; and no sense of time whatever. They loved camping, they loved digging, they loved finding something; and the longer it lasted the better they liked it. Swanton was wanting to push on to conclusions.

He got more out of an interlude away from Harvard with Boas in New York, where he was sent to learn linguistics. Here he cut his teeth first on Chinook, like so many of us; and then definitely on Dakota: the old Riggs and Bushotter material, the latter revised by Swanton in the field in 1899, and the results brought out jointly with Boas a dozen years later in Bulletin 40. It is indicative of progress that Boas is now doing Dakota over with modern exactitude and fullness. Out of this association there grew also Swanton's Northwest Coast work, done among the Haida in 1901 and among the Tlingit in 1904, and resulting in the accounts of the two languages in the Handbook, Bureau Bulletins 29 and 39 of texts, the basic memoir on the Tlingit in the Twenty-sixth Annual Report, a corresponding one on the Haida and a second collection of texts in the Jesup Memoirs, and a series of smaller papers.

However, before this basic series of Northwest Coast contributions had finished appearing, Swanton had committed himself to the field in which he was to erect his largest monument: the Southeast. In this he has specialized ever since, to such a degree that it remains undisputedly his, and that mention of the area automatically brings to all of us the association of his name.

The Southeastern United States differed from most other native American ethnic areas in its conditions and opportunities. The first contacts go back to De Soto. All the tribes have been under strong European influences, or at least impingements, for two centuries or more. The contacts and encroachments were multiple: Spanish, English, French, later American also. The smaller tribes have long been extinct—either outright or merged in the more and more composite larger groups that have survived, partly through absorption of such remnants and of White and Negro blood. Here and there, hidden away and overlooked, there remained dwindling little communities of the tribes that had long since ceased to count as entities. In the pre-Civil War days, good memory-ethnology could have been obtained from many of these. When the first ethnologists arrived—

Gatschet and J. O. Dorsey—and still more so a generation later in Swanton's time, little could be got beyond the speech, sometimes already broken down or half-forgotten, and scraps of folk tales, customs, and beliefs. The larger groups mostly had bitterly resisted eviction from their homelands. When they finally yielded, it was to set up in Indian Territory semi-autonomous, powerless, miniature imitations of American political forms and economic ways, or blends of these with what was left of their former but already modified institutions. Even these compromises were necessarily transient and gave way to the semiabsorption of citizenship. Field work by direct inquiry and observation, such as was and still is largely possible in the Plains and Plateau, Southwest and California, Northwest and Arctic, was enormously diluted in its possibilities for the Southeastern tribes. It was like working over tailings instead of following a fresh vein. The cultural material available in some ways resembled that obtainable in Latin America—it is imbedded in a matrix of long acculturation; and, as there, it is so firmly imbedded that dissociation is possible only through thorough knowledge of the absorbing culture; and the most authentic data are often to be found in the written records of preanthropological centuries.

Such a field discourages and repels the average American ethnologist. It uncovered a streak of historical genius in Swanton. What informants could not give, good documents did yield, in many cases; and the information was one, two, three, and even four centuries nearer the purely aboriginal. He mastered the documentary sources, presented their most relevant parts in translation, synthesized and interpreted them, fused them with the products of field work. The result is something unique in American anthropology (except for Speck's treatment of the Atlantic seaboard, and there the documentation is far meagerer), and something as permanent and fundamental as it is unique.

"Indian tribes of the Lower Mississippi," Bulletin 43, in 1911, was the first major product of this core of a lifework, and was followed by a series of Bulletins and Report monographs on the early history of the Creeks, on their society, their religion; on the Chickasaw, the Choctaw; on the Southeastern culture as a whole, and on a series of languages—Siouan (Biloxi and Ofo), Muskoghean (Choctaw), and minor idioms (Tunica, Atakapa, Chitimacha); besides a host of special and minor papers.

Apart from the regions dealt with, Swanton's contribution to anthropology is significant from three principal viewpoints: ethnography, linguistics, and theory.

Ethnography.—In the past 50 years, American ethnology has been characterized by increasing emphasis on the aspect of culture as such. This tendency has been very beneficial, for if there is a subject matter specific to our science, it is culture. Without culture patterns, culture elements, culture areas, culture changes and processes, we would have little left to us that is not more or less preempted elsewhere. And in these matters Swanton has carried his share like the rest of us. But in addition he has done what most of us unduly neglected doing—concerned himself with the ethnic entities that carried the cultures; with their identities, contacts, and movements. This may be an humble task compared with showing how a culture is structured or how it functions. It certainly leaves little room for displaying mere brilliance of ideation. But it is fundamental work which must underlie the other. No matter how cleverly we may analyze a recent or contemporary culture, we are seeing only one facies of it; and if the tribe that carries it lived elsewhere two or three centuries ago, has amalgamated with others, or is known to us in the history of discovery under another name, these are all facts pertinent to full understanding of the culture. The important job of recovering and ordering such facts Swanton has done fully and accurately. If most of us have mainly shirked it, it is either because we have considered ourselves superior, or because in the excitement of new field data we have lost sight of all else, or because we dreaded the unfamiliar stint of handling documents written by nonethnologists. If I call the kettle black, it is with full acknowledgment of my own sootiness, especially in the last regard. Swanton's flair for appreciation of a document, and skill in making it mean something, has stood him in good stead in these matters; and the eastern and southeastern Indians of course were in particular need of such treatment. There is in his approach something akin to taxonomy, which is also looked down upon by the laboratory man, but is equally necessary as a foundation for all biology.

It is of interest that in certain ways this preoccupation by Swanton is in line with Bureau of American Ethnology tradition. Major Powell did his philosophizing, but he also recognized that his first task as Chief of the Bureau was to establish some order where there had been random chaos before. The Handbook of American Indians became a great deal more, but it began as a tribal synonymy, an attempt to establish authentically whether the Hidatsa, Minitari, and Gros Ventre were one tribe or two or three, whether Lileek was a Pomo or a Yuki settlement, and thousands of other such facts. Indeed, the more pretentious articles in the Handbook are already

largely superseded, but we all still refer to it as an indispensable *vade mecum* in regard to points of just this order.

Similarly with Powell's classification of linguistic stocks. It did not set out to announce the eternal verities of the nature and processes of speech, but to discover which of the Indian languages were patently similar enough to render their common origin certain, and which were not. Though done largely by men wholly untrained as philologists—perhaps really for that reason—this classification has stood the test of time so well that we still adhere to it as a basis and, like Swanton himself, venture beyond it only for the short distances we have been able actually to explore. Sapir's vision may have penetrated many an area in which confirmation will ultimately be forthcoming, but as a base for correlative inductions in other fields it can only lead us into griefs, as certain recent attempts have shown; whereas by contrast the Powell scheme is not only safe but allows such correlations.

In the historicizing, identifying aspects characteristic of his ethnology, Swanton accordingly is genuinely representative of his institution.

In another way he has served as a needed corrective. Early explanations relied to excess on migrations to explain similarities, even chance ones. A tribe was found to have an institution which more or less paralleled a custom mentioned in the Old Testament. Immediately this people and its culture were derived from one of the lost Hebrew tribes which had wandered over the continents. A little later, explanations as crass as this one went out of vogue among scholars; but some other people in Asia, or perhaps Yucatan, was invoked as having sent an offshoot to, or passed in their own migration through the territory of, the tribe in question. It is really the simplest explanation that is logically possible; and its very naiveté continued to commend it to some minds, learned and unlearned: everything seems to be solved at one stroke. Later, as we gradually became more and more aware of the less spectacular but continuous, unremitting, pervasive influence of contact, diffusion loomed up as the great factor making for similarities: diffusion of culture as against migrations of societies. This newer principle is undoubtedly on the whole the more valuable and sounder one.

But, as always, the pendulum swung too far; until today, perhaps especially in America, most of us rely exclusively on diffusion and independent local developments in explaining how cultures have come to be as they are. It has come to smack a little of being outmoded when one invokes a movement of peoples. Yet we know from history that such mass movements have taken place again and again, and

from our linguistic maps that they must have occurred among our historyless tribes.

Now here again Swanton has shown his balance and independence in not bending to scientific fashion vogues. He has not had recourse to Israel or Central Asia or even Yucatan. But where his documents led him, or even recurrent native tradition, he has not hesitated to follow. After all, where a Siouan or Muskoghean or Natchez tribe once lived is relevant. It had contacts with neighbors then, these contacts affected its culture, and no one would be simple enough to assert that all these former influences were totally erased as soon as it came to dwell among its present neighbors. The truth is, the rest of us are too often prone to simplify our task by disregarding these complications of the past; especially if it means wading through travelers' narratives or Jesuit Relations.

In the famous controversy with Lowie caused by Swanton's and Dixon's joint article on "Primitive American History," in 1914, the antagonists never really met. Lowie was contending for a sound principle: that the *specific* traditions of illiterate peoples, especially when they refer to *origins*, do not deserve to be taken at face value as history; least of all to have history erected upon them as a foundation. He was thinking evidently of the seven northern caves from which the Aztecs emerged (at Santa Barbara, according to some); of the Hopi clan origin legends which Fewkes accepted in the face of contrary archeological and linguistic facts; of the Plains tale of tribal separations when a monster horn was chopped and the ice cracked; and the like. Swanton and Dixon never used such fables. Their article is really quite mild and sound, as one rereads it after 25 years. Lowie would probably be the first to admit this; just as Swanton has never contested that Lowie was right as regards the kind of abuses that he really attacked.

Linguistics.—An analogous set of qualities attach to Swanton's linguistics. His Dakota, Haida, Tlingit, Tunica manifest standard ability to master the structural forms of a language. In addition, however, he has done two things: made contributions to content of languages, and concerned himself with their kinship.

The first, the dictionary, has gone out of fashion in American linguistic anthropology. We still profess the need of lexicons, but somehow we hardly ever get around to producing them for the languages we study. The task is time-consuming, the product rated meritorious but of no great credit. Swanton has twice delivered a dictionary: Dorsey's on Biloxi and Ofo, and Byington's on Choctaw. In both instances he did not hold himself above arranging and editing

other men's materials if he thought them important: he is as free from egocentricity as human beings come.

As regards relationship problems, the relief afforded by Powell's classification was so great, and the influence of Boas so strong in showing how a particular language could be conceptually expressed in terms of its own characteristic configuration, that for about 25 years such problems were almost completely in abeyance in American anthropology. About 1915, however, there began to be some stirrings of dissatisfaction; and more or less simultaneously, and mainly independently, Swanton in the East, Dixon and I in the West, Sapir in the North and elsewhere, began to indicate evidences, however preliminary, of similarities between particular languages suggestive of a common origin. Swanton worked in his chosen field of the Southeast, with Atakapa, Chitimacha, Tunica, Natchez, Muskoghean;¹ and there seems little doubt that his findings, like at least the earlier ones of the others, will stand. Later, Sapir pressed on to his wider-flung associations, already touched on. These are really a series of prophecies as to what the determinations of future scholarship will be, unsupported by evidence, but entitled to respect on account of the extraordinary intuitional genius of Sapir. They must be kept wholly distinct from his and others' specific and documented findings.

The whole matter of linguistic relationships in native America has assumed an unnecessarily controversial color. In part this is due to Sapir's pronouncements not being understood for what they were, and others, such as Radin, attempting proofs but going beyond them. On the other side Boas has simply disliked and deplored all historical problems, such as those of relationship necessarily are; and others, like Michelson and Uhlenbeck, have refused to accept any findings worked out with less than the neat precision to which they had been trained in Indo-European. It is however certain that relationship problems will continue to be dealt with for two reasons. One is that they are highly pertinent to problems of historical ethnology and culture history, and ethnologists are entitled to the soundest answer that linguists can give them. The other reason is that any given language can be more completely apperceived and understood as a language in proportion as we know its past, either actual or as inferrible from cognate languages. The shoving of more and more idioms into fewer and fewer pigeonholes labeled "stocks" is really a secondary by-product of linguistic classification. The primary task is intelligent comparison of languages already admitted to be related;

¹ The first paper, on Texan languages, in the *Anthropologist*, dates from 1915.

and in this, American linguistics has lagged. Sapir's work within Athapascan, his and Whorf's in Uto-Aztecan, Bloomfield's and Michelson's in Algonquian,² Dorsey's and Swanton's in Siouan and Muskoghean, are all sound so far as they go, but are only beginnings. The Danes are equally behindhand with Eskimo.

Theory.—Swanton has never written a longer theoretical work nor enunciated a system. He has, however, repeatedly contributed to cultural theory, especially where it concerns social structure, but also as regards religion. Throughout he has taken issue with linear evolutionism, or, as he aptly calls it, uniformitarianism and particularism—the sort of thinking that forces the complexity of facts into a simplification, or explains them by a particular factor chosen at will.

As early as 1905 he began in the *Anthropologist* with "The Social Organization of American Tribes," which laid the basis of all subsequent approaches to the topic. Characteristically, it begins with a review of the data on a given area, but develops the theoretical position which most of us, at least in America, have come to accept. A paper in the same journal a year earlier, on the development of the clan system in the Northwest, is a partial prolegomenon, and is of special interest in revealing for the first time Swanton's specific historic bent of interest. A year later, in the Boas Anniversary Volume, he offers his "Reconstruction of the Theory of Social Organization." Other theoretical papers are: "Some Anthropological Misconceptions," 1917; "Three Factors in Primitive Religion," 1924; "The Factor of Difference," 1924; "The Subjective Element in Magic," 1926, which partly anticipates Malinowski's views on the subject. All these are characterized by close, sound, analytical logic, and rock or overthrow some current prejudice or loose manner of thinking.

Other Fields of Activity.—Besides the foregoing, Swanton has occupied himself with a number of other subjects. Among these are folklore and mythology, into which he was naturally led by his text collecting. The result is a series of papers in the *Journal of American Folk-Lore*, as well as *Bureau Bulletin* 88, on the Southeast, not to mention the earlier Haida and Tlingit collections.

On kinship we have, besides the systems reported in descriptive monographs, papers on Timucua, on Pentecost Island, and on the significance of sibling terms, in 1916 and 1917.

An association with his colleague Cyrus Thomas, and an old plan of the Bureau to extend Powell's map to Panama, led Swanton

² It should be added that the part of Michelson's classification which most of the rest of us chiefly use, the summary embodied in the colored map, is partly the work of Swanton and differs somewhat from Michelson's text.

figuratively to cross the Rio Grande in 1911, with "Indian Languages of Mexico and Central America." No field work or personal experience, or even previous preoccupation, underlay this difficult and no doubt uncongenial task of duty, which, however, justified itself by more than 20 years of useful service, and has only lately begun to be superseded by more intensive researches by specialists in the area.

To the archeologists in the difficult area of the eastern United States, Swanton has been adviser and godfather, both by occasional papers and especially by his presence at the Birmingham and subsequent conferences. His profound sense of historic depth, acquaintance with the earliest historical narratives and later tribal movements, his unrivaled toponymy, especially south of the Ohio, combined with his sympathetic acquaintance with the archeologists' own work, have made him a prop and stay for them.

Finally, it is fitting to mention a class of contributions which, while not strictly professional, are the outgrowth of an anthropological career, and above all express the personality of the man, his fundamental fairness and social-mindedness. Among these are the review of Gobineau in 1916, "Anthropology as a Corrective of Provincialism," 1920, "International and Interclass Misunderstandings," 1920, "An Indian Social Experiment and Some of its Lessons," 1930, "Some Thoughts on the Problem of Progress and Decline," 1939—and no doubt others in more fugitive media, or which he has been too modest to bring to the notice of his colleagues. They reflect Swanton's deep-seated idealism, his passion for justice and tolerance, and his judicial faculty—qualities characteristic of him as citizen as well as scientist.

ESSAYS IN HISTORICAL ANTHROPOLOGY OF NORTH AMERICA

INTRODUCTION

It is more than coincidence that a collection of papers by Smithsonian anthropologists can be called "Essays in Historical Anthropology." Smithsonian anthropology has always been historical, though conceptions of historical research have changed with progress in the science.

Two generations ago, when facts were scant and methodology was crude, history tended to be deductive. Cultural schemes were confidently reconstructed on a world scale, accepted as the last word on human history and, in some cases, even became parts of political dogmas. More recently, the rapid growth of accurate data and critical methods have made history increasingly deductive. Early historical schemes are now usually regarded in America as naive and rash hypotheses which, though important to a youthful science, fail to stand the test of fact. Even the world schemes of some of our contemporaries in other nations are similarly considered to be prematurely broad and definitive. The present objective in America is to reconstruct only those limited segments of cultural and biological history that can be well supported by substantial facts. Broader schemes will be possible and interpretative theories will be reliable only to the degree that they are based on these sound historical materials.

History, in spite of changes in methods and results, has formed the connecting thread through several generations of anthropology. But a number of nonhistorical approaches and objectives have recently developed in the science. A controversy of history versus nonhistory has, in fact, already produced a considerable literature. There is no need here to enter this controversy. It is perhaps symptomatic of approaching maturity that a science should develop more diversified and specialized methods and objectives. The choice of any of these, however, is more a matter of personal taste than of logical proof that it is the only thing worth doing. Some motives for choosing nonhistorical approaches are fairly clear. Recent interest in interdisciplinary studies has raised a number of attractive problems which are largely nonhistorical and peripheral to anthropology. Impatience with

the recent results of historical research in anthropology has also caused some persons to seek new approaches. Dissatisfied with reconstructions that encompass but small portions of the cultural world and which lack impressive and broad generalizations, they turn to a more sociological approach, hoping to discover cultural laws or seeking materials which will have immediate bearing on problems of a distressed modern world. Whatever the explanations of the various trends in modern anthropology, however, attempts to understand cultural phenomena from new points of view are to be welcomed. They all provide grist to some mill.

Despite this increasing repertoire of research objectives, the primary and distinguishing task of anthropology continues to be the reconstruction of man's biological and cultural history. It is the common objective which gives direction to the more specialized work of ethnology, archeology, linguistics, and physical anthropology. If the results of history are at present highly particularized and lack broad generalizations, it is probably a healthy sign. As facts accumulate and methodologies become more critical and adequate, reconstructions will become increasingly exact, reliable, and comprehensive. As history is more perfectly and completely known, interpretative theories of the causes, "processes," and perhaps even "laws" underlying cultural change will become increasingly possible. Considerable attention, in fact, is now being given to the development of methods for generalizing historical data. Meanwhile, though historical anthropology in America does not now pretend to offer reconstructions made on a world scale, it is rapidly providing the social sciences with sound facts upon which realistic social philosophies may be erected. And its analyses of cultural dynamics are of great importance to problems of interdisciplinary and other approaches peripheral to anthropology.

Smithsonian anthropology, following the broad purpose of the Institution's research program, "the increase and diffusion of knowledge," has, for several generations, made human history its objective. It is indicative of the freedom of science in America that this research has in no way been affected by political doctrines. It has kept apace with developments that have made historical anthropology increasingly scientific and inductive. Contributions to the present volume are therefore probably representative of present-day American research in this field.

This volume was not planned, however, as a formal exposition of historical anthropology. It grew out of various informal discussions of recent historical problems and trends. It was believed that it is occasionally profitable to leave off the pursuit of highly specialized

tasks and the accumulation of detailed facts in order to take stock of the present status of research. This would permit each subject or area to be viewed in the perspective of larger scientific problems and objectives. The discussions therefore centered around a number of papers, each undertaking to synthesize and interpret data of archeology, ethnology, language, and physical anthropology so as to sketch in bold outline recent achievements and problems in the various fields. Broad and often admittedly tentative interpretations of present data were unhesitatingly attempted, for, though facts are sacred, their rapid accumulation requires frequent systematization and reinterpretation. Science progresses from one theory to another. If future research shows present theories to be untenable, they will be supplanted not by new facts but by new theories that better explain the facts.

These essays are offered in a single volume in the hope that they will be useful summaries of the various fields and that they will help clarify and underline certain general research problems. They do not, however, pretend to represent identical points of view or approaches. They naturally reflect individual interest in the various divisions of anthropology. They do not, moreover, attempt complete coverage of the North American continent. It is largely chance that so many areas are included in the fields in which members of the Smithsonian staff have specialized. The sequence of articles places those of a general nature at the beginning. Descriptions of areas are arranged geographically, running roughly from south to north, then from east to west.

The appropriateness of dedicating this volume to Dr. John R. Swanton needs little explanation. During the early years of the present century, Dr. Swanton was in the front ranks of those who insisted that certain of the old, deductive historical schemes must be reexamined and either modified or rejected in the light of new facts. His continued devotion to a meticulously inductive historical approach and his monumental contributions to history have been an inspiration to his associates. His lively interest in new problems and new methods has been a constant stimulus to our informal discussions. This volume could, therefore, be no more fitly dedicated than to this outstanding exponent of historical anthropology.

JULIAN H. STEWARD.

SOME HISTORICAL IMPLICATIONS OF PHYSICAL ANTHROPOLOGY IN NORTH AMERICA

By T. D. STEWART
U. S. National Museum

The physical anthropology of the living is separated from that of the skeletal remains, at least as far as the native American population is concerned, by a gap comparable in some measure to that existing between ethnology and archeology. On the physical side, measurements and observations taken during life, although originally designed with reference to the underlying skeleton, are rarely useful in identifying skeletal remains; on the cultural side, ethnological observations involve for the most part evanescent and largely nonmaterial traits that fail to survive as archeological specimens.

This disparity between closely related phases of anthropological interest may be further illustrated in anthropometry, which is a partly conventionalized system of measurements employed by the physical anthropologists in studying both the living and the dead. Average stature, for instance, can be reconstructed with reasonable accuracy from an adequate series of long bones, yet in actual practice in North America this procedure is not very helpful, because usually the variability of stature among the living is considerable only as between widely separated tribes. A somewhat comparable difficulty confronts the investigator as regards the cephalic index—an expression of the relationship (ratio) between length and breadth of the head. Reflection will make it clear that the shape of the living head and that of the underlying skull are not quite the same. This difference is due, of course, to the presence of thick muscles on the side of the head. Here again it is possible, certainly theoretically, to approximate the head shape as it would have been in life from the skull measurements. However, actual correlations between head and skull indices of like groups in America show considerable variability (cf. Boas, 1895, p. 395).

Thus, although the gap between the two phases of physical anthropology, as between ethnology and archeology, are understandable and inevitable, these several fields of research are nevertheless fundamentally interdependent. Physical and cultural relationships necessarily were first established among the living. The knowledge that a

certain tribe occupied a site in historic times is the key to the identification of both the physical and the cultural remains, and the starting point in tracing this people back into the past.

Actually, however, much of the accumulated skeletal remains for North America cannot be accurately identified as to tribe. Especially is this true of areas inhabited by more than one tribe. It is unknown, for instance, whether some of the early collections from the north-eastern States are Algonquian or Iroquoian; indeed, for lack of study these two groups are generally classed together as of the same physical type. Similarly, in the Southeast we have no definitely identified Cherokee skeletons, to mention only one tribe. So great were the tribal movements in the Southeast that there are grounds for doubt regarding the identification even of burials containing European objects. These eastern areas, of course, were the first to lose their Indian inhabitants, and here the historic record is often incomplete.

From west of the Mississippi we are somewhat more fortunate in our skeletal identifications. The last Indian wars saw an active medical corps accompanying the Army, and through this circumstance many specimens reached the Army Medical Museum (Otis' Catalogues) and eventually the National Museum (Hrdlička's Catalogues of Crania). Even this valuable material, in which are represented mainly the Siouan, Caddoan, and Western Algonquian tribes, is still rather limited and has been given as yet only cursory examination.

Much of the material obtained by other means from the West, as well as from the North, comes from sites for which there are historic records. These include notably sites of the Pueblos, California Indians, and Northwest Coast and Arctic groups. We are, therefore, fairly well acquainted with the skeletal types of many of the larger tribes of these areas.

Beyond the range of this historical material the physical anthropologist must rely upon the archeologist for his identifications. Here, then, he usually applies the cultural name to the skeletal remains. Thus, we have Fort Ancient and Hopewell skeletons in the Mississippi Valley, Basket Makers in the Southwest, and everywhere an intensive search for Folsom man.¹

¹ Whether or not there is need for a different set of names for the physical types, freeing them from the cultural connotation, is debatable. Such a convention might be useful in view of the large areas covered by recognized types, but the difficulty is to find suitable names. In this connection it may be noted that Von Eickstedt (1933) has proposed, largely on the basis of the living, the terms *eskimide* (*Gruppe*), *pasifide*, *silvide*, *margide* and *zentralide*. A map showing the distribution of these types appears opposite his p. 704.

The succession of these or other types in the different areas has not been worked out to any extent, but here and there vistas are appearing. A notable advance has been made, for instance, in Illinois (Neumann, 1937), where the physical types from several cultural horizons are on record. Likewise, in the Southwest and in the Arctic the physical types are known for a period of 1,000 years or more.

The differences between the skeletal remains of North American Indians have been determined mainly on the skull, because this part is most often collected. As a rule, considering the size of the continent, the cranial differences are not extreme. It is true that the presence of artificial deformation in certain areas, and distinctive types thereof in parts of these areas, contributes an appearance of greater variability. Nevertheless, among the undeformed skulls, many from New England can be matched in California, Florida, and probably elsewhere. This seeming lack of differentiation has undoubtedly led to the belief on the part of some that the American Indian was a recent comer to this continent (cf. Hrdlička, 1935a).

Again, another school of American physical anthropologists sees many types even in single series of Indian skulls, while admitting that the living of all tribes are fairly homogeneous (cf. Hooton, 1937). This conception has contributed to the belief, contrary to that expressed above, that there are in general several types of Indians and that they represent successive waves of immigration over a long period of time.

In spite of the not inconsiderable mass of anthropometric data accumulated for North America during the last 100 years, relatively little effort has been expended in synthesis. A number of pamphlets are available setting forth broad deductions regarding the peopling of America, but substituting for evidence such phrases as "according to many indications." These papers are too general to warrant attention here. However, one person, not primarily a physical anthropologist, has had the courage to tackle the data after a new fashion and to present them in some detail in proof of his deductions. I refer to Roland B. Dixon (1923) and his famous experiment "The Racial History of Man." Although this ingenious work includes the whole world in its scope and is now some 16 years old, it has not been superseded, certainly in the American field.

Since I propose to review much of the body of data used by Dixon, together with that of recent date, in a search for new historical implications, I feel that I should begin, so to speak, "where Dixon left off." By this, however, I do not mean that I shall accept Dixon's conclusions as entirely established; indeed it would seem that many

of them were expressed as tentative suggestions to be altered according to the indications of future findings. Moreover, in questioning Dixon's conclusions it will be necessary to examine also his methods, for it is well known that these have aroused a storm of criticism (cf. Boas, 1923; Keith, 1923; Sullivan, 1923). Further justification, if needed, for producing a belated book review rests in the fact that this work has not received in print a critical analysis in keeping with its importance. Following my analysis of Dixon's book as it concerns North America, I will review against this background the findings of the past 16 years relating to physical man.

DIXON'S METHODS AND CONCLUSIONS

To present Dixon's (1923) thesis concisely and fairly I have abstracted his own words where possible:

. . . we may begin by the assumption (1) that the peopling of the continent began at an early date, a time synchronous perhaps with the end of the Palaeolithic period in Europe; (2) that all significant immigration took place from northeastern Asia by way of Bering Strait, and (3) that, as a result of wide movements of peoples in the Eur-Asiatic continent, the primary immigration into North America was followed by other drifts, each of which brought a combination of racial elements different from the preceding, depending upon the factors present at the time in that portion of Asia whence the migratory peoples came. [P. 396.]

. . . it may be noted that for Europe the determination of the sequence in which the several types appeared in the continent and spread over its surface, rests in the main upon definite stratigraphic or archaeological and historical evidence. In the New World little evidence of this sort has as yet been brought to light, so that here we are forced to rely largely upon what is frankly a less certain indication of relative age, but one which is, nevertheless, generally accepted as valid in current studies of the distribution and history of animal species. This is the principle that in the distribution of species within any large area, such as that of a whole continent, those which are marginal are in general to be regarded as the earlier, in comparison with species having a more central habitat. The older species, whose territory is invaded by another type, gives ground and is in the end either pushed toward the periphery, or forced into "refuge areas" where life conditions are less favorable than in the rest of the region, the better and more favorable lands being appropriated to themselves by the newcomers.

Assuming, then, that a peripheral distribution tends to indicate a relatively ancient stratum of population, whereas the more recent immigrants are to be looked for nearer the centre, we may learn much by observing what is the distribution of the human types within the North American continent. [P. 398.]

In broad lines, . . . a hasty survey of the distribution of types in North America leads to the conclusion that, just as in the Old World we can discern, beginning in earliest times, a series of drifts or waves of differing physical types, which have on the whole arranged themselves in such fashion that the dolichocephalic and presumably older peoples are found distributed mainly

along the margins of the continent, whereas the brachycephalic, younger peoples occupy in a solid, unbroken mass the whole interior [1] in North America, just as in Asia, in Europe, and in the Pacific region, the supplanting of the older dolichocephalic peoples by the later brachycephalic ones has gone on relentlessly, and here, as there, the brachycephalization of the continent was by the sixteenth century almost complete. [P. 404.]

Before Dixon's more specific conclusions are given, the general reader must be acquainted with Dixon's experiment in method of analysis. In broad outline, then, he begins by throwing overboard the time-honored method of characterizing racial groups by their average indices. He points out that in a series of skulls, for instance, very few individuals will be found to

. . . show the association of characters stated on the basis of averages to be typical of the group . . . the series of crania may in reality be in no sense uniform, but made up of several clear-cut and radically different groups, each marked by its own specific combination of characters. Only . . . by thus taking into account the actual combinations of characters in the individual, can we reach a correct understanding of the true nature and relationships of any people. [P. 7.]

The "combination of characters" selected for study by Dixon, chiefly on the basis of available data, consists of three indices: 1, cranial or cephalic (length-breadth);² 2, altitudinal (length-height); and 3, nasal. The possible range of averages for each of these indices is arbitrarily subdivided, according to convention, into three groups. Thus the subdivisions of the cephalic index represent long-headedness, intermediate, and round-headedness, and are known as dolichocephalic ("below 75"), mesocephalic ("75-80"), and brachycephalic ("80 or over"), respectively. The subdivisions of the altitudinal index are known as chamaecephalic, orthocephalic and hypsicephalic; of the nasal index, leptorrhinc, mesorrhinc, and platyrrhinc. These nine characters yield 27 combinations. However, those characters representing intermediate forms (mesocephalic, orthocephalic, mesorrhinc) are assumed to be due to blends of the extreme forms. Hence, there are considered to be 8 fundamental combinations or types and 19 blends. Using the initial letter of each character as an abbreviation (for example, D=Dolichocephalic), the fundamental types may be represented thus:

D-H-L, D-C-L, D-H-P, D-C-P
B-H-L, B-C-L, B-H-P, B-C-P

²The term cephalic is properly used only in reference to the head, to distinguish from the skull (cranium). Dixon, however, follows the common practice of using cephalic to describe the index whether on the head or skull. (Cf. Stewart, 1936.)

In actual practice the prevailing fundamental types in a series are weighted by a somewhat subjective selection of such types represented in the blends. For instance, the blend D-O-M, including the two medial forms O and M, is believed to be derived from either of the two following pairs of fundamental types: D-H-L D-C-P, or D-C-L D-H-P. When this blend occurs in a series, the investigator is entitled to substitute in proper proportion and according to his judgment one of the pairs of fundamental types from which the blend is thought to be derived. The object of all this procedure, therefore, is to reduce each series of cranial measurements to the 8 fundamental types as defined.

At this stage, "for convenience of reference and to avoid the continual use of unfamiliar and forbidding formulae," Dixon introduces names for each of his fundamental types:

D-H-L Caspian	B-H-L Alpine
D-C-L Mediterranean	B-C-L Ural
D-H-P Proto-Negroid ³	B-H-P Palae-Alpine
D-C-P Proto-Australoid ³	B-C-P Mongoloid

To simplify the presentation of his data, as thus analyzed, Dixon gives maps (usually in sets of four) for the major continental areas, each of which shows the combined percentage distribution of two types. For North America there is added a useful map (reproduced here as fig. 1) showing the distribution of dolichocephals according to percentages as determined by the method of analysis just outlined; that is, the frequency of the four fundamental types D-H-P, D-C-P, D-H-L, and D-C-L. In addition, there is a detailed discussion of the data from component areas, in which the frequency of individual types is mentioned.

This outline of Dixon's method of analysis should be sufficient to prepare the general reader for the conclusions relating to the distribution of the fundamental types in North America. I continue with quotations from Dixon:

. . . . Although the evidence is still rather contradictory as to the relative priority of the broad-nosed and narrow-nosed long-headed types, it seems on the whole probable that the Proto-Australoid [D-C-P] must have been one of the earliest, if not the earliest, type to spread into the North American continent. [P. 401.]

The extreme marginal positions of the leptorrhine, dolichocephalic types, particularly the Caspian [D-H-L], make this latter a strong competitor for the honor of being the earliest type in the continent. [P. 402.]

³ Not to be confused with Hooton's Pseudo-Negroid and Pseudo-Australoid types, which are just the reverse in head height; that is, the Pseudo-Negroid is low and the Pseudo-Australoid is high. (See Hooton, 1937.)

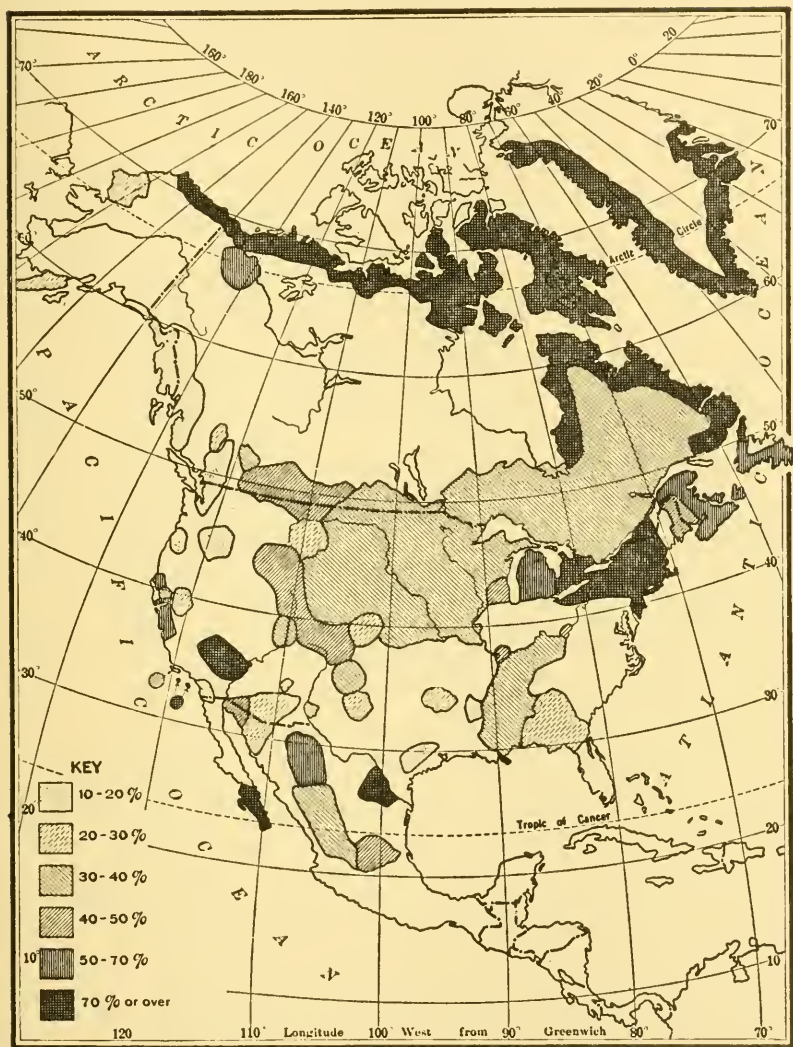


FIG. 1.—Dixon's plate 34 (reproduced through the courtesy of Charles Scribner's Sons) showing the percentage of dolichocephals in North America, as determined by his method of analysis. Dixon states that long-headedness is concentrated in two widely separated areas: 1, over the whole northern and northeastern coastal portions of the continent, and 2, in the opposite or extreme southwestern corner. Between these two marginal regions brachycephalic factors seem to prevail.

The considerable strength of the Mediterranean [D-H-L] type among some of the Eskimo, the Shoshonean tribes in the "refuge area" of Utah and Nevada, and especially in the shell-heaps along the Maine coast, suggest that this type also reached the continent early. . . . [P. 402.]

The Proto-Negroid [D-H-P] type has a very striking distribution. Except for its rather unexpected strength among the ancient Basket-makers in Arizona, it nowhere seems to have played an important part in the whole area west of the Rocky Mountains. . . . All of which suggests a rather special concentration in the eastern portion of the continent. . . . The complete absence of the Proto-Negroid [D-H-P] type in the extreme north and northeast and along the Pacific coast would indicate that it may well have been the last of the dolichocephalic types to make its way into the continent. [Pp. 402-403.]

If the sequence of the various dolichocephalic types is still more or less obscure, that of the brachycephalic factors which undoubtedly followed is, on the contrary, much more clear. Comparison of the maps giving the distribution of the broad and narrow nosed round-headed types, shows convincingly that the latter form a vast wedge whose base extends entirely across the continent, from British Columbia to the Gulf of St. Lawrence, and stretches southward between the Rocky Mountains and the Great Lakes through the Plains almost to the Gulf of Mexico. The platyrrhine, brachycephalic types, on the other hand, are concentrated among the Shoshonean and Athabaskan tribes in the plateau region west of the Rockies and, to a less noticeable degree, in the southeastern portion of the continent among the Muskogean tribes and such isolated southeastern Plains groups as the Tonkawa and the pre-Nahuan Tarascan people of Michoacan in Mexico. The inference is, I think, clear, that here the latter types have been driven back into the less favorable environment of the plateaus and into the southeastern area by a powerful movement from the north of the leptorrhine, brachycephalic peoples, coming southward through the Plains. [Pp. 403-404.]

Of the brachycephalic types, the Mongoloid [B-C-P] is that whose influence seems first apparent in the archaeological record. . . . [P. 487.]

. . . . In the New World we can judge only by the geographic distribution, which seems to indicate that the Palae-Alpine [B-H-P] peoples are here more recent than any of the dolichocephalic types, but older than the Alpine [B-H-L]. [P. 492.]

. . . . In America the distribution of the [Ural (B-C-L)] type makes it probable that it is of late rather than early appearance, coming in probably with the Alpine [B-H-L] peoples. [Pp. 498-499.]

These quotations, although out of context, include, I believe, the chief indications from this study of interest to us here. Naturally, there are many other suggestive points, especially as regards the relationship between individual tribes, but space will not permit their consideration. Furthermore, I wish to focus attention on the conclusions expressed in the above quotations. Briefly, then, the dolichocephalic peoples, by their peripheral distribution are regarded as descendants of the oldest stratum or immigration. On the other hand, the brachycephalic people, by their central location, are held to represent a more recent wave of immigration. As for the individual types,

they are believed to have arrived in the following sequence: Proto-Australoid (D-C-P) or Caspian (D-H-L), Mediterranean (D-C-L), Proto-Negroid (D-H-P), Mongoloid(?) (B-C-P), Palae-Alpine (B-H-P), Alpine (B-H-L), or Ural (B-C-L).

CRITIQUE OF DIXON'S ANALYSIS

The merits of Dixon's experiment have been lost upon many because it has occurred to them that the addition of only one more character—four instead of three—would have created 16 fundamental types with probably significant differences in distribution. Although this objection is perhaps valid, it is beside the mark; we are concerned here only with the experiment as it stands.

There can be little objection to the basic viewpoint of Dixon's study, namely, that combinations of characters should yield a valuable analysis of anthropometric data. Also, the selection of the particular characters and their arbitrary classification, although perhaps not altogether ideal, may be accepted as being imposed by the status of the science.

The important assumption that "intermediate forms have arisen from the blending of two extreme forms" is not well supported, as most of the reviewers have pointed out, and in fact is dismissed by Dixon in one paragraph as "probably justified." Hooton (1931, pp. 413-414), summarizes the matter thus:

We do know that when brachycephals and dolichocephals interbreed the resulting offspring may be dolichocephalic, mesocephalic, or brachycephalic, and that of such offspring few are likely to be long-heads, and many more either mesocephalic or brachycephalic. All evidence seems to indicate that the intermediate head breadth-length indices which we call mesocephalic are usually, if not always, the result of crossing the extreme types. But there are also data which show that parents of the same head form but of radically different size may produce offspring with head form different from themselves. If, for example, both parents are dolichocephalic, but the father has a very large head and the mother a very small one, a child may inherit the absolutely small head length of the mother with the absolutely large but relatively small paternal head breadth, and thus be mesocephalic or even brachycephalic. Instances of this kind, which may be observed in Fret's tables of head dimensions of parents and children, show that offspring may inherit the exact or approximate dimensions of the head from their parents, usually both diameters from the same parent, but sometimes one measurement from one parent and the other from the other. However, head form differing radically from that of either parent is likely to occur in children only occasionally, and especially when the parents manifest wide differences in head size. Generally speaking, long-headed parents have long-headed children and round-headed parents round-headed children. Parents differing widely in head form have children of all categories but are likely to produce an excess of brachycephals.

Although we may object to Dixon's interpretation of the "blends," his consequent manipulation of the data tends probably only to over-emphasize the extreme forms.

Criticism of the use of names to designate the character combinations is beside the point here, but generally such use is misleading and confusing. In addition, for those who are incapable automatically of reading the character combinations into these names, a certain masking of the data is thereby introduced. Thus, in the four maps referred to above, the paired types are as follows: Proto-Australoid and Proto-Negroid, Caspian and Mediterranean, Palae-Alpine and Mongoloid, Alpine and Ural. Replacing these names with character combinations, we have: D-H-P and D-C-P, D-H-L and D-C-L, B-H-P and B-C-P, B-H-L and B-C-L. Here the eye at once detects that in each pair the cranial and nasal indices are in the same class, whereas both extreme classes of the altitudinal index are present. The maps show, therefore, primarily the distribution of the extreme classes of cranial and nasal indices.

This brings us to one of the major criticisms that I wish to make, namely, the general lack of attention to the altitudinal index throughout the book. The only information given on this point is connected with the specific mention of individual types and is never supported by figures. Moreover, in an effort to bolster his analysis of craniological data Dixon has not hesitated to use the findings on the living. Now, as was pointed out in the beginning, the indices on the skull and on the living head in the same people as furnished by the run of anthropological records do not correlate closely—and the same is true of the nasal index; they furnish only general indications. As for the altitudinal index, Dixon admits that height of skull and of living head are entirely different measurements. Still, in spite of all this, he characterizes the living as representing this or that type. For example, in the chapter on North America the following may be cited:

. . . . The [Mohawk] show a large majority of brachycephalic factors, the narrow-nosed type (presumably Alpine) amounting alone to nearly 50 percent of the total. [P. 413.]

. . . . A portrait of an Apache as an example of this mixed Palae-Alpine and Alpine types is given in Plate XXXVI, Fig. 2. [P. 422.]

. . . . The Kiowa, Caddo, and Tonkawa . . . are in their turn linked together by a minority of Caspian or Mediterranean type (leptorrhine, dolichocephalic). . . . [P. 428.]

It should be clear from the context of these quotations—and many more could be given—that the altitudinal index is assumed. And what is worse, the cranial data for which the method is adapted, are at

times subordinated to those on the living. This is further illustrated in the following quotation:

. . . the female Blackfoot crania agree with the living series in having a preponderance of Alpine factors, and since the male series is small in numbers and the excess of dolichocephalic elements slight, it seems possible that it is not really significant, and that a larger series would more exactly parallel the results obtained from the living. [P. 431.]

RELATIVE HEAD HEIGHT

It can be shown that proper emphasis upon relative head height brings into relief certain important features that are generally overlooked. To emphasize this point I will devote some space to a consideration of the significant distribution of head height in North America. My demonstration necessarily involves averages, against the use of which Dixon inveighs. However, I submit that the same data should not yield diametrically opposite indications in different hands. Many of my data are indeed the same as were used by Dixon; but, in addition to other newer sources, I have the advantage of Hrdlička's Catalogues of Crania, whereas Dixon had only the Otis Catalogues.

First, let us note the variability of the cranial and nasal indices upon which Dixon has laid stress. In the 17 male Indian series studied by Von Bonin and Morant (1938) there is found to be a difference of 8.5 units between the maximum and minimum average cranial indices, whereas for the nasal index this difference amounts to only 3.6. Moreover, by combining all but three of these series, these authors get a standard deviation of 3.12 for the cranial index and 4.15 for the nasal index. In other words, as compared to the cranial index, the nasal index shows a considerable variability within the series, but a small variability between tribes. For practical purposes, indeed, the nasal index is of very little value in North America for differentiating Indian tribes; real significance can be attached to it only for differentiating Indian from Eskimo.

In contrast with the cranial and nasal indices the altitudinal index shows a range of averages in the Von Bonin and Morant series of 11.2 units. The average standard deviation is not given, but it is certainly not as large as that for the nasal index. However, the altitudinal index is not available without extensive calculations for much of the North American cranial data, so for convenience we will substitute the so-called "mean height index," which differs from the former only in relating height to the mean of length and breadth instead of to length alone. To appreciate the radical difference in

appearance between skulls with high and low mean height indices, the reader should examine figure 2. The two skulls shown there are both from Alaska, have the same cranial indices, and approximately the same nasal indices. However, one is a low-headed Aleut (mean height index 74.6) and the other is a high-headed Eskimo (mean height index 88.4). Since in general there is a rather high correlation between height of head and skull capacity, it is to be expected that in the cases illustrated the skull capacity of the Eskimo exceeds that of the Aleut by 170 cc. Incidentally, both a low vault and low capacity are primitive features, in the sense that they are characteristic of the known remains of Old World fossil man.

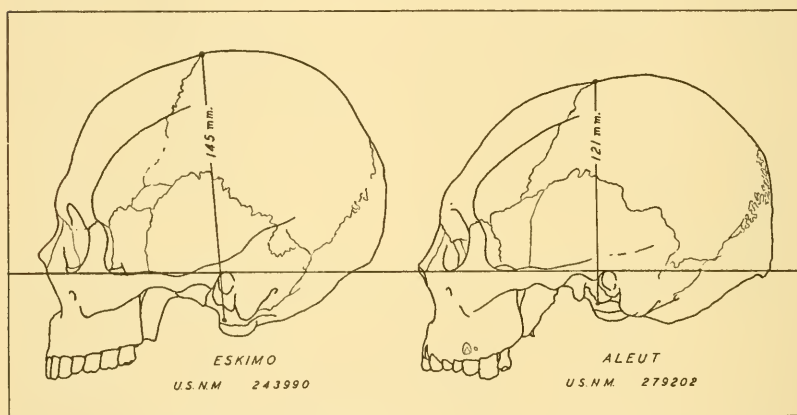


FIG. 2.—To show the difference in appearance between high- and low-headed skulls. In this case both skulls have the same cranial indices and approximately the same nasal indices, but the Eskimo has a mean height index of 88.4 and the Aleut one of 74.6. In absolute head height (basion-bregma) the difference is 24 mm. in favor of the Eskimo.

In table 1 the average mean height indices of a large number of Indian and Eskimo series are arranged according to size of index, beginning with the largest. The individual series include both males and females and show the distribution (in percentages) of the indices within an arbitrary classification. According to this arrangement, which, it should be noted, includes both the high-vaulted Eskimos and the low-vaulted Aleuts, there is a difference of 11.3 index units between the first and last. Without the Aleuts this difference becomes 9.7. Thus the mean height index, according to this measure, is somewhat more variable among North American Indians than even the cranial index.

If we draw an arbitrary line about midway down the list shown in table 1, dividing it into two groups, an interesting geographical divi-

TABLE 1.—Mean height index, arranged in the descending order of the averages
(both sexes)

Location or tribe	No.	Distribution			Average
		80.4 %	80.5-83.4 %	83.5 %	
Kentucky ¹	62	...	4.8	95.2	88.2
Florida ²	121	0.8	9.1	90.1	87.7
Ohio-Montana ³	92	2.2	10.0	86.9	87.7
Old Zuni ⁴	78	...	11.5	88.5	86.5
New Jersey-Virginia ³	68	2.9	16.2	80.9	86.4
Navaho ⁴	16	6.2	18.8	75.0	86.4
New England ³	62	9.7	16.1	74.2	85.4
Greenland ⁵	72	4.2	25.0	70.8	85.3
Basket Makers ⁴	50	4.0	16.0	80.0	85.2
Miscellaneous Eskimo ⁵	78	6.4	20.5	73.1	85.1
San Joaquin, Calif. ⁶	123	7.3	22.8	69.9	85.0
New York State ³	116	6.9	25.9	67.2	84.9
Huron ³	24	12.5	29.2	58.3	84.8
San Francisco Bay, Calif. ³	37	2.7	35.1	62.2	84.6
Haida ⁷	26	11.5	26.9	61.5	84.4
St. Lawrence Island, Alaska ⁵	223	10.3	29.6	60.1	84.2
Lower California ⁸	14	14.3	35.7	50.0	82.9
Salish ⁷	26	34.6	11.5 ⁹	53.8	82.7
Arikara ³	154	26.0	42.8	31.2	82.3
Santa Barbara Co., Calif. ³	75	33.3	32.0	34.7	82.2
Piegan ³	22	36.4	31.8	31.8	81.4
Cheyenne and Chippewa ³	31	41.9	29.0	29.0	81.3
Miscellaneous Athapascans ⁵	27	44.4	33.3	22.2	81.1 ¹⁰
Northern Islands, Calif. ³	184	39.7	41.8	18.5	81.1
Shoshoneans ³	27	48.1	37.0	14.8	80.6
Apache ⁶	21	42.8	42.8	14.3	80.6
Siouan tribes ³	108	69.4	25.9	4.6	79.5
Southern Islands, Calif. ¹¹	84	75.0	21.4	3.6	78.5
Aleuts ⁵	52	86.5	13.5	...	76.9

¹ Hrdlička, 1927, and Skarland, 1939.² Hrdlička, 1922.³ Hrdlička, 1927.⁴ Hrdlička, 1931.⁵ Hrdlička, 1924.⁶ Gifford, 1926, plus Hrdlička's unpublished measurements.⁷ Oetteking, 1930.⁸ Rivet, 1909.⁹ This distribution suggests a mixed group; indeed, of the subgroups composing this series the Lillooet and Nicola are low-headed, whereas the Spences Bridge, Kamloops, and especially the Lytton groups are high-headed.¹⁰ This figure may not be typical, because the Yukon Indians (Hrdlička's unpublished measurements) are high-headed, and Oetteking's group of 7 (locality not given) has a mean height index of 85.8.¹¹ Gifford, 1926, and Hrdlička, 1927.

sion results. This distribution is illustrated in figure 3. Here we see that, so far as our evidence goes, the low-headed groups are confined to the western half of the continent, and primarily to four great tribal groups, the Athapascans (at least in part), Sioux, Caddos, and Shoshoneans.⁴ From this showing we would expect these groups to contain a predominance of Dixon's low-headed types; that is, Mediterranean (D-C-L), Proto-Australoid (D-C-P), Ural (B-C-L), and Mongoloid (B-C-P). That such was Dixon's finding is nowhere clear in his book. Thus of the major portion of this group he says:

. . . . Although for practically the whole of Alaska and the Canadian Northwest, together with the region about Hudson Bay, we as yet possess few or no data of any kind, it seems virtually certain that the peoples of this vast region, the whole of the Plains and the area north of the Great Lakes, are to be regarded as forming essentially one great group, characterized by the predominance of the Alpine [B-H-L] type. From the linguistic point of view, it thus included the tribes belonging to the Athabascan, Tlingit, Haida, Tsimshian, Wakashan, Salishan and Shahaptian stocks; all the Plains tribes of the Siouan and Algonkian stocks; the Kiowan and Caddoan stocks; and all the Algonkian tribes north of the Great Lakes and the St. Lawrence. [P. 423.]

Again, of the Athapascans he says:

. . . . the very few crania known from this whole Athabascan area are almost exclusively round-headed. It would seem justifiable, therefore, to believe that the whole of this northern Athabascan area was characterized by a strongly prevailing brachycephaly, with the Alpine [B-H-L] type predominant. . . . For the Aleut the available data are extremely meagre, and *cranial deformation greatly obscures the results*,⁵ yet, making such allowance as is possible for this disturbing feature, it is probable that they are in the majority of the Palae-Alpine [B-H-P] type, with however a dolichocephalic minority, which is stronger in the ancient crania than among the modern tribes. Lastly, although the value of this evidence is probably not great, all the Athabascan tribes in other parts of the continent, for whom we have data, such as the Hupa in California, and the Navaho and Apache in the Southwest, are predominantly brachycephalic. If all these facts are taken into consideration, it seems that it is probably justifiable to regard all of this great area in the northwest of the continent where it most closely approaches Asia, as one primarily brachycephalic and predominantly Alpine [B-H-L] in type. [P. 439.]

Sioux:

. . . . Cranial material for the Sioux shows first that the primary brachycephalic element is the Alpine [B-H-L]; second that, as in the case of the Plains Algonkian tribes, the Mediterranean [D-C-L] type is a factor of importance; and thirdly that the largest dolichocephalic factor as shown by the *crania* is the Proto-Australoid [D-C-P], and that this is actually dominant, in

⁴ There is nothing novel about this finding; Hrdlička points it out in his Catalogues of Crania.

⁵ Italics mine.



FIG. 3.—Distribution of the extremes of the mean height index of the skull in North America based upon the averages given in table I, page 27.

contrast to the evidence given by the measurements on the living, which showed the Alpine [B-H-L] to be in the majority. [Pp. 430-431.]

Caddo :

. . . . Such fragmentary data as are available for the Kiowa, Caddo, and Tonkawa seem to corroborate their forming a group in contrast with the Ojibwa and Ponca, for where these latter have a Mongoloid [B-C-P] factor the three former tribes have instead the Palae-Alpine [B-H-P]. This seems to indicate that the affiliations of the Kiowa, Caddo, and Tonkawa are on the whole with the region toward the south and west, whereas the Ojibwa and Ponca are related more closely to the tribes south and east of the Great Lakes. [Pp. 428-429.]

Shoshoneans :

. . . . This much seems clear: the Shoshoni, Bannock, and Ute tribes, who occupy the whole eastern frontier of the [Plateau] area, are characterized by a predominance of brachycephalic, platyrrhine factors, as are probably also the Navaho, Zuni, all the tribes of Yuman stock, the Shoshonean tribes of southern California, together with the Chumash and Salinan peoples of the adjacent coast. No measurements are available from the Nevada tribes, but from the fact that among the Maidu, who were their western neighbors in the Sierra Nevada region of northern California, the brachycephalic, platyrrhine factors strongly prevailed, it seems probable that the Paviotso at least and perhaps the Pi-Ute, are of the same type. . . .

Although we have thus strong grounds for believing that the great majority of the modern tribes of this whole area show a predominance of broad-nosed, brachycephalic types, we cannot, because of the absence of adequate cranial material, determine with certainty which of the two such types is mainly represented. From the fact, however, that, in the few Ute and Pi-Ute crania which we have, a rather notable Mongoloid [B-C-P] element appears, we may conclude that, although the major factor is undoubtedly the Palae-Alpine [B-H-P], it is probably accompanied by a minority of the Mongoloid [B-C-P]. [P. 420-421.]

Analysis of these passages leads to the conclusion that for the area under consideration Dixon has rather consistently favored the measurements on the living as against those on the crania, in spite of the fact that his method is based upon cranial measurements. Thus the brachycephalic elements have as a rule been interpreted as high-headed, and are consequently Alpines [B-H-L] or Palae-Alpines [B-H-P] instead of Urals [B-C-L] and Mongoloids [B-C-P]. Even where the crania are admittedly low-headed, this feature is subordinated and explained away. Essentially, therefore, Dixon has differentiated the tribes of this area on the basis of brachycephaly and has ignored their common chamaecephaly (low-headedness).

The interpretation of the distribution of head height will be considered later. Before taking up that phase of the problem we must examine the new evidence from stratigraphy; that is, such finds as have an established position in the cultural succession.

CRANIAL DEFORMITY AND SYPHILIS

In connection with the review of recent finds that follows, I wish to take the opportunity to point out two significant features that are commonly slighted in descriptions of skeletal material, namely, cranial deformity and osseous lesions generally attributed to syphilis. My further reason for calling attention to these features, which are obviously in different categories from physical dimensions, is that, in my opinion, they contribute certain clues as to relative chronology.

Cranial deformity is generally recognized as being a late manifestation and culturally determined. Therefore, in an area where the recent peoples deformed their heads, finds of undeformed skulls might corroborate archeological indications of relative antiquity. A succession of this nature has been recognized for some time now in the Southwest; that is, deformed Pueblos succeeding undeformed Basket Makers. This instance also furnishes an example of the way in which skeletal material is sometimes described. Knowing the general significance of deformity in the Southwest, observers have mentioned only its presence or absence without describing it in detail when present. The point is that cranial deformity itself is variable and culture-linked (cf. Stewart, 1937 and 1940a).

As for syphilis, there are grounds for believing—and I will mention some of them later—that this disease was very uncommon, and possibly absent, in pre-Columbian North America. If this point can be definitely established, it will add another criterion for determining chronology. Until recently medical belief was to the effect that syphilis first was introduced into Europe upon the return of Columbus' expedition from America. The facts supporting this point of view have been called into question by modern medical historians (cf. Holcomb, 1936).

In America the skeletal evidence in favor of pre-Columbian syphilis has been summarized by Williams (1932, 1936). By placing the emphasis thus, instead of weighing the evidence pro and con, Williams has won over many to his point of view. Analysis shows, however, that of all the accumulated skeletal material in this hemisphere—and Williams personally examined much of it—he was able to point to only nine examples that he considered incontestable evidence of pre-Columbian syphilis. Moreover, he ignored and hence failed to explain not only this sparse distribution of a highly contagious disease, but also its absence from large prehistoric collections. Working in New York State, Williams made no mention, for example, of the prehistoric Algonquian skeletons that Ritchie has collected there. This fact appears significant to me when I note that Ritchie's generally

full descriptions include no mention of major pathology. Under the proper heading I will go further and criticize the chronological attributions of some of Williams' "incontestable" specimens from North America.

RECENT SKELETAL COLLECTIONS BY AREAS

We will now proceed to the examination by areas of certain recent skeletal finds that seem to me, in view of the foregoing discussion, to be especially significant. In reviewing this material I will emphasize the physical type (particularly the cranial index and mean height index) and presence or absence of deformity and syphilis. The subdivisions here used roughly correspond to those of the other essays in this volume.

ARCTIC AND ADJOINING REGIONS

Since 1923, when Dixon's book appeared, parts of this area, especially Alaska, have been explored intensively both by the archeologist and the physical anthropologist, and much information is now available regarding the succession of physical types and cultures (cf. Collins, 1937). Among the Eskimo physical types clearly associated with older cultures are the Thule and Birnirk (Old Igloo). The latter, thus far the oldest identified in these regions, differs from the Thule mainly in having a lower cranial index (long-headed). Neither of these types differs markedly in other respects from that of the present-day people (cf. Stewart, 1939b). Without going into further detail, it can be said that the Eskimo type is everywhere remarkably characteristic.

We may also include the Aleuts under this heading, because of their geographical and cultural proximity to the Eskimos. Hrdlička (1924) pointed out that these southern neighbors of the Alaskan Eskimos "are plainly Indians of the general type prevailing in the peninsula" (p. 39). Attention has already been directed to table 1, where it is shown to what extent the Aleuts differ from the Eskimos and approach the Athapascans in relative head height.

Hrdlička's recent excavations on Kodiak Island and in the Aleutians have yielded evidence of a physical type differing from and antedating the Aleuts. Speaking of the work on Kodiak, he says (1935b, p. 52):

The increasing number of skulls and skeletons from all layers makes it possible now to see clearly the physical type of the older as well as the later (Aleut) people. The latter type is plainly that of the Koniags found on the island by the Russians; the earlier stock, physically somewhat more delicate

and of different, more oblong, head form, is not yet definitely identifiable. In the face these older skulls show occasional eskimoid affinities, but the vault differs and together with other features approaches more that of the Indian. Except for their occasional somewhat eskimoid facial characters, these skulls come close to those of the prevalent type of those of the Frazer River, the Shoshone, and the California Indians.

Of the work in the Aleutians, he says (1938a, p. 90) :

The results indicate the existence throughout the Aleutian Islands of a separate type of people antedating the Aleut. These were an oblong- and medium high-headed type, occasionally somewhat eskimoid, but more commonly Indian-like. Their latest strains admixed more or less with the broad- and low-headed Aleut.

Unfortunately, the measurements of these series are not yet available, so further comment cannot be made. The significance is, however, that the older specimens exhibit longer and higher heads than the Aleut.

Dixon's statements (p. 439) to the contrary notwithstanding, it can be stated categorically that cranial deformity does not occur in the Aleutians or western Alaska, nor for that matter in the Arctic generally. Also, it is noteworthy that none of the Eskimo and Aleut skeletons that are clearly prehistoric shows any signs of syphilis (cf. Stewart, 1939b).

NORTHEAST

In this area I include southeastern Canada and the eastern Atlantic States as far south as Virginia. Here relatively little advance has been made in physical anthropology in recent years. Although some new material has been accumulated, it has not been studied adequately as yet. However, some indication of the early occupants of this region is given in Ritchie's various reports from New York State. Probably the oldest culture thus far recognized here is the nonceramic "Archaic." Of the skull form associated with this culture Ritchie (1936b, p. 18) writes :

Craniometric studies made by the writer on nine adult skulls, reveal a long narrow head form (dolichocephalic, mean cephalic index 72.5), combined with a high vault (hypsicephalic, mean height-length index 78.7), a high narrow face (leptoprosopic, mean total facial index 94.7), and a narrow nasal aperture (leptorrhine, mean nasal index 46.9).

A more recent culture group in New York is termed, according to current classification, "the Owasco aspect of the Northeastern phase of the Woodland pattern." This group appears either to be pre-Iroquoian (Canandaigua focus) or to represent the beginning of

Algonquian-Iroquois contact (Castle Creek focus). Ritchie (1936a, p. 71) says of this physical type:

. . . . The mean of the various indices affords a composite skull which is long and narrow (dolichocephalic); with moderately high vault; narrow face; orbits rectangular in shape, somewhat sloping, and of medium height; and a moderately broad nasal index. . . . This combination finds its closest counterpart in New York State in the prevailing skull type of the Iroquois.

It is noteworthy also that all of Ritchie's descriptions of pathological conditions include no mention of syphilis. This is in contrast to the findings for the early Algonquian-white contact sites along the Potomac River, the skeletons from which show much evidence of syphilis (Stewart and Wedel, 1937).

A little further information regarding the physical type of the prehistoric Iroquois, although regrettably based upon small numbers, is furnished by Knowles (1937). This report on the Roebuck site shows again a moderately long- and high-headed type. Here, too, the detailed notes on pathological changes give no indication of the presence of syphilis.

In the Northeast, as in the Arctic, the custom of deforming the head is not present.

UPPER MISSISSIPPI

For my purposes this area includes the remaining States east of the Mississippi River and north of the Ohio River, together with adjacent parts of Canada.

As already indicated, a considerable advance in our knowledge of physical type succession has resulted from the collaboration of archeologists and physical anthropologists in Illinois. Although Neumann (1937) has given as yet only preliminary notes on the crania from Fulton County, where most of this work has been done, he has emphasized certain interesting facts and presented his data so that anyone can search for still others. Among the facts to which Neumann calls attention are: 1, that the oldest archeologically established physical type in Illinois is the "Black Sands," characterized especially by long heads (average cranial index 73.8) and broad noses; 2, that the Red Ocher people, next oldest, had round heads (average cranial index 83.3) and narrow noses; 3, that the Central Basin people, who are ranked next in time, "are mesocranial, high, with . . . broad noses . . ."; 4, that the Hopewellians, tentatively placed next, are judged to be a heterogeneous group, as far as cranial form is concerned, with a nose of intermediate proportions; and 5, that the Middle Mississippi people, among the last comers, were mesocranial (ca. 78) and high.

with noses either broad or intermediate in proportions. In general, therefore, the oldest type is long-headed and probably high-headed.⁶ Significantly, also, the later round-headed peoples are also high-headed.

Unfortunately, Neumann did not summarize the evidence regarding cranial deformity and syphilis. In connection with the former I have discovered the statements:

Black Sands	(F°77)	"Cradleboard deformation is absent." [P. 258.]
" "	? (F°7)	"None of the skulls shows cradleboard flattening. . . ." [P. 228.]
" "	? (F°10)	"Cranium F°10-1 does not exhibit any deformation" [no other skulls available]. [P. 231.]
Red Ocher	(F°11)	"None of the skulls from this mound exhibits cradleboard flattening." [P. 234.]
" "	(F°14, bottom)	"None of the skulls exhibits cradleboard flattening. . . ." [P. 241.]
Central Basin	(F°12)	". . . all are undeformed adults. . . ." [P. 236.]
" "	(F°13)	No statement; by inference no deformity. [P. 238.]
" "	(F°14, middle)	" <i>. . . all skulls show marked cradleboard flattening. . . .</i> " ⁷ [P. 243.]
" "	(F°15)	"None of the skulls exhibited cradleboard deformation. . . ." [P. 248.]
Hopewellian	(F°54, F°188, Mn°1)	"The writer finally came to the conclusion . . . that cradleboard deformation probably was not practiced." [P. 253.]
Middle Mississippi	(F°14, top)	"Of this group 18.7 per cent of the adult male skulls and 20 per cent of the adult female skulls <i>exhibit cradleboard deformation.</i> " ⁷ [P. 245.]
" "	(F°34)	" <i>. . . after eliminating . . . skulls with cradleboard flattening. . . .</i> " ⁷ [P. 251.]

Thus it seems clear that, although the status of deformity among the Hopewellian people is in question, this custom really appeared in Illinois with the invasion "from the southeastern part of the United

⁶ Head height could not be measured on most of the older specimens; and where it could be, the indications contradict. Nevertheless, the illustration of a low-headed Black Sands specimen closely resembles the general Algonquian type.

⁷ Italics mine.

States" of the Middle Mississippi people.⁸ There is no information as to the type of deformity, since, as the quotations indicate, the ambiguous term "cradleboard" is used throughout. It is probable, however, that the unintentional (occipital) type is predominant.

It is not so easy to summarize the indications of syphilis in this Illinois material. Denninger described in 1935 what he diagnosed as syphilis in an adolescent skeleton attributed to the Hopewellian phase (F°12-14). However, in the final report on this site (Cole and Deuel, 1937, p. 103) the statement is made that:

Apparently this site was used by groups representing both Woodland and Mississippian cultures, but no clear stratification was obtained.

Although the age of the specimen thus is in doubt, there seems to be good evidence (Hooton, 1922, p. 129; Williams, 1932, p. 959) that syphilis was present, if not common, among the Ohio Hopewellians, and hence may well have been present among this group in Illinois. However, there is nothing to show that syphilis was present in the older Illinois groups (Black Sands, Red Ocher, Central Basin).

The only evidence that we have as yet of the presence of syphilis among the Middle Mississippi peoples of Illinois is contained in a statement relating to Mound 14 (Cole and Deuel, 1937, p. 20):

. . . . Skeletal material does not often tell the cause of death, but high incidence of Paget's disease is shown by its presence in nearly 10 per cent of the bodies in Mound 14.

Paget's disease is rather rare today, and I am inclined to believe that

⁸The skeletons with deformed skulls from the middle level of F°14 were assigned to the Central Basin phase chiefly because of their flexed burial position, a Woodland determinant. Neumann says, however:

" . . . There probably was a good deal of mixture between [the Woodland people and the Middle Mississippi people] before they came to Fulton County and possibly after the Middle Mississippi peoples arrived there. . . . This circumstance . . . makes the assigning of a few crania to a cultural component impossible. As an example we may take the three or four flexed burials from the middle level of F°14. It would be difficult to assign the crania with any degree of certainty either to the Central Basin or to the Middle Mississippi people." [P. 264.]

This situation raises a nice question: Did a Central Basin group take over the practice of head deformation from a Middle Mississippi group with whom they came into contact, but without changing their burial custom, as Neumann has intimated; or did a Middle Mississippi group with deformed heads take over a Central Basin burial custom? In other words, is the practice of head deformity more subject to change than a burial practice?

the high incidence of the pathological condition referred to represents syphilis.⁹

Outside of Illinois there appears to be only one other recent publication that contributes to this review, namely, Hughes' report (1937) on the skeletal material from the Younge site in Michigan. From archeological evidence this site is judged tentatively to correspond to Ritchie's Owasco aspect in New York State. The intact crania show a predominance of long heads (average cranial index, both sexes, 75.4) with moderately high vaults (mean height index 83.6) and broad noses.

No artificial cranial deformity is present at the Younge site. Syphilis, too, may be absent, for Hughes¹⁰ states:

Aside from evidence of arthritis and the dental pathology, I think that I can detect evidence of tuberculosis of bone, osteomyelitis, and osteosarcoma.

SOUTHEAST

This area, which we may take to include all the States south of the Ohio River and east of the Mississippi River, together with Louisiana and Arkansas, is one for which relatively few skeletal data are available. In general most of the crania found in the Southeast are either poorly preserved or artificially deformed. For this reason, undeformed series from this area are especially interesting. One such series from Kentucky (mainly Indian Knoll) has been noted in table 1. Recent archeological work in the same region (Chiggerville; Webb and Haag, 1939) has brought out the fact that these remains belong to a nonceramic people who built large shell middens. The same complex has been found elsewhere in the Southeast, notably in Alabama and Louisiana. In Louisiana, Ford¹¹ has given the name "Tchefuncte" to this culture and ranked it earlier than Marksville (Hopewellian).

Most fortunately, under these circumstances, the skeletal remains from Indian Knoll and Chiggerville are numerous and well preserved. I am fortunate, moreover, in having access to Hrdlička's measurements (now in press) on a "Tchefuncte" series from Louisiana (Pecan Island) collected by Collins in 1926. Thus I am in a position to affirm that these series agree in showing moderate long-headedness and relatively very high vault.

⁹ In Ohio the Fort Ancient peoples, culturally classed under the Mississippi pattern, show a high incidence of syphilis (cf. Orton, 1905). Some of these sites have yielded European objects.

¹⁰ Personal communication dated Jan. 8, 1938.

¹¹ Personal communication to Mr. Collins.

Combined with the absence of cranial deformity in the above series, is the absence of syphilis. Pathological specimens from the Indian Knoll collection were given to the Army Medical Museum, where they still remain. Among these, as well as in the main collection housed in the United States National Museum, I have failed to find evidence of syphilis. The same is true of the Louisiana collection. Of the Chiggerville series Skarland (1939, p. 49) says: "Bone pathology is rare."

In contrast to the conditions characterizing this old stratum of population are those typical of the more recent peoples. Naturally, the bulk of the collected skeletal remains from the Southeast are of the recent peoples. This material shows, for the most part, both intentional deformity and syphilis. Such conditions are reflected, for instance, in Funkhouser's recent reports (1938, 1939) from Tennessee. That the majority of this deformed material probably is post-Columbian is indicated by Kelly's work at Macon, Ga. Under the heading of "Trading Post Chronology," he says (1938, p. 52):

Both in and around the enclosure were found burials of Indians of all ages and sexes associated with European trade artifacts and objects of Indian manufacture, including pottery. A number of burial traits not previously observed were encountered. . . . However, the presence of artificial frontal deformation in a number of burials implied that this custom was much more prevalent in historic than in prehistoric times.

Moundville, Ala., figures as a source of one of William's (1936) examples of pre-Columbian syphilis in America. A skull and two tibiae from different individuals are stated by Williams, on the authority of Jones and De Jarnette in charge of excavating the site, "to be unmistakably pre-Columbian." Other anthropologists disagree with this age assignment. Collins (1932), for instance, pointed out at the Birmingham Conference on Southern Prehistory that the pottery types found at Moundville are identical with those in use among the historic Natchez.

ANTILLES

A considerable quantity of skeletal remains has been obtained from the various islands constituting this area, but almost invariably the remains represent, as far as we can tell, the recent population. I have shown (Stewart, 1939a, table 2) how predominantly intentional cranial deformation is represented in the collections available to me. Also, I have illustrated the undeformed skull type from Cuba that perhaps is somewhat older than the deformed. If this skull—the only one in the literature, as far as I can discover—really is old, it is significant that it is mesocranial and high-headed.

PLAINS

Roughly, we may consider this area to extend westward from those already examined as far as the Rocky Mountains. In spite of rather extensive field work in parts of this area, there has been little recent advance in physical anthropology.

Three specimens found in the State of Minnesota are outstanding because of the extreme antiquity (10-25,000 years) claimed for them. These are the "Minnesota girl" (Jenks, 1936), Browns Valley man (Jenks, 1937) and Sauk Valley man (Jenks and Wilford, 1938). Hrdlička's criticism (1937) of the first of these finds, that it is recent because of its identity with the type of the surrounding modern Sioux, is of interest to us in the present connection. This claimed identity is based partly upon the low vault (mean height index 80.1). However, it is noteworthy that Browns Valley man and Sauk Valley man are both fairly high-headed (mean height indices 84.0 and 84.8?, respectively.¹² If these three specimens have any antiquity in common, and this seems to be highly uncertain, it is difficult to decide whether they represent different physical types, or just extremes in the range of variation.

It may be noted also that the three skulls from a cave in Wyoming reported by Howells (1938) are described as resembling the "Minnesota girl," although a like antiquity is suggested rather than claimed. Skull III of this group, the only one in which basion is preserved, has a mean height index of 76.5. Thus far in our discussion, it will have been noted, this "Wyoming lady" and the "Minnesota girl" are the only skulls with even a partial claim to antiquity.

Farther south, in Missouri, Wedel (1938) has located the westernmost extension of the Hopewell culture yet reported. The skulls that seem to be associated with these cultural remains apparently agree in type with what little is known of the more eastern Hopewellians (Hooton, 1922; Neumann, 1937). Not only is the type, when undeformed, dolichocranic, but it is also high-headed. Moreover, my examination of this material reveals considerable evidence of syphilis.

¹² Jenks emphasizes the "primitive" lowness of the auricular height (112 mm.) as compared with the basion-bregma height (137 mm.) in Browns Valley man. The true significance of this difference may not have been discovered by Jenks, because he had no comparable auricular height data on American Indian crania. Indeed, it is highly desirable that the auricular height of skulls should be recorded more often so as to furnish comparative data in cases where the base of the skull is damaged. Moreover, such data would make it possible to refine the difference between low- and high-headed groups.

SOUTHWEST

We may include in this area chiefly western Texas, New Mexico, Arizona, Colorado, and Utah. The oldest physical remains thus far recognized in this area belong to the undeformed Basket Makers.¹³ Hrdlička's measurements, as noted in table 1, show that these people, like the later Pueblos (when undeformed), are high-headed. In addition, as is well known, they are long-headed.

I have described (Stewart, 1935) another series of long- and high-headed skulls from the Southwest, and specifically from the Big Bend region of Texas. Although the culture of these Texas cave dwellers is perhaps related to that of the Basket Makers, there is still not adequate proof that the Texans are of like age. Hooton (1933) and Hrdlička (1938b) have described other remains of this general type from the Panhandle region of Texas. These too may be of considerable age.

Of the more recent peoples of the Southwest the Pueblos have received the most attention in recent years. The splendid progress here in dating the ruins has led to studies on the skeletons from the various chronological periods. Indeed, Hooton's analysis of the Pecos material (1930) can be regarded as a sort of pioneer work, for nowhere else in North America have so many skeletons, representing such a long and known time interval, been recovered from a single site. However, Hooton was not able to demonstrate a marked change in physical type during the 450 or more years in which Pecos was inhabited. Furthermore, using the data contained in Hrdlička's catalog of Pueblo crania (1931) Seltzer (1936) has advanced the notion that there has been a continuity of physical type, masked somewhat by cranial deformity, from the Basket Maker period up to recent times (cf. Stewart, 1940a).

Reference has already been made (p. 31) to cranial deformity in the Southwest, and this will not be further elaborated.

So far as I can discover, no reliable examples of syphilis in Basket Maker skeletons have been described.¹⁴ The only careful records of syphilis in the Southwest are given in Hooton's Pecos report (1930).

¹³ Figgins' claim (1935) of antiquity for his "New World Man" is not generally accepted (see Roberts, 1937). Incidentally, however, this skull is high.

¹⁴ Williams (1936) includes a Basket Maker among his nine cases of pre-Columbian syphilis in America. However, the identity of the specimen seems to be based solely upon the word of the late Dr. Roy L. Moodie, who must certainly have obtained the specimen second-hand. The provenience of this specimen should be verified.

Here are descriptions of three skulls with lesions perhaps attributable to syphilis.¹⁵ Also, 13 of the 503 skeletons showed long bones affected with periostitis. Williams, who examined this material, thought the pathological changes in two of the skulls "were probably produced by syphilis" (Hooton, 1930, pp. 310-311), and one of these was more characteristic of the disease than the other. Ewing, of Cornell Medical College, who also examined the skulls, did not consider them syphilitic. Williams diagnosed probable syphilis in only three of the long bones (one from the historic level). Each specimen, whether skull or long bone, represents, in terms of ceramic development, a different "glaze period." Since the prehistoric period at Pecos is estimated to have been about 400 years, it would appear that syphilis was very rare there, an attribute which is not characteristic of this disease.

PACIFIC

In this vast area, in which we may include all the western part of the continent not previously covered, there has been little significant progress recently in physical anthropology. Nevertheless, there have appeared during this interval two detailed craniological reports, both of which have been used in compiling table 1, namely by Gifford (1926) and Oetteking (1930) on California and the North Pacific Coast, respectively.

Regarding type successions, the only new developments have been in California, and these are not yet reported in detail. In 1929 Rogers reported finding in the Santa Barbara region a succession of cultures prior to the historic, which he named, beginning with the most recent, Canaliño, Hunting, and Oak Grove. Furthermore, he presented cranial measurements and indices for each of these horizons. Although the Oak Grove people are represented by only seven skulls, all males, comparison of the averages suggests that these older people had longer and lower heads and broader noses than their successors. More recently, Lillard, Heizer, and Fenenga (1939) and Heizer and Fenenga (1939) have reported similar findings from central California. Here the early people have an average cranial index of about 75 as compared with about 81 for the late people; a nasal index of 54 as compared with 49. There is no mention of head height, but judging from my own observations on specimens of both early and late peoples from these same sites (U. S. National Museum collection), I can state that they are all high-headed.

¹⁵ The number of skulls examined for pathological lesions is not stated but presumably approaches the 503 mentioned elsewhere.

Although some of the Indians of the Northwest Coast practiced intentional cranial deformation, there seems to be no evidence as yet regarding the duration of this custom. No information is available either as to the presence of syphilis in the early population of this region or of California (cf. Stewart, 1940b).

SUMMARY

The main points brought out in this hasty survey of recent advances in American historical physical anthropology are the following:

1. The now impressive array of prehistoric skeletal remains from North America found in association with archeologically relatively old cultures almost invariably shows a type of skull characterized by long-headedness, high vault, and a nose at least somewhat broader than that of the more recent types. Three exceptions to this rule of early high-headedness are the "Minnesota girl," the Wyoming cave people and the California Oak Grove people. It will be noted, however, that these exceptional cases, all somewhat questionable as to age, occur in areas where the recent population is also low-headed. On the other hand, in one region—Aleutian Islands-Kodiak Island—it is known that the recent low heads succeeded older high heads.

2. Cranial deformity has not been found among the archeologically oldest peoples, even in areas where the custom was present recently. In the East, cranial deformity first appears seemingly with the Hopewellian people. In the Southeast, where the custom has undergone many variations, it may just have been introduced at the beginning of the historic period. In the Southwest, on the other hand, the custom has been practiced by the Pueblos for over 1,000 years.

3. Osseous lesions attributed to syphilis are everywhere extremely uncommon, if not absent, in the oldest skeletal remains, according to present indications. If syphilis among the Pueblos is ruled out, the antiquity of this disease in North America rests upon the age determination of the Hopewellian remains. In the Southeast, where intentional cranial deformity was practiced by the recent peoples, syphilis has a high incidence only among the skeletal remains of those whose skulls are deformed.

DISCUSSION

Attention has been confined, in the foregoing sections, chiefly to distributions among aboriginal North American skeletal remains of three features—relative head height, cranial deformity, and syphilis—which have not previously been summarized, and which throw some

light upon the racial history of this continent. Of these three features only relative head height contributes to the picture of ancient movements of population to which Dixon gave his attention. Neither cranial deformity nor syphilis characterizes the remains of the earlier peoples. We have seen, moreover, that not only does low-headedness have a geographical distribution limited to certain parts of the western half of North America, but that in collections representing earlier cultural stages it is not conspicuous. All this suggests that low-headedness as a characteristic of large groups is relatively recent on this continent.

How do these findings affect Dixon's interpretation of the racial history of America? Frankly, this is not clear. Dixon, as we have seen, placed primary emphasis upon the cephalic index. And since low-headedness in many cases seems to be associated with round-headedness, which Dixon concluded to be a feature brought in by the late migrants, his sequence may not be changed essentially. However, as I see the problem, a decision is required as to which feature carries more racial significance, relative head breadth or relative head height. If it can be shown that relative head height is not stable, then Dixon was perhaps correct in minimizing it. If, on the other hand, this character is more stable than relative head breadth, Dixon would seem to have misinterpreted the situation.¹⁶

To illustrate the complications of this problem I would point out that among the groups on our list (table 1) with lowest heads are the Sioux and Southern California Island Shoshoneans (average mean height indices 79.5 and 78.5, respectively), with cranial indices averaging approximately 78 and 72 and nasal indices 49 and 48, respectively. Of these three criteria, obviously only the cranial index differentiates the two groups. Does this small difference in average cranial index justify the conclusion that the ancestors of these Shoshoneans were among the first arrivals on the continent whereas the ancestors of the Sioux were among the last? Is it not more likely that all the low-headed peoples were late comers and that other factors have led to variations in head breadth? In this connection it is perhaps significant that low-headedness is widespread among both the modern and neo-

¹⁶ Ontogenetic changes in the length-height ratio in whites is being studied by Davenport. From his preliminary studies (1940) he concludes that this ratio changes from age to age, being at all times the resultant of both environmental and genetic factors. It is to be noted, however, that Davenport is here dealing with auricular head height, which may be less variable than the basion-bregmatic height usually measured on the skull.

lithic peoples of Siberia¹⁷ and, on the other hand, that groups with comparable low-headedness are unknown in South America (cf. Dixon, 1923).

To continue with the complexities, if all the low-headed peoples represent a late immigration, does the converse hold true; did all the high heads come early? Dixon has adhered slavishly to the principle of distribution to the point where he is forced to include the Eskimo among the earliest immigrants, contrary to all archeological evidence. Aside from this, however, the general distribution of the high heads may well represent relative antiquity.

These arguments lead me to believe that there are thus elements of truth in the theories of general type succession based on the distributions of relative head breadth and head height, but not the sequence of specific types identified by Dixon. Although it is tempting to explain human distributions by analogy from general biological principles, as Dixon did, it should be remembered that a somewhat different set of rules governs man. Unlike most animals, man has adapted himself to every climate. Also, man's progress is never contested effectively by other animals, but only by man himself.

That there may be other explanations of the observed human distributions in North America is suggested in a recent publication by Weidenreich (1939, p. 172), in which also are described the earliest skeletal remains of modern man yet found in eastern Asia:

. . . it is a well-known fact, that the aborigines of the American continent are fairly different in their physical appearance, though all of them display more or less the general characteristics of the Mongolian race. Among them very primitive types have been found, recalling in particular Australian natives or Melanesian, spread over the entire continent side by side with more advanced forms. To explain this seeming mixture always met with difficulties: some believed in immigrations from different parts of the Old World as those waves having come directly from Australia via Oceania and other from East Siberia; some thought that originally there existed a uniform stock which may have differentiated later on in America herself.

The discovery of the Upper Cave population sheds some light on this problem also. Here we are indeed dealing with three different types associated within one and the same family and this already in the Upper Palaeolithic and on the soil of East Asia long before an immigration into the American continent—at least according to our present knowledge—took place. These types, namely a primitive long-headed skull¹⁸ with a Mongolian touch of the face, a long-headed Melanesoid and a long-headed Eskimoid,¹⁹ are just those whose existence have always been mentioned in the anthropological literature of the Amerindians.

¹⁷ Personal communication from Dr. Hrdlička.

¹⁸ Mean height index 67.7.

¹⁹ Mean height indices 78.7 and 78.6, respectively.

. . . With regard to the racial history of the Amerindians it can be gathered from these facts that their different morphological groups are much older than they are expected to be. Neither is it necessary to assume a later differentiation in the new environment nor any immigrations distributed according to the special physical character of the tribes concerned. The fact that there are tribes of the Amerindians in which special types prevail and others which exhibit a more mixed character is probably due to the effect of dominance, on the one hand, and elimination, on the other, occurring before or after the arrival in the New World.

It should be apparent from the foregoing discussion that the difficulties confronting the interpreter are directly proportional to the time involved; the difficulties in the way of interpretation mount with increasing antiquity, owing to the fewer assisting factors. The reverse is true as we approach historic times. Here not only do cultural relationships become more apparent, but the bones themselves furnish more supporting evidence. It is partly for the purpose of emphasizing this point that I have called attention to the vertical distributions of cranial deformity and syphilis.

My arguments for the viewpoint that cranial deformity and syphilis made a relatively late appearance in North America should perhaps be summarized. Cranial deformity can be dismissed briefly by saying that there are three or four distinct centers for this custom, each with peculiar intentional types: The Southeast (probably with Mexican connections), the Antilles (connecting with South America), the Pueblo area, and the Northwest Coast. In at least two of these areas, the Southeast and Pueblo, older undeformed populations are recognized. There are indications here also that the custom was older among the Pueblos than among the Southeastern tribes; indeed, in the Southeast the custom may have only just appeared when the historic period opened.²⁰ If this is true, at least in the Southeast, cranial deformity may in turn serve to date the appearance here of syphilis. As has been pointed out, the present indications here point to the association of cranial deformity and syphilis.

In the Southwest, on the other hand, where the skeletal remains of the Pueblos can be accurately dated, it is recognized that the custom of deforming the head goes well back into prehistoric times. A few of these old remains show lesions that may be due to syphilis. How-

²⁰ When I advanced this idea at a meeting of the Anthropological Society of Washington, January 18, 1938, Dr. Swanton mentioned during the discussion that Iberville's account of his first visit (1699) to the Huma, a Choctaw tribe then living on the Red River in Louisiana, contains a statement to the effect that the custom of head deformity was just coming in; that the heads of the old people were not deformed.

ever, I have emphasized the rarity of these lesions and pointed out that such infrequency is not characteristic of syphilis as it is known from skeletons of the historic period.

This brings up the question of correct diagnosis. The etiological factor responsible for some osseous lesions cannot be determined from the dried bones. The response of the periosteum and cortex to different types of infection may be the same at corresponding stages. The identity of the infective agent is suggested only by such clues as group incidence, skeletal sites of predilection, and general skeletal involvement as contrasted to single bone localization. Periostitis or osteitis, especially in extreme stages, involving primarily the tibiae, but also sometimes the other major long bones, is usually looked upon as due to syphilis. Thus an isolated diseased bone can be considered only a presumptive indication of syphilis. Likewise, since untreated syphilis presumably would reach a high incidence in an aboriginal population, an isolated pathological skeleton in a large collection would not be proof of syphilis. In these cases the incidence of the disease in the group should be given due weight. This point of view is supported by great collections of materials from prehistoric North American populations in which signs of syphilis are lacking. Incidentally, also, the best collections of syphilitic Indian bones are from the coastal regions where occurred the first European contacts.

In concluding I would stress the importance of further cooperation between physical and cultural anthropologists. Too often in the foregoing I have been aware that materials exist but are not described. Seemingly, in many such cases the archeologist is not aware that the physical anthropologist might contribute to the solution of both immediate and more general problems. On the other side, there are physical anthropologists who are to be condemned because they describe skeletal collections without indicating cultural connections. For historical purposes such descriptions are almost a complete loss.

LITERATURE CITED

BOAS, FRANZ

1895. Zur Anthropologie der nordamerikanischen Indianer. *Zeitschr. Ethnol.*, vol. 27, pp. 366-411.
1923. Review of Dixon's "The racial history of man." *Science*, n. s., vol. 57, pp. 587-590.

COLE, FAY-COOPER, and DEUEL, THORNE

1937. Rediscovering Illinois. Archeological explorations in and around Fulton County. Univ. Chicago Publ. Anthrop., Arch. Ser.

COLLINS, HENRY B., JR.

1927. Archeological work in Louisiana and Mississippi. Expl. and Field-work Smithsonian Inst. in 1926. *Smithsonian Misc. Coll.*, vol. 78, No. 7, pp. 200-207.

1932. Archeology of Mississippi. Report of the Conference on Southern Pre-history, Birmingham, Ala. Publ. Nat. Res. Council, pp. 37-42.
1937. Archeology of St. Lawrence Island, Alaska. Smithsonian Misc. Coll., vol. 96, No. 1.
- DAVENPORT, C. B.
1940. Developmental curve of head height/head length ratio and its inheritance. Amer. Journ. Phys. Anthropol., vol. 26, pp. 187-190.
- DENNINGER, H. S.
1935. Prehistoric lesions; example from North America. Southwest. Med., vol. 19, pp. 202-204.
- DIXON, ROLAND B.
1923. The racial history of man. New York.
- FIGGINS, J. D.
1935. New World man. Proc. Colorado Mus. Nat. Hist., vol. 14, No. 1.
- FUNKHOUSER, W. D.
1938. A study of the physical anthropology and pathology of the osteological material from the Norris Basin [in eastern Tennessee]. Bur. Amer. Ethnol. Bull. 118, pp. 225-251.
1939. A study of the physical anthropology and pathology of the osteological material from the Wheeler Basin [in northern Alabama]. Bur. Amer. Ethnol. Bull. 122, pp. 109-125.
- GIFFORD, EDWARD WINSLOW
1926. Californian anthropometry. Univ. California Publ. Amer. Arch. and Ethnol., vol. 22, No. 2, pp. 217-390.
- HEIZER, ROBERT F., and FENENGA, FRANKLIN
1939. Archaeological horizons in Central California. Amer. Anthrop., n.s., vol. 41, No. 3, pp. 378-399.
- HOLCOMB, R. C.
1936. Ruiz Diaz de Isla and Haitian myth of European origin of syphilis. Med. Life, vol. 43, pp. 270-364, 415-470, 487-514.
- HOOTON, EARNEST A.
1922. The skeletal remains [from the Turner group of earthworks, Hamilton County, Ohio]. Peabody Mus. Amer. Arch. and Ethnol., Harvard Univ., Pap., vol. 8, No. 3, pp. 99-132.
1930. The Indians of Pecos pueblo. New Haven.
1931. Up from the ape. New York.
1933. Notes on five Texas crania. Bull. Texas Arch. and Paleont. Soc., vol. 5, pp. 25-39.
1937. Aboriginal racial types in America. Chapter 13 *in* Apes, men and morons. New York. (Reprinted, with considerable changes, from The American aborigines: their origin and antiquity. Toronto, 1933.)
- HOWELLS, W. W.
1938. Crania from Wyoming resembling "Minnesota Man." Amer. Antiquity, vol. 3, No. 4, pp. 318-326.
- HRDLIČKA, ALEŠ
1922. The anthropology of Florida. Publ. Florida State Hist. Soc., No. 1.
1924. Catalogue of human crania in the United States National Museum collections. (The Eskimo, Alaska and related Indians, northeastern Asiatics.) Proc. U. S. Nat. Mus., vol. 63, art. 12.

1927. Catalogue of human crania in the United States National Museum collections. (The Algonkin and related Iroquois; Siouan, Caddoan, Salish and Sahaptin, Shoshonean, and California Indians.) Proc. U. S. Nat. Mus., vol. 69, art. 5.
1931. Catalogue of human crania in the United States National Museum collections. (Pueblos, Southern Utah Basket-Makers, Navaho.) Proc. U. S. Nat. Mus., vol. 78, art. 2.
- 1935a. Melanesians and Australians and the peopling of America. Smithsonian Misc. Coll., vol. 94, No. 11.
- 1935b. Archeological excavations on Kodiak Island, Alaska. Expl. and Field-work Smithsonian Inst. in 1934, pp. 47-52.
1937. The Minnesota "man." Amer. Journ. Phys. Anthrop., vol. 22, No. 2, pp. 175-199.
- 1938a. Anthropological explorations on the Aleutian and Commander Islands. Expl. and Field-work Smithsonian Inst. in 1937, pp. 87-94.
- 1938b. Skeletal remains from northern Texas. Bull. Texas Arch. and Paleont. Soc., vol. 10, pp. 169-192.
1940. Catalogue of human crania in the United States National Museum Collections. (Indians of the Gulf States.) Proc. U. S. Nat. Mus., vol. 87, pp. 315-464 (in press).
- HUGHES, BYRON O.
1937. Human remains [from the Younge site]. Occasional Contr. Mus. Anthrop., Univ. Michigan, No. 6, appendix B, pp. 125-172.
- JENKS, ALBERT ERNEST
1936. Pleistocene man in Minnesota, a fossil *Homo Sapiens*. Minneapolis.
1937. Minnesota's Browns Valley man and associated burial artifacts. Mem. Amer. Anthrop. Assoc., No. 49.
- JENKS, A. E., and WILFORD, LLOYD A.
1938. Sauk Valley skeleton. Bull. Texas Arch. and Paleont. Soc., vol. 10, pp. 136-168.
- KEITH, [SIR] ARTHUR
1923. Review of Dixon's "The racial history of man." Nature, vol. 112, pp. 854-857.
- KELLY, A. R.
1938. A preliminary report on archeological explorations at Macon, Ga. Bur. Amer. Ethnol. Bull. 119, pp. 1-68.
- KNOWLES, SIR FRANCIS H. S.
1937. Physical anthropology of the Roebuck Iroquois with comparative data from other Indian tribes. Canada Dep. Mines and Res., Nat. Mus. Canada, Bull. No. 87, Anthrop. Ser. No. 22.
- LILLARD, JEREMIAH B., HEIZER, R. F., and FENENGA, FRANKLIN
1939. An introduction to the archeology of Central California. Sacramento Jun. Coll., Dep. Anthrop., Bull. 2.
- NEUMANN, GEORG K.
1937. Preliminary notes on the crania from Fulton County, Illinois. Appendix 4 in *Rediscovering Illinois* (Cole and Deuel).
- OETTEKING, BRUNO
1930. Craniology of the North Pacific Coast. The Jesup North Pacific Expedition. Mem. Amer. Mus. Nat. Hist., vol. 11, pt. 1.

ORTON, SAMUEL TORREY

1905. A study of the pathological changes in some mound-builders' bones from the Ohio valley, with especial reference to syphilis. *Univ. Pennsylvania Med. Bull.*, vol. 18, pp. 36-44.

OTIS, GEORGE A.

1876. Check list of preparations and other objects in the section of human anatomy of the United States Army Medical Museum. For use during the International Exhibition of 1876 in connection with the representation of the medical department, U. S. Army. No. 8. Washington.
1880. List of the specimens in the Anatomical Section of the United States Army Medical Museum. Washington.

RITCHIE, WILLIAM A.

1932. The Lomoka Lake site. The type station of the archaic Algonkin period in New York. *Res. and Trans. New York State Arch. Assoc.*, Lewis H. Morgan Chap., Rochester, N. Y.
1934. An Algonkin-Iroquois contact site on Castle Creek, Broome County, New York. *Res. Rec.*, Rochester Municipal Mus., No. 2.
- 1936a. A prehistoric fortified village site at Canandaigua, Ontario County, New York. *Res. Rec.*, Rochester Mus. Arts and Sci., No. 3.
- 1936b. New evidence relating to the archaic occupation of New York. *Res. and Trans. New York State Arch. Assoc.*, Lewis H. Morgan Chap., Rochester, N. Y.

RIVET, P.

1909. *Recherches anthropologiques sur la Basse-Californie.* *Journ. Soc. Amér. Paris*, n.s., vol. 6, pp. 147-253.

ROBERTS, FRANK H. H., JR.

1937. *New World man.* *Amer. Antiquity*, vol. 2, No. 3, pp. 172-177.

ROGERS, DAVID BANKS

1929. Prehistoric man of the Santa Barbara coast. *Santa Barbara Mus. Nat. Hist.*

SELTZER, C. C.

1936. New light on the racial history of the Southwest area (abstract). *Amer. Journ. Phys. Anthrop.*, vol. 21, suppl. to No. 2, p. 17, abstract No. 30.

SKARLAND, IVAR

1939. The skeletal material [from the Chiggerville site in Ohio County, Kentucky]. *Univ. Kentucky. Rep. Anthrop.*, vol. 4, No. 1, pp. 28-49.

STEWART, T. D.

1935. Skeletal remains from southwestern Texas. *Amer. Journ. Phys. Anthrop.*, vol. 20, No. 2, pp. 213-231.
1936. Anthropometric nomenclature. I. The cephalic (length-breadth) index. *Amer. Journ. Phys. Anthrop.*, vol. 22, No. 1, pp. 97-140.
1937. Different types of cranial deformity in the Pueblo area. *Amer. Anthrop.*, n.s., vol. 39, No. 1, pp. 169-171.
- 1939a. Negro skeletal remains from Indian sites in the West Indies. *Man*, vol. 39, No. 52, pp. 49-52.
- 1939b. Anthropometric observations on the Indians and Eskimos of Labrador. *Field Mus. Nat. Hist., Anthrop. Ser.*, vol. 31, No. 1.

- 1940a. Skeletal remains from the Whitewater District, Eastern Arizona. Bur. Amer. Ethnol. Bull. 126, appendix B (in press).
- 1940b. Skeletal remains from the Buena Vista site, California. Bur. Amer. Ethnol. Bull. 130 (in press).
- STEWART, T. D., and WEDEL, W. R.
1937. The finding of two ossuaries on the site of the Indian village of Nacochtanke (Anacostia). Journ. Washington Acad. Sci., vol. 27, No. 5, pp. 213-219.
- SULLIVAN, LOUIS R.
1923. Review of Dixon's "The racial history of man." Amer. Anthrop., n.s., vol. 25, pp. 406-412.
- VON BONIN, GERHARDT, and MORANT, G. M.
1938. Indian races in the United States. A survey of previously published cranial measurements. Biometrika, vol. 30, pp. 94-129.
- VON EICKSTEDT, EGON FREIHERR
1933. Rassenkunde und Rassengeschichte der Menschheit. Stuttgart.
- WEBB, W. S., and HAAG, W. G.
1939. The Chiggerville Site. Site 1, Ohio County, Kentucky. Univ. Kentucky. Rep. Anthrop., vol. 4, No. 1.
- WEDEL, WALDO R.
1938. Hopewellian remains near Kansas City, Missouri. Proc. U. S. Nat. Mus., vol. 86, pp. 99-106.
- WEIDENREICH, FRANZ
1939. On the earliest representatives of modern mankind recovered on the soil of east Asia. Peking Nat. Hist. Bull., vol. 13, pt. 3, pp. 161-174.
- WILLIAMS, HERBERT U.
1932. The origin and antiquity of syphilis: the evidence from diseased bones. Archiv. Pathol., vol. 13, pp. 779-814, 931-983.
1936. Origin of syphilis; evidence from diseased bones; supplementary report. Arch. Dermatol. and Syph., vol. 33, pp. 783-787.

DEVELOPMENTS IN THE PROBLEM OF THE NORTH AMERICAN PALEO-INDIAN

BY FRANK H. H. ROBERTS, JR.

Bureau of American Ethnology

INTRODUCTION

Prominent among questions commonly asked about the American Indian are those pertaining to his origin and the time of his appearance on the historical scene. Lack of evidence for human precursors and of primitive types of man in the Western Hemisphere preclude the supposition that he developed here, although a few people still cling to, and argue for, such a theory. The marked similarity in physical features between the Indian and eastern Asiatics, as well as some cultural resemblances, bespeaks a common heritage, and there is general agreement that he came from Asia (Hrdlička, 1928). There is some difference of opinion with respect to the routes of migration, but a majority of those studying the problem favor the northern ones, with the Bering Strait region considered as the most likely avenue, especially for the earliest of the movements. The date of arrival for the initial immigrants has long been a perplexing question and a subject for acrimonious debate. Throughout the course of American anthropology ideas have shifted from one extreme to another, from impossible antiquity to a time too recent to be compatible with well-founded evidence.

During the early stage of investigations lack of knowledge and overenthusiasm on the part of those feeling their ways along unfamiliar channels of research led to conclusions that are obviously erroneous. The inability to read and interpret properly the deposits in which assemblages of material occurred contributed to many a misleading statement. Aid obtained from specialists in other fields, although given with the best of intentions, frequently served but to complicate and further confuse the issue. Old World discoveries stimulated activities and at the same time had the undesirable effect of coloring New World finds through causing them to be regarded from preconceived points of view rather than from open-minded consideration of the actual manifestations. There was a great vogue for the finding of "Paleolithic man" in America, following the announcement of his occurrence in Europe, and little discrimination was shown in the acceptance of evidence. Those who saw the mistakes

and recognized the true import of many such finds failed to discuss them in an objective and calmly critical fashion, with the result that the subject became more characterized by the clash of personalities than by the judicial evaluation of data. The upshot was that the question of early man in America became virtually taboo, and no anthropologist, or for that matter geologist or paleontologist, desirous of a successful career would tempt the fate of ostracism by intimating that he had discovered indications of a respectable antiquity for the Indian.

The critics unquestionably did valuable service in exposing the fallacy of many claims, but eventually they were swept away by the ardor of their own crusade and definitely retarded the progress of investigations by their dogmatic denial of the possibility of traces of occupation other than those left by the recent Indians. Augmenting this was a categorical refusal to consider new evidence as it came to light. Improved techniques, more careful observations, and better recording of information in recent years have brought a change in attitude. Now the general tendency is to let the facts speak for themselves. There are a few, however, who remain hypercritical and some who do the subject disservice by the precipitate manner in which they present and accept questionable discoveries and strive to make every new manifestation the oldest yet reported.

Suggestions that the Indian may have inhabited North America for a considerable period come from a variety of sources, some more reliable than others. Students of the living groups frequently express the belief that the several apparent physical types, the complexity of language, the diversity of social organization, differences in ceremonial rites, adaptation to environment, and developments in the arts and industries show a long interval of separation from Old World influences. Yet there is no scale by which to measure the time involved in the growth of such phenomena (Nelson, 1933). The lack of homogeneity in the people is attributable to migrations of already established subtypes of the basic stock rather than to alterations taking place after their arrival, though there is some evidence for the latter and for the modifications occurring rather rapidly. One specialist recently suggested that the development, changes, and dialectic ramifications of one of the major linguistic stocks, that which was most widespread in North America, could have transpired in the span of a single millenium. Ethnological studies of certain groups have demonstrated that transitions in religious practices and secular customs sometimes take place with surprising swiftness. The same is true for some of the arts and industries. Hence it is apparent that



FIG. 4.—Portion of North America showing approximate location of various finds indicative of the Paleo-Indian. 1, Folsom, N. Mex. 2, Clovis-Portales sites. 3, Lindenmeier site. 4, Burnet Cave, N. Mex. 5, Area of original Yuma finds. 6, Miami, Tex. 7, Colorado, Tex. 8, Scottsbluff-Signal Butte, Nebr. 9, Angus, Nebr. 10, Alaskan Yuma points. 11, Saskatchewan, Folsom and Yuma artifacts. 12, Browns Valley, Minn., artifacts and human skeleton. 13, Gypsum Cave, Nev. 14, Sandia Cave, N. Mex. 15, Conkling Cavern, N. Mex. 16, Rito de los Encinos, N. Mex., artifacts. 17, Abilene, Tex., remains. 18, Oso complex. 19, Coahuiltecan sites. 20, Trans-Pecos, Tex., remains. 21, Cochise complex. 22, Lake Mohave, Calif., camps. 23, Pinto Basin sites. 24, San Dieguito remains. 25, Oak Grove sites. 26, Borax Lake artifacts. 27, Oregon Caves. 28, Great Salt Lake Caves. 29, Black's Fork artifacts. 30, Minnesota man. 31, Sauk Valley man. 32, Wyoming crania. 33, Bradwell, Sask., skeleton.

the concept of long growth periods being essential to multitudinous variations in the cultural pattern is open to question. On the other hand there is little doubt that the process of adaptation to environment requires more than a few passing generations and the almost perfect adjustment attained by numerous groups points to more than a late occupancy of their respective areas.

Archeologists have produced several kinds of evidence tending to demonstrate certain antiquity, yet the data have not always been wholly satisfactory and often have done little more than furnish a basis for postulation on the length of time involved. This is particularly true of conclusions reached through typological studies, those derived from considerations of the depth of cultural deposits, from the state of preservation of the remains, and for conjectural reconstructions of the steps leading to the peaks of cultural excellence. Because an implement compares in form, style of workmanship, in most of its details, with a type known to be ancient does not necessarily mean that they are of similar age. Tools that were satisfactory for certain purposes are known to have lasted over tremendous periods and through numerous cultural cycles. The depths at which manifestations occur have little significance as the forces of nature may bury a site beneath many feet of debris in a single operation, whereas others receive a covering of only a few inches during the course of thousands of years. The important factor in every case is the nature of the stratum in which they lie. The extent of preservation is very unsatisfactory as a criterion. Recent objects in an exposed location may exhibit more advanced disintegration than older ones in a protected spot. Under some conditions bones may become mineralized in less than a decade, and as a consequence their degree of fossilization be of little significance.

Nevertheless, there are occurrences indicative of some antiquity. These consist of artifacts and skeletal materials in deposits datable by geologic means, in association with the bones of extinct species of animals and invertebrates, in conjunction with pollens and plant remains differing from the existing flora, and also of indications of cultures that were adapted to conditions totally unlike those prevailing in modern times. From the foregoing it is apparent that the problem calls for even greater deliberation and discretion than that customarily accorded anthropological questions. A review and discussion of all discoveries purporting to show early inhabitation is beyond the possibilities of the present paper. Those interested may refer to the original sources for details¹ and to several recent publications for the

¹A partial bibliography of the more important examples was prepared by the writer and appears in Merriam, 1936.

concensus of opinion concerning their significance.² A number of finds made in the last 15 years, however, created widespread interest in the subject and are so essential to a consideration of the age question that it is advisable to summarize their main characteristics before suggesting an outline for the earliest chapters in the story of the Indian.

Because of the carefully controlled methods used in a majority of these investigations and the close cooperation between specialists from other sciences, the evidence obtained is more dependable than that produced by earlier discoveries. Nevertheless, some of the latter take on new importance when reexamined from the viewpoint of present knowledge and justifiably may be regarded not only as authentic but as corroborative of the data now being collected. Several different kinds of manifestations are available for study. These consist of associations between stone implements and bones from extinct species of animals, of stone tools and hearths situated in identifiable geologic strata, of camp sites located on old terraces and the beaches of lakes long since dried up, of human skeletal remains in deposits of geologic significance, and of the presence of articles attributable to such horizons in assemblages occurring under conditions that give little or no indication of the period involved. The latter type of evidence is, of course, less convincing than that of a direct nature. In a number of cases the artifacts appear to be products of the same or a closely related cultural pattern. Others have no as yet perceivable affinities. The data furnished by similar collections from comparable deposits at widely separated places are more satisfactory than those from unrelated, individual sites. Yet the latter in several instances contribute valuable information.

THE FOLSOM COMPLEX

The so-called Folsom complex is probably the best known and most generally accepted of the group considered as indicative of a comparatively early occupancy of North America. The term "early" is used in the sense of its relation to the modern Indians and not in that of its connotation in Old World studies. The Folsom series is characterized by associations of a definite complex of bone and stone objects with bones from extinct species of animals or from types no longer living in the areas where the finds are made. When discovered

² Howard, 1935; Hrdlička, 1907, 1918, 1928; Nelson, 1933. These papers also contain references to numerous reports on the subject. Since this article was set in type a valuable index to localities and a selected bibliography on early man in America has been published by Sellards, 1940.

in situ in undisturbed earth, such assemblages are usually in strata that can be correlated with geologic phenomena having particular importance in the determination of relative age.

The articles of stone consist of projectile points; a variety of scrapers; several kinds of cutting edges; drills; flakes with small, sharp graver points (not the burin type known from Europe but an American form sometimes erroneously called a drill) that may have served for scratching lines or designs on bone; large blades; hand hammers; rough choppers; rubbing stones and shaft-smoothers of sandstone; small pieces of tabular sandstone that served as palettes for the mixing of paint; bits of hematite and red and yellow ochers that furnished the pigment. Most of the implements were made from flakes; only the large scrapers, hammers, and choppers are core-type tools. In all cases the flaked artifacts were the product of either the percussion or percussion-and-pressure types of the chipping and flaking technique. There are no polished-stone tools, and that method of manufacture apparently was not employed by the people responsible for this complex. The bone specimens are punches and awls, pointed fragments that possibly functioned as spearheads, tubular beads, tabular pieces of the game-counter type bearing simple incised decorations, and ornamented scraps from larger objects the purpose of which is not indicated.

The only artifacts that are distinct and that can be regarded as typical are the projectile points and one kind of knife. These forms have longitudinal channels or fluting on each face extending from the base toward the point. The knives and one series of the fluted points exhibit a fine secondary chipping around the edges; another group of the points is more generalized in character with larger, less carefully made specimens lacking the peripheral retouch. The exact relationship between these two kinds of fluted points is still to be determined. It has been suggested that the larger ones were intended for use in killing big animals, that they represent an early example of the type, that they are a degenerate and later survival, or that they indicate a borrowed trait that was never completely mastered by those who took it over. The probability is that all of these explanations hold good in varying degree. The generalized form has a much wider distribution than the others and, according to the concept that the larger the area covered, the older the form, would seem to antedate them. Yet it is far from certain that such was the case, and there are some indications that the reverse was true. Because of these and other complications, the problem is a difficult one, and until definite proof concerning the variations is available conclusions must be held in abeyance.

Folsom artifacts are found in association with bones from extinct species of bison, mammoth, the large American camel, extinct and living forms of the musk ox, extinct antelope, and possibly the native horse. There is some question about the latter, but the evidence in support of the other associations has been too well established to warrant any further doubts about their validity. The mammoth, camel, antelope, horse, and kinds of bison represented no longer exist in North America, and the living type of musk ox is only found far north of the area where the archeological material occurs. This is a

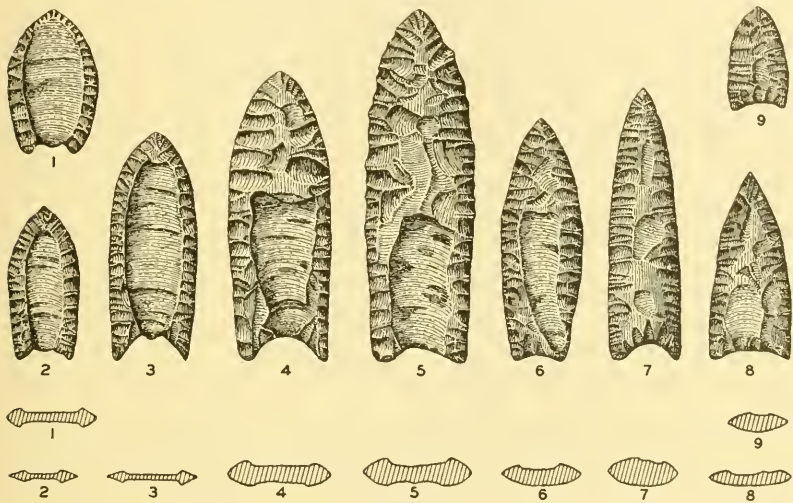


FIG. 5.—Types of fluted and thinned-base points. Cross sections taken midway of the blade. 1, 2, 3, true Folsom forms; 4, 5, variants of the generalized Folsom series; 6, example of an accidental Folsom, a point made from a flake already possessing a channel; 7, 8, 9, thinned-base types often erroneously identified as Folsom. ($\frac{1}{2}$ size.)

good indication of climatic change and of the lapse of considerable time. Bones from other animals, forms still living in various parts of the country, also come from Folsom sites. Included in this group are deer, pronghorn, wolf, fox, and rabbit. There has been little change in these mammals over a long period, and their presence in an assemblage has no importance as far as the age problem is concerned. Some of the deposits also contain invertebrate fossils, several of which have been identified as species that either are extinct or no longer live in the particular region. Charcoal accompanying the bones and from hearths in most cases suggests trees adapted to a cooler and moister climate.

There are three major Folsom sites, a number of minor ones, and sporadic traces of the complex in various widespread locations. The

information of greatest significance has come from the discoveries near Folsom, N. Mex., the scene of the original find and the source for the name, along Black Water Draw between Clovis and Portales in central-eastern New Mexico, and on the Lindenmeier Ranch just south of the Colorado-Wyoming boundary north of Fort Collins, Colo. Smaller sites that are of value for their corroborative data are those at Burnet Cave in the Guadalupe Mountains in southeastern New Mexico (Howard, 1935), the Powars site near Kersey, Colo. (Bryan and L. L. Ray, 1940; Roberts, 1937a), and the Johnson site northwest of Fort Collins and approximately 12 miles southwest from the Lindenmeier site (Roberts, 1939; Wormington, 1939).

Occurrences of importance in places that can scarcely be regarded as actual Folsom sites consist for the most part of associations between fluted points and mammoth or extinct bison bones. In this category are the finds at Dent, Colo. (Bryan and L. L. Ray, 1940; Figgins, 1933), near Miami (Sellards, 1938) and Abilene (C. N. Ray and Bryan, 1938), Tex.,³ in Dallam County, Tex., and Cimarron County, Okla. (Howard, 1935, pp. 98-99),⁴ and near Angus, Nebr. (Figgins, 1931). The Angus association has been questioned, however, and is not accepted as good evidence by some students (Strong, 1932; 1935, p. 221). Along the Little Wichita River in Texas a generalized fluted point was present with mammoth and horse remains (Witte, 1937, p. 222). Folsom-type points occasionally appear in other complexes and have been picked up from the surface in many places. Their occurrence with materials attributable to other cultural groups is discussed with those remains and need not be commented upon here.

The surface specimens serve mainly as an indication of distribution. Most of them come from the eastern half of the continent. The chief concentration is in the area extending from Alberta and Saskatchewan in the north to New Mexico in the south, skirting the eastern slopes of the Rockies, with the eastern border roughly approximating the western boundary of the Dakotas and thence across western Nebraska, Kansas, Oklahoma, and into Texas, where it turned eastward to the Mississippi. Smaller centers are indicated in the region encompassing

³ This was at a site originally called a Folsom camp (C. N. Ray, 1930). Subsequent investigations there tend, in the opinion of the present writer, to show that it is attributable to another complex in which there is associated Folsom material. It is discussed in following pages where early Texas manifestations are described.

⁴ The discoveries at Frederick, Okla., are entirely omitted from this paper because of their obviously spurious nature.

the junctures of the Ohio and Missouri Rivers with the Mississippi, in Ohio, in western New York, in Virginia, in Tennessee, Georgia, and northern North Carolina. Only a few sporadic examples have been found west of the Rockies, and most of these are from California, where they are reported from one northern and one southern district.⁵ The nature of the distribution suggests a correlation with the factors of physical environment and cultural pattern and with the period when the spread took place.

The original site lies below the eastern rim of Johnson Mesa, several miles west of Folsom, Union County, N. Mex., in a little valley on a small intermittent tributary of the Cimarron River. Here a number of fluted points, of the finely retouched type, a portion of a non-descript flake knife, and one example of a generalized type of scraper were found with the bones of an extinct species of bison and of a large deerlike member of the Cervidae. The assemblage was such that authenticity of the association could not be questioned. The material lay in a deposit of dark clay containing lenses of gravel and small concretions of lime, probably the remains of an old bog or water hole that was the principal reason for the presence of the animals. Above this stratum were several feet of sediments of highly restratified earth of a nature indicative of considerable antiquity. Some of those studying the deposits concluded that they belonged to the close of the Pleistocene and dated the remains at the end of that period. Others held that the evidence suggested early Recent, although all agreed that the age closely approximated the transition from late Pleistocene to the beginning of the Recent.⁶

About midway between Clovis and Portales, not far from the New Mexico-Texas boundary, a series of dry basins locally known as Black Water Draw extend in an east-southeasterly direction across that portion of the Staked Plains. Evidence points to a former period of heavy rainfall, when the basins were more or less permanently filled with water. Progressive desiccation reduced them to mere water holes, and eventually they dried up entirely and were filled by drifting sand. Recent wind and water action have left them in varying stages of erosion. The sand has been whipped up into dunes along their

⁵ A surface site is recently reported from the Great Basin, but the exact location and details concerning the material are not yet available. Published pictures suggest an off-pattern, possibly a less-developed affinity, rather than the true Folsom (Campbell, 1940). There may be some connection between this and the northern California occurrence discussed in subsequent pages.

⁶ Detailed information on the Folsom site will be found in Brown, 1929; K. Bryan, 1937; Cook, 1927; Figgins, 1927; Roberts, 1935, 1939.

northeastern borders, exposing a hard, bluish-gray deposit. The bluish layer in some cases has been cut down to a harder stratum of caliche, leaving benches around the edges of the basins and scattered islands rising from their bottoms. Excavations in these benches and islands have produced fluted points and a variety of other implements in conjunction with bones from an extinct species of bison and from the mammoth. There are some indications that the makers of the implements also killed camel and horse, but the evidence is not so conclusive as that for the other animals. Camel and horse bones are numerous in the level just below that of the period of human occupancy, and it seems possible that some of them may have been present when hunters first appeared on the scene; yet it cannot be said with certainty that they were. The bluish-gray deposits, on the assumption that they are lake beds, have been correlated with the high-water stage of ancient Lake Estancia to the west, which is believed to coincide with a pluvial period when temperatures were lower and there was much more precipitation. This stage is believed to correspond to the end of the Pleistocene and the camp remains and assemblages of tools and bones to date from that time. This checks well with the conclusions on the site near Folsom.⁷

The Lindenmeier site in northern Colorado is located on a vestigial valley bottom that has taken on the appearance of a terrace as the result of the wearing away of the ridges that formerly bordered its southern edge. Here there are numerous traces of former camps and a complex of implements, including the fluted knives and fluted points with secondary chipping, in association with bones from an extinct species of bison and the large American camel. There is evidence for the mammoth also, but direct association of tools and the bones of that animal has not yet been found. The mammoth remains were in the same horizon as the other assemblages and were accompanied by fragments cut from bones of the same species of bison as those in the archeological groups and by charcoal. Owing to the absence of implements it cannot be stated definitely that that animal was hunted there, although in view of the evidence from other places it is not unlikely. The archeological manifestations are found just below, or in the bottom of, a heavy zone of dark soil that occurs in the lower levels of the site. The stratum was produced by heavy vegetation. Above it are numerous layers of geologic debris that record several alternating periods of erosion and building up, arid and humid eras, between the abandonment of the location by the aboriginal hunters and the

⁷ Reports on the Clovis-Portales occurrences will be found in Antevs, 1935a; Cotter, 1937, 1938; Howard, 1935; Stock and Bode, 1936.

present. The geologic significance of the occupation level was determined by establishing the relationship between the old valley bottom and the terraces of the major drainage streams and then correlating the terraces with the traces of the various glacial substages in the mountains to the west. The conclusion derived from this evidence is that Folsom men lived at the Lindenmeier site while glaciers still lingered in the mountains and at a time when the climate was colder and wetter than that of today. The stage represented is after the climax of the Wisconsin glaciation, yet is believed to be in the late glacial and to be good evidence for a late Pleistocene presence of men in the New World.⁸ In this the Lindenmeier corroborates the indications at Folsom and the Clovis-Portales sites and suggests the possibility of an even slightly earlier occupancy. In all three cases the critical feature is the correlation of the deposits with others of datable age, and this has been accomplished to the satisfaction of most of those interested in the problem.

THE YUMA PROBLEM

Associated with the implements in the Clovis-Portales series, occurring with fluted points in other localities, and appearing individually in conjunction with bones from extinct species of animals at still different places are points that thus far have proved to be perplexing. These are the so-called Yuma points. The first examples were noted in collections gathered from sites in eastern Colorado, where the artifacts were weathering from a dark-clay substratum that has been swept clear of surface soil over extensive areas by high winds. They were named for the county in which they were found and, because some of the Folsom points were also present, have been linked with them. Relationship has been postulated because of certain similarities in appearance and a reconstruction of the sequence of forms, based on typology, has been proposed in which the Yuma is assumed to be the original and the Folsom the derived type (Renaud, 1931, 1932).⁹ As a consequence the term Yuma-Folsom or Folsom-Yuma is frequently used in discussions relating to the general subject. Such evidence as is available tends to negate these conclusions, yet fails to clarify the problem. One difficulty is that the definition of a Yuma point is broad enough to include a variety of forms, many so dissimilar that they obviously have no affinities

⁸ Further information on the Lindenmeier site will be found in K. Bryan, 1937; Bryan and L. L. Ray, 1940; Coffin, 1937; Roberts, 1935, 1936, 1937b, 1939.

⁹ Nelson, 1937, p. 320, thinks that the chipping indicates the reverse.

with others in the group and many so generalized that they could be assigned to any one of a number of different categories. Hence it is not easy to decide what is meant when the name is used.

Efforts to determine the real character of the type have not been wholly satisfactory because most of the studies have been restricted to surface material with no information—only conjectural typological seriation—on the sequence or contemporaneity of specimens. It is generally agreed that true Yuma forms are long, slender blades with lenticular cross sections, oval to diamond-shaped, and with fine parallel flaking that runs either in an oblique direction entirely across the faces

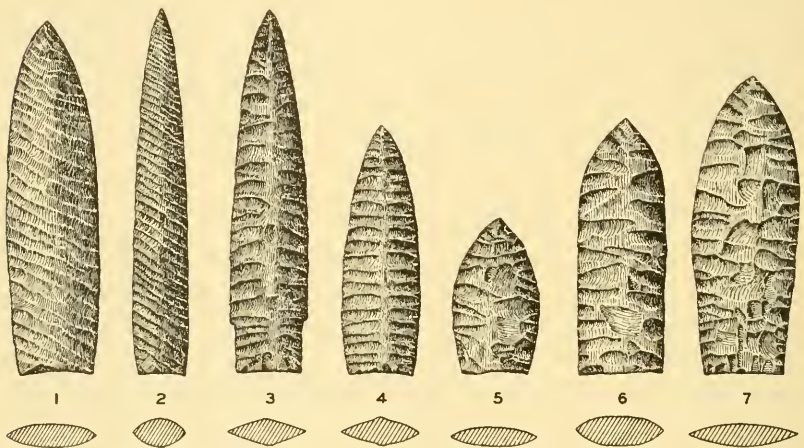


FIG. 6.—Yuma and variant points. 1, 2, examples of true Yumas with oblique chipping; 3, 4, true Yumas of the dorsal-ridged series; 5, 6, 7, generalized forms frequently classified as Yuma. ($\frac{1}{2}$ size.)

or horizontally, with the facets meeting along a median line to form a dorsal ridge. Most of the points with the first of these types of flaking have parallel sides, although there are sporadic examples with a suggestion of the lanceolate or triangular shape. The group is characterized by a concave base. The other form tends to an elongated, subtriangular outline or one with parallel sides. The base is predominantly straight, occasional specimens may show a slight concavity, and about half the group exhibits a rudimentary tang. The inset along the edges at the base as a rule is slight, the shoulders being little more than just perceptible. In both forms the edges near the base are smoothed. This is also true of many Folsom points and has been considered as one of the traits connecting the two types. Nevertheless, there are totally unrelated points that exhibit a similar feature,

and although it is one of the characteristics of both the Yuma and Folsom, it is not a reliable criterion for identifying the types or for establishing affinities.¹⁰

It has been suggested that the smoothed bases are due to the fact that the objects were not points but knives and that they were hafted with the point end in the handle, the base being used as the working portion of the tool. Examples of the Yuma have been found inserted in a bone handle in just such a fashion. Many have considered the Yuma point a Folsom knife. It seems better fitted to serve in that capacity than for purposes of penetration. That it is part of the Folsom complex, however, is another question. Some of the Folsom points may have been used and hafted in a similar fashion, but many unquestionably were intended as projectile tips. In this connection the smoothed bases are explained on the grounds of having been so treated to prevent cutting the lashings with which they were attached to the ends of shafts.

With the outlines of the two true Yuma forms as a starting point the group has been expanded to embrace accentuated leaf shapes with pronounced fishtail barbs, triangular blades with long tangs or stems, diamond and ovate shapes with indifferent chipping, even nondescript specimens that cannot be regarded as indicative of any series. In this whole array there is one generalized style of point that possibly is related to the true Yumas, although the connection is debatable and probably remote. It has the shape of the first form described, parallel sides or sides with a slight tendency to convergence near the base, which is concave, but the flaking is not comparable. The facets are shallower, not as regular in contour, only approximately parallel, and usually tend to run horizontally across the faces. The type is sometimes present in collections containing true Yuma specimens, is occasionally found in association with extinct animal bones, appears in conjunction with Folsom points, and is that on which rest most of the arguments for the greater antiquity of the Yuma and its ancestral relation to the Folsom.¹¹ Actually, it indicates closer affinities with the Folsom than with the Yuma and probably would have been classified with the former rather than the latter if it had not been overlooked during the first searchings of collections for fluted forms. As a matter of fact it has been called "Unfluted Folsom" (Schultz and Eiseley, 1936). There is a possibility, although no definite indication,

¹⁰ Since the above was written a classification of Yuma points has been published in which the first form described is called the Oblique Yuma and the second is designated the Collateral Yuma (Wormington, 1939).

¹¹ This form is designated Indeterminate Yuma by Wormington, 1939.

that it might represent the basic type out of which both developed as collateral traits in separate, yet neighboring and similar cultures.

In the Clovis-Portales sites Yuma forms have been found in association with mammoth and extinct bison (Cotter, 1937, 1938; Howard, 1935). Both the true and generalized examples occur, but the evidence linking the latter with the animals is more consistent than that for the more specialized points. At the Lindenmeier site two of the forms are definitely represented, and the third is debatably indicated by examples that could be a prototype but that may be from another series. As a group the Lindenmeier Yumas constitute so small a percentage of the total number of points that they suggest intrusive or trade material rather than a trait in the complex. There is definite stratigraphic evidence on their occurrence, however, that is of some significance. The lowest level containing true Folsom points has thus far produced no Yuma specimens. The level above this has yielded examples of the generalized style,¹² but the others occur much higher in the deposits. These latter are for the most part from the group with the oblique flaking. The questionable forms are fragments from points with horizontal flaking and a rudimentary kind of dorsal ridge. The facets are larger, more irregular, and exhibit poorer workmanship than is usually observed on Yuma points. For that reason their inclusion in the Yuma group has met with some disagreement on the part of students who have seen them. Present data are not altogether satisfactory, but there is good indication that they are somewhat later than those with the oblique chipping. If they actually are the adumbrative form, this would argue for an earlier development of the oblique series, with the horizontally flaked, median-ridged the younger of the two true Yumas. As far as the Lindenmeier site is concerned, it seems that there was only a late contemporaneity between the Yuma and the Folsom, with a later survival for the Yuma.

Several places in Nebraska have yielded Yuma points in association with extinct species of bison (Barbour and Schultz, 1932, 1936; Schultz, 1932, 1938; Schultz and Eiseley, 1935, 1936). They also have been found in deposits considered to be relatively old; some were identified as late Pleistocene and others as early Recent (MacClintock, Barbour, Schultz, and Lugin, 1936). In a majority of the occurrences the type has been the generalized form. A few of the true examples have been found under similar conditions, although, as noted for the Clovis-Portales sites, the associations have not always

¹² Cotter's reference (1939) to a point of this type being at the bottom of the stratum concerns the heavy, dark-soil zone previously mentioned and not the lighter-colored sandy layer that is the lowest artifact-bearing horizon.

been as definite and in a few instances have been questioned. Generalized Yumas have also been reported from Texas in conjunction with extinct bison (Figgins, 1927) and mammoth (Sellards, 1938). The latter also included generalized Folsom specimens. Other comparable associations have been reported from various places in this general area, but for the purposes of this paper those already mentioned will suffice.

Farther afield is the example of a Yuma point in conjunction with mammoth bones at an Alaskan site (Collins, 1937), and Yumas, with other types including a few Folsom fragments, have been found in Alberta and Saskatchewan.¹³ There is a series from Minnesota that is usually regarded as comprising Yuma points. Some are surface finds, others came from a burial in deposits considered as being of demonstrable antiquity. Those from the burial, 5 in number, have been called Yuma-Folsom (Jenks, 1937). However, in the light of the preceding discussion of the two forms, and despite the suggestion of some Folsom-like flaking, the writer does not think the term Yuma-Folsom appropriate. Yuma alone would be better. Yet because of certain characteristics, greater width and thinner blades, that differ sufficiently from the common traits to indicate a local variation, they seem worthy of a distinct name, and as they were found near Browns Valley, they could well be called the Browns Valley points. Should it be deemed desirable to emphasize their affinity with Yuma, that could be done by applying the term Browns Valley-Yuma.¹⁴ A change in name would have no bearing on the question of relative age. If the identification of the deposits is correct for both regions, the Minnesota points would tend to be more recent than some of the western examples—the age is given as early postglacial—but approximately contemporaneous with others. In the main they serve to substantiate the indications of age shown by the western material.

The distribution of the Yuma has not been worked out as satisfactorily as that of the Folsom, partly because of the confusion over what constitutes the type, but it appears to be more widespread. Its major concentration on the basis of present knowledge was in a strip across the western Plains from Alaska to Texas. In the United States it seemingly runs just east of the main Folsom area, though no sharp boundary occurs and as already noted a certain mixing took place.

¹³ The Saskatchewan points in the Yuma series have been dated as post-Wisconsin (Bliss, 1939).

¹⁴ In the Wormington classification they are listed as Yuma and are regarded as belonging to two of the subtypes. Two are designated as Oblique Yuma and the other three as Indeterminate Yuma.

The true forms certainly survived much longer than the Folsom. It is possible that a considerable part of the diffusion took place after the culmination of the true subtypes and that the somewhat similar points from later horizons represent a persistence in slightly modified form.

OTHER NEW MEXICAN DISCOVERIES

One of the more important sites bearing on the problem of early occupancy is that of Sandia Cave located in Las Huertas Canyon in the Sandia Mountains east of Albuquerque, N. Mex. Excavations have not been completed and available information is only sketchy, yet the evidence is sufficient to establish several significant things. The deposits in the cave comprise a number of layers. Some contain traces of human activity and others are sterile. The top stratum, that of the present floor, yields artifacts of comparatively recent origin although they are probably pre-Columbian in age. This layer rests on a hard surface of travertine, a light-yellow rock of a calcareous nature varying from $\frac{1}{2}$ inch to 3 inches in thickness, that entirely covered the underlying strata and sealed them in. This condition precluded the intrusion of later objects into earlier assemblages and effectively forestalls the practice of attributing unusual associations to such an occurrence. Below the compact crust are two levels of occupation separated by clean material, a stratum of sterile yellow ocher. In both levels artifacts occur in association with scraps of bones from camel, ground sloth, mastodon, carnivores, and the horse, a characteristically Pleistocene fauna. The solution of calcareous matter in places penetrated the lower strata, consolidating sections into large, porous, breccialike masses of earth, bone scraps, and stone tools. On the original floor of the cave is a fireplace outlined with small stones carried there for the purpose. Fragments of burned bone were in the ashes and charcoal, and an implement was lying at the edge of the hearth.

The complex of artifacts includes points, knives, scrapers, and fragments from large blades. There is nothing particularly distinguishing about the knives and scrapers thus far recovered. The points consist of lanceolate blades with one side notch at the base, specimens suggestive of the generalized Yuma or unfluted Folsom yet not identical with them, and a form similar to that from the Lindenmeier site that was mentioned as a possible prototype for the dorsal-ridged Yumas. The side-notched type appears to be the oldest. It is not a common shape in North America; in fact, it is reminiscent of the

well-known points from the Solutrean industry in the Old World, although not likely derived from or related to them, and is observed only rarely in collections—mostly in those from the area of the Staked Plains and the southern Plains. In the upper layer of the older deposits, those below the travertine, one complete true Folsom point and fragments from several others were present in the assemblage. The association with bones from extinct species of animals and with generalized and protodorsal-ridged points is in accord with the evidence from various Folsom finds, but their occurrence at a higher level is of importance because it demonstrates a cultural complex preceding that of Folsom. Whether this was a purely local phenomenon or a widespread feature in the southern Plains is still to be determined. Claims for such a stage have been made from time to time on the strength of other discoveries, many lacking the certainty of the present one, but because they were made at places sufficiently removed from the main Folsom centers to raise the question of peripheral lag, a number have suggested that the two may well have been contemporaneous in actual chronology yet have sequential relationships in some districts. The Sandia Cave sheds new light on the problem and emphasizes the probability of a preceding stage.

Geologic studies of Sandia Cave are incomplete and no definite conclusions have been reached on the age of the deposits. The fauna, of course, points to a late Pleistocene horizon, but evidence based solely on fossil bones is not convincing as many of the extinct species, including animals in this group, undoubtedly survived into the early Recent period. An appreciable amount of time would be required in the subarid Southwest to produce a layer of travertine as thick as that covering the cave deposits. Conditions would need to be more favorable to the formation of such material than those during the historic period, and a cursory examination of different traces of climatic variations tends to suggest the cool, moist era, the last pluvial, mentioned in the discussion of the Clovis-Portales sites. Eventually it may be possible to correlate the layers in the cave with geologically datable occurrences in the region and thus establish the position of the cultural manifestations in the historic sequence. There is every reason to suppose that the archeological material is at least comparable in age to that from the Folsom, Lindenmeier, and Clovis-Portales sites and in all probability that coming from the bottom level, the original floor and first surface of occupation, is somewhat older.¹⁵

¹⁵ Hibben, 1937, makes a preliminary report on the first season's work in Sandia Cave. The results of subsequent excavations have not been published as yet. During the summer of 1939 the writer learned more about the progress of

From another New Mexican cave, near Bishop's Cap in the Organ Mountains east of Las Cruces, came assemblages of bones that take on new significance in the light of Sandia Cave and other more recent discoveries in this general area. At the time of the investigations in 1930 reports of human skeletons in association with the remains of extinct species of animals received only cursory attention because it was taken for granted that the deposits must have been mixed. Since the authenticity of the occurrence of man-made objects with similar animal bones has been so convincingly demonstrated, the presence of man's own remains in comparable situations needs cause no undue concern. Hence it seems that reexamination of the Bishop's Cap or Conkling Cave material would be in order. Whether or not such studies are contemplated is not known.

As in the case of Sandia Cave there is a twofold division of the deposits. The separating layer in this instance was a stratum of cemented sand that completely sealed everything below from that above and from the present opening of the cave. Although the upper horizon may have been mixed, it does not appear certain that the lower one had been disturbed. From the upper deposits came bones of the camel, sloth, bear, horse, and man. Below the compact, cemented layer were remains of the California condor, ground sloth, an extinct species of antelope, wolf, camel, horse, and man (W. A. Bryan, 1929; Conkling, 1932). No implements were reported. The association of human bones with any of the animals listed cannot be disregarded on the grounds that it was fortuitous because, as previously mentioned, evidence obtained elsewhere indicates that such an occurrence is not wholly improbable. Although the data from Conkling cave are not all that could be desired, they nevertheless add their quota of substantiation to the more convincing material from other sites. In addition the features of a cemented layer comparable to that in Sandia Cave, also suggestive of the formation covering part of the deposits in Gypsum Cave, indicates that the occurrences were more than mere coincidence and may be linked to the same phase of general climatic conditions in the area. On this basis it seems that approximate contemporaneity existed between the assemblages below the compact crusts in the Sandia and Conkling caves, and that the Gypsum Cave manifestations would be somewhat later.

the investigations from Mr. Hibben, saw a series of implements from the cave, and corresponded with Dr. Kirk Bryan about the geologic significance of the finds following his checking of the evidence. Dr. Bryan stated that he was greatly impressed by the cave and its contents.

In the north-central part of the State implements and chipper's debris are present in alluvial deposits along the Rito de los Encinos, a tributary of the Rio Puerco. Similar tools, as well as others of later type, are found at quarry sites on Cerro Pedernal, a well-known peak of the Jemez Mountains. The implements are hand axes, choppers, flake knives, scrapers, and leaf-shaped blades. The general character and workmanship is comparable to that of some of the late Paleolithic industries of the Old World, the Abbevillian axes and Levallois flakes particularly. This in itself would be no evidence for age, but the deposits in which they are found are such as to warrant placing them in the interval between the Folsom horizon and the earliest known stages of the recent Indian inhabitants of the region (K. Bryan, 1939). Specimens from this complex, called Los Encinos and easily identified because of the quality of the chert from which they were made, appear with artifacts from some of the older levels in Texas yet thus far have not been reported from the earliest. At most, the complex seems mid-Recent, and it is possibly even later.

GYPSUM CAVE, NEVADA

At Gypsum Cave, located in a spur of the Frenchman Mountains east of Las Vegas, Nev., artifacts were found in association with remains of the ground sloth, camels, native horse, and a wolf that probably is an extinct species. Several horizons are represented by the material from the deposits. The latest is attributed to the Paiute, below it were objects from the Pueblo pattern, lower still were traces of the Basket Makers, and at the bottom, with an intervening sterile layer indicative of a hiatus, was the assemblage of man-made articles and the remains of the extinct species of animals.

The material culture is represented by a limited series of specimens comprising projectile points, oval scraper-knives, foreshafts and shaft fragments, some of the latter being feathered and decorated with red, blue, and green pigments, and cordage made from sinew and from fibers. The projectile points have a long, triangular-shaped blade, square shoulders that merge into the stem, which tapers into a rounded or pointed base. The longer forms exhibit a tendency to be slightly convex along the edges midway of the blade. On some examples the shoulders approximate a short barb and the edges of the blade are sometimes slightly serrated. This type of point in its numerous ramifications is widespread. It occurs in Nevada and California to the west, in eastern New Mexico, western Texas, Arkansas, Missouri, Georgia, New Jersey, and New York. When found in archeological sites, it is usually in lower levels and is associated with older phases

of the various complexes (Harrington, 1933). One example was found at the Lindenmeier site in a thin soil zone above a small stream bed that cut across a portion of the slope 2 feet above the Folsom layer.

Contemporaneity of the artifacts with the ground sloth and the camel (of the latter, three species are represented) appears to be demonstrated, but there is some doubt concerning the horse. Nevertheless, some students adhere to the belief that the animal still survived when the cave was occupied and that the people were familiar with it even though it may not have been one of their game animals. Some antiquity is indicated by the associations, but the survival of these species into the Recent period, as previously mentioned, makes for uncertainty in the matter of dating. Geologic phenomena in the cave

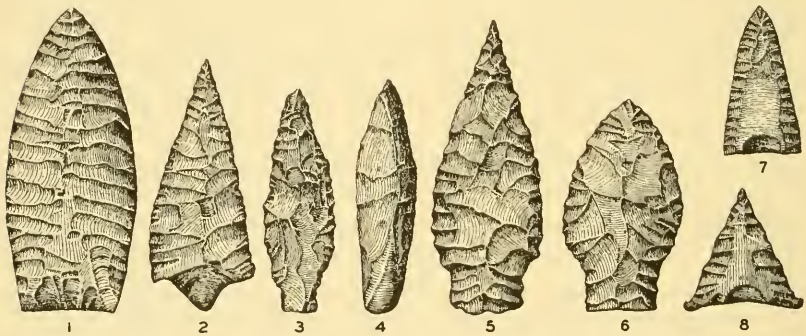


FIG. 7.—Minnesota, Nevada, and Texas points. 1, Browns Valley; 2, Gypsum Cave; 3, Abilene; 4, Clear Fork type 1; 5, 6, Clear Fork type 2; 7, Clear Fork type 3; 8, Clear Fork type 4. ($\frac{1}{2}$ size.)

suggest a maximum, yet do not give a clue as to how close the assemblage approaches that limit.

The bottom levels in Gypsum Cave are filled with water-borne deposits containing horse and camel bones. Above these are silts left by standing water. The top surface of these layers gives evidence of a period of evaporation and in places is solidified by mineral substances that had been carried in solution. The first traces of occupation by the ground sloth occur on this surface, and in places this material is partially covered by a stalagmitic formation. From there to the top the strata are completely dry and seem always to have been so. The water-deposited layers, because of their evidence of pronounced humidity, have been correlated with the maximum of the last great rise in the level of ancient Lake Lahontan in Nevada. This was in the pluvial period corresponding to the last glacial substage. Since the sloth, as well as the camels, were present at the end of the wet cycle,

and their hunters presumably appeared shortly after the onset of aridity, the date of the first occupation of the cave has been placed at the close of the Pleistocene or in the early Recent (Harrington, 1933). There is a possibility that the intervals between the drying up of the bottom levels, the use of the cave by sloth when there was still sufficient moisture to produce the stalagmitic material, and the coming of the men were longer than postulated. Botanical specimens from the deposits all represent an arid flora, although one species is now growing at a higher altitude under cooler conditions, and are from plants present in the area today. In view of these factors it probably is better to place the remains in the early Recent.

THE SIGNAL BUTTE REMAINS

On Signal Butte, near Scottsbluff in western Nebraska, a series of stratified deposits yielded evidence of four stages of occupation and indications that the interval represented probably extended over some millenia. The first and second, and the second and third layers of archeological material, reading upward from the bottom, are separated by sterile strata demonstrating breaks in continuity, periods when the top of the small mesa was not used as a camping place by the Indians. The third and fourth levels, the latter comprising the top soil and present surface, are of no importance for this discussion because they are late pre-Columbian and early historic in age.

The oldest and bottom horizon contained considerable debris of occupation consisting of the remains of hearths, small storage pits dug into the underlying silt and gravel, scattered charcoal and ashes, stone chips and flakes from the manufacture of tools, cut and broken animal bones, and artifacts. The latter are stone and bone. The stone implements are of the smoothed and flaked categories. In the series are grinding stones, shaft-polishers, grooved mauls, a notched ax, several types of projectile points, knives, scrapers, gravers, and drills. Bone tools consist of awls, knapping implements, and heavy gouges. Numerous fragments of polished bone bear incised geometric designs. The projectile points include barbed and stemmed forms, notched examples, lanceolate shapes with concave base and basal thinning, and a group with the general outline of the small-sized true Folsom, lacking the facial fluting but with a thinned concave base that on sporadic specimens is suggestive of vestigial channels (Strong, 1935). The last form is very similar to points occurring in some of the later phases of the early complexes, the Clear Fork and the Brazos River, found in Texas. Counterparts of the other types are also present in many sites in the western Plains area. The second level did not con-

tain much material, but it produced a series of bone and stone artifacts. The bone articles were awls and punches, and pieces of polished material with incised decorations. The stone implements include projectile points, knives, scrapers, drills, and graver points. Characteristic of the group is a medium-sized expanding-stem point with either shoulders or barbs. There were no traces of pottery in the first or second levels, although it was present in the upper two.

Dating of the levels is somewhat uncertain. All of the animal bones from the bottom layer are from living species, and objects attributable to established old complexes seem to be absent. One true Yuma point was reported, but according to persons present when it was found, it probably was intrusive, may have been carried there by later Indians. Signal Butte points have been found on the surface in blow-outs with Yuma and Folsom forms, but that is no criterion as late types of barbed arrowheads also occur under similar circumstances. Grooved mauls, the notched ax, and notched arrowheads bespeak a later horizon than Folsom, and although it has been suggested that the thinned-base points with Folsom outline may be derived from the Folsom type, there still appears to be a hiatus of unknown extent between the periods represented by the two complexes.

Study of the deposits offers some indication. The surface of the butte prior to the first occupation consisted of sand and gravel that some believe to be water-borne deposits of Pleistocene age and that others regard as wind-blown material of a subsequent dry period. The occupation level resting on this old surface is thought to combine aeolian deposits and human detritus with enough humus to darken its color. Above this a stratum of wind-borne material forms the sterile zone separating cultural level 1 from level 2. The latter is a thin, dark streak formed by the accumulation of camp debris and some humus. The overlying sterile layer is again aeolian in origin, covered in turn by soil deposits containing human detritus, topped with the surface soil zone with growing prairie grasses. Differences in the strata are explained on the basis of alternating humid and arid periods. Correlation with geologic phenomena in the region offers the tentative alternatives, depending on the identification of the original surface deposits, of the first occupation starting either at the beginning of the postglacial or Recent period or some two millenia later. The second archeological horizon is thought to coincide with a short, humid era occurring about midway between the start of the Recent period and the present (Strong, 1935). At all events the age of the oldest material unquestionably is postglacial, and in view of the evidence

from other complexes and geologically dated sites the writer is inclined to believe that the age may prove to be even less, with a corresponding decrease in that of the second level.

REMAINS IN NORTH-CENTRAL TEXAS

Deeply buried hearths, occupation levels, and graves in the banks of various streams and their intermittent branches in north-central Texas are contributing suggestive data on several complexes that presumably existed in the area at a relatively early date. The oldest of these, as far as present information indicates, centers about the Abilene district. There in a number of locations are stratified sites in which different types of artifacts occur in sequence at depths ranging from 4 to 30 feet (C. N. Ray, 1930, 1939a). Distance below the surface in itself is no criterion. The writer has seen sites just pre-Columbian in age that are covered with 40 feet of alluvial deposits, and one site in central Texas with cultural manifestations at a depth of 32 feet is regarded as not very ancient (Jackson, 1939, p. 225). The material composing the strata in the Abilene area has geologic significance, however, and demonstrates some antiquity. The lowest levels produce charcoal, stone flakes of the kinds struck off in the making of implements, crude tools of the heavy scraper and hand-ax type, choppers, and thick leaf-shaped percussion-flaked points thinned at the base by the removal of a flake from one side (C. N. Ray, 1930, pp. 50-52; 1934, pp. 109-110). The points have been named Abilene by their discoverer (C. N. Ray, 1934, p. 110). There is a possibility that a curious core-scraper or gouge with a concave base may also belong in this complex. Numerous reports convey the impression that it comes from the same level as the points, yet a specific statement to the effect that the two have been found associated in situ has not been noted. They do appear together, along with other artifacts, in subsequent assemblages, but that evidence is not applicable to the earlier occurrences. The gouge is definitely one of the traits in a complex following the Abilene point stage and is called by the complex name, the Clear Fork (C. N. Ray, 1934, pp. 110-111; 1935, p. 127; 1938a).¹⁶

¹⁶ This implement has also been named the Abilene core-type scraper (Sayles, 1935), and it is not clear whether this designation applies to a variant form that belongs in the Abilene point horizon or is attached to the same tool. The points illustrated (Sayles, *ibid.* pl. 9) are not the same as those elsewhere called Abilene but appear to be examples of the Clear Fork as pictured by Ray (1938a, pl. 25, 1), which adds to the confusion. Careful study of the literature and published illustrations suggests that Sayles' (1935) Abilene phase is equivalent

The Clear Fork complex, in addition to the gouges, is composed of planer-gouges, four kinds of projectile points, recessed-base scraper-knives, drills or awls, graver points, disks, and spokeshave scrapers (C. N. Ray, 1934, pp. 110-111; 1935, p. 127; 1938a). The projectile points consist of one group that is percussion-flaked, long, narrow, thick with oval-rounded base, no shoulders or barbs, and twisted blades. Another is characterized by stems that are beveled to the right, the blades being either long and slender with tapering point or stubby with the sides turning abruptly to form the tip.¹⁷ These are described as having no shoulder, yet in the photographs illustrating the type (C. N. Ray, 1938a, pl. 25, 1, 3rd and 4th rows) the sides definitely slope inward in a sweeping curve to the top of the stem. These two classes are considered as the oldest in the complex, with the stubby subtype of the second the latest of the group. A third series consists of triangular points with straight bases and long slender channels extending up the faces from the base. The edges are characterized by a careful retouch, a feature not present on the preceding examples.¹⁸ The fourth type has a broad-triangular blade, either straight or somewhat concave base, and edges that flare outward and upward near the base; on occasional specimens there is a thinning of the base obtained by the removal of longitudinal flakes from the face. The edges on some of the examples in the group are beveled to the right.¹⁹ There is no secondary retouch. The variation in point

to Ray's Clear Fork and his Nos. 1 and 2 projectile types, while types 3 and 4 and a few other Clear Fork traits possibly are the older horizon of Sayles' subsequent Brazos phase, which comprises in the main the traits from Ray's Small Scraper culture and Sand Dune culture. These complications are unfortunate because they produce contradictory results when attempts are made to correlate the Texas materials with those from other areas. This is particularly true with respect to the questions of relative age and probable sequence for the different phases or complexes. Anachronisms in one or two reconstructions of cultural developments are no doubt due to this situation. From the standpoint of the major interest of the present paper, that of the antiquity of the occupation, the archeological confusion is not important but it does becloud the picture of the general trend of events.

¹⁷ The second or smaller form of this type occurs in the bottom level of Pearce's Burnt Rock Mound culture (Pearce, 1932; Ray 1934) that Sayles calls a late phase of the Abilene or an early phase of the subsequent Edward's Plateau culture (1935, p. 53). Because of the difference in blade shape and a tendency to a slight twist, this form might be considered as a separate type rather than a subtype.

¹⁸ In the opinion of the writer, who has seen examples, some of this class suggest the reworked tip ends from actual Folsom points, and it is possible that the type originated from such re-used forms.

¹⁹ In this connection it is interesting to note that the specimens illustrated and listed as Folsom and Yuma points by Sayles (1935, pl. 25) with one ex-

types is considered the result of a long duration for the Clear Fork complex, a period marked by evolutionary changes in the projectiles but only slight modification of other traits (C. N. Ray, 1938a, p. 198).

The Clear Fork complex is of particular interest because Folsom points are often found with it, especially the earlier stage with the first two types of points, and in general it seems that Folsom and Clear Fork remains were approximately contemporaneous (C. N. Ray, 1939a, pp. 63-64). It has been suggested that the Clear Fork complex may be a local development of the Folsom (Ray, *ibid.*, p. 64), but it is more likely a phase of a Texas culture with an admixture of Folsom material. The two have much in common; in fact, some forms of implements, flake knives, spokeshaves, and graver points are so similar that it is difficult to differentiate one type from the other (C. N. Ray, 1935, p. 127). This is also true for the same series of tools as far as Folsom and other, even much later, complexes are concerned, so that probably the similarity has no particular significance in this instance. What is important, though, is that some of the artifacts peculiar to typical Folsom sites are missing from Clear Fork collections and vice versa. Also, there are Clear Fork sites where no Folsom points have been found (C. N. Ray, 1935, p. 127; 1939a, p. 64). Furthermore, the total number of fluted points from this whole area is smaller than that from any one of the definite Folsom sites, an indication that they represent a diffused rather than a local trait. Because of this the writer is led to conclude that the Abilene sites identified as Folsom are probably representative of a basic Texas pattern with some infiltration of objects from the former. An example is the McLean site (C. N. Ray, 1930), where both true and generalized Folsom points have been found with other forms of implements comparable to some of the Folsom varieties, as well as with characteristic Clear Fork specimens.

In fact, it is reported that all of the Clear Fork complex components have been found wherever Folsom points were obtained (C. N. Ray, 1939a, p. 63). Added to this is the circumstance that a number of tools commonly found in straight Folsom deposits are missing from

ception correspond more closely to Ray's later Clear Fork than they do with the actual Folsom and Yuma types. This is significant from the standpoint of a hypothetical reconstruction of sequence and complex relationships because regarding them as Folsom and Yuma tends to place those forms in a later horizon than is indicated by other evidence. To further complicate matters Gladwin (1937, pl. 7) pictures what appear to be some of the same points shown in Sayles' pl. 25 and calls them Brazos River types, at the same time omitting a number of Sayles' characteristic forms for that complex. Gladwin (1937, pl. 2) also illustrates Ray's Abilene but seems to follow Sayles' data.

the McLean assemblage. Hence it seems better to consider the location a Clear Fork or a Clear Fork-Folsom camp rather than specifically Folsom. This, of course, is a matter of interpretation and others may not agree, but from the writer's knowledge of actual Folsom materials it appears to be a more plausible designation. From the standpoint of general age the identification makes little difference, as both Folsom and Clear Fork objects presumably come from about the same horizon in deposits indicative of some antiquity. The Folsom may be earlier, with subsequent contemporaneity, as it was here that a generalized fluted point was found in association with mammoth bones in a hard, compact layer of reddish alluvium intermixed with gravel and limey concretions.²⁰ Other fluted points and Clear Fork artifacts occur in deeply eroded banks of similar material, but inasmuch as there is a younger alluvium that for the most part is indistinguishable from the older one containing the bones (Bryan and C. N. Ray, 1938, p. 268) and as some of the objects are probably derived from it, there is the possibility that the Clear Fork complex may have appeared somewhat later. Dr. Ray has expressed the opinion that the Clear Fork was the older, but the newer evidence indicates the reverse.

Folsom points are present at various surface sites and at one place occur with a variety of stemmed and barbed points, pottery fragments, pecked and polished celts, milling stones, and other objects from later horizons (C. N. Ray, 1935, pp. 84-86). The site has been cultivated, and the materials are obviously mixed. Such stratification as may have been present was probably destroyed, so that evidence on relationships would be difficult, if not altogether impossible, to obtain. The place, no doubt, was occupied at different times by several peoples and to attribute it to one specific group, especially that with the smallest percentage of traits and one regarded as indicative of some antiquity, tends to be misleading when the other articles are undoubtedly from a later complex.²¹ In this connection it may be noted that

²⁰ The association is not as significant as it might be because the deposit is attributed to an ancient flood and "The skull, various other bones and the point seem to have been rolled in together" (Bryan and C. N. Ray, 1938, p. 267). What the relationship was prior to the deposition is not known. It does indicate priority for the fluted points, however. An additional feature of interest was the finding of a Yuma point embedded in the top surface of this layer (*ibid.*).

²¹ The points are the generalized fluted form (C. N. Ray, 1936, p. 183), and as it is stated that the specialized Folsom type has never been found in sites with pottery (Ray, *ibid.*), the occurrence might be interpreted as an indication that the generalized was the more recent. That such was actually the case, however, is still to be proved.

some think the Folsom complex persisted much longer in this part of Texas than elsewhere, a thing which might account for the associations at the above site. Evidence for such a survival is meager and, being based for the most part on the degree of patination (or, more precisely in most cases, of cacholong resulting from exposure to sun and wind) present on the implements, is highly debatable. At the Lindenmeier site recent Indian specimens lying on the surface exhibit this feature, whereas none of the buried tools have it. Consequently, ideas of relative age based on that factor alone would be completely misleading for that location.

Subsequent complexes or phases in the central Texas area are too late to be of significance from the standpoint of the age problem here under consideration. They are more important with respect to their bearing on the problem of continuance of occupancy and, in the present status of archeological knowledge, offer some, although not altogether satisfactory, evidence for such an occurrence. Extensive excavation in these remains will no doubt furnish valuable data—there actually has been very little digging—and may supply necessary connecting links, but the question of a possible gap between the earliest inhabitants and those of later date still remains.

The burials are found at depths from 7 to 9 feet. They consist of stone-slab-lined pits containing skeletons that exhibit features believed to be indicative of an early type of Indian. There is no evidence to connect these graves with any of the deeply buried sites (Ray, 1939b, pp. 237-241). Such mortuary offerings as accompanied the interments have not been of the types of implements described and hence provide no means for correlation.²² The levels at which they occur are also against the possibility of their belonging to the early complexes, yet their discoverer believes that they represent the type of man making and using those tools (C. N. Ray, 1938a, p. 206).²³ The morphological significance of the skeletons is considered in subsequent pages in conjunction with other human remains attributed to the Paleo-Indian inhabitants and needs no further comment here.

Geologic studies of the deposits where the preceding archeological manifestations are found have produced some interesting and at the same time puzzling data. Resting on the basic substratum are compact silts that have been named the Durst. The top of this layer, an old soil or gumbo profile, appears to have been exposed over a long period

²² A seeming contradiction to this statement is the report of a side-scraper in one grave (C. N. Ray, 1938a, p. 203), but as the tool is of a type too ubiquitous to form a good criterion it has probably been disregarded for that reason.

²³ Sayles tentatively assigns them to his Brazos branch (1935, p. 52).

during which it was deeply weathered. Unconformably above this is a series of silts laid down by widespread, successive slack-water sheet floods. They are designated the Elm Creek silts, and in places their tops are characterized by the development of soil profiles and erosion, by recent deposits, and by flood plain. The Durst silts have been suggested as being an older Pleistocene deposit, possibly correlating with the Illinoian glacial substage and the weathering with the Sangamon interglacial. The Elm Creek silts are regarded as either Late Glacial, the Wisconsin substage, or early Recent but probably Wisconsin (Leighton, 1936).

The stone flakes, utilized flakes, and crude hand axes described for the lowest horizon come from the Durst silts and from the weathered upper surface (Leighton, *ibid.*, p. 38). Some of these tools have been called Durst eoliths (Gladwin, 1937, p. 30) and are considered typologically so crude that they did not persist into later horizons. It is more likely that they represent discarded material or unfinished artifacts because both the Abilene point (K. Bryan, 1938, p. 274; C. N. Ray, 1938b, p. 273) and the generalized fluted point also occur in the Durst silts (Albritton and Bryan, 1939, p. 1468). The latter indicate that the culture was well beyond the "dawn age of stone tools" and that there is not the sharp differentiation between artifact levels (Gladwin, 1937, p. 24) formerly believed to exist. The Abilene points (Ray style) also come from the lower Elm Creek silts, and the Abilene complex (Gladwin-Sayles) is found there. Some of the Clear Fork traits are present, but it is not certain that all components of the complex are contained in them (K. Bryan, 1939, pp. 37-41). Folsom points are also found in the lower Elm Creek silts, and although it is not specifically so stated, it seems evident that the stone-slab burials are in the upper levels of that horizon. In some cases the top of the pit is below some of the upper layers and in others appears to have been a penetration from their top surface; possibly this is a result of recent erosion rather than of excavation for the grave in a later period. More evidence is needed on this feature, and until it is available, it is not prudent to suggest that all of the burials are contemporaneous with the upper Elm Creek silts. As a matter of fact it is entirely possible that the physical type remained unchanged in this area over a period sufficiently long to make possible the presence of similar skeletal remains in both forms of graves. Phases of the Edwards Plateau culture and the older Brazos River, those incorporating traits from the Clear Fork, apparently correlated with the upper Elm Creek horizon, but in the main the materials are found under different conditions.

The trend of events indicated by the geologic strata and the archeological specimens, and summarized by Leighton (1936, p. 41).

. . . is that primitive man lived in this region during the latter part of the Sangamon interglacial stage, prior to the deposition of the Elm Creek Silts,—that later during the widespread slack-water sheet floods which were responsible for the deposition of the silts, they inhabited the adjacent higher ground, as shown by the older culture mingled with a young culture found in the red sands on the divides;²⁴ that during the intervals between the floodings—short geologically but possibly hundreds of years long—they invaded the silt flats in search of game and left their records of hearths, charcoal, crude flint implements, and bone refuse, to be covered by the next flood.

The latter feature explains the numerous occupation levels in the Elm Creek deposits.

Leighton states that his findings are tentative and subject to the results of later field work. Identification of the weathered surface of the Durst silts as Sangamon suggests an antiquity for the archeological specimens that is incompatible with the history of the development of stone working as it is known in the Old World.²⁵ Subsequent discovery of Abilene and fluted points in the Durst silts, not lying on their upper surface, would place the time of their first appearance in the area even farther back in the past and would accentuate the anachronistic status of the artifacts. Unless the deposits in which those points were found have been mistakenly identified—which is unlikely, as the identification was made by competent geologists—the age concept for the Durst silts probably needs to be revised. The writer has not seen the deposits and, as he is not a geologist, would not be qualified to pass on them if he did, but from the available literature on the subject and the archeological evidence, meager as it is, correlation of the silts with one of the glacial substages in the Southern Rocky Mountains rather than with the major phenomena farther north and east appears reasonable. There are a number of substages in the Wisconsin exemplified in the former area that could account for the alternating humid, dry, and humid conditions necessary to produce the deposition, erosion, and deposition recorded. The mammoth bones and fluted point washed in together at the McLean site are in Durst silts, and although it is stated that the point is as old as the layer of alluvium (Bryan and C. N. Ray, 1938, p. 267), the age is not indicated in that connection. The logical conclusion would

²⁴ This presumably refers to the Edwards Plateau complexes.

²⁵ A somewhat similar situation in Nebraska had remains assigned to the Peorian, and later studies demonstrated the improbability of that age (Bell and Van Royen, 1934, pp. 53-56).

be that it is not quite as old as the earliest established horizon for that type of artifact, which is approximately mid-Wisconsin. Shifting the dating of the Durst silts ahead to that point brings the material into agreement with the broad archeological picture and eliminates an otherwise inexplicable hiatus.

Just what this would do to the Elm Creek silts is not clear. It might mean that they should be regarded as of later origin—in fact, studies in another area tend to indicate such a status—yet it would not necessarily change their relative position of late Wisconsin or early Recent. It is possible that the arid period between the third and fourth substages of the Wisconsin as recorded in the sequence for the Southern Rocky Mountains would suffice for the weathering of the top of the Durst silts. Both the archeological and geologic discussions of the Abilene sites probably are more detailed than necessary for the purposes of the present paper. There is so much confusion and misunderstanding about them, however, that the more complete consideration was deemed advisable. The significant feature is that here again there is evidence for, at least, a late Pleistocene and possibly a somewhat earlier occupation.

THE TEXAS GULF COAST AND TRANS-PECOS REGION FINDS

On the basis of typology, similarity of certain implements, the presence of the concave-base scraper or the Clear Fork gouge and variations of the Abilene point, the same type of human skeletal remains, and depth of occupation levels, sites in the vicinity of Corpus Christi Bay and in the valley of the lower Rio Grande have been identified as derivatives from the Abilene-Clear Fork complexes and assigned a considerable antiquity. The first has been named the Oso and the second the Coahuiltecan (Gladwin, 1937, p. 32, pls. 3, 4; Martin, 1930, pp. 13-16; Sayles, 1935, pp. 40, 41). The Oso is placed shortly after the Abilene, and the Coahuiltecan somewhat later still. The dating should be considered tentative as the evidence is not wholly convincing and, in view of the situation discussed above, probably will prove to be exaggerated. The data thus far available on these complexes are certainly not as significant as those from the Abilene sites. They are mentioned more because it is thought that they have been unduly stressed rather than because of their contribution to a solution for the problem of age.

Southwest from Abilene and the Edwards Plateau and northwest from the Coahuiltecan district in the area between the Pecos River and the Rio Grande, Trans-Pecos Texas or the Big Bend region as

it is variously called, are remains that have been regarded as having a bearing on the question of early inhabitation. Because they are more recent, they are not as important in establishing age as sites already discussed and others still to be considered. Nevertheless, they have been emphasized by certain workers and for that reason are worthy of passing notice. The archeological manifestations occur in buried deposits along stream beds, in rock shelters, and in caves. Hearths, occupation levels, stone implements, and burials are found in valley sites. The caves contain similar remains but in addition yield dry materials such as baskets, matting, sandals, wooden objects, animal skins, and a variety of bone implements. The stone objects comprise hand hammers, hand axes, flake scrapers, core scrapers with concave base, large and small rough blades, flake knives, retouched leaf-shaped blades, several types of projectile points, wedge-shaped grinding stones and oval-bowl milling stones or metates, painted pebbles, abrading stones, and tubular stone beads. These artifacts suggest a later horizon than those from the complexes previously described. Some of the hand axes, leaf-shaped knives, and side-notched projectile points are comparable with those from the later Edwards Plateau horizons, and the core scrapers with concave base are reminiscent of the Clear Fork gouge. Most distinctive is one type of projectile point. It is thin, sharp-tipped, broad-bladed, shouldered and stemmed, and is known as the Pecos River Cave point (Sayles, 1935, p. 66, pl. 18).

The other components of the complex, the articles made from perishable materials, are for the most part suggestive of similar objects from the Basket Maker horizons of the Pueblo area, although they do have characteristics peculiar to this region that distinguish them from actual Basket Maker specimens (Setzler, 1935). As none of the older complexes contain such artifacts, owing to the open nature of the sites, further consideration of the group is not germane to the present discussion. Comparisons have to be restricted to the lithic industries. The remains in this region are referred to as Big Bend Basket Maker, Big Bend Cave Dweller, or Texas Cave Dweller with subdivisions designated Pecos River, Big Bend, and Hueco. The main distinction between Pecos and Big Bend in the latter category is that the Big Bend complex contained agriculture. The Hueco is differentiated from the Big Bend on the basis of closer similarity to the Pueblo area Basket Maker (Sayles, 1935, pp. 63-72).

There is considerable difficulty in determining the age of the cave materials, and no satisfactory conclusions have been reached as yet. On the basis of comparisons with Basket Maker, the typology of certain implements, and some cross finds, the general tendency has

been to regard them as belonging to early centuries of the Christian Era, a time far too late to have any bearing on the subject of earliest horizons in the New World. A few indications that they might be older have come to light, but these are not sufficient to warrant much emphasis on the possibility. Fragments from the specialized type of Folsom points have been found in some Big Bend caves. The conditions under which they occurred, the lack of other traits from that complex, and the nature of the associations preclude their being advanced as evidence for contemporaneity between the cave dwellers and the Folsom people. In some cases animal remains suggest certain antiquity, yet fail to establish it. Musk ox and horse bones were found in one cave, but they came from a lower level than any of the human material (V. J. Smith, 1934, pp. 103-106) and are of no value in determining its age. Another cave contained an actual association between bones from an extinct species of antelope, *Tetrameryx*, sandal fragments, fiber cordage, and bone awls in an undisturbed hearth level (Sayles, 1935, p. 67). From this it is concluded that there was an early stage of the Hueco Cave Dweller contemporaneous with the Folsom complex.

So few details are given that it is not possible to examine the occurrence as critically as would be desirable. The conditions are such, however, that it is advisable to wait for more data before accepting it as unequivocal evidence. The fact that only a single animal is represented in a region where other caves have contained a whole series of extinct forms suggests that the association may be the result of causes other than that of the killing of the creature by the cave inhabitants.²⁸ Support is lent this view by the manifestations in Burnet Cave, also in this province, where remains belonging to the complex and apparently representing approximately the same horizon were much higher in the deposits than the extinct species of animals and the occupation level where the fluted point was found (Howard, 1935, p. 78). Geologic studies have not been particularly fruitful, although they have contributed one serviceable datum in correlating

²⁸ Indians commonly picked up fossil bones and carried them to their camps. Sometimes they were used in making implements, perhaps as fetishes or for magical purposes. In other cases it was probably the result of the same collecting instinct that is found in people today. The writer has dug up pottery from Pueblo sites that contained a wide assortment of fossil forms, both plant and animal, and has observed horse teeth and bones from Pleistocene animals, tooth and bone fragments from the mammoth and other large mammals scattered through the refuse mounds of villages that dated in the eleventh and twelfth centuries A. D. For that reason such occurrences require more than a few scattered members as proof of contemporaneity.

certain dust accumulations with physiographic phenomena recorded in valley deposits. Thus far no artifacts have been found in the dust layer (Albritton and Bryan, 1939, pp. 1456-1457), hence the occupation of the caves was subsequent to its formation.

The alluvium in the valley flats has been separated into three formations called Neville, Calamity, and Kokernot. Extinct horse and mammoth bones occur in the Neville, but traces of human occupancy have not yet been observed in it. In a few places the remains of disturbed hearths are present along the Neville-Calamity contact and in the lower part of the Calamity, and intact hearths generally occur in the upper two-thirds of the formation. Most of the artifacts and burials are found in the lower part of the Calamity, although some are present in the upper layers. The stone implements comprise projectile points, various forms of scrapers, choppers, graver's points, and milling stones. Information on their types and probable relationships is not yet available. There are indications that they may have affinities with some of the Edwards Plateau or Clear Fork phases and with the Los Encinos complex from New Mexico. Objects coming from about the middle of the formation are of the Pecos Cave Dweller complex, including the characteristic projectile points. This is significant from the standpoint of relative dating. Archeological materials are found in the bottom and top levels of the Kokernot. They are unquestionably late. Those from the bottom cannot be dated precisely but certainly do not antedate A. D. 900, and the upper or latest are associated with pottery types from the Pueblo area that were made in the centuries A. D. 1100 to 1400 (Albritton and Bryan, 1939). This horizon is, of course, entirely too recent to contribute anything of value pertaining to the time of the first occupation.

The formations indicate three periods of sedimentation with subsequent cycles of erosion. It is thought that the periods of alluviation were relatively humid and those of erosion relatively arid. On this basis the Neville, because of its greater volume, is believed to represent a much longer period of humidity than the succeeding formations, which are progressively smaller. The period of erosion following the Neville also seems to have been a relatively long one as evidenced by extensive channel cutting and the development of broad gullies. There is evidence of considerable wind action, and it is likely that the dust deposits in the caves date from this era because the material in them is that of the Neville formation. The horse and mammoth presumably left the district at the beginning of the era of erosive activity and, although the mammoth may have lingered for a time in the mountain precincts, by the end of the period had disappeared

from the whole area. During the next stage the sediments left by recurrent floods gradually filled the channels and gullies in the Neville to the level of the surrounding flats. In the intervals between floods men camped along the streams and left the hearths, implements, and burials now found in the Calamity. The second period of erosion then set in and steep-banked gullies were cut through the Calamity and into the Neville. This dissection had not progressed far when the streams again began to aggrade and form the Kokernot. Ultimately, the channels were filled to the level of the surrounding flats, subsequent flood waters spreading out over the plain burying camp sites and structural remains on its surface beneath a layer of silt and sand. Some time later the third period of erosion began. It continued to the present and is still active (Albritton and Bryan, 1939).

The Neville formation tentatively has been correlated with the Durst silts of the Abilene region, the Calamity with the Elm Creek silts and with the intermediate alluvium of Rito de Los Encinos (K. Bryan, 1939, table 1), and the Kokernot with the unnamed flood plain deposits that in places overlie the Elm Creek. Another correlation, based on the glacial substages in the Southern Rocky Mountains, equates the Neville with the Folsom horizon or the deposits immediately above it at the Lindenmeier site. The Calamity and Kokernot are believed to be too late to be comparable with any of the substages until well into the Recent period. In this connection Albritton and Bryan point out that there appears to be a major chronological gap occurring in the Neville-Calamity erosion interval in the Trans-Pecos area and that the correlation with the glacial substages is not as satisfactory as that with the silts of the Abilene district. It is significant, however, that by their correlation they indicate the Neville-Durst representative of a later period than that proposed by the Gladwin, Leighton, Sayles reports. The Albritton-Bryan placing of the horizon suggests a substage following the climax of the Wisconsin, a possibility mentioned in the preceding discussion of the Durst silts in the Abilene area and of the seeming inconsistencies in the archeological record. The late dating for the Calamity formation, and by inference the Elm Creek silts, raises a number of questions about the age of the cultural assemblages in those deposits in the Abilene area.²⁷ Some of

²⁷ Although it is not mentioned in the discussion of the silts in the two regions the Elm Creek seem to be somewhat more extensive and in places thicker than the Calamity. This might be an indication of an earlier beginning for the Elm Creek, with the contemporaneity coming in the upper levels. If such were the case, the artifacts in the lower strata would be somewhat earlier than those in the Calamity.

the Edwards Plateau-Clear Fork-Brazos phases may prove to be even later than the revised estimates proposed in preceding paragraphs in this paper. As far as present knowledge goes the archeological remains in the Trans-Pecos province certainly do not give evidence of an antiquity comparable to some of those previously discussed and the occurrence of Pecos River Cave Dweller artifacts midway in the Calamity formation argues against that complex being considered other than relatively recent.

THE COCHISE COMPLEX

In southwestern New Mexico and southeastern Arizona a series of artifacts designated the Cochise have been found under conditions that are interpreted as evidence of antiquity. First traces of the complex were discovered in sediments exposed in the bank of a ravine in Whitewater Draw northwest of Douglas, Ariz. (Antevs, 1937a, pp. 129-132). The remains consisted of hearth stones, charcoal of poplar and hickory, hammerstones, a variety of percussion-flaked implements, hand grinding stones or manos, flat milling stones or metates, and pestles. Projectile points are apparently missing (Antevs, *ibid.*, p. 132). The materials are in a sand stratum $13\frac{1}{2}$ feet below the present surface and 2 feet above the ravine bed. The sand was originally attributed to deposits laid down by an eroding stream during a dry period, but subsequently was described as a flood plain deposit from a permanent river in a wet era. The change was based on the presence of the hickory charcoal and the fact that growing hickory requires abundant moisture (Antevs, 1938). Above the sand is a stratum of laminated clay surmounted by a layer of massive marl. These two horizons are identified as deposits in a small permanent lake, dammed perhaps by beavers, and likewise are believed to be evidence for a humid period. The top of the massive marl shows the effects of erosion, a dry era. Resting in this weathered surface is a thick deposit of brown clay, the top of which also bears marks of erosion. Finally, there is a thin layer of laminated silt with a weathering upper surface, the present ground level. The skull from a mammoth was removed from the upper part of the laminated marl, and mammoth, sloth, dire wolf, extinct bison, and horse bones are present in the artifact-bearing sand.²⁸ The wetness of the pluvial is deemed

²⁸ Statements to the effect that the presence of charcoal in the stratum precludes the possibility of its being a redeposition will not receive complete agreement on the part of archeologists because evidence is occasionally found for just such a thing having taken place. Charcoal also has a peculiar tendency to work downward in sand as several excavators have noted on various occasions.

essential to the formation of the marl beds and the sand layer and they are dated as late Pleistocene.

Artifacts attributed to the Cochise complex, in association with objects that may be components not represented in the Whitewater Draw deposits or that may be intrusive traits from other groups, are also found around the edges of dry basins in southeastern Arizona and southwestern New Mexico. These formations are believed to be pluvial in origin and are known as Lakes Cochise and Cloverdale. The implements consist of choppers, flake knives, a variety of scrapers, and a miscellaneous series of projectile points. Descriptions of the latter are not available, although some are said to be like examples found in southern California, so it is not possible to compare the types with those of established age previously discussed. The specimens occur mainly on the surface of the old beaches, but some are found incorporated in the silts, and although their contemporaneity still remains to be proved, it is suggested that the Cochise people camped on the shores of pluvial lakes (Antevs, 1937a, 1937b). If such were the case, it seems that an unquestionable correlation between the lake beds indicated in the deposits in the ravine in Whitewater Draw and Lake Cochise could be established. Relationship apparently has not been demonstrated in a wholly satisfactory manner as yet. In general it may be said that the proposed antiquity of the Cochise complex has not been accorded as wide an acceptance as some others, and the desirability of more convincing evidence has been suggested by various students in the fields of geology and archeology. As a matter of fact so little has been published on the subject that to pass judgment on the finds is neither possible nor justified at this time.

CULTURAL COMPLEXES IN THE CALIFORNIA DESERT

Camp sites and artifacts are found under similar circumstances in the arid region of southeastern California. They occur along the shores and terraces of dry lakes and river beds, and in some instances around the margins of formations where water is still present or is readily available. Typical examples are the Lake Mohave and Pinto Basin remains. In the Mohave Desert two dry basins or playas called Silver and Soda Lakes indicate the location of what once was a single large body of water. The outlines and various beach levels of this former lake have been traced and the formation named Mohave. At the peak of its development the lake overflowed into Death Valley, cutting a channel through hard granitic rock. Scattered along the beaches correlating with the overflow levels are the artifacts that

comprise the Mohave complex. At one place they were embedded in beach silts at depths of 6 to 54 inches. From this some investigators conclude that the implements are as old as the lake and that determination of its age will also establish that of the complex (Symposium, 1937).

Pinto Basin is an arid valley in the Colorado Desert about 65 miles south from Lake Mohave. Here is evidence for the former existence of an extensive, shallow lake and a subsequent broad, sluggish stream that eventually diminished in size until it occupied a relatively narrow bed that in turn became the present dry wash in the bottom of the basin. Various kinds of stone tools, remains of hearths, and some animal bones are found on the terraces that once were the banks of the larger stream. Inasmuch as the manifestations are mainly on these particular terraces, it is suggested they indicate an occupation coincident with the existence of the river, because of the necessity for people to camp near water. Conditions conducive to such a body of water are attributed to a period of greater precipitation than that of recent times, and correlation of the channel with such an interval is regarded as establishing the age of the stream bed. Assuming contemporaneity for the artifacts, one report gives them the same date (Campbell, 1935, p. 30). Another, however, regards them as being much later (M. J. Rogers, 1939, p. 58). The specimens on which the first publication is based are all surface finds (Campbell, *ibid.*, p. 33), whereas some of those described in the second were found beneath the surface *in situ* (M. J. Rogers, *ibid.*, p. 59). The surface assemblages frequently contain horse and camel bones, some split and broken in a way suggestive of the work of man, and although they occur in greater numbers around the old camps and might be regarded as contemporary midden material, the association is questionable. Similar bones are found weathering out of the underlying deposits, and two awls made from fossilized bone are reported in the collection gathered from such a site (M. J. Rogers, *ibid.*, p. 53). The use of mineralized bone for implements was not uncommon elsewhere, and evidence that the practice was known here offers a plausible explanation for the bones in the sites.

The Lake Mohave artifacts comprise smoothed-stone and flaked-stone implements. In the first group are hammerstones, abraders, possible manos (although the metate apparently is missing), and anvils. There is some question whether the stones were actually smoothed for the purpose or whether those already smooth were used. The flaked category includes choppers, a large variety of scrapers, flake knives, graters, drills, oval knives, leaflike blades,

projectile points, and a series of patinated and water-worn tools that were reworked. Points believed to be characteristic are designated Lake Mohave and Silver Lake. The first is diamond-shaped with a long, tapering stem, pronounced shoulder, and short, stubby blade with a rounding tip.²⁹ The second has a triangular blade, definite shoulders, and broad stem with slightly rounded base, the stem length averaging about one-third that of the entire point. Both types have examples made solely by percussion flaking and others that exhibit percussion shaping with a pressure-flaking retouch. Examples of both types occur at Lake Cochise and in some of the Texas materials, and specimens comparable to the Silver Lake are widely distributed in North America.

Other points consist of a slender, lanceolate form with the maximum width about one-third of the length above the base, which is rounded, straight, or slightly concave; one midway between it and the Lake Mohave type; a variant of the Silver Lake; a variant of the Pinto Basin type designated Paradise River Pinto; and a series classified as Yuma. Only a few of the latter fall within the bounds outlined for the Yuma in this paper and they are mainly of the generalized type. One example suggests the form with dorsal ridge in a lesser stage of development. Several points have a Folsom outline, but lack the fluting and quality of chipping usually noted on such specimens. Others have a suggestion of the fluting of the generalized type of Folsom, yet they seem to belong in the thinned-base category of a subsequent series rather than in the fluted group. The reworked water-worn and patinated implements indicate the existence of an older horizon. They may be from, or allied to, an industry such as indicated by tools found near, but not definitely associated with, old hearths, camel, horse, mammoth, and bison bones in southern Nevada (Harrington, 1934).

Such artifacts have been included in a widely scattered complex that is called the Malpais in one classification (M. J. Rogers, 1939, pp. 6-22) and believed by some to precede that of Lake Mohave. Conclusions are that the latter represents a long interval in the development of various components, that it shows a cultural admixture, and that it belongs in the same broad horizon as Folsom (Amsden *in* Symposium, 1937, pp. 90-95). In its relation to the early lithic industries in this area, one study classes it as a component of the second phase of the Playa Industry, the eastern form of a basic pattern

²⁹ There is some question about classing this as a projectile. In many ways it is comparable to forms designated knives in other areas and to examples actually hafted for use as knives.

extending to the Pacific littoral, where the western exemplification is called San Dieguito (M. J. Rogers, *ibid.*, pp. 27-46).

The Pinto Basin complex, as illustrated by the materials gathered from sites at the eastern end of the basin, also contains smoothed-stone and flaked implements. Metates, manos, pestles, and hammer-stones are the smoothed forms. Flaked types consist of choppers, scrapers of different kinds, retouched flakes, fully fashioned knives, and projectile points. Two forms of the latter are considered as characteristic.³⁰ One is a thin, percussion-flaked, leaf-shaped blade, too generalized to serve as a criterion. On some there is a pressure-flake retouch. The other has been designated as the type for the complex and is called the Pinto Basin point. It is thick, with rounding-convex faces, narrow shoulders, and broad stem with concave base. The stem frequently has side nocks making serrated edges. These and the shoulder nocks have a characteristically curved appearance, the result of their being made by a single, sharp blow. The points were percussion-flaked and in many cases exhibit a pressure retouch. The type compares closely with some of those from the later Clear Fork and synonymous complexes in Texas, with others from the Panhandle and Clovis districts (all surface finds there), from the terraces of former Lake Bonneville in Nevada, and from Caves in the Great Salt Lake region. Two examples are even reported from the Gobi Desert. Associated with these are a few specimens reminiscent of the Abilene point (C. N. Ray), and at some sites fragments suggestive of the Folsom point have been found. In one case the portion of a blade indicates the true Folsom but the remainder are so generalized that they, like some from Lake Mohave, really appear to belong to a thinned-base type. The contemporaneity of the milling stones and the flaked implements was questioned in the original report (Amsden *in* Campbell, 1935, pp. 35-51), and as the evidence now stands, it appears that they do not belong together.³¹ On typological comparisons and other archeological manifestations the Lake Mohave complex is considered the older (Amsden *in* Symposium, 1937, p. 94). Because numerous sites containing the Pinto complex also produce points of the Gypsum Cave type, some believe that they are one of the coin-

³⁰ M. J. Rogers, on the basis of numerous additional sites, lists five (1939, p. 54).

³¹ M. J. Rogers states that potsherds and barbed arrowpoints are usually present wherever manos and metates occur with Pinto materials (1939, p. 52). The Campbells (1935, p. 30) mention "casual sherds and one smashed pot, which are of the prevailing type of desert red ware and certainly could have been left by a late Indian. . . ." It is not entirely clear why such might not be true for the other items as well.

ponents of the basic industry and combine the two, with the name Pinto-Gypsum designating the cultural horizon, the one immediately following that of the Playa and its included Lake Mohave remains (M. J. Rogers, 1939, p. 47, pl. 21).

As mentioned previously, studies of Lake Mohave and the surrounding region have led to the conclusion that it was formed during moist climatic conditions. Only two periods seem to qualify in this respect. One is the last pluvial and the other is the millenium just prior to the beginning of the Christian Era. The latter is not regarded as of sufficient magnitude to have produced such a body of water; hence it is attributed to the pluvial coincident with the beginning of the glacial retreat. The overflow beach lines are believed to record both the wettest stage of the period and a considerable part of its duration (Antevs, 1937a, p. 128; *in* Symposium, 1937, pp. 45-49). This would date it in the late Pleistocene. Because of the occurrence of the artifacts along the overflow beaches the camps have been given the same age.

Several factors furnish a basis for questioning the latter supposition. One significant item is the reported presence of a large camp on a bar extending across the outlet channel (M. J. Rogers, 1939, p. 43), a place that would not have been habitable under conditions of overflow. Another is the finding of some potsherds with Playa artifacts at a depth of 12 inches in the same deposits as the specimens previously mentioned (M. J. Rogers, *ibid.*). Less precise, yet not without significance, is the fact that there is ample evidence in the Southwest for the location of camps at some distance from water,³² and there is not necessarily a correlation between materials on old beaches and the accompanying water levels. The latter may have been considerably lower at the time of occupation. Some may question the age of the lake, but irrespective of the correctness of its dating, demonstration of the contemporaneity of the camps with its maximum development is highly debatable, and until there is more convincing evidence, the possibility of the sites having been coeval with a body of water that collected during the later and less moist period cannot be overlooked.

The original lake in the Pinto Basin has been attributed to the same conditions of moisture as Lake Mohave, namely, the pluvial of the last glacial substage. The subsequent stream is placed in the early postpluvial, and the artifacts have been given a comparable antiquity

³² Steward (1937, p. 105) mentions cases of camps 10 and 20 miles from water that were occupied by entire families and groups of families for days at a time.

(Campbell, 1935). The correctness of this conclusion is also open to question in the matter of contemporaneity and in the possibility of the stream on which the people camped having been the result of the relatively recent period of moisture. As a matter of fact the materials reported in situ indicate a later date, as they are found on an occupation level in a fossil dune that rests on alluvium from a postpluvial wash (M. J. Rogers, 1939, p. 59). There is no doubt that the complex is reasonably old. That it is actually early postpluvial rather than later in the Recent period does not seem probable in the light of present evidence.

OTHER REMAINS IN CALIFORNIA

Antiquity for Malpais remains, consisting of camps, stone tools, and large geometric and life-form figures outlined on level surfaces with gravels, is postulated on the crudity of the implements, the location of the sites, a possible association with ancient hearths in Nevada, and the fact that similar artifacts occur in the earliest horizon of certain shell middens, many of them now miles inland, of the Pacific coast area to the west (M. J. Rogers, 1939, pp. 21-22). Thus far, however, the complex does not appear to be clearly defined; some components may be rejects or unfinished objects from the other groups, and there is little on which to establish possible age. Material from the lower levels of the stratified site known as Pebble Beach, below Boulder Dam (Harrington, 1937), has no bearing on the problem in spite of suggestions that it might have, as it correlates more favorably with specimens from the horizon subsequent to Pinto-Gypsum than with any of the supposedly older forms. It is suggested that the Malpais may approximate the earliest horizon of the Oak Grove complex farther north along the coast, although the latter is probably somewhat later.

The Oak Grove complex (D. B. Rogers, 1929) is characterized by sites on the crests of high, rounded hills; circular, semisubterranean houses; compact middens that are metamorphosed and highly calcareous; crudely chipped stone tools; metates and manos; extended burials; and a dolichocephalic or long-headed people. Considerable antiquity is postulated on evidence for greater precipitation, the burial of sites beneath many feet of water-washed debris, the quality of the artifacts, and the calcareous nature of the bottom layers in refuse mounds. The concensus of those most familiar with California remains is that the Oak Grove complex is probably not as old as those found in conjunction with extinct animal remains in identifiable geologic deposits, but that it unquestionably is one of the earliest in

the now known California sequence. There are numerous other manifestations indicative of some age, and although they are of interest from a general archeological point of view, the limits of the present paper preclude consideration of more than one additional occurrence. This is a so-called Folsom and pre-Folsom site in the north-central part of the State.

On the terrace above the dry end of Borax Lake in Clear Lake Park a series of artifacts consisting of fluted points, Silver Lake and Lake Mohave points, scrapers, flake knives, arrowpoints, chipper's debris, and other objects attributable to recent Indians have been found on the surface in a walnut grove. Digging revealed a layer of village debris $5\frac{1}{2}$ feet deep. Objects were found in this and in the 3 and more feet of underlying subsoil. Specimens attributed to the Folsom complex occur only on the surface or within the disturbed earth above the plow line, with the exception of the basal portion of a fluted point appearing approximately 5 feet below the surface and considered an intrusion via rodent or root hole (Harrington, 1938b, p. 346). Four Silver Lake points came from below the cultivated horizon, and in addition there were five wide-shouldered, narrow-stemmed examples that have been named the Borax Lake type. At even lower levels were rough obsidian blades, metates, manos, pestles, and scrapers (Harrington, 1938a). From this an early seed-gathering complex that was pre-Folsom is postulated. As mentioned in preceding pages, there was undoubtedly a horizon antecedent to that of Folsom. In the present case, however, the fact that the latter complex is represented only by surface material and by a portion of a point that has been ruled out on the basis of subsequent penetration negates its value as evidence. The writer knows of half a dozen sites where Folsom artifacts are found on the surface, or within the cultivated zone which archeologically must be regarded as synonymous with the surface, and where underlying and undisturbed deposits yield potsherds, glass beads, and sporadic points made from metal. That the occurrences at such sites and those at Borax Lake are analogous seems obvious. The fact that some objects are lying on the surface at a site where others are buried is no assurance that the latter are older.

The material from the lower levels at Borax Lake may be old, but this needs to be demonstrated entirely apart from any consideration of the character of the surface finds. The formation is considered to be a fossil alluvial fan laid down during the last pluvial period (Harrington, 1939). If such were the case, the subsurface artifacts would date from the late Pleistocene which, as indicated in other

areas, is also the horizon for the true Folsom complex. However, identification of the deposits as pluvial is not wholly convincing because it appears to depend in large measure on the presence of the artifacts. This is brought out by the statement, “. . . the fact that the implements include points of Silver Lake, Pinto and Folsom types, all of which derive elsewhere from the last Pluvial age, shows that the fan, or that part of it in which the artifacts occur, was formed during the Provo Pluvial,³³ not about 1000 B. C.” (Antevs in Harrington, 1939, p. 209). The latter figure refers to the moist period previously mentioned. The weakness in this summation is apparent when it is remembered that Pinto points were considered at most as only early postpluvial at their type sites and probably are even later, that it is not at all certain that Silver Lake points correlate with the pluvial beaches at Lake Mohave, and that the Folsom material is all from the surface. If consideration is given the buried point, the pre-Folsom complex conclusion would be upset. As a matter of fact the artifact assemblage is very suggestive of reversed and somewhat mixed deposits, and that such is not the case needs convincing demonstration. More conclusive evidence seems essential to support the claimed antiquity for the remains.

Little information is available on the implements considered to be Folsom, and detailed description of their characteristics is not possible at this time. One complete and five fragmentary fluted points are in the collection. There is no statement relative to the nature of the associated tools beyond that of their being typical of the Folsom complex. The writer saw a number of the scrapers and other artifacts on exhibit at the Carnegie Institution of Washington 2 years ago and would hesitate to class them as Folsom unless they actually came from the occupation level at a definite Folsom site. They can be duplicated in many collections from late stages in this region as well as in the Plains area. In this connection it will be recalled that fluted points and fluted knives are the only forms known to be definite criteria. Fluted knives apparently are absent, and the fluted points, judging from the illustrated example, are a variant of the generalized type. They seem almost to fall within the category of fortuitously fluted points, those made from flakes already containing a channel or an accidental reproduction of the feature in the removal of “thick spots” from the faces, and suggest a possible relationship to points coming from a relatively recent horizon in the Sacramento Valley

³³ Provo Pluvial probably indicates a correlation of the pluvial with the culmination of the last glacial maximum exemplified by the Provo level in ancient Lake Bonneville.

where fragments from other examples have some fluting (Heizer, 1938). Hence it seems that for the present this material must remain in the doubtful category.

DISCOVERIES IN OREGON

Farther north there have been several finds indicative of considerable age, yet demonstration of the fact has not been as satisfactory as proponents of early occupancy would like. In this group are stone knives from the Wikiup Damsite No. 1 in Oregon. These blades were in loose earth from a stratum, underlying a layer of pumice, of soil and gravel believed to correlate with late glacial or early postglacial times. Investigation of the pit failed to produce additional specimens but indicated there had been no disturbance in the deposits and that there was little likelihood that the artifacts, which differ from late types in the region, were present as the result of an intrusion (Cressman, 1937). Elsewhere in Oregon cave deposits, underlying a stratum of pumice resulting from volcanic activity, various types of artifacts have been found (Gifford, 1939, pp. 280-281). These are considered to be of some antiquity, although not as great as that indicated by the knives. The problem involves the time and manner of deposition of the pumice as well as the correlation of the archeological material, which seems relatively late, with other complexes. Volcanic activity in that area continued into recent times, and it is possible that the evidence may correlate with eruptions placed at approximately 1,000 years ago. This would not be at odds with what the artifacts show.

Other caves have floors of water-smoothed rocks and beach gravels. These are attributed to wave action in Pleistocene lakes, although not all who have seen them are agreed that such was their origin. Artifacts are found in a number of them, and one contained numerous articles, basketry, sandals, bits of textiles, arrowpoints, and other implements. Partially embedded in the lacustrine gravels on the floor were parts from one human skeleton and a single bone from another. One explanation for this is that a body in an advanced stage of decomposition, although still articulated, was deposited there by wave action (Cressman, 1938, p. 343), but careful consideration of available information makes such an occurrence debatable. The archeological material in general is comparable to some from the Basket Maker horizon and to West Coast forms that are slightly later. The survival of dry materials where some moisture prevails argues against any marked antiquity. On the other hand the animal and bird bones from the cave are reported to show a pronounced change in faunal types in

the region (Carnegie Institution, 1938; Gifford, 1938). The flora, however, seems to have remained essentially unchanged (Carnegie Institution, *ibid.*). Some of these apparent contradictions are no doubt due to the fact that there was no clear stratification in the deposits. The material appears to be relatively early as far as later occupants of the region are concerned, but that it can be considered at all comparable in age to some of the remains from the New Mexico-Texas-Colorado sites is questionable.

MATERIALS FROM UTAH AND SOUTHWESTERN WYOMING

Artifacts in and on lacustrine gravels lying on the floors of caves also occur in Utah. These formations are correlated with certain phases in the history of ancient Lake Bonneville and are believed to date from the Stansbury terrace stage (Steward, 1937). The latter probably roughly approximates the early postpluvial discussed in connection with finds in areas farther south. Implements lying on the gravels consist of projectile points, knives, retouched flakes used as scrapers, and bone-splinter awls. The points are roughly triangular in shape with broad stem and crude side notches. They suggest some of the forms in the Pinto-Gypsum series. Some of the Pinto points are present at higher levels. An infant burial was found in the bottom of one cave. The grave had been scooped out when the cave floor was not over 6 inches above the top of the gravel, as shown by unbroken strata above, and penetrated into the gravel to a depth of 6 inches (Steward, *ibid.*, p. 110). Thus it appears that the interment was early in the history of the cave although somewhat subsequent to its first occupation. How long an interval the 6 inches of material above the ground represents is not known. The bones of the skeleton were too disintegrated to serve for study purposes. Being approximately 1 year old, the individual would have been of little help in demonstrating possible physical type. Because there is no indication of any accumulation between the gravels and the artifact-bearing layer, use of the cave is believed to have started soon after the water dropped below the Stansbury terrace leaving the place dry and habitable (Steward, *ibid.*, pp. 119-120). This would date the remains early in the Recent period. Lack of intervening deposits as evidence for immediate occupancy may be questioned, however, as subsequent layers in caves often rest unconformably on the floor with no clue to the length of time involved in the hiatus. Also, there are caves the present floor surfaces of which are of pluvial origin, and objects left there today would be in the same relation to the deposits as those above. There is no doubt that old remains are represented by these

materials, but that they are as ancient as postulated needs more substantial evidence than that now available.

Scattered over the undulating valley bottoms and on the slopes and tops of the bordering bluffs of the Black's Fork River drainage, one of the main tributaries of the Green River, in southwestern Wyoming are sites and artifacts proffered as evidence for an ancient culture in that area (Renaud, 1936, 1938). Age is postulated from the typology of the implements, the degree of weathering or patination, and to some extent from their situation, whether on valley levels, the slopes, or the tops of the bluffs. The specimens are all surface finds and in general seem to occur in about the same proportions in the different locations, although a few forms may be more numerous on the bluff tops. With size, shape, material, patination, wind-blasting of the surfaces, nature of the edges, whether sharp or dull from rolling about, quality of workmanship, and technique of manufacture as criteria, the artifacts are placed in one of a series of six groups, and in the proper subgroups in such of the main classes as have minor categories. The groups are considered to be sequent, indicative of relative chronology, and are compared with industries of the lower and middle Paleolithic of Europe from pre-Chellean through Mousterian, with emphasis on the Clactonian technique, as well as with the Paleolithic of Africa and with early forms from India. The European names are used, and although it is stated that they apply only in a descriptive sense and are not intended as an indication of time or contemporaneity between the New and Old World forms (Renaud, 1938, p. 49), the sequence and relative chronology of the latter are stressed and the geologic and paleontologic evidence for the long duration of the various industries is used as a gauge for postulating considerable antiquity for the Black's Fork complex. That the implication is justified still remains to be demonstrated. Many of the sites appear to offer little in the way of subsurface assemblages; where ravines and gullies cut across them, they show no occupation levels in the deposits. Hence satisfactory evidence will be hard to get.

The Black's Fork artifacts in some ways form an anomalous complex because most of the types may occur on a single site, with no depth to the accumulation and no signs of long occupancy, and tools of the same type made from the same material coming from the same location will exhibit complete, partial (i. e., one side or one end only), or no patination. In one such series, known to have been found within a radius of a few yards, an example from the surface was entirely patinated, a partially covered specimen had the feature only on its exposed portion, and a tool from just below the surface bore no traces

of it. At some of the first sites described, those near Lyman, Wyo., the writer picked up barbed arrowheads and flake scrapers attributable to recent Indian complexes as well as some of the purported early Paleolithic forms. Being made from the same material, all show the same degree of patination or cacholong. Similar tools made from identical stone and exhibiting varying stages of patination are common in western Nebraska and eastern Wyoming village sites known to be late. Several former camping places in northern Colorado, marked by numerous tipi rings, yield specimens indistinguishable from Black's Fork examples. With them are potsherds and barbed arrowheads. Definitely older horizons in the same district contain no objects the least bit suggestive of the Black's Fork series. The prominence of the Clactonian flaking technique in the latter complex is interesting from the standpoint of method, yet has little significance in the matter of age as it has been noted in a good percentage in the stone implements from Pueblo sites in north-central New Mexico (Renaud, 1939). The problem of similarities between Paleolithic forms and blanks, unfinished implements, and rejects appears not to have been given much consideration, and there might be some helpful clue in that approach. There is much in common between the components of the Black's Fork and those of the Los Encinos complex, although the materials used are distinctly different, and the relative position of the latter shows that a predominance of old tool types may be present in a fairly recent horizon. The most that can be said at present is that the Black's Fork complex contains numerous Paleolithic-like artifacts and that patination and weathering indicate some age, but thus far there is no definite evidence for antiquity.

HUMAN SKELETAL REMAINS

Skeletal remains found under varying conditions have suggested appreciable age, but for the most part there is greater disagreement over their authenticity than in the case of the archeological and paleontologic manifestations. This is due to several factors. Foremost is the question of stressing the bones—the presence or absence of primitive characteristics—rather than the manner in which they were found in the earth. This is partially due to the fact that the studies are usually made by persons primarily interested in the skeletons per se, but mainly to the fact that such discoveries frequently are fortuitous and the remains are either disturbed or have been completely removed before being seen by those qualified to pass on them. Subsequent study of the deposits is usually unsatisfactory, and any evidence thus obtained is always open to question. It is not an easy matter to

determine from a skeleton's position whether a burial was intentional or accidental, and the outlines of a grave pit may be missed. The continuity of overlying strata or the evidence of penetration are too often destroyed by the activity that reveals the interment. As a consequence opportunities for differing opinions are immeasurably increased. Fossilization has some significance but is not a reliable criterion because, as mentioned in the introductory paragraphs to this paper, it may be a rapid development in some regions and in others may not take place at all.

The problem of primitive characteristics is intricate, and the issue tends to be further confused by the attitude of both the pros and the cons. The former have had a tendency to overemphasize any such characteristics that may be present—and sporadic primitive features are noted even in people living today—whereas the latter have insisted that the existence of a few but the absence of many precludes all possibility of age. The adherents of this view actually demand a more primitive physical type as evidence for some antiquity in the New World than was living in the Old at a comparable time. Discussion of the archeological manifestations pointed out that the earliest demonstrably authentic horizon is late Pleistocene. The artifacts from this level are similar in form and development to those of the late Paleolithic industries, in some cases are believed to be more Mesolithic or even Neolithic in type. Hence it is not reasonable to expect that they were made by a less evolved kind of person here than there. By Aurignacian times in Europe, an earlier stage than any thus far suggested by the North American materials, there were three races of men, including modern forms. In the so-called Desert Belt in the Near East there were men of modern types in the pluvial period correlating with the last, Würm, glaciation in Europe (Childe, 1928, p. 29). There also were modern men in eastern Asia as is shown by the assemblages from the upper cave at Choukoutien, China, where skeletons were found with implements considered to be upper Paleolithic and in association with a Pleistocene fauna. One skull from this site is like that of some southwestern Indians, the Texas long-heads (Weidenreich, 1939, p. 172). In view of this, to expect anything but an essentially modern form of man is inconsistent. Furthermore, the consensus is that the American Indian as a group retains more primitive features than modern Europeans and probably shows less divergence and progression from his own basic stock than any of the various related subgroups stemming from the same source. Consequently, there is no reason to suppose that the earliest arrivals,

those responsible for the archeological complexes, would be other than "ordinary Indians" with perchance some slightly primitive features.

Detailed discussion of human remains considered representative of the first migrants to North America is beyond the bounds of this paper. Among recent finds of this nature may be mentioned the Texas skeletons (Hooton, 1933; Hrdlička, 1938; Oetteking, 1930; Stewart, 1935; Woodbury, 1935); New World man (Figgins, 1935; Roberts, 1937b); Minnesota man (Jenks, 1936, 1938; Hrdlička, 1937); Browns Valley man (Jenks, 1937); Sauk Valley man (Bryan, Retzek, and McCann, 1938; Jenks and Wilford, 1938); some skulls from Wyoming (Howells, 1938); the Bradwell skeleton in Saskatchewan (Edmunds, Jackson, Spinks, and Vigfusson, 1938); the Conkling Cave skeletons; and the burial in one of the Oregon Caves. There is no available information on the morphological characteristics of the Conkling Cave examples, and their approximate chronological horizon has already been discussed. All the crania in this series have the dolicocephalic or long-headed form believed to be typical of the first inhabitants. The skull from Oregon is of the well-known Basket Maker type. The Texas specimens are unusually long and narrow with a protruding occiput and are identified by some as belonging to the group which includes the purportedly early Lagoa Santo and Punin skulls from South America, a so-called archaic variety of the Indian.

New World man, the Wyoming skulls, and Minnesota man are similar in that they exhibit alveolar prognathism, have undeveloped nasal sills, and some protuberance of the occiput (Howells, 1938). The group does not resemble that exemplified by the Texas specimens. Their nearest affinity appears to be with the Sioux, yet various students think that they have sufficient differences to warrant considering them in a separate category. The teeth of Minnesota man, individually and as a set, are above the average in size. Sporadic recent skulls may contain two or three of comparable dimensions, but similarity for the whole series has not been noted. Much is made of this in the argument for antiquity. Browns Valley man had a long, narrow skull, prominent brow ridges, a short face with broad lower jaw and skull base. The Sauk Valley skull is long, low, has prominent brow ridges, projecting occiput, some alveolar prognathism, and a massive lower jaw. It has been suggested that it represents a stage midway between Minnesota man and Browns Valley man in the matter of primitive characteristics. The Bardwell skeleton was badly broken in removal, and the facial parts of the skull are missing. The intact vault indicates the long, narrow head form with prominent

brow ridges. The various features mentioned for the different crania are admittedly traits attributable to lesser stages of physical development, and other parts of the skeletons not discussed here also show primitive characteristics to a greater or less degree, but because they sometimes occur singly or in different combinations in recent individuals, there is a tendency to deny their value as criteria in cases like those above. Needless to state, there is no unanimity of opinion on the status of the above remains per se. Conclusions for the most part are that all fall within the normal range of variation, which is broad, of the modern Indian and that any claims they may have to antiquity must be decided on the basis of archeological and geologic evidence.

The Texas series came from the Abilene burials, either late Clear Fork or Brazos according to the classification being followed, the Oso along the Gulf Coast, and caves of the Cave Dweller complexes. Their horizons have been discussed already and need not be presented again. New World man had no associated archeological or faunal material. The remains came from a bank of the Cimarron River in northeastern New Mexico some 16 miles east of the original Folsom bison quarry. The bones were not observed in situ by any trained investigator, but the spot where they were found was subsequently pointed out. It was a water-borne deposit 13 feet 6 inches below the present surface, and the skeleton had undoubtedly been washed into a pocket by stream action.³⁴ The overlying stratum of alluvium contains scattered fragments and individual bones from modern bison. From the degree of fossilization of the human bones and a tentative correlation of the old stream bed the remains were assigned a date equal to, or exceeding, that of the Folsom bison and archeological material (Figgins, 1935). This conclusion has not been confirmed, and thus far there has been no independent study of the geology of the site. The Wyoming skulls were discovered in the debris after a road crew blasted away a portion of a sandstone cliff in the North Platte Valley in the southeastern part of the State. They, with other portions of the skeletons, some stone implements, and bone beads, no doubt had been in an unobserved earth-filled hole or crevice in the cliff. The artifacts were carried away at the time and have not been available for study. There is no means for dating the material either archeologically or geologically.

Minnesota man, actually a young girl, also was discovered by a road crew, and most of the bones were removed before they could be

³⁴ It may well be mere coincidence, but it is interesting to note that this is the same depth and the bones are in the same type of deposit as the Cochise materials in Whitewater Draw.

observed by a trained anthropologist. A few fragments were subsequently found in situ in the sides of the excavation and, as they fitted onto pieces previously removed, are regarded as authenticating the source of the remains. An elk-antler dagger, a conch-shell gorget, and another shell ornament were associated with the skeleton. Scraps of bone from the wolf, loon, turtle, and muskrat were removed from the pit, and it has been suggested that they were part of the contents of a medicine bag carried by the individual. The assemblage was in the varved clays of glacial Lake Pelican. Identification of the deposits is not questioned, but there is sharp disagreement over the nature of the burial—whether it was intentional or fortuitous, contemporaneous with, or a later intrusion into, the clays, and whether the latter do or do not give evidence of disturbance. That the body was placed in a grave or that the girl had fallen through a hole in the ice, drowned, and sunk to the bottom to be covered gradually with settling sediment can never be established conclusively because of the manner of its discovery. There is a case for contemporaneity with the clays (Bryan and MacClintock, 1938), and grounds for argument against it (Antevs, 1937c). The artifacts are too indeterminate to be of assistance, as similar objects might accompany a burial at any stage down to early historic times in that area. The faunal clue from the antler dagger and the supposed medicine bag bespeak present climatic conditions and modern animals. Opinion on the status of the find is about equally divided. One group maintains the age is late Pleistocene, the other that it definitely is Recent. There the matter stands.

Browns Valley man came from an intentional burial. It was found in a gravel pit while material was being removed for use on a roadway. The grave was in late glacial gravels. It had been dug after the formation of the deposits but prior to the development of a thick layer of humus. From this it is judged that the remains probably are early postglacial. The artifacts accompanying the burial, the points already described, lend corroboration to such a conclusion. The find has been accepted by most students. The Sauk Valley skeleton is another in the series found by workmen in a gravel pit. It presumably was not an intentional burial and had no accompanying artifacts. Like New World man, it had been included in the gravels during their deposition. Indications are that the latter may be late Pleistocene, but the geologists studying the site were unable to obtain conclusive evidence of that fact.

The Bradwell remains were in a gravel pit near the town of that name in Saskatchewan. Unfortunately, all the bones were removed and the adjacent gravel was completely disturbed before the find

became known and critical examination could be made of the excavation. For this reason there is no evidence to show whether the burial was fortuitous or intentional, whether the grave was dug prior to the deposition of the upper bedded gravels or was wholly a late penetration. Workmen stated that they had observed no unusual features in the bedding of the layers above the bones, but their ability to recognize a disturbance of some standing is open to question. Sifting of the material removed when the bones were discovered yielded a nondescript quartzite scraper that has no cultural significance.³⁵ The deposits containing the material are glacial outwash formed during the final retreat of the ice sheet in that region. If the upper layers were unbroken the bones would be late Pleistocene, otherwise they belong to the Recent period. That they may have some antiquity is indicated by their mineralization, but that is not a certain criterion. From the foregoing it is evident that except for Browns Valley man, perhaps one of the more recent of the series, the archeological and geologic data for the antiquity of the human remains are neither as good nor as convincing as those for some of the complexes that have been found with no accompanying skeletal material.

THE TIME AND ROUTES OF MIGRATION

The preceding review of recent discoveries and the evidence they offer indicates that the migration to North America was under way in the latter part of the Pleistocene and that by the beginning of the Recent period groups had penetrated as far south as the area just north of the Mexican boundary. As brought out in the discussion, suggestions of occupation in the last interglacial and early phases of the last glacial stage do not hold up under careful examination of the deposits on which they were based. On the other hand shifting those manifestations to a position subsequent to the climax of the Wisconsin, although still within it, brings them into agreement with the general archeological picture for the continent. The presence of men in the New World at a time when lingering portions of the great ice sheet still covered large areas of the terrain raises the problem of glaciation, its effect on climatic conditions, its bearing on the routes of travel, the movements of peoples, and the animals that were their main source of sustenance and maintenance. Studies along these lines are far from complete, and there is much to be learned. Enough is known, however, to provide a basis for a few broad conclusions.

³⁵ Yuma and Folsom points are found in Saskatchewan in the district directly south, and other artifacts are reported from gravels in the area farther west (Bird, 1939).

During the last stage of the Pleistocene, glacial drift covered the northern part of North America from the Atlantic to the Pacific, but the ice did not form a single, continuous sheet. It consisted of numerous lobes extending from several centers of development and was characterized by a complexity of fluctuations in the lobes, the main masses from which they radiated, and in the relations between the active centers (MacClintock, 1937). In Alaska the glaciers were in the Alaska and southern coastal ranges and the Brooks Range in the northern part, but at no time was the great central plain or the lowlands bordering Bering Sea and the Arctic coast glaciated (Johnston, 1933). The fossil remains of plants and animals indicate that during the whole Quarternary period there was an abundance of supplies suitable to the needs of any people living there or passing through the area (P. S. Smith, 1937).

On various occasions a land bridge apparently connected Alaska with Asia, at times there were ice bridges, and there is no doubt that the strip of water at Bering Strait has been narrower than in recent years. Hence the crossing would not have been an impossible task. The most likely place was north of the strait proper, and the main pathway from the unglaciated area seems to have been east to the MacKenzie River, southeastward along it and the eastern slopes of the Rocky Mountains and into the Plains (Johnston, 1933). Subsequent opening of the upper Yukon River and its tributaries provided a route to the Plains through the Liard and Peace River valleys. Coalescence of the cordilleran and Plains ice sheets no doubt blocked the trail along the eastern edge of the mountains during a greater part of the Wisconsin, but there was an interval when there was an open corridor, and not long after the climax of the period it again became free of ice, though glaciers still lingered in the mountains and on the Plains farther east. There seems to have been at least one minor advance, of insufficient proportions to close the pathway, before the onset of the final retreat. Later another route south along the Fraser River, between the Rockies and the Coast Range, and into the Great Basin became available.

Knowledge of glaciation in Siberia is limited, but passage from central Asia to Alaska was possible at the time of the open corridor (Antevs, 1935b). The climate was none too good, and temperatures no doubt were much cooler than those of today. The environment was of the tundra variety, yet the Caribou Eskimo and neighboring Indians have lived for considerable time in a comparable situation and have demonstrated that it would not be an obstacle to migration. For that matter people lived in Europe throughout the last glacial

period. In view of the lack of actual physical barriers to prevent the spread of peoples into North America in late glacial times, supplemented by the fact that such movements have been established for various animals, the finding of camp sites and artifacts in deposits attributable to that period is a natural concomitant. The first migrations undoubtedly were those of small groups. Subsequent amelioration of conditions probably increased their numbers. The major movements that provided the main bulk of the Indian population, however, seem not to have developed until the Recent period was well established and the climate became like that of today.

Travel by boats has been suggested as one of the methods of approach to the New World and a means by which it was populated. By this is not meant the use of small craft, rafts, or other makeshift forms of water transport that may have been used in the crossing near Bering Strait. It refers to movements down the coast to suitable landing places and migrations by way of the Commander and Aleutian Islands. The coastal waters were no doubt navigable in late glacial times, yet the glaciation of the Alaskan peninsula and the seaboard as far south as Vancouver would make for inhospitable stopping places, and the stormy nature of the waters would be a great handicap. Crossing from Asia by way of the island chain calls for the navigation of long distances over open water and against treacherous currents, whereas the widest stretch of open sea at Bering Strait at present is only 25 miles, with land always in sight. In earlier times it appears to have been much less. Furthermore, archeological evidence for the Aleutians and other islands is that occupation was relatively late and that the movement was westward from Alaska. They were actually a cul de sac rather than a main travel route. Because of these things, the consensus is that most of the movement was across the strait area and the spread followed the inland routes. This is borne out by the bulk of the archeological evidence.

The first migrants were unquestionably hunters, and many of the animals that served them as game were essentially the same as those existing today. In addition there were a number that now are extinct. Among those represented by the bones associated with the remains of camps and the tools left by these hunters are large bison, camelids, sloth, giant beaver, giant bear, dire wolf, mammoth, four-horned antelope, musk ox, and the horse. This is usually regarded as a Pleistocene fauna and was formerly considered evidence for dating accompanying materials in that period. It is now believed, however, that all of these creatures survived into early Recent times (Romer, 1933), with the sloth and some of the camelids the last to disappear.

As a consequence, an association between man-made objects and bones from such animals cannot be considered evidence of Pleistocene man, although it does indicate some antiquity. On the other hand, total absence of such remains, in areas where the creatures flourished, is a good criterion for the relatively recent age of a site. When archeological manifestations occur in deposits that can be correlated with geologic phenomena identified as late Pleistocene and also are associated with extinct species of animals, as noted in a number of the examples described, the dating of the assemblage as late Pleistocene appears to be justified.

The similarity between various implements found in the early complexes in North America and those from different European stone industries has been mentioned. Perusal of a number of reports reveals detailed comparisons with Early, Middle, and Late Paleolithic types, with some Mesolithic forms, and a few from the Early Neolithic. In some cases the New World artifacts have been designated by the same names as their Old World analogs. For purposes of characterization this is in keeping with archeological practice, but because inescapable implications of contemporaneity and origin are involved, the use of different terms and categories seems advisable. This would avoid undue stimulation of a tendency to infer antiquity from typology and to derive North American complexes from European industries. It would also lessen objections to conclusions on the age of New World materials that stress the absence of certain typical European Paleolithic tools as evidence for a late development. There would be no fault to find in the application of European terms to the techniques of manufacture, as in Clactonian-like or Levalloisian, but to go farther would be misleading. In North America we are dealing with the remains of an Asiatic people, and it appears that the logical source of their tool-making industry would be Asia rather than Europe. Although little is known about it as yet, it appears certain that the development of stone chipping in eastern Asia, where the flake industry early attained high excellence, was mainly independent of that in Europe and that the Paleolithic industries in the two areas are distinct (Loukashkin, 1937; Menghin, 1937; Pei, 1937). Present indications are that the closest affinities of the New World implements are with those from east Asia. Nevertheless, there was a definitely local development in the industry after it reached this hemisphere, and some types of tools are indigenously. Thus it is obvious that attempts to correlate these artifacts with those of Europe or to insist that materials here should conform to the pattern there are based on erroneous conceptions. This view is not a case of archeological isola-

tionism, as some have suggested, it is merely giving due regard to a growing body of evidence.

The greatest source of disagreement over Paleo-Indian remains is the matter of the dates attributed to them. Many think them too great; others insist that they are not. Some base their arguments on archeological characteristics and Old World comparisons, others on the physical type of the people, while many rely on the evidence from paleontology and geology. Geology offers the surest guide, but one that is not altogether simple. Difficulties arise from the complexity of the glacial action, the fluctuation in radiation from the several centers, the variations in the different lobes, conditions that make for uncertainty in the correlation of deposits with glacial phenomena. Late glacial in one region may be contemporaneous with glacial in another, and postglacial along the peripheries may be late glacial near the nuclei. Furthermore, the question of the relationship of the pluvials is not always clear, and there is practically no way of correlating postglacial materials. Studies on fossil pollens and old peat bogs suggest possible solutions to that problem, but thus far have not been very helpful in the problem of questionable archeological discoveries. The dating of glacial movements by means of varves, the annual silt deposits left by the melting ice, has become well established in Europe and has been of considerable aid in determining the age of remains there. Synchronization between the Old and New World glaciations has not been completely demonstrated, and although varve counts here are proving to be helpful, correlations with the established chronology are not altogether convincing. However, dates based on these studies have been suggested and are generally accepted as being substantially correct.

The beginning of the Recent is placed at from 9,000 to 10,000 years ago. The opening of the corridor east of the Rockies is dated 15,000 to 20,000 years ago. The previous break that subsequently closed is believed to have occurred about 20,000 years before or 35,000 to 40,000 years ago. (Antevs, 1937a). The maximum of the last pluvial was attained 15,000 years ago on the basis of these calculations. Dates for various sites described in preceding pages are given as: 10,000 to 25,000 for the Lindenmeier, with the possibility that it is nearer the 25,000 mark (Bryan and L. L. Ray, 1940); Clovis-Portales 12,000 to 13,000 (Antevs, 1935a); Cochise prior to 10,000 (Antevs, 1937a); Pinto Basin about 15,000 (Campbell, 1935); Lake Mohave at least 15,000 (Symposium, 1937); Gypsum Cave 10,500 (Harrington, 1933); Borax Lake 10,000 (Antevs *in* Harrington, 1939); the cave containing the infant burial in the Great Salt Lake area 10,000 to

15,000, the layer containing Pinto type points 3,000 (Steward, 1937); the oldest level at Signal Butte 8,000 to 10,000, the second level about 5,000 (Strong, 1935); Browns Valley man between 8,000 and 12,000 (Jenks, 1937); and Minnesota man approximately 20,000 (Jenks, 1936). As originally identified the Durst silts in the Abilene region would have an age of about 70,000 years when computed on the same basis. Their later correlation, however, places them in the same category as the Folsom materials.

Some of the dates given probably should be reduced on the strength of the evidence of the deposits. Pinto Basin, for example, is considered as terminal pluvial, which is listed as 10,000 in the geologic studies and, as the California phase of the last pluvial is thought by some to be somewhat later than that farther east, might be even less. Lake Mohave possibly would be somewhat younger for the same reason. As a matter of fact, since the latter is correlated with the pluvial as indicated in the New Mexican area, it seems that its dates should be regarded as approximating the 12,000 to 13,000 of the Clovis-Portales sites rather than the suggested 15,000. The ages given for Pinto Basin and Lake Mohave are for the geologic horizon, and their application to the cultural manifestation is subject to the ramifications previously discussed. Another series of dates proposed for those remains is based on the humid period circa 1,000 B. C., and in it Lake Mohave artifacts are given as 800 to 1,000 B. C., and the Pinto-Gypsum complex as 800 B. C. to A. D. 200 (M. J. Rogers, 1939). It is interesting to note in passing that the latter checks rather well with the 3,000 age suggested for the Pinto points in the caves in the Great Salt Lake area. Gypsum Cave, with postpluvial deposits, would appear to be less than 10,000—probably about 8,500.

SUMMARY AND DISCUSSION

The picture presented by the evidence of geology and archeology is that of an essentially modern type of Indian arriving in the New World approximately 15,000 years ago with a culture comparable to that of the Late Paleolithic or possibly Early Neolithic in Europe, using those terms in their broadest sense and bearing in mind the probable Asiatic derivation of the tool-making industries. This agrees very well with conclusions reached from other lines of investigation. They were announced prior to the completion of the studies discussed in preceding pages and the establishment of the evidence they provide. These earlier conclusions were to the effect that the occupation began at about "the time of the European late paleolithic or, more probably, the earlier neolithic, which, reduced to years, would be somewhere

between possibly ten or at most fifteen thousands of years ago" (Hrdlička, 1928, p. 491).

The present status of knowledge on the subject is not sufficient for correlating the oldest of the remains with subsequent Indian tribes. Attempts have been made to derive certain groups from them on the basis of distribution of linguistic stocks, head form, chipping techniques, and physical environment, but these are so highly speculative—in some cases even going against evidence indicating otherwise—that they can be regarded as little more than the play of fancy. In most cases there appears to be a definite break between the older and later horizons. There are some suggestions of continuity in the remains in the central Texas area and in southern Arizona. The proofs are tenuous as yet, however, and can be regarded only as indicating a possibility. A broad interpretation of the record as it appears today is that the first migrants came down through the eastern corridor shortly after its opening and that the minor oscillation in the ice sheets sometime subsequent to that movement was sufficient to hold other groups in the north, even though the passage was not entirely closed, until conditions again became more favorable. During this interval the dispersal of those already in the southern precincts continued, and when others arrived, the former were no longer in the area and their camp sites had been covered through the action of natural agents. This covering formed the sterile layer that separates the first and later levels of occupation. Eventually, no doubt, descendants of the early and later peoples came in contact in marginal or refuge areas, and there was an intermingling that is responsible for the occasional appearance of an older physical type in recent groups.

Presumably, there were two lines of movement: One down the eastern slopes of the Rockies, thence out over the Plains, spreading eastward to the Mississippi River in the more southerly precincts and up its various tributary streams to leave the traces found throughout the eastern portion of the country. This was probably the route followed by the Sandia Cave, Abilene, Folsom, and affiliated groups. A rough correlation between the distribution of Folsom artifacts and the lines of the moraines left by the retreating ice sheet has an interesting implication and may explain the absence of such forms throughout the central and northeastern part of the continent. Sporadic specimens, of course, have been found too far within those lines to have significance in that respect, but their presence may be due to other causes than original deposition. Further study and more evidence may show this tendency to follow the southern borders of the glaciers to be coincidence only, yet in view of the time involved

and conditions in general, the distribution seems more than fortuitous. The other migration apparently was down the plateau between the Rockies and the Coast Range, into the Great Basin and thence into southern California, Arizona, and on into Mexico. This was the pathway for the Lake Mohave, Pinto Basin, Cochise, and related peoples. Because of statements to the effect that this corridor probably opened somewhat later than the one east of the Rockies, the occupation of the Basin and adjacent territory may have been slightly retarded and possibly was coeval with the the second wave into the northern Plains. There was undoubtedly some mixing of representatives from the two main streams in the southwestern New Mexico-southeastern Arizona region as a result of contingents from one working south and from the other moving east. Groups from this district also may have continued south along the eastern slopes of the Sierra Madre and constituted an early occupation in the eastern portion of Mexico. Thus far there is nothing to show that such was the case because the few finds that have been advanced as evidence for antiquity in that area have been refuted so convincingly that they cannot be held comparable in age to the North American complexes. So little has been done in northern Mexico that at the present stage of investigation lack of evidence has little significance and does not mean necessarily that there will be no such discoveries.

Considering the problem as a whole, the need for more information, more sites, further excavation in the known sites, and a better understanding of the geologic and archeological manifestations is apparent. The work of recent years, however, shows definite progress in this field of American archeology and demonstrates that there actually was a Paleo-Indian.

LITERATURE CITED

- ALBRITTON, CLAUDE C., JR., and BRYAN, KIRK
1939. Quaternary stratigraphy in the Davis Mountains, Trans-Pecos Texas. *Bull. Geol. Soc. Amer.*, vol. 50, pp. 1423-1474.
- ANTEVS, ERNST
1935a. The occurrence of flints and extinct animals in pluvial deposits near Clovis, New Mexico. Pt. 2, Age of the Clovis lake clays. *Proc. Acad. Nat. Sci. Philadelphia*, vol. 87, pp. 304-312.
1935b. The spread of aboriginal man to North America. *Geogr. Rev.*, vol. 25, No. 2, pp. 302-309, April.
1937a. Climate and early man in North America. *In* Early man, as depicted by leading authorities at the International Symposium, Academy of Natural Sciences, Philadelphia, March 1937, pp. 125-132. J. B. Lippincott Co., London.

- 1937b. Studies on the climate in relation to early man in the Southwest. Carnegie Inst. Washington Year Book, No. 36, p. 335.
- 1937c. The age of the "Minnesota man." Carnegie Inst. Washington Year Book, No. 36, pp. 335-338.
1938. Studies on the climate in relation to early man in the Southwest. Carnegie Inst. Washington Year Book, No. 37, p. 348.
- BARBOUR, E. H., and SCHULTZ, BERTRAND
1932. The Scottsbluff bison quarry and its artifacts. Bull. Nebraska State Mus., vol. 1, Bull. 34, pp. 283-286.
1936. Paleontologic and geologic consideration of early man in Nebraska. Bull. Nebraska State Mus., vol. 1, Bull. 45, pp. 431-449.
- BELL, EARL H., and VAN ROYEN, WILLIAM
1934. An evaluation of recent Nebraska finds sometimes attributed to the Pleistocene. Wisconsin Archeologist, vol. 13, No. 3, pp. 49-70.
- BIRD, JUNIUS
1939. Artifacts in Canadian river terraces. Science, vol. 89, No. 2311, pp. 340-341.
- BLISS, WESLEY L.
1939. Early man in western and northwestern Canada. Science, vol. 89, No. 2312, pp. 365-366.
- BROWN, BARNUM
1929. Folsom culture and its age (with discussion by Kirk Bryan). Bull. Geol. Soc. Amer., vol. 40, pp. 128-129.
- BRYAN, KIRK
1937. Geology of the Folsom deposits in New Mexico and Colorado. *In* Early man, as depicted by leading authorities at the International Symposium, Academy of Natural Sciences, Philadelphia, March 1937, pp. 139-152. J. B. Lippincott Co., London.
1938. Deep sites near Abilene, Texas. Bull. Texas Arch. and Paleont. Soc., vol. 10, pp. 273-274.
1939. Stone cultures near Cerro Pedernal and their geological antiquity. Bull. Texas Arch. and Paleont. Soc., vol. 11, pp. 9-42.
- BRYAN, KIRK, and MACCLINTOCK, PAUL
1938. What is implied by "disturbance" at the site of Minnesota man. Journ. Geol., vol. 46, No. 3, pt. 1, pp. 279-292.
- BRYAN, KIRK, and RAY, C. N.
1938. Long channelled point found in alluvium beside bones of *Elephas Columbi*. Bull. Texas Arch. and Paleont. Soc., vol. 10, pp. 263-268.
- BRYAN, KIRK, and RAY, LOUIS L.
1940. Geologic antiquity of the Lindenmeier site in Colorado. Smithsonian Misc. Coll., vol. 99, No. 2.
- BRYAN, KIRK, RETZEK, HENRY, and McCANN, FRANKLIN T.
1938. Discovery of Sauk Valley man of Minnesota with an account of the geology. Bull. Texas Arch. and Paleont. Soc., vol. 10, pp. 114-135.
- BRYAN, W. A.
1929. The recent bone-cavern find at Bishop's Cap, New Mexico. Science, vol. 70, pp. 39-41.
- CAMPBELL, ELIZABETH W. CROZIER and WILLIAM H.
1935. The Pinto Basin site. Southwestern Mus. Pap., No. 9.
1940. A Folsom complex in the Great Basin. Masterkey, vol. 14, No. 1, pp. 7-11.

CARNEGIE INSTITUTION OF WASHINGTON

1938. Fresh light on the antiquity of man in America. *News Serv. Bull.*, school ed., vol. 14, No. 13.

CHILDE, V. GORDON

1928. *The most ancient east*. London.

COFFIN, ROY G.

1937. Northern Colorado's first settlers. Colorado State College, Ft. Collins.

COLLINS, HENRY B., JR.

1937. Arctic area, notes and news. *Amer. Antiquity*, vol. 3, No. 2, p. 188.

CONKLING, R. P.

1932. The discoveries in the bone cave at Bishop's Cap, New Mexico. *West Texas Hist. and Sci. Soc., Sul Ross Teacher's Coll., Bull.* 44, No. 4. Alpine.

COOK, HAROLD J.

1927. New geological and paleontological evidence bearing on the antiquity of mankind. *Nat. Hist., Journ. Amer. Mus. Nat. Hist.*, vol. 27, No. 3, pp. 240-247, May-June.

COTTER, JOHN L.

1937. The occurrence of flints and extinct animals in pluvial deposits near Clovis, New Mexico. Pt. 4, Report on excavations at the gravel pit, 1936. *Proc. Acad. Nat. Sci. Philadelphia*, vol. 89, pp. 1-16.

1938. The occurrence of flints and extinct animals in pluvial deposits near Clovis, New Mexico. Pt. 6, Report on field season of 1937. *Proc. Acad. Nat. Sci. Philadelphia*, vol. 90, pp. 113-117.

1939. A consideration of "Folsom and Yuma culture finds." *Amer. Antiquity*, vol. 5, No. 2, pp. 152-155.

CRESSMAN, L. S.

1937. The Wikipi Damsite No. 1 knives. *Amer. Antiquity*, vol. 3, No. 1, pp. 53-67.

1938. Early man and culture in the northern basin in Oregon. *Carnegie Inst. Washington Year Book*, No. 37, pp. 341-344.

EDMUNDS, F. H., JACKSON, J. L., SPINKS, J. W. T., and VIGFUSSON, V. A.

1938. Some skeletal remains in Saskatchewan. *Amer. Antiquity*, vol. 3, No. 3, pp. 244-246.

EISELEY, L. C.

1939. Evidence of a pre-ceramic cultural horizon in Smith County Kansas. *Science*, vol. 89, No. 2306, p. 221.

FIGGINS, J. D.

1927. The antiquity of man in America. *Nat. Hist., Journ. Amer. Mus. Nat. Hist.*, vol. 27, No. 3, pp. 229-239, May-June.

1931. An additional discovery of the association of a Folsom artifact and fossil mammal remains. *Proc. Colorado Mus. Nat. Hist.*, vol. 10, No. 2.

1933. A further contribution to the antiquity of man in America. *Proc. Colorado Mus. Nat. Hist.*, vol. 12, No. 2.

1935. New World man. *Proc. Colorado Mus. Nat. Hist.*, vol. 14, No. 1.

FISCHEL, HANS E.

1939. Folsom and Yuma culture finds. *Amer. Antiquity*, vol. 4, No. 3, pp. 232-264.

GIFFORD, E W.

1938. Pacific coast area, notes and news. *Amer. Antiquity*, vol. 3, No. 3, pp. 272-273.

1939. Pacific coast area, notes and news. *Amer. Antiquity*, vol. 4, No. 3, pp. 280-281.
- GLADWIN, HAROLD S.
1937. Excavations at Snaketown. II, Comparisons and theories. *Medallion Pap.*, No. 26. Gila Pueblo, Globe, Ariz.
- HARRINGTON, M. R.
1933. Gypsum Cave, Nevada. *Southwest Mus. Pap.*, No. 8.
1934. A camel-hunter's camp in Nevada. *Masterkey*, vol. 8, No. 1, pp. 22-24.
1937. A stratified camp site near Boulder Dam. *Masterkey*, vol. 11, No. 3, pp. 86-89.
1938a. Folsom man in California. *Masterkey*, vol. 12, No. 4, pp. 133-137.
1938b. Researches of M. R. Harrington. *Carnegie Inst. Washington Year Book*, No. 37, pp. 345-347.
1939. The age of the Borax Lake finds. *Masterkey*, vol. 13, No. 6, pp. 208-209.
- HEIZER, R. F.
1938. A Folsom-type point from Sacramento Valley. *Masterkey*, vol. 12, No. 5, pp. 180-182.
- HIBBEN, FRANK C.
1937. Association of man with Pleistocene mammals in the Sandia Mountains, New Mexico. *Amer. Antiquity*, vol. 2, No. 4, pp. 260-263.
- HOOTON, E. A.
1933. Notes on five Texas crania. *Bull. Texas Arch. and Paleont. Soc.*, vol. 5, pp. 25-39.
- HOWARD, E. B.
1935. Evidence of early man in North America. *Mus. Journ.*, vol. 24, Nos. 2-3, pp. 61-175. Univ. Pennsylvania.
- HOWELLS, W. W.
1938. Crania from Wyoming resembling "Minnesota man." *Amer. Antiquity*, vol. 3, No. 4, pp. 318-326.
- HRDLIČKA, ALEŠ
1907. Skeletal remains suggesting or attributed to early man in North America. *Bur. Amer. Ethnol. Bull.* 33.
1918. Recent discoveries attributed to early man in America. *Bur. Amer. Ethnol. Bull.* 66.
1928. The origin and antiquity of the American Indian. *Ann. Rep. Smithsonian Int. for 1923*, pp. 481-494.
1937. The Minnesota "man." *Amer. Journ. Phys. Anthrop.* vol. 22, No. 2 pp. 175-199.
1938. Skeletal remains from northern Texas. *Bull. Texas Arch. and Paleont. Soc.*, vol. 10, pp. 169-192.
- JACKSON, A. T.
1939. A deep archeological site in Travis County, Texas. *Bull. Texas Arch. and Paleont. Soc.*, vol. 11, pp. 203-225.
- JENKS, ALBERT E.
1936. Pleistocene man in Minnesota, a fossil *Homo Sapiens*. Minneapolis.
1937. Minnesota's Browns Valley man and associated burial artifacts. *Mem. Amer. Anthrop. Assoc.*, No. 49.
1938. A reply to a review by Dr. Aleš Hrdlička. *Amer. Anthrop.*, n. s., vol. 40, No. 2, pp. 328-336.

- JENKS, ALBERT E., and WILFORD, LLOYD A.
1938. Sauk Valley skeleton. *Bull. Texas Arch. and Paleont. Soc.*, vol. 10, pp. 136-168.
- JOHNSTON, W. A.
1933. Quaternary geology of North America in relation to the migration of man. *In* *The American aborigines, their origin and antiquity*, 5th Pacific Sci. Congr., Canada, pp. 9-45.
- LEIGHTON, M. M.
1936. Geological aspects of the finding of primitive man near Abilene, Texas. Preliminary report. *Medallion Pap.*, No. 24. Gila Pueblo, Globe, Ariz.
- LOUKASHKIN, A. S.
1937. Pleistocene fauna in northern Manchuria. *In* *Early man, as depicted by leading authorities at the International Symposium, Academy of Natural Sciences, Philadelphia, March 1937*, pp. 327-340. J. B. Lippincott Co., London.
- MACCLINTOCK, PAUL
1937. Pleistocene glacial stratigraphy in North America. *In* *Early man, as depicted by leading authorities at the International Symposium, Academy of Natural Sciences, Philadelphia, March 1937*, pp. 115-124. J. B. Lippincott Co., London.
- MACCLINTOCK, PAUL, BARBOUR, E. H., SCHULTZ, C. B., and LUGN, A. L.
1936. A Pleistocene lake in the White River valley. *Amer. Nat.*, vol. 70, pp. 346-360, July-August.
- MARTIN, GEORGE C.
1930. Two sites on the Callo del Oso, Nueces County, Texas. *Bull. Texas Arch. and Paleont. Soc.*, vol. 2, pp. 7-16.
- MENGHIN, OSWALD
1937. Origin and development of the early Paleolithic cultures. *In* *Early man, as depicted by leading authorities at the International Symposium, Academy of Natural Sciences, Philadelphia, March 1937*, pp. 303-314. J. B. Lippincott Co., London.
- MERRIAM, JOHN C.
1936. Present status of knowledge relating to antiquity of man in America. *Rep. 16th Int. Geol. Congr.*, Washington, 1933, pp. 1313-1323.
- NELSON, N. C.
1933. Antiquity of man in America in the light of archeology. *In* *the American aborigines, their origin and their antiquity*. 5th Pacific Sci. Congr., Canada, pp. 87-130.
1937. Review of "Additional information on the Folsom complex." *Amer. Antiquity*, vol. 2, No. 4, pp. 317-320.
- OETTEKING, B.
1930. Skeletal remains from Texas. *Indian Notes*, vol. 7, No. 3. Mus. Amer. Indian, Heye Found.
- PEARCE, J. E.
1932. The archeology of east Texas. *Amer. Anthrop.*, n. s., vol. 34, pp. 670-687.
- PEI, WEN-CHUNG
1937. Paleolithic industries in China. *In* *Early man, as depicted by leading authorities at the International Symposium, Academy of Natural Sciences, Philadelphia, March 1937*, pp. 221-232. J. B. Lippincott Co., London.

RAY, CYRUS N.

1930. Report on some recent archeological researches in the Abilene section. Bull. Texas Arch. and Paleont. Soc., vol. 2, pp. 45-58.
1934. Flint cultures of ancient man in Texas. Bull. Texas Arch. and Paleont. Soc., vol. 6, pp. 107-111.
1935. The pottery complex artifacts of the Abilene region. Bull. Texas Arch. and Paleont. Soc., vol. 7, pp. 70-88; and *in* Editorials, pp. 127-129.
1936. Some comments on Sayles' Survey. Bull. Texas Arch. and Paleont. Soc., vol. 8, pp. 180-184.
- 1938a. The Clear Fork culture complex. Bull. Texas Arch. and Paleont. Soc., vol. 10, pp. 193-207.
- 1938b. New evidences of ancient man in Texas found during Prof. Kirk Bryan's visit. Bull. Texas Arch. and Paleont. Soc., vol. 10, pp. 269-273.
- 1939a. Inaccuracies in Fischel's Folsom article. Amer. Antiquity, vol. 5, No. 1, pp. 58-64.
- 1939b. Some unusual Abilene region burials. Bull. Texas Arch. and Paleont. Soc., vol. 11, pp. 226-250.

RAY, CYRUS N., and BRYAN, KIRK

1938. Folsomoid point found in alluvium beside a mammoth's bones. Science, vol. 86, No. 2281, pp. 257-258.

RENAUD, E. B.

1931. Prehistoric flaked points from Colorado and neighboring districts. Proc. Colorado Mus. Nat. Hist., vol. 10, No. 2.
1932. Yuma and Folsom artifacts, new material. Proc. Colorado Mus. Nat. Hist., vol. 11, No. 2.
1936. Southern Wyoming and southwest South Dakota. The archeological survey of the high western plains. 7th Rep. Univ. Denver, Dep. Anthrop.
1938. The Black's Fork culture of southwest Wyoming. Archeological survey of the high western plains. 10th Rep. Univ. Denver, Dep. Anthrop.
1939. The Clactonian flake technique in the western states. Bull. Texas Arch. and Paleont. Soc., vol. 11, pp. 129-138.

ROBERTS, FRANK H. H., JR.

1935. A Folsom complex: Preliminary report on investigations at the Lindenmeier site in northern Colorado. Smithsonian Misc. Coll., vol. 94, No. 4.
1936. Additional information on the Folsom complex: Report on the second season's work at the Lindenmeier site in northern Colorado. Smithsonian Misc. Coll., vol. 95, No. 10.
- 1937a. New developments in the problem of the Folsom complex. Expl. and Field-work Smithsonian Inst. in 1936, pp. 69-74.
- 1937b. New World man. Amer. Antiquity, vol. 2, No. 3, pp. 172-177.
1939. The Folsom problem in American archeology. (Reprint of revised article from Early man.) Ann. Rep. Smithsonian Inst. for 1938, pp. 531-546.

ROGERS, DAVID BANKS

1929. Prehistoric man of the Santa Barbara coast. Santa Barbara Mus. Nat. Hist.

ROGERS, MALCOLM J.

1939. Early lithic industries of the lower basin of the Colorado River and adjacent desert areas. San Diego Mus. Pap., No. 3.

ROMER, ALFRED S.

1933. Pleistocene vertebrates and their bearing on the problem of human antiquity in North America. *In* the American aborigines, their origin and antiquity. 5th Pacific Sci. Congr., Canada, pp. 47-83.

SAYLES, E. B.

1935. An archeological survey of Texas. Medallion Pap., No. 17. Gila Pueblo, Globe, Ariz.

SCHULTZ, C. BERTRAND

1932. Association of artifacts and extinct mammals in Nebraska. Bull. Nebraska State Mus., vol. 1, Bull. 33, pp. 271-282.

1938. The first Americans. Nat. Hist., Amer. Mus. Nat. Hist., vol. 42, No. 5, pp. 346-356, 378.

SCHULTZ, C. BERTRAND, and EISELEY, L. C.

1935. Paleontological evidence for the antiquity of the Scottsbluff bison quarry and its associated artifacts. Amer. Anthropol., n. s., vol. 37, pp. 306-318.

1936. An added note on the Scottsbluff quarry. Amer. Anthropol., n. s., vol. 38, No. 3, pp. 521-524.

SELLARDS, E. H.

1938. Artifacts associated with fossil elephant. Bull. Geol. Soc. Amer., vol. 49, pp. 999-1010, July.

1940. Early man in America. Index to localities, and selected bibliography. Bull. Geol. Soc. Amer., vol. 51, pp. 373-432, March.

SETZLER, FRANK M.

1935. A Prehistoric cave culture in southwestern Texas. Amer. Anthropol., n. s., vol. 37, pp. 104-110.

SMITH, PHILIP S.

1937. Certain relations between northwestern America and northeastern Asia. *In* Early man, as depicted by leading authorities at the International Symposium, Academy of Natural Sciences, Philadelphia, March 1937, pp. 85-92. J. B. Lippincott Co., London.

SMITH, VICTOR J.

1934. Hord Rock shelter. Bull. Texas Arch. and Paleont. Soc., vol. 6, pp. 97-106.

STEWART, JULIAN H.

1937. Ancient caves of the Great Salt Lake region. Bur. Amer. Ethnol. Bull. 116.

STEWART, THOMAS DALE

1935. Skeletal remains from southwestern Texas. Amer. Journ. Phys. Anthropol., vol. 20, No. 2, pp. 213-231.

STOCK, CHESTER, and BODE, F. D.

1936. The occurrence of flints and extinct animals in pluvial deposits near Clovis, New Mexico. Pt. 3, Geology and vertebrate paleontology of the later Quaternary near Clovis, New Mexico. Proc. Acad. Nat. Sci. Philadelphia, vol. 87, pp. 219-241.

STRONG, W. D.

1932. Recent discoveries of human artifacts associated with extinct animals in Nebraska. Sci. Serv. Res. Announcement, No. 130.

1935. An introduction to Nebraska archeology. Smithsonian Misc. Coll., vol. 93, No. 10.

SYMPOSIUM

1937. The archeology of Pleistocene Lake Mohave. Southwest Mus. Pap., No. 11.

WEIDENREICH, FRANZ

1939. On the earliest representatives of modern mankind recovered on the soil of east Asia. Peking Nat. Hist. Bull., vol. 13, pt. 3, pp. 161-174, March 1939.

WITTE, A. H.

1937. Buried middens in the floodplain of the Little Wichita River. Bull. Texas Arch. and Paleont. Soc., vol. 9, pp. 222-226.

WOODBURY, GEORGE and EDNA

1935. Prehistoric skeletal remains from the Texas coast. Medallion Pap., No. 18. Gila Pueblo, Globe, Ariz.

WORMINGTON, H. M.

1939. Ancient man in North America. Colorado Mus. Nat. Hist., Popular Ser., No. 4.

THE HISTORIC METHOD AS APPLIED TO SOUTHEASTERN ARCHEOLOGY

BY M. W. STIRLING

Chief, Bureau of American Ethnology

Presumably most of the readers of this account are familiar with the changes that have taken place in archeological methods and objectives during the last quarter of a century. In one sense, it seems to me, a cycle has been completed. In the beginning the field was vast, the archeologists few, and the interested world generally uncritical. The less that is factually known, the more room there is for the imagination. The early lure of archeology in this country generally attracted the imaginative rather than the historically minded. There was a definite tendency to accent the apparently unexplainable, to augment antiquity, and exaggerate the achievements of the early people. Thus for a long time archeologists, blithely ignoring obvious historical accounts, set up the mysterious and very ancient civilizations of the Cliff Dwellers and the Mound Builders, glorified their vast achievements and contrasted them generally with their successors, the unaccomplished American Indian. The practice of ignoring known chronologies, in presenting broad theories of far-flung origins and long occupancies, has not yet been entirely abandoned.

After the hectic and rather realistic period of discovery and conquest had receded far enough into the mists of the past, the more conspicuous of the archeological regions of America became favorite playgrounds for archeological theorists. When Stephens during the second quarter of the nineteenth century visited the ruins of the great Maya cities of Central America and Yucatan, he took the almost unprecedented step of looking up the sixteenth century Spanish and native historical accounts and reached the inevitable conclusion that many of these ruins represented the same cities that the Spaniards found occupied by the Maya. In spite of the fact that his books became best sellers, it was another generation before his down-to-earth method was resumed by archeologists and the Maya were disentangled from the cultures of Mu or Indonesia. In other words, while these investigators undoubtedly had a fine time doing their stint, practically everything written was worthless until it was viewed in the light of historic fact. This group of armchair archeologists was followed by another group who, rationalizing their desire to collect, indulged in

a period of rather careless digging for specimens. At the present time there is a school of archeological thought represented for the most part by earnest scholars who, revolting against careless looting of sites primarily for specimens, have installed meticulous methodologies for the excavating and recording of material and equally elaborate and systematic nomenclatures to be applied to various kinds of ceramics and combinations of artifacts, to be used for comparative purposes.

The wisdom of this application of American high-pressure business methods and system to the scientific pursuit of archeology might be open to some question. It perhaps goes without saying that over-carefulness is much more desirable than lack of care, but the question might be asked as to whether or not there is a danger in permitting techniques to become an objective in themselves. Defining the objectives of the various branches of anthropology has recently become a popular form of indoor sport, but if archeology is not primarily concerned with the reconstruction of history, its purposes must be rather futile.

The writer believes that archeology should primarily constitute an attempt to reconstruct ethnological and historical facts. This being the case, an archeologist should first of all be well grounded in the ethnology and history of the region in which he is working, as the data which he encounters in the field are limited and at best constitute only a fragmentary picture of the group whose position he is trying to reconstruct. Thorough field techniques are of course essential but are entirely secondary to the basic knowledge of anthropology. A bright student can become a good field technician and write a good descriptive report with one season of instruction and experience, but many years of training and application are needed to understand and interpret properly what is found.

The southeastern United States constitutes one of the interesting culture areas of aboriginal America. In general this is the region lying east of the Mississippi River and south and east of the Ohio to the Gulf of Mexico and the Atlantic Ocean. In early historic times this was one of the most densely populated regions of equal area anywhere in North America north of Mexico. Abundant archeological remains indicate that it was a favorite dwelling place in prehistoric times, and it is the general question of interpreting these remains that constitutes the main theme of this paper. This task can be simplified by the gradual elimination of several possible broad hypotheses and narrowing down the problems remaining to specific lines of research.

Concerning the earliest period of occupation of the Southeast, we are still on very uncertain ground. Judging from the sporadic occurrence of fluted points in various localities throughout the area, it is probable that an early phase of the Folsom culture is represented in the Southeast. As yet no Folsom points have been found in association with animal remains or in definite sites as in the western High Plains, but it is significant also that they have not been found in association with materials of identifiably later sites. The problem of ancient man in the Southeast is one that comes up sporadically, usually in Florida or Tennessee. As yet the evidence surrounding these finds is not sufficiently convincing to be accepted without considerable reserve. The apparent complete absence of fluted points in peninsular Florida may be significant, suggesting, as it does, the relatively recent geologic emergence of the peninsula.

Following the postulated, but unproved Folsom period, we find remains of a nonceramic littoral-river population of fishers and hunters who left behind them on their camp sites abundant kitchen-midden deposits, the most interesting of which have been those excavated by Moore on the St. Johns River in Florida, and by Webb in the Pickwick Basin on the lower Tennessee. During this period, which was presumably of considerable duration, the population must have been small and scattered.

Finally came the relatively recent agricultural period, featuring the manufacture of ceramics and the building of mounds. This period, which was in full flower at the arrival of the Spaniards in the sixteenth century, represents the "golden age" of the Southeast. With it came a great increase in population pressures that resulted in considerable movements of cultures and peoples, and in most of the archeological remains now visible in the region.

Since most of these sites show a rather surprising amount of inter-relationship, and since the period extended well into historic times, it is evident that in time, through application of the historic method, a great deal of this epoch should eventually be successfully reconstructed by the archeologist. In this task certain broad problems first present themselves.

The pioneer work of Clarence B. Moore, Cyrus Thomas, and W. H. Holmes opened up the scientific work in the field of Southeastern archeology, but it was not until the publication of the thorough historical and ethnological researches of John R. Swanton that a solid foundation for such work became available. As a result of this now easily accessible background, probably the most complete of its type for any comparable area in the continent, modern investigators such

as H. B. Collins, James Ford, William Webb, Jesse Jennings, and others during the last decade have made great strides in putting significance into Southeastern archeological research.

This writer is one of those who believe that we must go to Mexico in order to locate the beginnings of this final phase of Southeastern aboriginal culture. Similarity in the custom of building great ceremonial mound centers, numerous parallels in material culture, and close parallels in the ideologies expressed in the social, political, and religious organizations of the lower Mississippi tribes and those of Mexico, all point in this direction. It is quite possible that far-reaching displacements in the populations of the Gulf Coast of Mexico, brought about by the rise and expansion of some of the great Mexican centers, produced actual migrations of marginal peoples who, responding to pressure from the south, followed the Gulf Coast northward, passing the uninviting regions just south and north of the Rio Grande and establishing themselves eventually when the rich agricultural regions of eastern Texas, Oklahoma, Arkansas, and Louisiana were reached. From here the spread eastward across the Mississippi and northward up the river would have been relatively easy at first, because of the sparseness of the indigenous population and the simplicity of its culture. The physical make-up of the people constituting the centers resulting from this cultural influx present a complex problem, but one to the solution of which there already exist many clues. In many of the mounds and other sites are abundant skeletal remains that can to a certain extent be correlated with known linguistic stocks and tribal types.

There are reasons to suspect that the indigenous inhabitants of the Southeast when the agricultural ceramic culture arrived were representatives of the great Algonquian stock which had spread down from the north. Swanton has shown that historic and traditional evidence indicates that the Muskhogean who constituted the bulk of the population of the Southeast at the dawn of history had moved in from the northwest, probably northeastern Arkansas, and that originally they may have been related to the Caddo, who have been principally identified with eastern Texas and Arkansas. Similarities of ceramic remains in such mound centers as Moundville, Ala., to those of the Caddo suggest that at one time this group may have thrust farther to the eastward in prehistoric times.

Swanton has likewise demonstrated that the Calusa of south Florida were probably closely related to the Hitchiti and Choctaw, and therefore representatives of this group had spread into Florida before the Muskhogean Timucuas, who occupied the upper two-thirds of the peninsula at the beginning of history.

This northern origin of Florida groups brings to attention another broad theory that is occasionally advanced, namely, the influence of Antillean culture on the Southeast, presumably through Florida by way of Cuba or the Bahamas. The writer has attempted to demonstrate elsewhere that there is no real evidence of influence from this direction, and that despite the proximity of the two regions, there is no proof of cultural exchange.

Two other linguistic groups in particular should be mentioned in connection with Southeastern problems. These are the Iroquoian and the Siouan. Since historic evidence indicates that the latter disseminated from the region of the Ohio River, we should look for Siouan connections in the Southeast when cultural connections are found with this northern region. Swanton has already demonstrated that the Fort Ancient culture is probably Siouan, and it is significant that various protohistoric sites from Mississippi to the northern Gulf coast of Florida show close similarities to this culture. D. I. Bushnell, Jr., is one of the few investigators who have explored the important field concerned with these broad late prehistoric movements, an understanding of which is essential to the intelligent interpretation of archeological problems.

The Muskogean group was the group most characteristic of the Southeast at the beginning of the historic period. The Muskogean peoples were typically a stocky, broad-headed type. In this respect we find their nearest relatives toward the west in the direction of Mexico. In further support of the theory that their ancestors may have been the bearers of the mound-building ceramic culture is the fact that their closest linguistic affiliations also lie in this direction. These connections in fact carry us beyond the Rio Grande River, and it is quite possible, if not probable, that further linguistic researches may indicate their ultimate point of dissemination from this direction.

The distribution of the Muskogean stock and its nearest relatives in the Southeast suggests that it overlies the other stocks found in this region and therefore represents the latest general invasion. This is significant with regard to the question of the antiquity of the mounds. When, in addition to the items of physical anthropology and linguistics, we analyze the material culture content of the mound cultures, we find a predominance of late features. In Mexico, where there exists a much deeper stratigraphy than in the United States, copper, tobacco pipes, engraved shell and similar items appear relatively late. In short the typical mound material of the Southeast presents a picture of cultural recency when the yardstick of Mexican chronology is applied.

Southeastern mounds of the historic and protohistoric periods contain objects of material culture and present structural features that seem not far removed from the earliest mound developments of the area. Many of the apparent chronological difficulties of the archeologist disappear when a relatively short period is allowed for the entire mound era. When sites known to have been occupied by historic tribes are examined, we find close relationships existing between their pottery and other artifacts and that of the prehistoric mounds. The resemblance of protohistoric Caddo ware with that of prehistoric Moundville has already been mentioned. Collins, Ford, and Walker have isolated the types of pottery made by the historic Choctaw, Natchez, and Tunica. All these types occur in prehistoric sites as well. The Natchez type, which is very widespread, is found at Moundville among other localities. Choctaw ware appears to represent a more local development, but the Tunica continued to make a type of pottery that is rather widespread in prehistoric sites. The writer has identified the types of ware made by the Timucua and Calusa in Florida, and here again we find the results very suggestive. Both types occur in prehistoric sites, and what is more significant, no other type of ware precedes them. In the Timucua area different types of ware widely separated in the north have descended and occur side by side in Florida sites. On the Gulf coast of Florida, for example, prehistoric and protohistoric sites contain stamped ware such as occurs typically in Georgia, associated with Caddo-like incised pottery of the kind usually identified with the lower Mississippi.

In the Calusa region but one general type of pottery is found, the historic sites differing from the prehistoric only by the addition of European trade material, and a slight degeneration in native ware.

It is important that the archeologist realize that uniformity of culture did not exist within any given linguistic stock. Neither does it follow that a particular linguistic stock implies a uniform physical type. It is equally true that close parallels or identities in material culture may be found existing between groups of different physical type or belonging to separate linguistic stocks. These facts make the task of the archeologist all the more exacting, and were it not for historical clues, there would be little hope of solving many of these prehistoric riddles.

Fortunately, no section of this country is better documented historically than the Southeast. Beginning with the voyage of Ponce de Leon to Florida in 1513, the record is fairly continuous. Gaps exist, of course, in many sections, and many of the early accounts are far from being as detailed as we should like. Most of these old travelers

were not given to detailed descriptions of objects of material culture that they saw, but nevertheless, many are the hints that are offered to the student of these records. Such things as house forms, the existence of stockades and mounds, burial practices, etc., are frequently mentioned. Many of the early writers were also fairly explicit in giving the locations of the towns they visited. All of this presents a mass of material of use to the archeologist, particularly if he be able to identify the site on which he is working.

Some of the more important expeditions, particularly that of De Soto, furnish background material that is absolutely essential to the archeologist if he is to work intelligently. In the case of such expeditions, which crossed wide sections of country visiting many tribes, we get a cross section of the native populations which shows the relative locations and importance of different groups during a given period. By following up later accounts the movements of these groups may to a certain extent be traced, as may also their rise or decline in importance. Linguistic affiliations and boundaries may be traced, as may also the shiftings of population centers. Dr. Swanton has already accomplished most of this work covering the historic period, and it remains for the archeologists of the Southeast to make use of it in identifying and interpreting their sites.

The future of Southeastern archeology is bright. Sites are abundant and many of them are well documented. If the archeologists make proper use of this material, the last vestiges of the mystery of the Mound Builders should soon disappear before the source book and the spade.

VIRGINIA BEFORE JAMESTOWN

BY DAVID I. BUSHNELL, JR.

Collaborator, U. S. National Museum

(WITH PLATES I AND 2)

Virginia in 1584 was a region of unknown bounds, established upon "remote heathen and barbarous lands, not actually possessed by any Christian prince nor inhabited by Christian people." It extended northward from the Spanish possessions in Florida to the valley of the St. Lawrence, vaguely claimed by France, and continued westward from the Atlantic coast for an undetermined distance. But gradually this vast domain became reduced in size until the present State of Virginia is all that remains to perpetuate the name bestowed by Elizabeth.

Virginia at the close of the sixteenth century—and for many years later—was a country of great forests and grasslands, traversed by the many streams that flow into Chesapeake Bay. Wild game was everywhere plentiful; the rivers teemed with fish; and wild fruits and edible plants and roots were widely scattered throughout the land. Thus nature provided a region ideally suited to the wants and requirements of the native tribes.

The native inhabitants of Virginia as it is now known, together with those of some of the circumjacent country, for the most part southward through the Carolinas, form the subject of the present article.

The historic tribes, those encountered by the early colonists, will first be considered.

THE HISTORIC TRIBES

At the beginning of the seventeenth century Virginia was occupied by many tribes that belonged to three linguistic groups: The Algonquian, the Siouan, and the Iroquoian. Of these the Algonquian, whose villages dotted the banks of the streams from the Chesapeake to the fall line, became best known to the English colonists. Westward from the falls the country was claimed and occupied by Siouan groups, enemies of the Algonquian. Southward and westward from the Siouan groups were Iroquoian tribes, with others near the coast south of the James.

Although this was the distribution of the native population when Jamestown was settled in 1607, it is believed that there had recently been a shifting within the groups, and that only a short time before the relative positions of tribes in many localities would have been different.

ALGONQUIAN TRIBES

Algonquian tribes had pushed down from the north and during the sixteenth century dominated the greater part of the coastal plain from New England to central North Carolina. They had many villages in tidewater Virginia and on both sides of the Chesapeake. They may, at an earlier time, have extended beyond the fall line in Virginia, and it is evident that by the beginning of the seventeenth century they were being forced by Siouan tribes, who had entered the country from the south and west, to abandon their outlying settlements and to move down the valleys. This was related by Powhatan when he met the English at the falls of the James during their first journey in May 1607. Then (p. xlvi):¹

He tolde us that the *Monanacah* was his Enmye, and that he came Downe at the fall of the leafe and invaded his Countrey.

Similar conditions prevailed on the Rappahannock, and in 1608, when the colonists ascended that river from the Chesapeake, they found the country deserted and settlements abandoned for a distance of 10 miles or more below the falls, and just beyond encountered a great gathering of the Manahoac—Siouan tribes whose villages were farther up the valley.

On June 16, 1608, the party from Jamestown, then exploring the Chesapeake, entered the mouth of the Potomac. They advanced far into the wilderness and ascended the river to the site of the present city of Washington. No Indians were encountered on the lower reaches of the river, but later some were met (p. 112):²

Then we were conducted by 2 Salvages up a little bayed creeke toward *Onawmament*: where all the woods were laid with Ambuscadoes to the number of 3 or 400 Salvages; but so strangely painted, grimed, and disguised, showingt, yelling, and crying, as we rather supposed them so many divels.

Peace was soon restored and one of the English was sent 6 miles "up the woods, to their kings habitation." The narrative continues:

Wee were kindly used by these Salvages: of whom we understood, they were commaunded to betray us by *Powhatans* direction, and hee so directed, from the discontents of James towne.

¹ Archer Relation, in *The generall historie of Virginia*, by Capt. John Smith, 1624. English Scholar's Library ed., edited by Edward Arber, Birmingham, 1884.

² Smith, *op. cit.*

The "little bayed Creeke" up which the English were conducted to the Indian village is believed to have been the present Machodoc Creek, in King George County, Va. It is not possible to determine the exact site of Onawmament in the summer of 1608, although its position is suggested by the occurrence of fragmentary pottery and implements of stone in several places on the banks of the creek. Again the narrative continues :

The like incounters we found at *Patawomeck*, *Cecocawone*, and divers other places; but at *Moyaones*, *Nacothtant*, and *Taux*, the people did their best to content us.

The former villages, whose inhabitants resisted the English, were dominated by Powhatan, but the latter, where the people were well-disposed, are believed to have been allied with the tribes of Maryland, enemies of Powhatan, and who by their actions endeavored to gain the good will of the colonists.

The map of Virginia, prepared by Capt. John Smith and which appears in all issues of his "Generall Historie," is one of the most remarkable pieces of cartography known. The drainage is shown with great accuracy, and the native villages are named and located with such precision that the sites of many may now be definitely determined. However, during the lapse of three centuries and more the sites of some ancient settlements have disappeared through erosion, the shifting of the currents and the changing of the banks of the streams. Other areas have been cultivated for many years, and this has resulted in the lowering, leveling, and wearing away of the surface on which the village stood.

A detail of the Smith map is reproduced in figure 8. It shows the Potomac River from just below Port Tobacco River, on the left or Maryland bank, to approximately the position of the Great Falls, and thus includes the lands now covered by the city of Washington. The spelling of the names given on the map does not always agree with that used in the text, but it is easily understood to which villages the names apply.

The country had been the home of native tribes through countless generations. All desirable locations along the river had, at some time in the past, been occupied and reoccupied. Temporary camps and larger settlements had stood in many places, but the entire extent of a single site, as now recognized, may seldom have been occupied contemporaneously. Some villages were of a more permanent nature than others and may have existed for years. With such a moving about and changing of camps it is not possible at the present time to identify the exact site of all villages as they stood during the

summer of 1608, but the location of all can be approximated, and the exact position of the two important settlements, Patawomeck and Nacotchtanck, can be definitely identified. The former occupied a level area on the left bank of Potomac Creek at its junction with the Potomac River; the second, Nacotchtanck, extended along the left bank of the Eastern Branch, the Anacostia, within the District of Columbia, and as far as the present Bolling Field.³

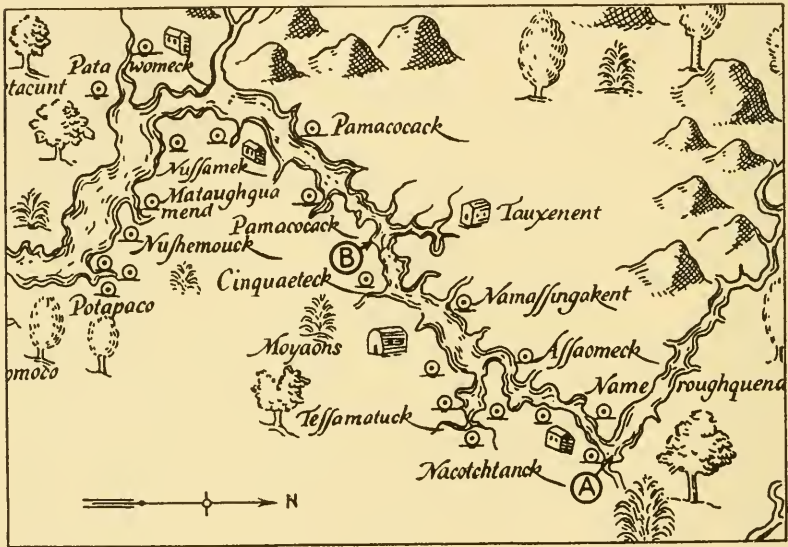


FIG. 8.—Section of the Smith Map, 1624. *A*, mouth of Anacostia River; *Nacotchtanck*, on left bank of the Anacostia; *Moyaons*, on or near Broad Creek, Prince Georges County, Md.; *B*, mouth of Piscataway Creek, Prince Georges County, Md.; *Pamacocack*, near Mattawoman Creek, Charles County, Md.; *Nameroughquend*, in Virginia, opposite Washington, D. C.; *Tauxenent*, on or near Mount Vernon, opposite *B*; *Patawomeck*, on left bank of Potomac Creek at junction with the Potomac River, Stafford County, Va.

The manners and customs of all the Algonquian tribes of the region were similar. The habitations were mat- or bark-covered lodges forming rather compactly built villages standing near water. Some were encircled by palisades and others were open, but it is not known to what extent the custom of so protecting the settlements was practiced. Dugout canoes were used. Much corn was raised in the vicinity of

³ Just 50 years ago the Potomac Valley below the Great Falls received more attention than at the present time, but far less than it should now have. The ancient village sites were being visited and identified, and the early history of the native inhabitants studied. Seven papers of the greatest value were presented and published as: The aborigines of the District of Columbia and the Lower Potomac—a symposium. *Amer. Anthropol.*, vol. 2, No. 3, July 1889.

the villages; wild game was plentiful in the surrounding forests, and fish could be taken in vast quantities. Great masses of oyster shells still existing along the banks of rivers and creeks, and on the shores of bays, reveal the importance of the oyster as an article of food.

Bows and arrows were in use before firearms were acquired, and it is recorded that the Algonquian hunters along the banks of the Potomac, whose long arrows "were tipped with stag's horn, or a white flint sharpened at the end," excelled in marksmanship and in the use of the native weapon.

Pottery vessels were made and used, and mats and baskets were woven of vegetal materials. Tanned skins were fashioned into garments, bags, and other articles, and these were often decorated with beads and marginella shells. Quantities of beads and feathers were worn, and painting and tattooing were practiced for personal adornment.

Such were some of the customs in the native villages along the Potomac when they were visited by the English during the summer of 1608, and it is believed that similar manners and ways of life had been followed by all the southern Algonquian tribes through generations, with only slight, local variations.

John White, the artist, was a member of the second expedition sent out by Sir Walter Raleigh to attempt a permanent settlement in Virginia. He remained in America from June 1585 until his return to England the following summer. The water-color drawings made by White during the year spent in the wilderness are now in the British Museum, London. Many of them were engraved and reproduced by De Bry in 1590 to accompany the description of the country and its natural resources which had been prepared by Thomas Hariot, another member of the unsuccessful venture.⁴

The drawings made by White among the villages on the north-eastern coast of the present State of North Carolina would have applied to the tidewater section of Virginia. The dress of the natives is clearly shown, with the manner of wearing beads and feathers. The several methods of taking fish, in weirs and by spearing, are revealed in one drawing. Concerning the latter method the legend states: "They fasten unto their Reeds or longe Rodds, the hollow taylor of a certain fishe like to a sea crabb in steede of a poynte, wherewith by nighte or day they stricke fishes, and take them opp into their boates." This refers to the king crab (*Xiphosurus sowerbyi*), of which this was the first notice. One drawing shows the method of preparing food in an earthen vessel. All are of the greatest interest

⁴ This work was reproduced by Quaritch, London, 1893. Narrative of the first English plantation of Virginia, by Thomas Hariot.

and make clear certain of the manners and customs of the natives late in the sixteenth century.

The site chosen by the English colonists in 1607 for their permanent settlement—Jamestown—was within the territory of “the *Wero-wance* of *Paspiha*,” one of the confederated Algonquian tribes dominated by the great leader Wahunsonacock, better known as Powhatan.

The name Powhatan, translated “falls in a current,” was applied to the native village at the falls of the James, within the limits of the present city of Richmond, a favorite place of residence of Wahunsonacock. Later the name was given not only to the individual and to his tribe, but also to the confederacy which he had been instrumental in forming and which later became such an important factor in the annals of the colony. The name may have been applied not only to the falls of the James but to similar sites or rapids in other streams. It may also have had other signification.

It has been assumed that the references to Powhatan occurring in the documents quoted below applied to the same individual, but “Powhatan of Roanoke” may not have been Powhatan, the father of Pocahontas.

Sir Thomas Gates, before leaving England as Governor of Virginia in 1611, received lengthy instructions as to the policy to be pursued in treating with the Indians and also as to certain discoveries to be undertaken.⁵ One item referred to the country southward from Jamestown, where he would be

neare to the Copper mines of *Ritanoe* and may passe them by one branch of this river, and by another *Peccarecamicke* where you shall finde four of the Englishe alsoe, lost by Sir Walter Raweley, which escaped from the slaughter of *Powhatan* of *Roanoke* upon the first arivall of our Colony and live under the protection of a *wiroano* call'd *Sepanocon* enemy to *Powhatan* by whose consent you shall never receive them.

The expedition, which arrived off the coast late in June 1585, and of which White and Hariot were members, remained in America a full year. Not having received the expected aid and supplies from England, and fearing for the future without assistance, they reluctantly abandoned the venture and returned to England with Sir Francis Drake, whose fleet had cast anchor near Roanoke Island, June 10, 1586. Drake was then returning to England after attacking the Spanish settlements far southward, including St. Augustine in Florida. A supply ship soon after reached the deserted island but did not remain. A fortnight later Sir Richard Grenville arrived with three ships well stocked with necessary stores, but soon abandoned the search for the colony. However, he left 15 men, with ample supplies,

⁵ Ms. vol. 21993, fol. 178 et seq. British Museum, London.

to hold or claim the country. The following year—1587—another group of colonists, those destined to become the Lost Colony, discovered evidence that the men left by Grenville the year before had been killed by the Indians. This massacre appears to have been the event alluded to in the instructions received by Sir Thomas Gates. Obviously it was “upon the first arrivall of our Colony,” 20 years before Jamestown. Powhatan may then have been in the vicinity of Roanoke Island, later to move northward to the valley of the James. However, the “four of the Englishe” mentioned in the instructions to Gates may have been members of the Lost Colony, concerning whose fate nothing definite is known. All that has been stated regarding them is vague and uncertain, and tangible evidence is lacking.

The identity of “a *wiroano* call’d *Sepanocon*” has not been determined. It may have been a Siouan village to the west or southwest of the Algonquian country. The name suggests the Saponi, one of the tribes of the Monacan confederacy, but the latter were at that time established near the Rivanna, far beyond the region traversed by the colonists.

The massacre of part of the Lost Colony by Powhatan a short time before the coming of the Jamestown colonists was mentioned by Strachey⁶ who urged the removal or extirpation of the native priests, the “Quiyoughquisocks, by whose advise and perswasions was exercised that bloody cruelty.”

Another reference to Powhatan may be cited.

After the marriage of John Rolfe and Pocahontas at Jamestown in April 1613, Sir Thomas Dale went to the “Chicohominie” village,⁷ a short distance from the English settlement, and made a pact of friendship with that tribe. One of the articles of the pact to which all agreed was that (p. 13):

they [the Chickahominy] should at all times be ready and willing to furnish us with three or four hundred bowmen to aide us *against the Spaniards*, whose name is odious amongst them, for *Powhatans* father was driven by them from the *west-Indies* into these parts, or against any other Indians which should, contrary to the established peace offer us any injurie.

In this quotation the “west-Indies” is assumed to refer to Spanish territories in the south rather than to the islands to which the name would apply. The tribe to which Powhatan’s father belonged, whether Algonquian or related to another stock, had evidently been forced away from their earlier habitat by the Spaniards, or through Spanish

⁶ Strachey, William, *The historie of travaile into Virginia Britannia*, p. 86. Hakluyt Society, London, 1849.

⁷ Hamor, Raphe, *A true discourse of the present estate of Virginia, and the success of the affaires there till the 18 of June 1614*. London, 1615. Reprint 1860.

influence. They may have lived farther south on the coast before Siouan tribes had pushed eastward and would, therefore, have encountered the Spaniards who frequented the region. The Spaniards advanced northward along the coast and in 1570 established a mission on the banks of a stream that flowed into the Chesapeake, believed by some to have been the Rappahannock. However that may be, the reference is valuable as suggesting an early movement of the tribes.

SIOUAN TRIBES

Centuries ago the Siouan tribes lived in the valley of the Ohio, west of the mountains. They are believed to have occupied both banks of the Ohio River, being more numerous on the north than on the south side. They are likewise believed by the writer to have been the builders of the majority of the great earthworks, so numerous in the southern part of the State of Ohio and across the river in northern Kentucky. It is evident that Algonquian tribes were then living to the northeast and east of the Siouan groups.

Swanton⁸ in an earlier paper suggested the relative position of the Siouan tribes before they had separated. He concluded the article:

The occupancy of the territory of our Middle West between the Great Lakes and the Ohio by Siouan tribes seems therefore to rest on grounds almost historical. With the strong indications now at hand there seems to be reason to think that a close comparative study of the Siouan dialects would enable us to reconstruct the general outlines of their ancient geographical positions with considerable accuracy. If present indications are not deceptive, when that is done we shall find that they fell into four major linguistic groups; a northeastern, consisting of the ancestors of the later Siouan tribes of Virginia, the Hidatsa, Dakota, Biloxi, and Ofo; a southeastern, including most of the later peoples of the two Carolinas; a southwestern composed of the five tribes of Dorsey's Dhegiha group; and a northwestern, Dorsey's Teiwere.

The five tribes included in Dorsey's Dhegiha group are the Omaha, Ponca, Quapaw, Osage, and Kansa. The Teiwere group consists of the Iowa, Oto, and Missouri. One Siouan village, and possibly more, stood in southern Ohio until the latter part of the seventeenth century.

Less is known about the Algonquian tribes adjacent to the Siouan groups; however, the movements of the two appear to have been similar. Michelson⁹ after a careful study of the language wrote in part:

Summing up, we may say that Powhatan clearly belongs with the Cree group of Central Algonquian languages, that it is closer to Cree than to any other

⁸ Swanton, John R., *New light on the early history of the Siouan peoples.* Journ. Washington Acad. Sci., vol. 13, No. 3, Feb. 4, 1923.

⁹ Michelson, Truman, *The linguistic classification of Powhatan.* Amer. Anthropol., vol. 35, No. 3, July-September 1933.

member of that group, but that it can not be classified as a Cree dialect. A prehistoric migration is thereby shown.

“Powhatan” here refers to the language spoken by the Algonquian tribes of Virginia when Jamestown was settled.

The Siouan tribes of the East were two of the “four major linguistic groups” recognized by Swanton as previously mentioned, and which have more recently been discussed in detail.¹⁰ At this time he has determined the movements of the two groups of tribes, referred to the dialectic distinctions in their language, and has added much information to that available when Mooney¹¹ prepared his monograph nearly a half century ago.

The northern Siouan group, those in Virginia at the beginning of the seventeenth century, occupied the piedmont beyond the country claimed by the Algonquian tribes; but they may not have been there many generations, having moved into the valleys from the west and southwest. The Monacan and Manahoac confederacies, whose villages were in the valleys of the James, Rivanna, Rappahannock, and lesser streams, were Siouan peoples. This was as far north as the tribes advanced, and soon after the middle of the century they were returning southward, having been forced to abandon their scattered settlements by the invasion of the Susquehanna and others from the north.

The village of Shackaconia, which stood on the banks of the Rapidan above its junction with the Rappahannock, is believed to have been abandoned soon after the year 1650, when the people moved southward to the vicinity of the falls of the James and endeavored to establish a new home near the present Shacoe Creek, a name which undoubtedly perpetuates that of the tribe. These Indians were attacked by the colonists and their Pamunkey allies, led by Totopotomi, in the spring of 1656.

Little was recorded about the people of the piedmont section. There is no known reference to a European having visited a native village in the valleys beyond the falls of the Rappahannock; nor was the valley of the James, beyond the mouth of the Rivanna, reached by the colonists until after the Indian settlements had been abandoned.

Few, if any, Indians remained in the piedmont in 1670. When Lederer,¹² Colonel Catlet, and their party of “nine English horse, and five Indians on foot” traversed the country westward from the falls

¹⁰ Swanton, John R., *Early history of the eastern Siouan tribes. Essays in Anthropology in honor of Alfred Louis Kroeber*, Univ. California, 1936.

¹¹ Mooney, James, *The Siouan tribes of the East*. *Bur. Ethnol. Bull.* 22, 1894.

¹² Lederer, John, *The discoveries of . . . Begun in March 1669, and ended in September 1670*. London, 1672. Reprint 1902.

of the Rappahannock, they did not mention encountering a native camp. But on August 24, so the journal states, "we travelled thorow the Savanae amongst vast herds of red and fallow deer which stood gazing at us; and a little after, we came to the Promontories or spurs of the Apalataean-mountains."

In the year 1682, twelve years after Lederer explored the valley of the Rappahannock, Cadwalader Jones, then in command of the Rappahannock Rangers, traversed the same country. When near the headwaters of the Rapidan he "saw an Indian y^t made a periauger at the mountain and brought her down to the Garison with Skins and venison."¹³ The garrison was at the falls of the Rappahannock. The periauger was a dugout canoe, made of a single log. No other reference to the use of a dugout canoe by Indians in piedmont Virginia is known to the writer. Similar craft had undoubtedly been made and used by all Siouan tribes of Virginia, whose villages in 1607 were in the river valleys, westward from the fall line to the mountains.

The villages in the piedmont were composed of clusters of bark-or mat-covered lodges, probably more scattered than in the towns nearer the coast. There were no large structures in the villages that would have resembled the council houses of the tribes farther south.

As no description of a Siouan settlement in the Virginia piedmont has been preserved it is not known to what extent the villages were palisaded. However, after the Tutelo and Saponi had moved away from the banks of the James and Rivanna, their towns were so protected.

In 1701 the Tutelo village stood on the bank of the Yadkin River, in central North Carolina, where it was visited by Lawson.¹⁴ One night there was a severe storm accompanied by a strong wind from the northwest and, so wrote Lawson: "The first Puff blew down all the Palisadoes that fortified the town."

Lawson continued his journey, soon passed through the Saponi village and some miles beyond arrived at the Keyauwee town, "fortified in with Wooden Puncheons, like Sapona, being a People much of the same Number." Mooney located the Keyauwee village about the present High Point, Guilford County, N. C. The Tutelo and Saponi belonged to the northern, and the Keyauwee to the southern group of Siouan tribes.

Settlements on the headwaters of the James and Rappahannock may, at an earlier time, have been similarly protected.

¹³ Harrison, Fairfax, Landmarks of Old Prince William. 2 vols. Privately printed, Richmond, 1924.

¹⁴ Lawson, John, History of North Carolina. London, 1714. Reprint, Charlotte, N. C., 1903.

Sweat houses were used extensively by all tribes.

Lawson, again referring to the Tutelo village on the Yadkin, saw near the settlement "several Bagnios, or Sweating Houses, made of stone in shape like a large oven." Others were of a lighter construction. Several were standing at the "Sapponey Indian Town" near Fort Christanna in the spring of 1716 when it was visited by Governor Spotswood and John Fontaine. To quote from the latter's journal (pp. 277-280):¹⁵

Between the town and the river, upon the river side, there are several little huts built with wattles, in the form of an oven, with a small door in one end of it; these wattles are plaistered without side very closely with clay, they are big enough to hold a man, and are called sweating houses. When they have any sickness, they get ten or twelve pebble stones which they heat in the fire, and when they are red-hot they carry them into these little huts, and the sick man or woman goes in naked, only a blanket with him, and they shut the door upon them, and there they sit and sweat until they are no more able to support it, and then they go out naked and immediately jump into the water over head and ears, and this is the remedy they have for all distempers.

Although this was written at a comparatively late day, the tribes then settled at Fort Christanna had moved down from the north, from the valleys of the James and Rivanna, to join the kindred Occaneechi about the year 1670. They settled on islands below the junction of the Staunton and Dan Rivers, in the present Mecklenburg County, Va., but moved to several other localities before reaching Fort Christanna. However, many of the customs practiced by the earlier generations at the villages in the north were undoubtedly followed by the people gathered at Fort Christanna. Log structures were erected for the Indians but, as told in the journal (p. 276): "Some Indian houses are covered in a circular manner, which they do by getting long saplings, sticking each end in the ground, and so covering them with bark; but there are none of the houses in this town so covered." Fires were made on the ground in the middle of the lodge. "A pot and some wooden dishes and trays, which they make themselves" served as their more important household goods. This undoubtedly referred to earthenware. They also made mats "of bullrushes." Bear and deer skins were used on their beds, which were raised about 2 feet above the ground. They "live entirely upon their hunting and the corn which their wives cultivate." Such were the conditions at Fort Christanna, about 10 miles north of Roanoke River, in the present Brunswick County, Va., during the month of April 1716.

¹⁵ Journal of John Fontaine, in *Memoirs of a Huguenot family*, by Ann Maury. New York, 1853.

The southern Siouan tribes—those suggested by Swanton as constituting the southeastern group when all lived in the vicinity of the Ohio—moved southward along the mountains from their earlier habitat. They continued to move farther from the Ohio, and the Cheraw were established in the valley of the Savannah, in the extreme northwest corner of the present State of South Carolina when the region was entered by De Soto in 1540.

Siouan tribes may never have crossed the Savannah River, which had served from the earliest times as the boundary between the tribes that came from the north and those that entered the country from the west or southwest, from the direction of the distant Mississippi. Villages of the Creeks, Yuchi, and Shawnee, in addition to those of the Siouan tribes, have stood on the banks of the river at different times since the year 1540. But of these only the Siouan had approached the valley from the north, and it is evident that others did not penetrate far into the present South Carolina.¹⁶ However, small Muskogean tribes early occupied the extreme southeastern part of the State, south of a line that would have extended westward from the vicinity of Charleston. About the year 1687 the Yamasee fled from the Spanish settlements in Florida. They went northward across the Savannah and were permitted by the English to settle in the present Beaufort County. Muskogean tribes may never have been farther north in South Carolina.

Soon after the coming of the Spaniards, the Cheraw and related tribes began to move away from the headwaters of the Savannah. They followed the trend of the mountains in a northeasterly direction to near the Virginia line, and ultimately joined with others and settled in the vicinity of the Catawba. The movement may have been impelled by fear of the Spanish forces who had penetrated the wilderness, and the advance of the Siouan tribes could, in turn, have caused a movement of the Iroquoian and Algonquian villages farther north and northeast. The tribe to which Powhatan's father belonged may, at that time, have joined in the movement and abandoned its earlier home.

Unlike the Siouan tribes in Virginia, the southern group developed a form of council or town house, which had probably been acquired

¹⁶ Swanton, in one of his most important works, *Early history of the Creek Indians and their neighbors*, *Bur. Amer. Ethnol. Bull.* 73, 1922, discussed the manners and customs of the native tribes that occupied the country southward to the Gulf coast. In a recent publication, *Final Report of the United States De Soto Expedition Commission* [John R. Swanton, Chairman], *House Doc. No.* 71, 76th Congr., 1st Sess., 1939, he has added a vast amount of information to that previously presented and, as far as possible, identified the locations of the ancient Indian settlements.

through contact with the Creeks or Cherokee. Lawson, at the beginning of the eighteenth century, witnessed a ceremony at the small Waxsaw village, near the Catawba, which he described.¹⁷ The ceremony was conducted in a large round house, with a pyramidal roof thatched "with Sedge and Rushes." The house had but one door, very low, and inside there was a line of benches, made of cane and joined together, which extended along the wall. All the people of the village assisted in the erection of the great structure, which was much larger than the dwellings. The latter were covered with bark. One of the "Chiefest men" of the tribe remained in the house at all times, and it was here, "in these state Houses," that the "most aged and wisest" would gather to deliberate on all important affairs. The house was very dark within; a fire burned in the middle, and it was the duty of one man to add split canes as fuel whenever it was needed.

Leaving the Waxsaw village, Lawson soon arrived at the Catawba where, so he wrote, they occupied "one of the Chief Men's Houses, which was one of the Theaters I spoke of before."

Thus the settlements of the southern Siouan tribes differed in some respects from those then scattered through the piedmont of Virginia, but when the Siouan tribes lived in the vicinity of the Ohio, before the general movement southward and before the separation of the groups, all the villages would undoubtedly have been alike in appearance.

IROQUOIAN TRIBES

Less is known about the Iroquoian tribes of the South during the early days of the colonies than about either the Algonquian or Siouan groups. The Cherokee, the most important of the tribes, when first known in the early sixteenth century were settled in the southern Appalachians. They are thought to have moved southward along the mountains from their earlier habitat in the vicinity of the headwaters of the Ohio.

The Iroquoian tribes may have followed the first of the Siouan groups who, in 1540, were occupying villages near the Savannah. During the southern movement of the Cherokee some entered the western and central parts of Virginia, and according to an ancient tribal tradition, Cherokee villages, generations ago, stood in the vicinity of the Peaks of Otter, south of the James.

The numerous settlements of the Cherokee were scattered through the mountains and in the protected valleys. All were not closely built, and separate habitations were often some distance from the

¹⁷ Lawson, John, *op. cit.*

Town House, which served as the center of the community. As written by a British officer of the French and Indian war (p. 202):¹⁸

They [the Cherokee] live in as good order as any savages on the continent. They build their houses with wood, and ciel them with clay mixed with straw, so as to render them tight and comfortable. They have many small towns dispersed among the mountains on the branches of the rivers Tanesee and Savanna. . . . They are very famous for hunting, and their country abounds with deer, bears, and some elks and turkeys in great plenty in the fertile vallies between the mountains.

Although this was written after the middle of the eighteenth century, the same statements would undoubtedly have applied from the earliest times. The seclusion of the Cherokee settlements in the midst of the mountains caused them to remain separated and apart from others, and prevented contact with the earliest of the European colonies near the coast.

The Cherokee town house, often termed the council house, served as the gathering place for the people of the settlement. It usually occupied the summit of a mound of earth, raised for that purpose, and varied in size according to the requirements of the community. In some respects it was the most interesting structure reared by any of the native tribes of the East. One of the most comprehensive descriptions of such a structure is found in the narrative of an English officer who visited the Cherokee in 1761. It refers to the "town-house of Chote, the metropolis of the country," which was thus described (p. 32):¹⁹

The town-house, in which are transacted all public business and diversions, is raised with wood, and covered over with earth, and has all the appearance of a small mountain at a little distance. It is built in the form of a sugar loaf, and large enough to contain 500 persons, but extremely dark, having, besides the door, which is so narrow that but one at a time can pass, and that after much winding and turning, but one small aperture to let the smoak out, which is so ill contrived, that most of it settles in the roof of the house. Within it has the appearance of an ancient amphitheatre, the seats being raised one above another, leaving an area in the middle, in the center of which stands the fire; the seats of the head warriors are nearest it.

A similar structure at Tellico, a Cherokee town in the present Monroe County, Tenn., was on the summit of a mound 12 feet in height, in the midst of the old fields in a bend of the Little Tennessee River.²⁰ This was not far from the important town of Cowe, which then consisted of about 100 dwellings standing on both sides of the

¹⁸ Rogers, Maj. Robert, *A concise account of North America*. London, 1765.

¹⁹ Timberlake, Lieut. Henry, *The Memoirs of . . .* London, 1765.

²⁰ Hawkins, Benjamin, *Letters of . . . 1796-1806*. Coll. Georgia Hist. Soc., vol. 9, p. 112, 1916.

Tennessee River.²¹ The council house at Cowe was described in 1776 as a great circular structure which stood on an artificial mound 20 feet in height. The house, which would hold several hundred people, was said to have been 30 feet high, thus making the peak of the roof rise some 50 feet above the original surface.

Such were the great council houses of the Cherokee. They would not have differed greatly in appearance from the large earth lodges constructed by several tribes in the upper Missouri Valley until after the middle of the nineteenth century.

Isolated mounds that have stood in parts of Virginia and elsewhere near the mountains may have served as elevated sites for structures similar to those known to have been built by the Cherokee.

The Tuscarora, a confederation of Iroquoian tribes, occupied the north-central part of North Carolina, and extended southward to the Cape Fear River. They constituted a powerful group but one of which little is known until after the beginning of the eighteenth century when Lawson's work was written.²²

The Tuscarora formerly possessed six or more large settlements. They evidently remained in close contact through fear of their enemies rather than scattering in smaller camps as was the custom of the Algonquian tribes of Virginia. Lawson encountered one of the camps of the Tuscarora which may not have been considered a permanent village, but which was a large gathering (p. 32) :

We met with 500 Tuskereros in one Hunting Quarter. They had made themselves streets of houses built with Pine Bark, not with round tops as they commonly use, but Ridge Fashion, after the manner of most other Indians. We got nothing amongst them but corn, Flesh being not plentiful by reason of the great number of their people. For tho' they are expert hunters, yet they are too populous for one Range, which makes Venison very scarce to what it is amongst other Nations, that are fewer, no savages living so well for Plenty as those living near the sea.

During the month of October 1711 the village of Paski was probably typical of many throughout the tidewater region. As briefly described (p. 937) :

The village was fortified with palisades and the houses or cabins were neatly made out of tree bark, they stood in a circle and in midst of them was a beautiful round place, in the center a big fire, and around it the Council sitting on the ground, that is the leaders of the Tuscoruros' nation.

²¹ Bartram, William, *Travels through North and South Carolina, Georgia, east and west Florida*. . . . London, 1792.

²² Lawson, John, *op. cit.*

²³ De Graffenried, Christopher, *De Graffenried's Manuscript, in Colonial Records of North Carolina*, vol. 1, Raleigh, 1886.

Such a scene was radically different from that of a gathering in a council house of the Cherokee, but of the same significance. The gathering, sitting around a fire, would have suggested one of the water-color drawings made by White just a century and a quarter before.

The two preceding accounts of Tuscarora settlements are interesting as referring to the same generation, at the beginning of the eighteenth century, but there is no reason to consider them different from those that existed long before Jamestown.

The steady encroachment of European colonists on the lands of the Tuscarora soon led to open warfare which ended with the defeat of the Indians. Early in January 1712 the Tuscarora and their allies constructed a palisaded fort on the bank of the Neuse, some 20 miles west of New Bern. This was taken by the colonists on the 28th of the same month. The Indians soon moved northward to seek refuge among friendly tribes, and about the year 1722 the Tuscarora became the Sixth Nation of the League of the Iroquois.

The two smaller tribes, the Nottoway and Meherrin, whose villages were in southeastern Virginia south of the James, belonged to the Iroquoian linguistic family. The former were related to the Tuscarora, but the latter were later arrivals from the north and their identity has not been clearly determined.

The Nottoway village in Southampton County, Va., was visited on April 7, 1728, by Colonel Byrd, who left a brief description of it as it then appeared.²⁴ The bark-covered lodges, "close arbours made of saplings, arched at the top, and covered well with bark as to be proof against all weather," stood within "strong palisades, about ten feet high . . . each side of the square might be a hundred yards long, with loop-holes at proper distances."

This was one of the last palisaded Indian settlements in Virginia, a century and more after Jamestown.

The native tribes of Virginia that were encountered by the early colonists have now been mentioned. The characteristic features of the villages of the three groups have been briefly described, together with short references to the manners and ways of life of the people, and although many of the accounts apply specifically to a time several generations after the settlement of Jamestown they would undoubtedly have applied equally well to a much earlier period. These were the historic tribes. Some had occupied the country for generations; others were newcomers to the region in which they were encountered at the beginning of the seventeenth century.

²⁴ Byrd, Col. William, *History of the Dividing Line*. Petersburg, Va., 1841.

The historic tribes were not the aborigines of the country; all had been preceded by others who, in turn, were not the first occupants of the region. These interesting facts are revealed by the occurrence at the same site of objects of various forms and made of different materials, assumed to have belonged to several periods of occupation.

PROTOHISTORIC SITES, MOUNDS, AND BURIALS ATTRIBUTED TO THE HISTORIC TRIBES

Westward from the Chesapeake, up the valleys of the streams that flow into the bay, across the tidewater and piedmont sections of Virginia, are traces of innumerable camps and villages of the native tribes. Many of the sites were occupied by the historic tribes long after the country was first traversed by Europeans, other sites are more ancient and had been abandoned before the settlement of Jamestown, and some had been occupied and reoccupied by different peoples or tribes through succeeding centuries. Many sites are rich in archeological material belonging to several periods of occupancy, but its interest and importance is seldom appreciated. Like conditions prevail southward to the Savannah.

Fragmentary pottery and stone artifacts scattered over the surface and, in some localities, the occurrence of mounds and burials, serve to reveal the sites of the native settlements.

ALGONQUIAN TRIBES

The Algonquian tribes did not erect mounds, and the few that have been encountered in tidewater Virginia are believed to have been raised by people of another stock, whose customs differed from those of the Algonquian.

The narratives of Hariot and Captain Smith refer to the burial customs of the Algonquian tribes of northeastern North Carolina and tidewater Virginia, but fail to mention the ceremonies that were enacted when the remains were placed in the grave or tomb. One of the water-color sketches made by White at the village of Secota, in 1585 or 1586, and shown in Hariot's narrative, bears the title: "The Tombe of their Werovvans or Chieff Lordes." It shows the "Tombe" standing within a mat-covered structure, and in this respect the engraving differs from the original drawing. The original sketch shows a platform supported by 11 posts, 4 in front, 5 in back, and 1 in the middle of each side. It stands several feet above the surface of the earth and has a mat covering which resembles that of the lodges.

Nine bodies are resting on the platform. The original drawing, now in the British Museum, bears a legend written across the top:

The Tombe of their Cherounes or chiefe personages, their flesh clene taken of from the bones save the skynn and heare of their heads, w^{ch} flesh is dried and enfolded in matts laide at their feete, their bones also being made dry or covered wth deare skynns not altering their forme or proportion. With their Kywash, which is an Image of woode keeping the deade.

The legend explains clearly the subject of the drawing, but it was not reproduced on the engraving made by De Bry.

Later the bones were probably removed from the platform, to be buried in the ground or cared for in some manner. However, only a few of the dead of the village were so treated, and Smith mentioned another form, "their ordinary burials," in which the bodies, wrapped in skins and mats, with various possessions, were deposited in deep holes which had been dug with sharpened sticks. These "deep holes" may have been the large ossuaries that have been discovered on many sites, but individual burials were also made, and an ancient cemetery, which contained 50 or more such burials, was encountered more than a century ago on the right bank of the Chickahominy River, in Charles City County, Va. The graves had been made in a shell heap, and the remains of both children and adults were found.²⁵

Similar burials have been discovered in other parts of the tidewater region, and just 50 years ago it was stated that:²⁶

About three years ago many human bones were exhumed from the great mound at Pope's Creek by the lime-burners. . . . That the custom of burying in shell mounds was not uncommon has been verified in distant localities on the eastern shore of the Bay, where, during my research, I learned that four bodies had been removed from the mound at Roadley Manor, two from the Bolingbroke shell-field, and one from the enormous deposit at Chancellor's Point.

The great shell heap at Popes Creek, on the left bank of the Potomac River, in Charles County, Md., once covered more than 30 acres and in places was 15 feet in depth. It was one of the largest accumulations of shells on the entire Atlantic coast and proves that the region was frequented by native tribes through generations or even centuries.

During the past few years ossuaries have been encountered and examined at several sites on the banks of the Potomac below Washington. These were located at Bolling Field, at the beginning of the Eastern Branch; near the mouth of Piscataway Creek, in Prince

²⁵ Christian, James H., in *Farmers' Register*, vol. 3, No. 3. Petersburg, Va., July 1835.

²⁶ Reynolds, Elmer R., *The shell mounds of the Potomac and Wicomico*. Amer. Anthropol., vol. 2, No. 3, 1889. This is one of the papers included in *The aborigines of the District of Columbia and the lower Potomac—a symposium*.

Georges County, Md.; and on the banks of Port Tobacco River, in Charles County, Md., all on the left bank of the Potomac. Ossuaries have recently been discovered and carefully examined on the site of the more important village of Patawomeck, on the left bank of Potomac Creek, at its junction with the Potomac River, in Stafford County, Va.

These ossuaries undoubtedly belonged to the Algonquian settlements that were encountered by the colonists from Jamestown when they ascended the Potomac during the summer of 1608. Very few glass beads or other articles of European origin have been found on the sites or associated with the burials, giving evidence of their antiquity. The ossuaries had been formed before the coming of the colonists, although a few burials appear to have been added after that time.

During the late summer of 1939 a small ossuary was examined on the left bank of the York River, between 4 and 5 miles below West Point, in King and Queen County, Virginia.²⁷ It had been exposed by the falling away of the bank of the river and consequently part of it had disappeared, but it appeared to have been originally about 10 feet in diameter and 3 feet in depth. Traces of some 25 burials, all greatly decomposed, were recovered which may represent about one-half of the total number that had been placed in the excavation. Charred human bones were discovered in small masses. Also bits of shell-tempered pottery, some of which bore faint traces of impressions of nets or cords. The ossuary was only a few miles above the site of Werowacomoco, one of the more important settlements of the Powhatan tribes when Jamestown was settled, and evidently indicates the position of another camp or village that belonged to the same period. Similar burials may exist on the sites of villages that stood on the banks of other streams in tidewater Virginia, as well as southward in the country occupied by Algonquian tribes at the close of the sixteenth century.

Several ossuaries resembling those discovered on the Potomac River sites were exposed, some years ago, when the left bank of Choptank River broke away. This was at the site of an ancient Nanticoke village 2 miles below Cambridge, Dorchester County, on the Eastern Shore of Maryland. The site was abandoned by the Nanticoke tribe in 1722, and after that time it was covered by wind-blown sand to a depth of many feet. Human remains were exposed on the face of the cliff, and examination revealed "a hard-set horizontal bed of hu-

²⁷ The ossuary was excavated by Dr. T. Dale Stewart and the material recovered is now in the United States National Museum.

man bones and skulls, many of them well preserved, about $1\frac{1}{2}$ to 2 feet thick, 10 feet long, 3 feet under the village site stratum." The entire mass of bones was "of irregular, circular shape, 25 feet in longest by 20 feet in shortest diameter and $1\frac{1}{2}$ to 2 feet thick."²⁸ Another ossuary, smaller but of the same form, was discovered nearby.

The forms of burial, represented by the ossuaries, are characteristic of the Algonquian tribes of the Potomac-Chesapeake region. Smith may have referred to ossuaries when he mentioned burials placed in deep holes, dug with sharpened sticks.

SIOUAN TRIBES

The Siouan tribes, whose villages were in piedmont Virginia until after the middle of the seventeenth century, were undoubtedly the builders of the burial mounds known to have stood at or near their principal settlements. The best known of these, although it disappeared more than a century ago and its exact position remains unrevealed, was on the low ground bordering the right bank of the Rivanna, at the site of the village of Monasukapanough. This is in Albemarle County, directly north of the University of Virginia. The village was indicated on the Smith map, 1624, but the colonists had not penetrated that far into the wilderness and its existence had been made known by the Indians.

The Monasukapanough were believed by Mooney to have been the Saponi of later narratives, whose villages have already been mentioned. This may have been the village abandoned by the Saponi when they moved southward to join the Occaneechi sometime before 1670.

The mound was carefully examined and described by Jefferson,²⁹ and were it not for his account, the knowledge that a mound had stood on the site would not have been preserved—which leads to the belief that other similar works once existed in the piedmont but have since disappeared.

As described by Jefferson the mound was "of a spheroidal form, of about 40 feet diameter at the base, and had been of about twelve feet altitude, though now reduced by the plough to seven and a half, having been under cultivation about a dozen years." Before the ground was cleared and cultivated, trees up to 12 inches in diameter had covered the mound. It was surrounded by a ditch, from which, it was assumed, earth had been removed to cover the bones at the

²⁸ Mercer, Henry C., *Exploration of an Indian ossuary on the Choptank River, Dorchester County, Maryland*. Publ. Univ. Pennsylvania, vol. 6, 1897.

²⁹ Jefferson, Thomas, *Notes on the State of Virginia*. Philadelphia, 1788.

time of each succeeding burial. Vast quantities of human remains, placed in distinct strata, were discovered and, as Jefferson wrote (p. 105): "I conjectured that in this barrow might have been a thousand skeletons." And as he justly concluded:

Appearances certainly indicate that it has derived, both origin and growth from the accustomed collection of bones, and deposition of them together; that the first collection had been deposited on the common surface of the earth, a few stones put over it, and then a covering of earth, that the second had been laid on this . . . and so on.

This, however, was the last and final disposition of the bones. Earlier, the body may have been paced on a scaffold, or exposed in some manner; then the flesh was removed from the bones, which were collected and kept until the final ceremony. Such was the custom among the Choctaw, in whose ancient territory, in the southwestern part of Alabama, stand many burial mounds that must have resembled the one described by Jefferson.

A mound similar to the one on the Rivanna, although much larger, formerly stood on the right bank of the Rapidan, in Orange County, about 1 mile east of the Greene County line. An extensive village site surrounds the mound, from which some interesting material has been recovered. This may have been the site of the Manahoac town of Stegara, as indicated on the Smith map, far to the westward of the country then known to the colonists. The two villages, Monasukapanough and Stegara, were some 15 miles apart.

The mound on the Rapidan was partially examined in 1893,³⁰ but much of it had been destroyed by the encroachment of the waters of the river. Human remains were encountered throughout the mound, but all were greatly decomposed and frequently appeared as thin, chalky seams. Pits or graves were discovered below the original surface beneath the mound. Some bones showed the effect of fire. No objects of any sort were associated with the burials. The magnitude of the burial mound proves the importance of the ancient settlement to which it belonged.

Few mounds remain in the Virginia piedmont, but one is now standing about 2½ miles southwest of Leesburg, Loudoun County. It is on the west side of the road, about midway between Tuscarora Creek on the north and Sycoline Creek on the south. The mound has not been examined, and consequently it is not known to which class it belongs—whether it is similar to the burial mounds on the banks of the Rivanna and Rapidan or to the works encountered west of the Shenandoah. It now stands between 10 and 12 feet in height, with a di-

³⁰ Fowke, Gerard, Archeologic investigations in James and Potomac Valleys. Bur. Ethnol. Bull. 23, 1894.

iameter of about 60 feet. Originally, it was higher and of smaller diameter and would have resembled in appearance the mound described by Jefferson.

Some years ago a cemetery and village site were discovered on the bank of the Yadkin River, near East Bend, Yadkin County, N. C. The majority of the burials were flexed and placed within a few feet of each other, and all were about 4 feet below the surface. Many had been exposed by the falling away of the river bank. Traces of fire frequently occurred near the burial. Fragmentary pottery, implements of stone, beads made of shell and copper, pipes made of stone and pottery, and pieces of galena were associated with the burials; one iron ax was found. Much material lay scattered over the surface of the site. This may have been one of the Siouan villages occupied at the beginning of the eighteenth century. The palisaded town of the Tutelo stood on the banks of the Yadkin in 1701, when it was visited by Lawson.

Many burial mounds formerly stood in the southeastern part of North Carolina, in Duplin, Sampson, and adjacent counties. The mounds were low and spreading, having settled since the remains were placed on the surface and covered with earth and some were surrounded by shallow ditches—suggestive of the mound on the Rivanna. One, selected as a typical example, stood on a sandy ridge about one-half mile southwest of the courthouse at Kenansville, Duplin County. Its base was circular and about 35 feet in diameter; the height of the mound was about 3 feet. In it were found fragments of charcoal and pottery, small shells, and parts of about 60 human skeletons. No implements of any sort were discovered.³¹ The description of the manner in which the bones were placed is similar to Jefferson's account of the contents of the burial mound at Monasukapanough.

The mounds just mentioned were undoubtedly of Siouan origin, and the burials, like others in Virginia, are believed to represent the last phase of the burial ceremonies, which may have resembled those performed by the Choctaw, as recorded by Romans late in the eighteenth century.³²

As yet only the final disposition of the remains have been mentioned. A detailed account of the earlier rites—those performed soon after death—was prepared by Lawson³³ while at the Santee village,

³¹ Holmes, J. A., *The Indian mounds of the Cape Fear*, *In* *Chronicles of the Cape Fear River*, by James Sprunt. Raleigh, N. C., 1914.

³² Romans, Bernard, *Natural history of East and West Florida*. New York, 1775.

³³ Lawson, John, *History of North Carolina*. London, 1714. Reprint, Raleigh, N. C., 1903.

some 60 miles north of Charleston, S. C., at the beginning of the year 1701. He referred to the removal of the flesh from the bones, which were then washed, carefully preserved in a box, and from time to time oiled and cleaned. They were thus preserved by members of the family. It is believed that the bones would later have been buried—although this rite was not recorded by Lawson—and if so, the practice would have conformed with the customs of the Iroquoian tribes of the north, by whom the remains would have been placed in ossuaries, and of the Choctaw of the south, as told by Romans. This reveals the similarity of customs as practiced by different tribes, unrelated and far distant from one another.

IROQUOIAN TRIBES

Little can be said concerning the burial customs of the Iroquoian tribes. Although the towns of the Cherokee were so numerous and were so frequently visited during the later days of the colonies, only scant records have been preserved of such visits.

Interesting ceremonies were performed at the beginning of the erection of the large mounds on which the town houses were to stand. Burials were made at the base, or on the original surface of the ground. Years ago Mooney was told the traditional account of the raising of such a mound.³⁴ It did not refer to any mound specifically but was related as being the custom always followed when such a work was erected. As Mooney wrote:

When they were ready to build the mound they began by laying a circle of stones on the surface of the ground. Next they made a fire in the center of the circle and put near it the body of some prominent chief or priest who had lately died—some say seven chief men from the different clans. . . . The mound was then built up with earth, which the women brought in baskets.

Thus the mound, erected over the remains of important personages of the tribe or village, became virtually the crypt of the council house which served as the center of the community and in which all important gatherings were held.

The great town house at Chote, one of the most important of all Cherokee towns, has been mentioned in connection with the visit made to it by the British officer, Lieutenant Timberlake, in 1761. It stood on the south side of Little Tennessee River, in the present Monroe County, Tenn. The site was examined by Thomas about the year 1893.³⁵ The mound, then designated "McGee Mound, No. 2," is be-

³⁴ Mooney, James, *Myths of the Cherokee*. 19th Ann. Rep. Bur. Ethnol., 1900.

³⁵ Thomas, Cyrus, *Report on the mound explorations of the Bureau of Ethnology*. 12th Ann. Rep. Bur. Ethnol., 1894.

lied to have been the one on which the town house stood in 1761. As given by Thomas the diameters were 70 and 65 feet, the height 5 feet. The plan of the base shows, on the original surface, "a rough wall, about two feet high, built of slate stones; circular in form, inclosing a space about nine feet in diameter." Within the wall were 12 skulls and a large number of other bones. The circle of stones was just west of the center of the base of the mound. Near the exact center of the mound were 12 skulls close together. Thirteen entire skeletons were found in the eastern part of the area. Objects of stone, shell, and a few copper beads were in contact with the burials, but nothing of European origin was discovered.

The burials and the stone circle in the base of the mound agree well with the traditional account recorded by Mooney at a different time and place.

When Lawson³⁶ wrote concerning the burial customs of the Indians of Carolina he is believed to have referred to the Tuscarora in particular, although he did not specifically say so. As he said: "When an Indian is dead the greater person he is the more expensive is his Funeral." He then described in detail how the body was wrapped and "last of all they have a long Web of woven Reeds, or hollow Canes, which is the Coffin of the Indians, and is brought around several times and is tied fast at both ends." After various ceremonies, the body, thus wrapped, was placed in a pit, covered with bark, and so remained until the flesh fell away. The bones were then removed and cleaned, and the relatives would then "dress them up in pure white dressed Deer-Skins, and then lay them amongst their Grandees and Kings in the Quiogozon, which is their royal Tomb or Burial-Place of their Kings and War-Captains. This is a very large Magnificent Cabin, (according to their Building) which is raised at the Publick Charge of the Nation, and maintained in a great deal of form and Neatness." The remains were placed on a platform raised about 7 feet above the ground.

The Quiogozon would have resembled the "Tombe" sketched by White in 1585 or 1586, among the Algonquian tribes on the coast. Whether the bones were ever removed from the Quiogozon and later buried in the ground is not known.

CAIRNS

Cairns have been discovered throughout the mountainous country once occupied by the Cherokee. Many of these simple stone heaps,

³⁶ Lawson, John, op. cit., pp. 107-108.

averaging 2 or 3 feet in height, covered human remains and represented the form of burial practiced under certain conditions and in certain localities.³⁷ But now, after the lapse of many years, scant traces of the burials remain, although objects of a more permanent nature are often found under the stones.

Cairns occur in many widely separated localities, and their use was not confined to any one tribe or group of tribes.

Lawson, continuing his description of Santee customs, wrote :

They have other sorts of Tombs, as where an Indian is slain, in that place they make a heap of stones, (or sticks where stones are not to be found) to this memorial every Indian that passes by adds a stone to augment the Heap, in respect to the deceas'd hero.

This readily explains the origin of many such piles.

Several small cairns stand on the summit of a narrow ridge bordering the low grounds on the left bank of the Rivanna, some 2 miles below the site of Monasukapanough. The largest, about 3 feet in height and 15 feet in diameter, is formed of stones gathered from the nearby surface. A wide view of the country is obtained from the cairn and from the ridge on which it stands.

PREHISTORIC OCCUPANCY

All that has now been written concerning the native inhabitants of Virginia and of the country southward to the Savannah has related to the historic tribes, although much that has been mentioned had its origin or inception some time before the coming of Europeans. But many camp and village sites, burials, and mounds encountered in the same region belonged to an earlier period, and the identity of the tribe or tribes by whom they were occupied or created may never be determined.

During the early 1890's many sites in the James and Potomac Valleys were examined by Fowke, and his account of the work contains descriptions of some mounds and burial places that have now disappeared.³⁸ Many mounds were located west of the Shenandoah, the most interesting being in Rockingham, Page, and Shenandoah Counties. Different forms of burials were discovered in the mounds, and all the remains were greatly decomposed. Stone pipes of beautiful workmanship and other objects suggestive of specimens from west of the mountains were associated with certain mound burials. A low, spreading mound about 2 miles north of Linville, Rockingham County,

³⁷ Dunning, E. O., Account of antiquities in Tennessee. Ann. Rep. Smithsonian Inst. for 1870, 1871.

³⁸ Fowke, Gerard, op. cit.

contained a vast amount of skeletal material, estimated by Fowke to have represented some 800 burials. Many objects were found with the human remains, including carved bone ornaments of exceptional interest.

The principal Indian settlements in the piedmont and tidewater sections of Virginia were on the immediate banks of rivers, where they were often inundated. Great freshets sweep down the valleys of the streams that have their rise in the eastern slopes of the Blue Ridge. The rivers are short, and the floods soon pass but frequently cause changes in the contour of the low grounds. This has become more pronounced since the lands were cleared and cultivated, as these processes allowed the loosened ground to be more easily eroded and gullied. Floods of unusual extent were recorded during the eighteenth century and often occurred during the nineteenth. Sites of many ancient villages have thus been washed away, and others have been covered by sand and earth carried by the torrents from farther up the stream. The effect of the floods was told by Fowke. In describing discoveries made on the left bank of the James River, in Nelson County, Va., some 3 miles below Norwood, he wrote (p. 14) :

The floods of 1870 and 1877 disclosed numerous small deposits, probably more than 200 in all, containing burned stones, pieces of pottery, arrowheads, and great quantities of quartz chips. They are in nearly straight rows, from 25 to 50 feet apart, and extend for several hundred yards along the river. . . . A number of side-notched axes, hoes, adze-like celts . . . and an unfinished steatite pipe were found. . . . All these things point to a village of considerable size, but a most careful search of the whole area . . . failed to reveal a bone of any description.

This extensive site had probably been occupied by different tribes at different times, but its last occupants are believed to have been the Tutelo (the Monahassanugh of Smith), who soon after the middle of the seventeenth century moved southward and joined the Occaneechi, and whose village in 1701 stood on the bank of the Yadkin where it was visited by Lawson.

To which period of occupancy the ancient villages in the James River valley belonged is not known, and although some may have been the early Siouan settlements, others had undoubtedly been occupied before the Siouan tribes left the vicinity of the Ohio.

Similar conditions prevailed on the Shenandoah River. A low mound formerly stood on a narrow ridge about one-fourth mile west of Grove Hill, Page County, and as related by Fowke (p. 45) :

In the bottom land below this mound the flood of 1870 uncovered between 200 and 300 aboriginal fire beds, from 4 to 6 feet in diameter, either on the bare

surface or on a stratum of bowlders carefully placed. Quantities of flakings, broken and burned bones, burned stones, and other indications of a village site were washed out.

A freshet of unusual volume and destructive force passed down the valley of the Rappahannock in the spring of 1937. Water covered the low grounds to an unprecedented depth, and in many places the surface was lowered several feet, deep gullies were formed, and the courses of smaller, tributary streams were changed—all of which is shown in the photograph of a small section of the valley reproduced in plate 1. The photograph was made by Capt. H. K. Baisley during the autumn following the flood, after some fields bordering the river bank had been harrowed and again cultivated; other areas had not been leveled, but remained as left by the receding waters. A tract on the left, in the bend of the river at the foot of the high ground, is shown deeply gullied and washed, and the mouth of the small stream just below is seen to be closed with silt.

After the flood had passed, much material was collected from the exposed surfaces of the two sites indicated at *a* and *b* on the photograph, plate 1. A burial mound had stood on the immediate bank of the river at *a*, facing the island, and several flexed burials, much fragmentary pottery, and many triangular points, were exposed by the freshet. Some of the small triangular points, made of yellow jasper, are beautiful examples of chipping.

The site at *b*, also on the right bank of the stream, is about 2 miles below *a*. The surface had been lowered several feet by the flood. Various objects were found on the hard, exposed surface shown in the aerial photograph. These included axlike implements fashioned from quartzite pebbles and many smaller artifacts made of diabase, chert, and quartz. Some pottery was found, but it was badly decomposed. The surface sloping to the river was strewn with pieces of diabase, fractured pebbles, and partly shaped implements of the same stone. This is typical quarry-workshop material and appears to be more recent than the majority of the finished objects from the site. Here, as in many places along the river, the current did not carry away the heavier pieces, but allowed them to settle and become intermingled on the hard surface. Before being disturbed, the material was probably in several strata, with the finished implements, some of which are greatly weathered, at the bottom and the evidence of a quarry-workshop above.

Events similar to these described for the Rappahannock have been repeated many times on the streams between the Potomac and the Savannah, which explains the difficulty of finding ancient sites that

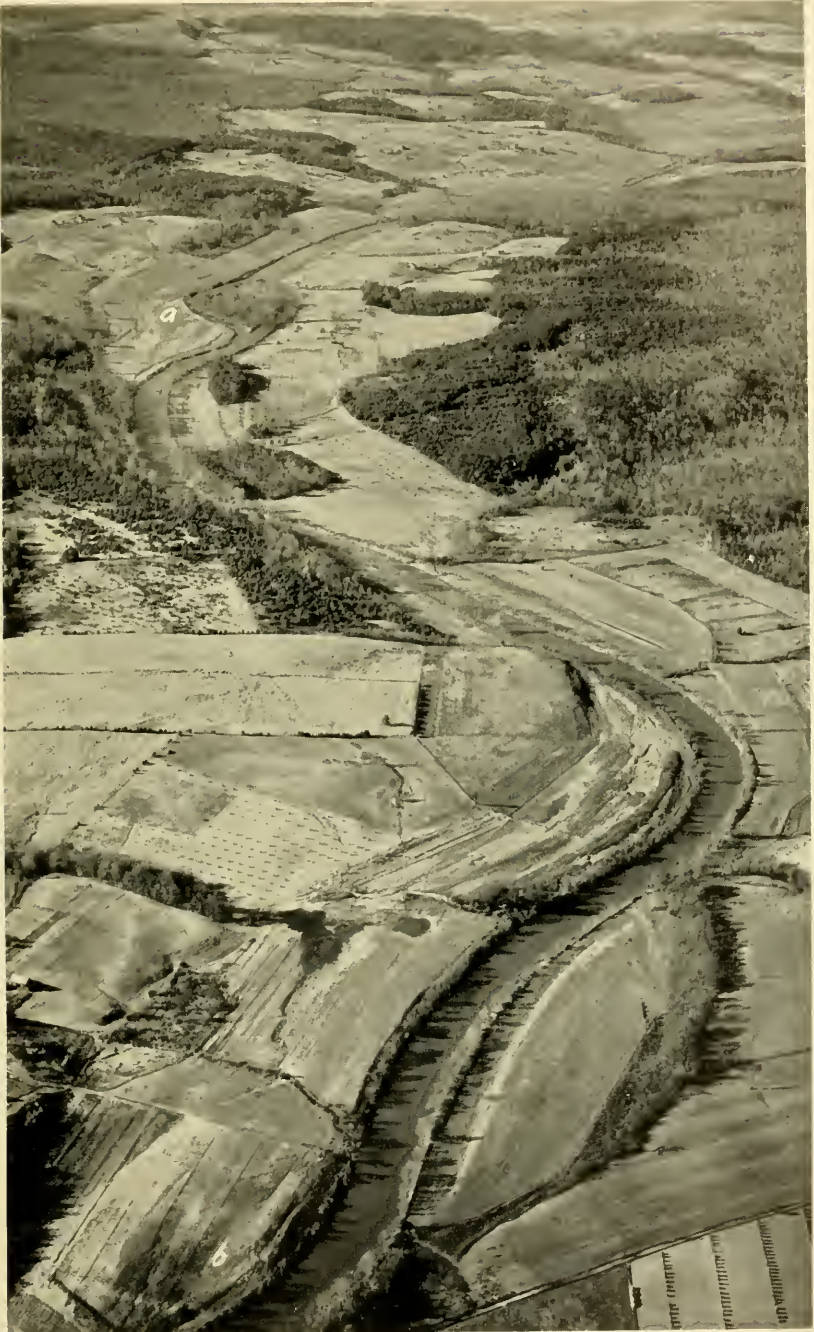
have remained undisturbed by natural causes since they were abandoned by the native inhabitants. This is possible only when the village stood on ground sufficiently high above the water to escape the floods, and such sites are encountered more often below than above the fall line.

The important village of Patawomeck was never covered by the waters of the Potomac River; nor was the village of Pissaseck, on the left bank of the Rappahannock, at Leedstown, Westmoreland County, Va., which occupied a site well above the greatest flood. The site of this ancient Algonquian town has been cultivated for many years, and as a result, all material that remained on the surface was scattered and broken. During the past few years a large number of arrowpoints and other small chipped objects have been recovered from the site, together with quantities of broken pottery. The variety of points and blades proved to be of the greatest interest. The majority were made of quartz and quartzite and included all types found in the valley, although only one example of the triangular point was discovered among the 400 or more specimens collected on the site.

Projectile points or knives, and side scrapers, made of a dark brown argillite, were found on the site of Pissaseck. These are now altered to a light yellowish color and resemble in both color and form specimens that belong to the so-called argillite culture in the Delaware Valley and that occur in yellow sand or soil beneath a stratum of black surface soil. Other specimens were made of a dark very compact, argillitic slate and are a distinctive type. Others were made of rhyolite, probably obtained from a quarry in South Mountain, located in Pennsylvania northeast of the Shenandoah Valley in Virginia.

The finding of such a variety of specimens, differing in both shape and material, and all more characteristic of some other region than of the Rappahannock Valley, suggests that the village had been visited or occupied by Indians who had been in contact with distant tribes, or who themselves had reached the Rappahannock from a region far northward. The site had evidently been occupied and re-occupied for centuries.

The pottery found on the site was more uniform than the points, and the great majority of pieces were either cord-marked or bore the impression of nets. One fragment had on the outer surface the impression of coiled basketry and this is believed to be the oldest type of earthenware occurring in tidewater Virginia. Fragments of similar ware were recovered from the site of the village of Nandantaghtacund, on the opposite side of the river and several miles above Pissaseck. (See fig. 9.)



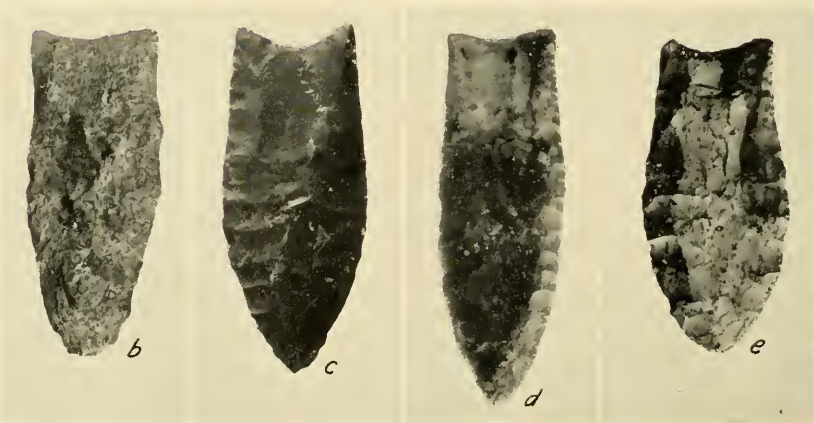
Photograph U. S. Army Air Corps.

VALLEY OF THE RAPPAHANNOCK AFTER THE FRESHET OF 1937

Looking up the Rappahannock from over Rogers Ford, Culpeper County on left, Fauquier County on right. Distance between *a* and *b* approximately 2 miles.



1. From sites on the Rappahannock River, below the falls, Virginia.
 $\frac{2}{3}$ natural size.



2. Similar points from different localities. *b*, Prince Georges County, Md.;
c, King George County, Va.; *d*, Granville County, N. C.; *e*, Orangeburg
 County, S. C. $\frac{2}{3}$ natural size.

Fragments bearing similar impressions of basketry occur on sites along the coast southward in the Carolinas, and others have been found in widely separated localities westward to Mississippi—an extensive distribution of a distinctive form of ware.

The pottery of the country between the Savannah and the Potomac was so carefully studied by Holmes that little can now be added to his account of the distribution of the various types of vessels, the materials of which they were made, and the different ways in which they were decorated.³⁹

There is a great similarity in the stone implements found scattered over the surface of the innumerable sites, many of which had been occupied by the historic tribes. The majority of the axlike implements or weapons were fashioned from quartzite pebbles or from pieces struck from larger masses. Arrowpoints and other small artifacts

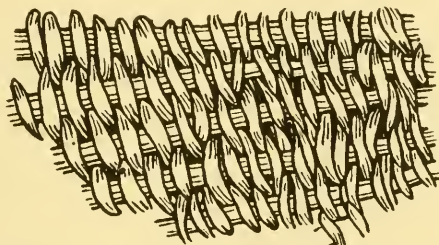


FIG. 9.—Basketry derived from impression on a fragment of pottery. From site of Nandtanghtacund, on right bank of the Rappahannock River near shore of Port Tobacco Bay, Caroline County, Va. Natural size. U.S.N.M. No. 378085.

were made from pieces of white quartz or quartzite, and chert was used when and where obtainable, but most of it came from beyond the piedmont.

Conditions in the valley of the Potomac were similar to those encountered elsewhere, and Holmes' monograph⁴⁰ on the stone implements of the region contains much information that is equally applicable to the adjacent country, as well as to that far southward.

Extensive soapstone quarries in the piedmont plateau had been worked for generations, but very few perfect, finished vessels have been recovered. At what time and by which tribes the quarries were opened is not known, but the knowledge of the manner in which the stone could be shaped and utilized is believed to have been derived from a northern source.

³⁹ Holmes, W. H., *Aboriginal pottery of the eastern United States*. 20th Ann. Rep. Bur. Amer. Ethnol., 1903.

⁴⁰ Holmes, W. H., *Stone implements of the Potomac-Chesapeake tidewater province*. 15th Ann. Rep. Bur. Ethnol., 1897.

The first soapstone quarry recognized as having been opened by Indians was at Chula, Amelia County, Va. It was examined by F. H. Cushing and was later described in the Annual Report of the Smithsonian Institution for 1878. But since that time many similar quarries have been discovered, not only in Virginia but in the Carolinas and other localities.

A custom followed by the tribes who occupied the country southward from the Potomac to the Savannah was that of secreting many of the valued possessions in the ground, where they would remain hidden until required. This was a trait of the Indians of tidewater Virginia at the time of the settlement of Jamestown, and it had undoubtedly been practiced through generations. The custom became known to Strachey who later wrote (p. 113):⁴¹

Their corne and indeed their copper, hatchetts, howses, beades, perle, and most things with them of value, according to their owne estymacion, they hide, one from the knowledge of another, in the grownd within the woodes, and so keepe them all the yeare, or untill they have fitt use for them . . . and when they take them forth, they scarce make their women privie to the storehowse.

This referred specifically to the tribes encountered by the early colonists at the beginning of the seventeenth century, but it would have been equally true of other tribes to the westward, and southward through the Carolinas to the Savannah. Although much of the material thus deposited in the ground would long ago have decayed and disappeared, all stone objects would have remained. Many such caches have been found, and characteristic examples are now in the collections of the United States National Museum. These include: From Albemarle County, Va., quartzite blades; Roanoke County, Va., miscellaneous small blades; Catawba County, N. C., large rhyolite blades; Caldwell County, N. C., 597 pieces; Alexander County, N. C., 97 rhyolite blades; Aiken County, S. C., opposite Augusta, Ga., many small pieces.

The use of caches was evidently a widespread custom and had probably been followed from the earliest times.

ARCHAIC FORMS

Specimens are frequently found in the fields, on the low grounds, and hillsides in tidewater and piedmont Virginia that differ somewhat from the great majority of pieces recovered from the scattered sites. They differ in form and in the stone of which they are made, and usually the surface of the specimens is greatly altered through long exposure to the elements. These are believed to have belonged to a

⁴¹ Strachey, William, *op. cit.*

very early period of occupancy—centuries before the coming of the historic tribes—and consequently to be the oldest stone artifacts occurring in Virginia.

Five specimens attributed to the early period, all from sites in the Rappahannock Valley, are shown in plate 2, figure 1. Above is an axlike implement (U.S.N.M. No. 378092) which was found in a field on the left bank of the Rappahannock River, 1 mile above the mouth of Lamb Creek, King George County, Va. It had been fashioned from a quartzite pebble which was reduced to the desired form by pecking rather than by flaking. It is assumed to have been unused for a long period, during which time the surface became greatly altered. Later a part of the surface was flaked and so resharpened, and as a result only about one-half of the width of the original groove remains. The more recently flaked surface is slightly weathered and is readily distinguished from the deeply altered portion of the original implement.

Another specimen from the same site is similarly weathered as a result of long exposure, and it also had been resharpened by the removal of large flakes. The new surface thus formed is worn from use, and although exposed for at least three centuries it has not become altered but remains as it was immediately after the removal of the flakes. Quartzite weathers so slowly that the present condition of the two pieces is indicative of great age.

The deep weathering of the four specimens at the bottom of plate 2, figure 1, makes them appear as old as the ax, although they are not made of quartzite. The piece on the left, *a*, was found on the surface of a plowed field on the left bank of the Rappahannock at the mouth of Millbank Creek, King George County, Va. This specimen (U.S. N.M. No. 378094) is made of a greenish diabase now altered to a dark brown. Similar pieces have been found in other parts of the valley being particularly numerous in the vicinity of the falls, above Fredericksburg.

The occurrence in Virginia and elsewhere in the eastern United States of the distinctive type of small blades generally termed Folsom points has presented several unanswered questions. Many of the specimens resemble the true Folsom points found at the Lindenmeier site in northern Colorado, but they lack certain characteristic features of the latter. They are widely distributed, although few have ever been found in any one locality. All that are known to have been collected in Virginia have been on the surface, and as yet no workshop has been discovered where the points were made. Such a workshop would be revealed by broken or unfinished pieces intermingled with

the cores and spalls which would have resulted from the shaping of the blades. Nor is a specimen known to have been discovered in an undisturbed mass of sand or earth, or associated with traces of extinct fauna that would indicate or suggest its approximate age or the period to which it belonged. The points are assumed to be very old, but several facts concerning them remain unknown, namely: the identity of the people by whom they were made; the period to which they should be attributed; the cause of their wide distribution; and the actual manner in which they were used.

Four examples of this distinctive type of point—one each from Maryland, Virginia, North Carolina, and South Carolina—are illustrated in plate 2, figure 2. Of this group, *b* (U.S.N.M. No. 42953) is the most unusual. It is made of rhyolite and is the first specimen made of that material known to the writer. It was found in 1880 on "the old Bladensburg Road" in Prince Georges County, Md., a few miles from the city of Washington. The edge of the concave base—at the top in the photograph—and of the two sides for a distance of about 1 inch below the base are smoothed, a feature characteristic of all four pieces shown in the figure. Although the base is smooth and appears to have been used in some way, the other end is irregular and blunt because of the inability of the maker to remove a projecting piece of stone. It may never have been sharper than at the present time, and this fact would seem to preclude the possibility of its having served as a projectile point or to have been attached as a head to a spear or javelin. To judge from the appearance of the piece, the pointed end had been inserted in a handle, a section of bone or antler, and the remaining portion of the blade, terminating in the concave end, had projected from the handle. Mounted in this manner, it would have been a serviceable tool for many purposes. All this, however, is purely hypothetical, and is suggested by the form and condition of the specimen.

The second specimen in the group, *c*, is a beautiful example of this peculiar type of point. It is made of a dark gray chert, and the surface is only slightly altered, which proves that it had been buried in the ground and so protected until exposed by the plow or by erosion. It was found on the surface near the mouth of Millbank Creek, a hundred yards or more from where specimen *a* was later discovered, but the latter resembles more closely the examples from Maryland and South Carolina. When the difference between the two kinds of stone, diabase and chert, is considered, the similarity of the three pieces is the more remarkable. All are believed to have belonged to the same early period, of which nothing definite is known.

CONCLUSION

Evidence presented in the preceding pages proves that man had reached Virginia and the country southward countless centuries before the settlement of Jamestown in 1607. It also proves that the historic tribes, those who occupied the country at the beginning of the seventeenth century, were comparatively newcomers whose earlier habitats can be determined with a degree of certainty.

The tribes with whom the Virginia colonists came in contact belonged to three linguistic groups: Algonquian, Siouan, and Iroquoian.

The Algonquian tribes had pushed down from the north to occupy the coastal plain as far south as central North Carolina, where they were discovered in 1584. But, unlike the Algonquian tribes, as Swanton has so clearly demonstrated, the Siouan people had formerly occupied the upper Ohio Valley on both sides of the river. The Siouan groups, who had originated beyond the Mississippi, could have been among the earliest to cross to the left or east bank, thence to continue into the valley of the Ohio, parts of which they occupied for generations. It is the belief of the writer that the great earthworks in Ohio and Kentucky were erected by the Siouan tribes during that period of occupation.

Iroquoian tribes are likewise believed to have come from beyond the Mississippi, where they had lived among the forest-covered Ozarks south of the Missouri. Moving eastward, across the Mississippi, they would have advanced into the Ohio Valley and may have caused the separation of the Siouan tribes, when many went west and others southeast, some of the latter ultimately reaching the piedmont of Virginia and Carolina. Although the main body of the Iroquoian people crossed the Ohio and moved eastward to the country in which they were first met by Europeans, the Cherokee are believed to have become detached and to have remained in the mountains south of the Ohio, whence they later moved farther south to the vicinity of the Savannah.

Such are considered to have been the earlier movements of the historic tribes of Virginia. Some conclusions are hypothetical, but others—those relating to the later movements of the Siouan people—seem, as Swanton has stated, “to rest on grounds almost historical.” All are believed to be essentially correct.

Some archeological material recovered from sites in the tidewater and piedmont sections of Virginia differs from that attributed to the later tribes. The deeply weathered surfaces of specimens made of quartzite and chert indicate extreme age. These and other types of

artifacts, obviously belonging to an early period, prove that others had occupied the country centuries before the coming of the historic tribes, but their identity has not been revealed.

Thus Virginia presents an interesting field for archeological research, one in which careful work would produce valuable results, and would shed light on the manners and ways of life of the native inhabitants of the country centuries before Jamestown. But Virginia is frequently passed over for more distant, though not more important, fields.

PROBLEMS ARISING FROM THE HISTORIC NORTH-EASTERN POSITION OF THE IROQUOIS

By WILLIAM N. FENTON
Bureau of American Ethnology

INTRODUCTION

The Iroquoian¹ tribes of New York and Ontario have played a prominent role in American history during 400 years (see table 1 and fig. 11). Ever since Cartier encountered one of their fishing parties on the lower St. Lawrence in the summer of 1534 they have been a source of vexation or fascination for American settlers. View-points naturally differed among farmers who coveted their lands, traders who bartered for the beaver whose sources they controlled, missionaries who competed for their souls, and explorers who shared their hospitality and observed the Iroquois social system in operation. Moreover, the Iroquois recruited their depleting ranks by adopting aliens, and whites who fell into their hands during border raids were frequently adopted. Several of these white captives became thoroughly adjusted to the Indian way of life, and retained throughout their lives the marks of their adjustment to the culture of another race. They frequently took Indian spouses. Mary Jemison, for example, worked out the best years of her life as a Seneca woman (Seaver, 1932). Such contacts inevitably produced the gradual breakdown of Iroquois culture. The acculturation of white folkways resulted. Fortunately for us, explorers, missionaries, traders, and captives frequently related what they saw and experienced, and there comes down to us a rich literature in several languages describing the old life.

¹Throughout this paper the term *Iroquoian* has a linguistic connotation; it includes all of the tribes who spoke Iroquoian languages. *The Iroquois* are the Five (and later Six) Nations, a political entity welded into the classic confederacy. The term *Iroquois* has been used so much in both ethnological and archeological literature to denote a culture, which is often meant to include the Hurons and Neutrals as well as the Iroquoian peoples of the Susquehanna watershed, that its use is unavoidable. By analogy with the above, we distinguish the *Algonkin* tribe, the aboriginal inhabitants of the Ottawa valley, from *Algonquian* languages and cultures. In this sense, Flannery (1939) speaks of Coastal Algonquian cultures, meaning, I gather, cultures of Algonquian-speaking peoples along the Atlantic seaboard.

Perhaps no other people in the Americas has had more ink spilled over them than the Iroquois. Even their surviving remnants have not escaped.

TABLE I.—*The Iroquoian peoples*

Tribes	Period	Locality
Laurentian (Hochelagan)	(before 1600)	Montreal and Quebec to the Gaspé.
Huron (Confederacy)	(before 1650)	Southern Ontario (near Lake Simcoe).
Tobacco (Tionontati)	(before 1650)	Southern Ontario (south of Hurons).
The Iroquois (Confederacy or League) (The Five or Six Nations)		
1. Mohawk		Mohawk Valley to Montreal.
2. Oneida		East-central New York.
3. Onondaga		Central New York (Syracuse).
4. Cayuga		Finger Lakes (Auburn, N. Y.).
5. Seneca		Western New York (Seneca Lake to Genesee River; after 1654 to Lake Erie).
6. Tuscarora	(after 1722)*	At first among Oneidas; moved westward until reservation at Niagara.
Neutral (Attiwandaronk) (Confederacy)		
		Niagara Peninsula (from Detroit to Genesee River).
Erie (Cat Nation)	(before 1650)	Lake Shore (southwestern New York to Cleveland).
Wenro	(before 1640)	East of Eries (Oil Spring, southwestern New York).
Susquehanna (Andaste, Andastogwe, Conestoga)		
	(before 1675)	Susquehanna watershed (central Pennsylvania).
Black Minqua (Honiasont)		Western Pennsylvania (?) (Ohio River).
Nottoway, Meherrin		Southeastern Virginia, northeastern North Carolina.
Tuscarora	(before 1711)*	Neuse River, North Carolina.
Cherokee		Highlands of western North and South Carolina and eastern Tennessee.

Anthropology among the Iroquois has a long genealogy. It commences properly with Lewis H. Morgan, the father of American anthropology, who began his field work among the Senecas and produced his still classic "League of the Ho-de'-no-sau-nee, or Iroquois" (1851), the first scientific treatment of a primitive tribe; evolutionary

"Ancient Society" (1877), in which Marx and Engels found materials for their theories; "Systems of Consanguinity and Affinity of the Human Family" (1870), and "Houses and House Life of American Aborigines" (1881), which appeared the year he died. Meanwhile, a gentleman scholar of Ontario named Horatio Hale had been applying European linguistic methods to the Iroquoian dialects. He published a series of significant papers and an "Iroquois Book of Rites" (1883a). By contrast, Morgan's contemporary, Schoolcraft, produced little of outstanding merit.

The second generation had representatives in the Bureau of American Ethnology. Soon after founding the Bureau, Major Powell, attracted by her folklore soirées in Jersey City, engaged Mrs. Erminnie A. Smith to record Iroquoian languages. However, Mrs. Smith died before her studies were fairly begun, but her interpreter and coworker, J. N. B. Hewitt, carried on after coming to the Smithsonian in 1886. By birth part Tuscarora, Hewitt was admirably suited to his job of preserving on paper the various dialects. Persisting until his death in 1937, he saved complete, and what he considered traditional, versions of the myths and rituals of Iroquois government. It is regrettable that these remained unpublished and largely untranslated at his passing. He did establish the relationship of Cherokee to the other Iroquoian dialects in 1887, he edited and supplemented Curtin's fine collection of Seneca folklore (1918), and he published the Iroquoian Cosmology in three dialects (1903 and 1928). Besides a series of brief papers on various esoteric religious topics,² his sketches of several Iroquoian tribes in the "Handbook of American Indians" are among his best productions.

In the third generation Arthur C. Parker is descended from a distinguished line of Cattaraugus Senecas. Following the leads of Rev. William M. Beauchamp, Parker and M. R. Harrington made the first systematic archeological excavations in New York, showing that the Iroquois were relatively recent comers to the State and that they were preceded by peoples leaving several earlier cultures. Parker's outstanding ethnological work is his publication, "Iroquois Uses of Maize . . ." (1910), and his sketches of the medicine societies (1909), but the fate that has overtaken so much Iroquois field work prevented publication of other materials, which were destroyed in the New York State Capitol fire in 1911. Alanson Skinner, also of the pre-World War school of museum-trained anthropologists, made his principal contribution to Iroquois archeology (1921). Of late years, while Parker's energies have gone into making the Rochester Museum

² For a complete list of titles see Hewitt's obituary by Swanton (1938).

of Arts and Sciences outstanding among historical museums and rejuvenating Seneca arts and crafts, New York prehistory has not languished in the capable hands of William A. Ritchie, his principal student.

It was Franz Boas' influence that finally brought academically trained anthropologists into the Canadian Government service. With the creation of the Anthropological Division of the Geological Survey, Edward Sapir mapped out a concerted research program to solve the principal ethnological problems of Canada, and he gathered around him a scientific staff capable of doing the work. Both Boas (1907 and 1910) and Sapir (1911) urged concentrating energies upon the systematic study of the great problems of each area. Both men pointed out the anomalous position that the Iroquoians occupy amid the loosely organized Algonquian and Siouan tribes of the eastern woodlands whose cultures appear marginal to the broad area of horticultural tribes having clans with political functions, integrated group religious systems, and incorporating languages, to whom the Iroquoians seem more nearly related. An Ottawa group composed of Barbeau, Goldenweiser, and Waugh followed this line of inquiry by gathering and analyzing the culture of the Iroquoian remnants, including the Huron-Wyandots who were never part of the famous League, while Wintemberg tackled archeological problems and Sir Francis Knowles undertook the physical anthropology of the Iroquois. Barbeau, beginning with the French-speaking Huron of Lorette and a few Wyandot still left in western Ontario, undertook an intensive survey of the most conservative group of Wyandots, those who had removed to Oklahoma. Goldenweiser carried over ideas derived from an analysis of totemism (1910) to the task of working out the fundamental structure of Iroquois society; he collected extensive genealogies and long lists of personal names belonging to the several clans, he measured the degree to which kinship reached out toward the extremities of the family trees, and he noted how clan and moiety function. F. W. Waugh was at heart a naturalist and officially a preparator, but he was the most persistent field worker of the group; he was best fitted to study ethnobotany, agriculture, and related aspects of Iroquois material culture, in which he engaged with enthusiasm. He achieved a good command of phonetics so that his vocabularies are still useful.

It is certainly one of American ethnology's tragedies that except for some promising summary reports, much of the results of this brilliantly conceived and well-organized research program remains unpublished. To be sure, Barbeau has given us "Huron and Wyandot

Mythology" (1915b) and a study of Huron and Mohawk prefixing (1915a), but we are still in the dark about Huron social organization and ceremonial life, and it is hoped that Barbeau will publish his other materials. Waugh's fine monograph on foods (1916) evokes regrets that he did not live to work up his extensive notes on Iroquois medicines, techniques, games, and his large collection of Cayuga folklore.³

Goldenweiser's report on his Iroquois work (1913 and 1914) are still the best data in the field of social organization, and I shall augment these by editing the original field notes which he generously entrusted to me several years ago. Recently, the National Museum of Canada has brought out Wintenberg's report on the Roebuck-Iroquois site (1936b), and Knowles' measurements of the skeletal remains contrasted with his measurements on the living residents of Six Nations Reserve and Tonawanda (Seneca) Reservation in New York. My Iroquois informants who worked with this generation would have me believe that it is more than coincidence that Waugh disappeared, Knowles "took sick," and Goldenweiser never returned.

Speck's name is ordinarily associated with southeastern peoples and the northeastern Algonquians. His studies have skirted the fringe of the Iroquois problem until recent years, when his researches on Tutelo and Delaware led him to study the ceremonial cycle of the Cayugas who took them into the League. He is now in a position to decide how much of Delaware ceremonial life represents a veneer of Iroquois elements and which elements of Iroquois are attributable to an older, supposedly Algonquian substratum. The technique which Speck devised for analyzing the Cayuga yearly ceremonial cycle proved useful in my own studies of Seneca ceremonies at Coldspring and Tonawanda. It recognizes the local group as the autonomous socioceremonial unit, a condition which we have every reason to believe is old. Isolating present local group differences may lead us to a generalized Iroquois ceremonial pattern or to an appreciation of analogous older group differences that obtained between the nations of the League.

Though somewhat peripheral to our discussion, I shall mention the ethnologists who followed Mooney among the Cherokee. Frans M. Olbrechts, a Flemish student of Boas, reworked the medicinal formulas that Mooney collected (Mooney and Olbrechts, 1932),

³At the request of Professor Sapir, in 1932, Dr. Diamond Jenness placed Waugh's notes in my hands. After several seasons working with Waugh's old informants I am ready to attempt the monograph on medicines. Copies of his other materials are in my files.

concentrating his energies on the language. He extended his linguistic researches to cover Onondaga, as it is still spoken near Syracuse, and Tuscarora, a tribe formerly living near the Cherokee in North Carolina, now spoken near Niagara Falls. He may yet produce a thorough treatment of one of the Iroquoian languages. More recently, William H. Gilbert, Jr., has made a complete study of Eastern Cherokee social organization, and has published a condensation (1937).

THE IROQUOIS CULTURAL POSITION

It may seem surprising that after 90 years of ethnological study and archeological excavation the Iroquoian peoples continue to present problems. Nevertheless, in the pages that follow I attempt to outline the problems that arise from their historic northeastern position by defining their location and movements at successive periods. The problems continue to be the ones Boas (1910) pointed out. The major problem in Iroquois culture history is that of explaining their intrusive linguistic and cultural position. A glance at figure 11, giving the Iroquoian distribution, shows that they had driven a wedge between Algonquian-speaking peoples north and south of the Lower Lakes and as far down the St. Lawrence River as the mouth of the Saguenay. Here was a block of incorporating languages far afield of the nearest similar stock, the Caddoan-speaking peoples, in the west watershed of the middle Mississippi. Moreover, the Iroquoians were horticultural tribes with matrilineal clans; they separated loosely organized patrilineal bands of northern Algonquian hunters from semisedentary fishing, hunting, and horticultural Algonquians of southern New England and the Middle Atlantic States. South of them were loosely organized Siouans. Iroquois culture has its closest resemblances in the broad area of intensive maize-growing tribes to which the northern Algonquians seem definitely marginal.

The southeastern peoples, like the Iroquois, were concentrated in permanent nucleated villages supported by horticultural maize economy. Localized village life permitted social systems based on the principles of lineage and reciprocity, giving rise to clan and moiety divisions with political and ceremonial functions and class distinctions. The Iroquois group religious system, dominated by the idea of renewal and characterized by an annual cycle of first-fruits ceremonies marking crises in maize cultivation, also seem southern. Iroquois shamanistic fraternities derived from earth-bound animals seem peculiarly northern, and suggest that their recent religious system represents the result of the impact of a northern hunting environment upon an agricultural people.

It has been assumed that the Iroquois in coming from the southeast brought peculiarly southeastern culture traits with them. They probably brought some basic patterns of their culture, such as nucleated village life based on maize horticulture and matrilineal sibs, from a place where they were in contact with an area of higher cultures, but some traits that have been introduced in evidence of the southeastern origin of the Iroquois, such as possibly the blowgun and probably the Eagle Dance (Fenton, 1937), diffused to them during the seventeenth and eighteenth centuries. The Iroquois did not necessarily ever live in the southeast but certain elements were derived from that area in historic times. What we know as Iroquois culture developed its own peculiar patterns and institutions in the lower Great Lakes area during relatively recent protohistoric and historic times.

THE PROBLEM

It would defeat the purpose of this paper to present it as the final word on the Iroquois cultural position. Its main purpose is to indicate problems that still await research in the hope that other students may be attracted to work in the northeast. The area is still rich in problems despite the fact that its aboriginal peoples have either long since disappeared or retain only a tantalizingly small part of their old culture. Nevertheless, the difficulty of the job should not discourage the student.

If a major problem of Iroquois research shall be to explain their intrusive linguistic and cultural position in the northeast, which is incompletely understood, a final demonstration of their cultural origins requires basic studies of their adaptation to the environment into which they moved, their adjustments to the surrounding Algonquian peoples of the northeast, and to the whites. We must await these before the problem can be answered. First, we need a comparative study of Iroquoian languages. Ideally, this calls for systematic grammars of several dialects and a demonstration of their relationship to each other. Second, archeological studies should proceed from the known historic sites back through the protohistoric sites to the prehistoric period. The main outlines of Iroquois archeology have been drawn. Although we know that the Iroquois appear late in the time perspective of northeastern archeological remains, yet their known historic sites have not been excavated, described, and compared with the care that has been lavished on earlier anonymous archeological cultures. Third, the history of the Iroquois needs rewriting from the sources (Hunt, 1940) to show the changes in Iroquois culture that

have occurred during 400 years of white contact. Here are remarkable materials for an acculturation study showing the effects of the interaction of Indian and White culture, the interaction of Indian and Indian—Iroquois and Algonkin, and the adjustment of culture to environment. Fourth, there are abundant written sources contributing to a historical ethnography. I have commenced assembling them. Fifth, aside from problems of language and culture, the Iroquois offer an interesting series of race problems. It might help us in erecting a time perspective to know whether there are group differences between the physical measurements on large series of Iroquoians, and between Algonquians and Iroquoians. Earlier studies made before a large amount of archeological work had been done show that the Iroquois is radically of the same physical type as the Algonkin (Hrdlička, 1927, p. 48). Also the modern Iroquois, for whom extensive genealogies are available, present an interesting example of racial admixture. (See Hooton, 1933, pp. 152-153.)

A systematic approach to our problem requires that the unusually abundant literature on historic locations and movements of Iroquois groups be analyzed and a historic framework erected. The object of this paper is, therefore, to locate the Iroquois groups at various points in time and to trace their known historic movements. The latter show us which way they were moving when the historic period began. We therefore locate the Iroquois towns and, where we can, date them. For some of them we know their antecedents and their successors. These are positive clues to tribal movements. I hope that, like Swanton's admirable contributions on the Southeastern tribes of the historic period, this study will serve as a springboard from which the direct historic approach to archeology may carry Iroquois prehistory deeper into the past. It may stimulate someone to apply the techniques of comparative taxonomy to the contents of ethnically known and historically documented sites. The Huron-Iroquois, whose history and political grouping is known, furnish a control group for testing the historical value of a method which archeologists are using for grouping the archeological remains of unknown peoples. Is Iroquois a single aspect or part of another? Are Huron, Neutral, Seneca, Cayuga, Oneida, Mohawk entities (foci) of the same archeological order as Castle Creek, Canandaigua, etc., foci in the prehistoric period? Do the separate tribes or nations retain or lose their identity when the remains from their known sites are compared taxonomically? Reports of the caliber of Wintemberg's (1936b; 1939) on Laurentian, Huron, and Neutral village sites are needed for Iroquois village sites in New York and Pennsylvania. Where the

sites were long ago mutilated by amateur collectors, fruitful studies might be made of existing materials that have been preserved in museum collections from these key sites. Finally, the present study provides the writer with a time and space perspective for subsequent studies of Iroquois ethnobotany, society, and ceremonial organization. Making the study has strengthened a growing conviction that the Iroquois town or settlement, in fact the local group, bears all the seeds out of which more elaborate tribal and intertribal institutions have grown. If the town and the band are synonymous, if the local group is the unit of Iroquois culture, it is important to know how many there were and where they were situated during different periods.

I present the direct evidence of history giving the locations and movements of Iroquoian peoples since white contact. History begins with Cartier's discovery of the Laurentian Iroquois (fig. 10), whose disappearance I account for by their assimilation among the Huron and Iroquois. I locate and trace the movements of Huron and Iroquois villages during the seventeenth century (figs. 11, 12, 13). Iroquois population absorbed Huron and other elements after 1650 and became increasingly mixed during the eighteenth century. Whereas early cultural assimilation was between Iroquoians and Algonquians, the Iroquois next absorbed outlying Hurons who had gone over to an Algonquian hunting and trading economy. After that, southeastern patterns were incorporated from Siouan, Muskogean, and southern Iroquoian-speaking captives (fig. 14). Thus, far-reaching population shifts were set in motion by wars over the fur trade, the colonial wars, and land cessions to the expanding seaboard colonies. I also locate the Iroquoian remnants that have survived historic changes for ethnological study (fig. 15).

LAURENTIAN IROQUOIS

Cartier remains our earliest source on any Iroquoian people. An earlier manuscript record of the aborigines whom Breton fishermen encountered yearly in the Gulf of St. Lawrence has not been discovered. On Cartier's first voyage of 1534, while his ships were safe in Gaspé Harbor toward the end of July, more than 300 Indians in some 40 canoes came into Gaspé Basin for mackerel (fig. 10). He says they were "not at all of the same race or language as the first we met" (Micmac of Chaleur Bay) (Biggar, 1924, p. 61). Their fishing tackle, camping habits, and dress hardly distinguish them from other northeastern peoples. They had canoes presumably of bark and nets of hemp gathered near their distant habitation. They

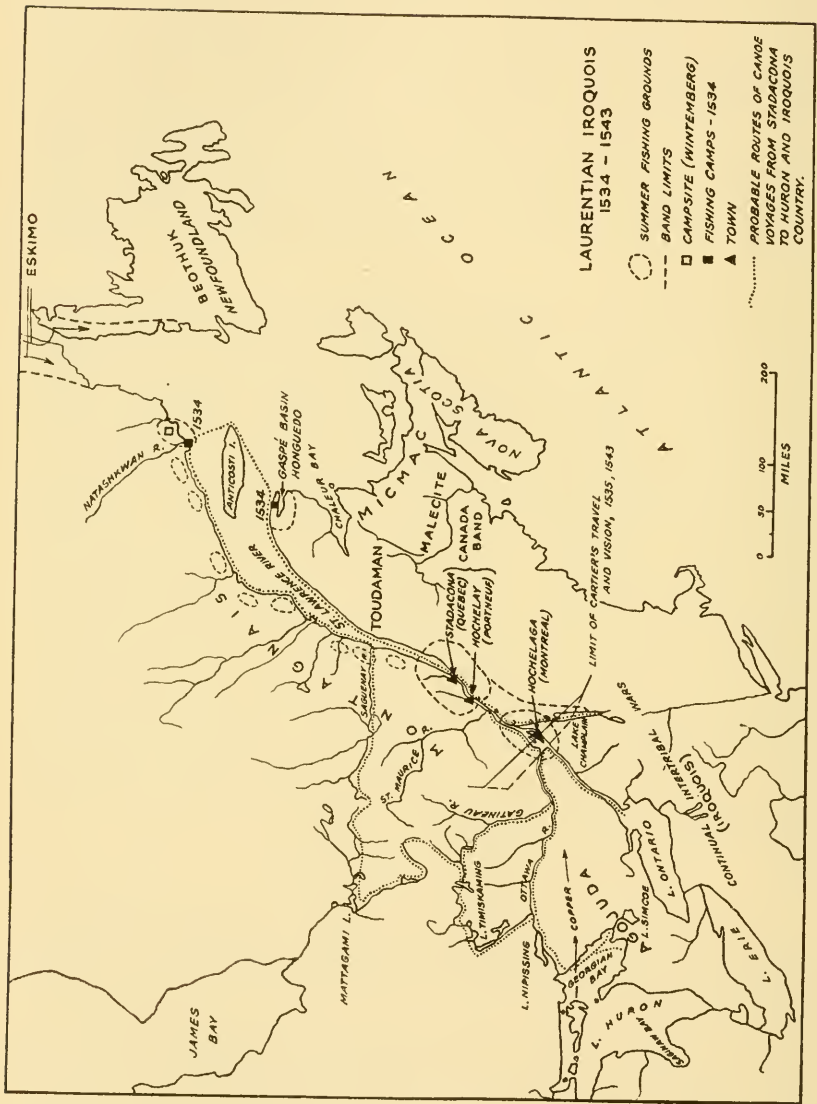


FIG. 10.—The Laurentian Iroquois of Cartier's period, 1534-1543.

ate fish warmed over coals, almost raw. In camp they went naked except for a skin pubic covering and odd furs, and the men tied the scalp lock in a thong. When we read that they secluded their women in the woods and that they danced in welcoming strangers and greeted them by rubbing their arms and breasts, we are scarcely more certain of their identity. However, they had quantities of unsalted bread made from maize and beans which, like the hemp, they said grew near their regular residence. They must have come from higher up the St. Lawrence, where they were sessile. Where evidence of ethnology fails us, persistence during 400 years of similar names for foods proves unquestionably that they spoke an Iroquoian dialect. It also appears that this band thought their group controlled the shore at Cape Gaspé, for when Cartier's men erected a beacon cross there, the chief protested (*ibid.*, p. 65). Cartier found them again at Natashkwan Point on the far northern shore of the Gulf beyond Anticosti Island. Now that Wintenberg has found an Iroquoian camping-site as far east as Kagashka, beyond the Natashkwan River, we are certain that prehistoric Iroquoians controlled not only the valley of the St. Lawrence River but a considerable portion of the Gulf, and that the party which Cartier met represented an annual summer excursion to fishing grounds (Jenness, 1932, p. 173). Here they were probably in contact with Eskimo who occupied the whole north coast of the Gulf of St. Lawrence a century later (Birket-Smith, 1936, p. 27). This seventeenth century Eskimo occupation represents either a reoccupation of territory from which they were displaced, or an encroachment upon Laurentian Iroquois fishing grounds after the latter withdrew to the west and south between 1541 and 1600.

Cartier absconded with two Iroquoian lads, who were among the first American Indians to be shown in Europe, and returned in 1535, bringing them as guides. Passing the Gaspé (Honguedo) where they were kidnapped the previous summer, they piloted Cartier's expedition to Canada (*ganáda*, the settlement) beyond the Saguenay River. Canada was a region extending along the north shore of the St. Lawrence from Grosse Island on the east (about 35 miles east of Quebec (Biggar, 1924, p. 119)) to a point between Quebec and Three Rivers (*ibid.*, pp. 142, 172, and note 69, p. 103), where the territory terminated on the west at a place called Achelacy or Hochelay, the present Portneuf, situated at the foot of Richelieu Rapid. This was the home country of the eastern Laurentian Iroquois, and their principal town was the open village of Stadacona on the present site of Quebec. Cartier saw it from the Isle d'Orleans; "Opposite . . . the shore rises to a good height in two ridges of

cultivated land, . . . There stands the village and abode of Chief Donnacona and of our two Indians . . ." (*ibid.*, pp. 195-196).⁴

In 1535-36 there were "four tribes and villages" downriver from Quebec. Ascending the river, they were Ajoasté (Andoasté ?), Starnatam, Tailla on a mountain, and Sitadin. "Then the village of Stadacona" (Stadagona). Upriver "lies the abode of the people of Tequenonday" (Tekononkiaye (Lighthall, 1899, p. 207)) on a mountain and of Hochelay (Achelacy, Ochela) on a flat (Biggar, 1924, p. 196).⁵ These were the villages of Canada, so-called, in the few clearings along the St. Lawrence. We have no way of knowing which of them contained Algonquian populations. Conditions were very much the same down to 1543.

Beyond Three Rivers, the other and seemingly main Laurentian Iroquois band centered around Hochelaga on the site of Montreal. Cartier encountered plenty of natives but records no towns between Sorrel and Montreal. The Canadians and some eight or nine other tribes along the St. Lawrence were subjects of the Hochelagan band,

⁴ Biggar locates the village on Cape Diamond, and some other historians face it toward the St. Charles River (Biggar, *op. cit.*, pp. 195-196), but Wintemberg has recently concluded, after going over the ground bearing in mind Cartier's narrative and the usual topographical factors influencing Iroquois selection of sites, that Stadacona probably stood somewhere on that more or less level area, best seen from the west end of Isle d'Orleans, between the Chateau Frontenac and Battlefields Park, because the Iroquois commonly chose elevated locations similar to this for their villages. However, the archeological evidence to establish the position of the site has not yet been discovered, and this remains one of the problems that purposeful research or excavators of city cellars may accidentally solve. (Wintemberg, 1936a, pp. 19-21.)

⁵ Besides this list, Cartier (Biggar, *op. cit.*, p. 246) gives another, in his vocabulary, of the names of towns subject to Chief Donnacona. The second list of 12 may be reduced to 9, which agrees with the number of peoples subject to Hochelaga (*ibid.*, p. 161).

Villages of Canada (p. 196)	Towns subject to Donnacona (p. 246)
Ajoasté	(1) Ajoasté
	(2) Thaogahen
Starnatam	(10) Stagoattem
Tailla	(8) Tella
Sitadin	(3) Sitadin
Stadacona	(4) Stadaconé
	(5) Deganonda [Two-mountains]
Tequenonday	(6) Theguinondé
	(9) Theguenondahy
	(7) Thegadechoallé
	(11) Agouchonda (Hagouchonda, p. 188)
Hochelay	(12) Ochela

yet Donnacona's league of nine or more villages functioned separately when expediency dictated. Donnacona's position is analogous to that of the governor or overseer whom the later Iroquois placed at the junction of the Susquehanna to watch the Delaware and other subject nations.

It is apparent that even at this early date the cultural and political unit was the local group or band composed of a village and a few outlying houses under the leadership of a village chief. It is easy to see how a factional leader might divert part of the band to another settlement which gradually grew into a community with its own interests.

Cartier's guides deserted him at Stadacona (Quebec), and their chief, Donnacona, became very much annoyed when Cartier insisted on going to Hochelaga. After failing to persuade the doughty Frenchman to remain by a friendship feast during which he refused to adopt a brother of one of his guides and the chief's sister's son (Biggar, 1924, pp. 132-134), the natives even resorted to the ruse of masked drama in which black-faced, costumed messengers of their god arrived by canoe, supposedly from Hochelaga, and were reported to have warned that impending snow and ice would kill all who traveled that way (*ibid.*, pp. 137-139). Rather than protecting the sovereign group at Montreal, it is more likely that the people of Quebec were determined that the inlanders should not enjoy primary trade relations with Cartier's men.

The chief of the village of Hochelay,⁶ located on the open flat at Portneuf, acted independently of Quebec. Although this town is sometimes included as part of "Canada" (*ibid.*, pp. 142, 103), its chief presented Cartier with his daughter and conducted his own trade. Later he warned Cartier of plots at Stadacona (*ibid.*, pp. 142-144, 188); there appears to have been some antagonism between the places. Lighthall, who has given much attention to the Laurentian Iroquois problem, thinks that the Hochelay people were Hochelagans proper, not Stadacona Hochelagans, and that Hochelay-aga could mean "people of Hochelay" (Lighthall, 1899, p. 202). Moreover, the townspeople of Hochelaga (Montreal) in 1535, with their nucleated agricultural village life, more nearly resemble the seventeenth century Huron-Iroquois; and in this respect Cartier says they were unlike "those of Canada and of the Saguenay, notwithstanding that the

⁶ Also called Achelacy or Hagouchouda. Lighthall does not consider the latter a place name but an epithet derived from Agojûda, meaning "wicked," which the Stadacona people had called them (Lighthall, 1899, p. 202).

Canadians and some eight or nine other tribes along this river are subjects of theirs" (Biggar, 1924, p. 161). We infer that the down-river Iroquoian bands had adapted themselves toward an Algonquian type of hunting and fishing economy, although they had taken maize culture as far northeast as Quebec.

The sole documentary evidence for the probable location of the other Iroquoians in 1535 is a brief paragraph in Cartier's Second Voyage. Following a brief visit within palisaded Hochelaga in mid-October 1535, some residents obligingly led him to the summit of Mount Royal and showed him the country for 30 leagues (90 miles) round about. They pointed southwest up the St. Lawrence, saying that "after passing these [three great] rapids, one could navigate along that river for more than three moons" (ibid., pp. 169-170); they apparently meant the Great Lakes route to Lake Superior, 1,550 miles from Montreal. They also told him of the Ottawa River, and identified silver and copper as metals that came from the Upper Lakes, a fact that has since been confirmed by archeology. There lived a people they called "*Agojuda* ('evil folk') [enemies], . . . who [go] armed to the teeth [finger ends]" wearing armor of "cords and wood, laced and plaited together . . . these *Agojuda* waged war continually, one tribe against the other" (ibid., p. 171), Cartier understood them to say, although he was unable to make out the distance to the *Agojuda* country. Clearly this description fits the armor that the Hurons and Iroquois were wearing in the next century, but one cannot know whether the intertribal warfare refers to the long-standing feud between the Huron and Seneca, as Lighthall suggests (1899, p. 204), or to the blood feuds among the Iroquois before they formed the League (Hewitt, 1894; Misc. Ms. No. 3687). Whoever the *Agojuda* were, the Hochelagans regarded them as enemies. The Hochelagans kept their palisade galleries loaded with stones as if they feared an attack from their enemies. The *Agojuda* may have been the Ottawa Valley Algonkin who continued to hold the river leading to the Huron country in Champlain's time.

Cartier learned on returning to Quebec that Saguenay (probably the same as Saginaw, meaning "mouth of a river") was most readily accessible through the Ottawa Valley, and this is the route Champlain and the missionaries used in the next century to reach Huronia, south of Georgian Bay. "There," they said, "are many towns and tribes composed of *honest people* who possess great store of . . . copper" (Biggar, 1924, pp. 200-201). The people of Quebec had talked with people from the Fresh Water Sea (Lake Huron), but their chief, Donnacona, claimed to have been there (ibid., pp. 220-222). The

canoe trade routes from Georgian Bay to Quebec via Lake Temiscaming, Mattagami, and the Saguenay River, which the Hurons followed a century later (Hunt, 1940), must have been known to the Laurentians. Moreover, the "Canada" band had canoed up the Richelieu River from the head of Lake St. Peter, presumably down Lake Champlain in the direction of the Iroquois country, "for one month [from Quebec] to a land where ice and snow never come; but in which *there are continual wars of one tribe against the other*. . . . They also told us that the inhabitants of that land were dressed and clothed in furs, like themselves" (Biggar, 1924, p. 203). Here I am inclined to agree with Hewitt that the warring tribes were the Iroquois before they formed the League, and that a month's journey via Lake Champlain, allowing time out for hunting, would about reach the Mohawk Valley. Moreover, this was a much traveled route in later times.

However, I am less certain than Hewitt (1894, p. 63; 1912, vol. 1, p. 585; Misc. Ms. No. 3687) that the Seneca (or other western Iroquois) were the enemies of Donnacona's band. Donnacona showed him "scalps of five Indians, stretched on hoops like parchment," who he told Cartier "were Toudamans from the south, who waged war continually against his people" (Biggar, 1924, p. 177). Despite the superficial resemblance between Toudamans and Tsonnontowanens, the Seneca of later writers, these Toudamans who attacked and massacred the Quebec people on an island opposite the Saguenay River, where they were camping a night enroute "to Honguedo (Gaspé), being on the war path against the Toudamans" (*ibid.*, pp. 177-178), were more probably an eastern Algonquian enemy, perhaps the Etchemins (Malecite), as Lighthall thinks (1899, p. 207).

At the time of Cartier's third voyage (1541) the same towns commanded the lower river as far as Portneuf. Stadacona and Ache-lacy were in existence, but Hochelaga was not visited, although years later Jacques Noel, who had ascended the St. Lawrence, quoted his great-uncle's map as mentioning the Hochelaga people (Biggar, 1924, p. 260). The walled town of 1535 may have already been abandoned. Instead of Hochelaga, we hear of two villages, Tutonaguy above the rapids of St. Mary and a second near LaChine, with a portage trail along the north bank connecting them. Returning from above the rapids, Cartier distributed trinkets to about 400 persons assembled near the first village (*ibid.*, pp. 257-258), but he says nothing of Hochelaga which he had visited 6 years earlier. Fearing treachery, he hastened away (*ibid.*, p. 259); he had lost the confidence of the Indians after he had taken the Quebec chiefs to France in 1536, where they had died.

Bailey (1933, p. 103) thinks that Cartier bungled France's hopes in the St. Lawrence Valley. The populous Laurentian Iroquois towns blocked French penetration beyond the Saguenay until after 1581, when they disappeared. Port Royal in Acadia remained the trading center until Champlain arrived and established posts at Quebec and Three Rivers. Bailey suggests that "Cartier, and not Champlain" was "responsible for the historic enmity of the Five Nations towards the French" (*ibid.*, p. 103), for he argues that the Laurentians were Mohawk and Onondaga. Hunt (1940) has recently shown that not even Champlain's two expeditions against the Iroquois were factors of any importance in perpetuating the Iroquois hatred of the Huron and French when compared with the trade in furs, which placed them continually in mutually hostile economic positions. At any rate, when Champlain arrived at the site of Hochelaga, he learned that because of the wars the inhabitants had withdrawn to the interior (Champlain, vol. 3, p. 263). They had either joined the Huron to the west or the Iroquois to the south.

The reasons for the Laurentian Iroquois diaspora may be inferred from historical documents. First, their eastern Algonquian enemies—Algonkin-Montagnais and Micmac-Malecite—were descendants of tribes they had originally displaced from the valley. The Laurentians had been living in antagonistic cooperation with the former, trading grain for the products of a hunting economy. Probably trading expeditions carried them to Georgian Bay via the Laurentian lakes, or the Huron of Georgian Bay came down to Quebec as they did in later times. However, the Laurentians were at war with the Algonquian Micmac-Malecite south of the St. Lawrence. When these tribes living nearest to Port Royal, Acadia, and the hunting Montagnais on the Saguenay obtained iron implements through the fur trade, they forced the Laurentian Iroquois villagers to withdraw inland before 1600.⁷

⁷ Champlain, vol. 3, p. 263; Innis, 1930, pp. 8 ff., and 12 ff.

Champlain in 1603 found the Etchemin (Malecite), Algonkin, and Montagnais celebrating substantial victories they had won over the Iroquois (vol. 1, pp. 100 ff., 141, 178). The bulk of Jesuit testimony indicates that before 1614, when the Iroquois commenced getting guns from the Dutch at Fort Orange, and for a time afterward the Iroquois were taking regular drubbings from the valley tribes. The Relation for 1644 refers to a "war—which had previously been so much to their [the Eastern Algonquians'] advantage that they had become Masters of their enemies' [the Iroquois] country, and had defeated them everywhere" (Jesuit Relations, vol. 25, p. 107). Bailey has discovered a second documented datum in the Public Archives of Canada in a memoir by de la Chesnaye. Writing as late as 1697, de la Chesnaye says, ". . . the true Algonquins possessed the land from Tadoussac as far as Quebec, and I have

Secondly, the inhabitants of the site of Hochelaga (Montreal) were both dispersed and absorbed by the Huron driving down the Ottawa to trade on the St. Lawrence.⁸ The Hochelagans may also have been Huron who sought safety farther inland to escape the Seneca or Upper-Iroquois (Daniel Wilson, 1885, pp. 81-82), but this seems less likely. Then the reason for the westward position of the Huron and the disappearance of Hochelaga would be the same.

Other factors contributed to the disappearance of the Laurentians:

First, the Quebec group was probably decimated by European diseases. In this weakened condition the Algonquians easily dispersed them. In the winter of 1536, when both the Indians and Cartier's crew were suffering with scurvy, an Indian prescribed a decoction of evergreen leaves which also relieved some sailors who had syphilis (Biggar, 1924, p. 204 ff.). The sailors made frequent visits to the Indian town, and it is not unreasonable to assume that the disease was communicated to the Indians. We find no record of smallpox before 1616, when it took terrific toll of the New England Indians (Bailey, 1937, p. 77).

Second, like the other Iroquoians following contact, the Laurentians had already begun to abandon their hilltop strongholds and moved to more vulnerable positions nearer the river. Tailla, Tekenonday, and Hochelaga, the older hill sites, were already abandoned by 1541.

Third, the country was economically disadvantageous. Early frosts on the St. Lawrence had discouraged agriculture, and the usual causes of moving Iroquois villages—exhaustion of the soil, distance to firewood, and scarcity of game—encouraged them to settle in a more salubrious climate down Lake Champlain toward the Mohawk valley, where they had previously established a colony (Lafitau, 1724, vol. 1, pp. 101, 102).

The facts so far presented suggest four possible hypotheses to explain the disappearance of the Laurentian Iroquois. The choice

always thought that they came from the Saguenay; it was a tradition that they had driven the Iroquois from the site of Quebec and the neighborhood which was their former home; they used to show us their towns and villages covered with wood newly sprung up (new growth)" (quoted from Bailey, 1933, p. 106). See also N. Perrot (*in* Blair, 1911, vol. 1, p. 42 ff.) and the ever reliable Lafitau (1724, vol. 1, pp. 101-102) for the Iroquois tradition of the conflict.

⁸ Hochelega was most likely abandoned (Wintemberg, 1927), possibly by 1541, and whether preceding Algonquian inhabitants, the Iroquoian inhabitants that Cartier found in 1535, or the succeeding Algonkin whom Maisonneuve had as guides in 1642 bore the brunt of the Huron attack cannot be known. See Jesuit Relations, vol. 22, pp. 207, 215, and Lighthall, 1899, p. 207.

among these four must be further narrowed by studying the evidence of archeology, ethnology, and linguistics before we shall have a satisfactory theory to explain the Laurentian diaspora.

The people of Hochelaga and Stadacona (Montreal and Quebec) did not agree about their neighbors. The former told Cartier that the people of Saguenay (Huronian) were enemies—"wicked people"—but the Quebec folk told him they were good people. However, Cartier did not always understand his informants. The two Laurentian groups may not have had the same Huron-Iroquois tribes in mind as being continually at war with one another. Unquestionably, a condition of intertribal war prevailed from the Mohawk to Georgian Bay before the era of confederacies. Nevertheless, our first hypothesis rests on interpreting these attitudes to mean that the Canada bands were aligned with the people who are found later to be the Huron; the Hochelagan band, being at odds with the Huron, gravitated southward after abandoning their villages. This interpretation would help explain certain alleged resemblances between the head form of the Huron and Eskimo on the grounds that the Canada band intermarried with Eskimo during summer fishing excursions to the Gulf of St. Lawrence. It would explain the presence of Huron words in Cartier's vocabularies, and the later Huron tradition that part of them formerly lived near the salt sea. The corollary that the Hochelagans had joined the later Iroquois and became part or all of the "Lower Iroquois" clarifies the striking resemblances between the archeology of later Mohawk-Onondaga sites and the prehistoric sites of the upper St. Lawrence Valley. It explains the Mohawk words in Cartier's vocabularies and the readiness with which part of the Mohawks followed the Jesuits back to the St. Lawrence in 1668.

The second alternative is that the Canada bands from around Quebec migrated to the Mohawk valley via the "River of the Iroquois" (the Richelieu to Lake Champlain—which also could have been the exit for the Hochelagans in the first hypothesis) while the Hochelagans retired inland across Ontario, ultimately joining the other Huron with whom their sedentary village life is most similar. In this event the archeological parallels between Hochelaga and the Mohawk-Onondaga sites represent the diffusion of culture and not migration of people, and we will have to assume that the Hochelagans acquired the Dead Feast after migrating to Huronia. Because there is reason for believing that the Huron Dead Feast became elaborated after white contact, we need not labor too hard to explain its absence at Hochelaga.

The third alternative is that, harassed by the Algonquians closest to Port Royal (which also fits the first two hypotheses) and by the

Iroquois to the south, both bands of Laurentians joined the Huron. We still have to explain archeological correspondences between the St. Lawrence Iroquois sites and those of east-central New York as cultural diffusion and not as migration of people, and the presence of Iroquois words in Cartier's vocabularies as lack of differentiation in 1535 between Huron and Mohawk. The similarity of Huron and Eskimo head forms would still have to be accounted for.

As a fourth alternative, the Laurentians were independent peoples, neither Huron nor Lower Iroquois, that were assimilated by both of the latter.

HURON

The Wendat or Huron, who totaled 30,000 in 1636, were the most numerous Iroquoian people. In 1615 they were concentrated at the southern end of Georgian Bay between Matchedash and Nottawasaga Bays and Lake Simcoe (Champlain, vol. 3, p. 46). Within the narrow limits of a rectangle 40 miles in length from northwest to southeast by scarcely 20 miles from southwest to northeast lie the twenty-odd scattered towns and villages of "Old Huronia" of the Jesuit Relations (fig. 12).⁹ Here in the present Simcoe County, Ontario, Jesuit archivist A. E. Jones (1909, p. 5) carefully plotted them in concordance with archeological sites. His research might serve as a model for locating the villages of the New York Iroquois. A similar study would prove equally useful to historians, archeologists, and ethnologists.

Huronia embraced four bands or peoples with one or more villages apiece. The Jesuits call them "Nations," and in that sense they are comparable to the Five Iroquois Nations, for each band had political individuality. It is erroneous to call them clans, which they may originally have been. They had grown far beyond the proportions of any known Iroquois clan, and they were very probably divided into smaller intermarrying lineages. From northwest going toward Lake Simcoe, they were: 1, the Bear people; 2, White-eared or Deer people (Hewitt, 1912, vol. 2, p. 584), or People of One-single-white-lodge (Arthur E. Jones, 1909, p. 181) who comprised a single village called Scanonaenrat (fig. 12, 27); 3, the Cord people; and 4, the Rock people farthest east.

The Bear people, Attignaouantan, had occupied the Georgian Bay region continuously from the Iroquoian envelopment of the lower

⁹ Fig. 12 shows 34 sites, but not over 20 sites were occupied contemporaneously. At the height of Huron power in 1636, before smallpox decimated them, Brébeuf (Jesuit Relations, vol. 8, p. 115) estimated 30,000 souls living in 20 villages. (Arthur E. Jones, 1909, p. 424.)

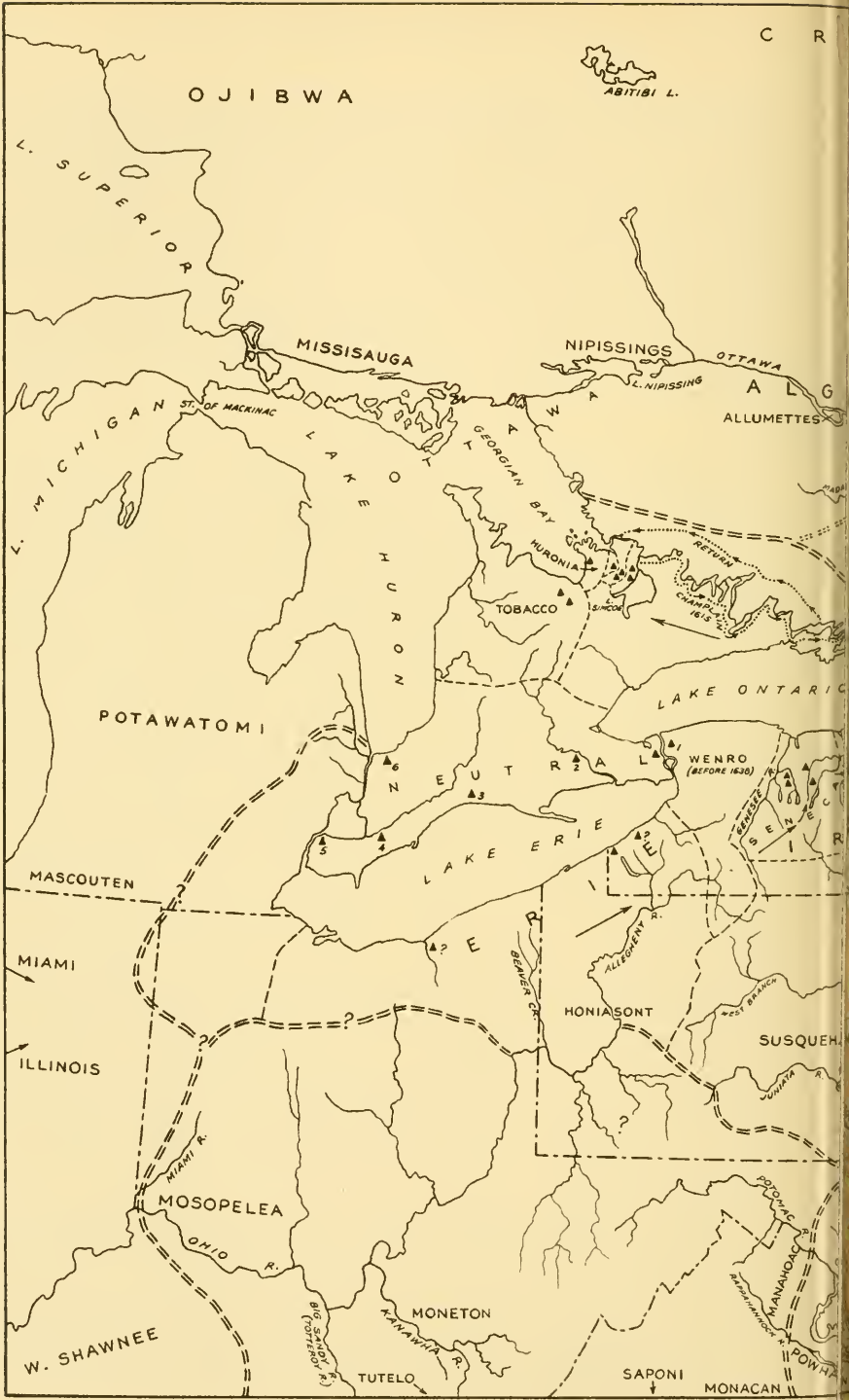
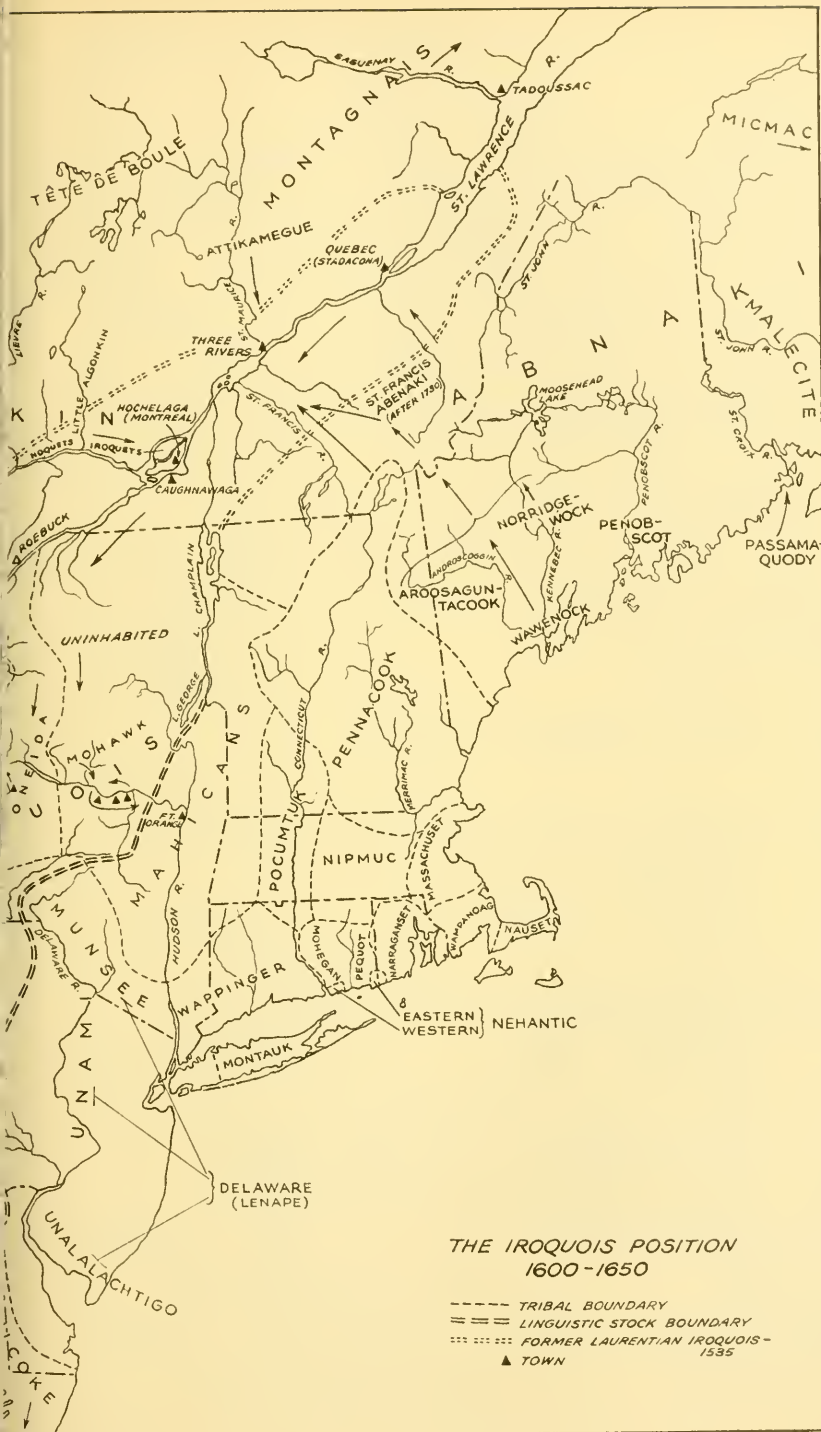


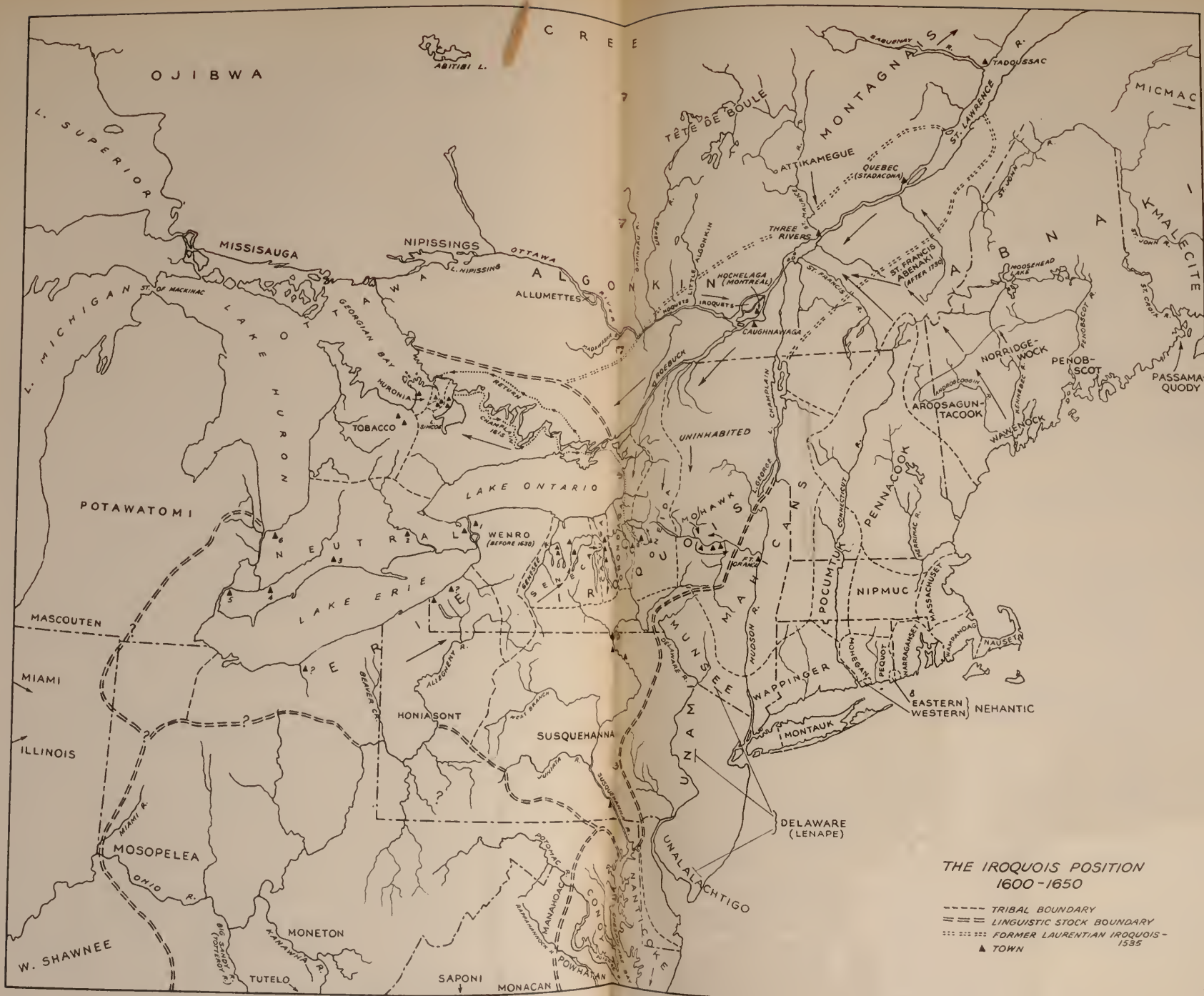
FIG. 11.—The Iroquois



THE IROQUOIS POSITION
1600-1650

- TRIBAL BOUNDARY
- ===== LINGUISTIC STOCK BOUNDARY
- FORMER LAURENTIAN IROQUOIS - 1535
- ▲ TOWN

fore their conquests.



THE IROQUOIS POSITION
1600-1650

--- TRIBAL BOUNDARY
 == LINGUISTIC STOCK BOUNDARY
 ... FORMER LAURENTIAN IROQUOIS-1535
 ▲ TOWN

FIG. 11.—The Iroquois position before their conquests.

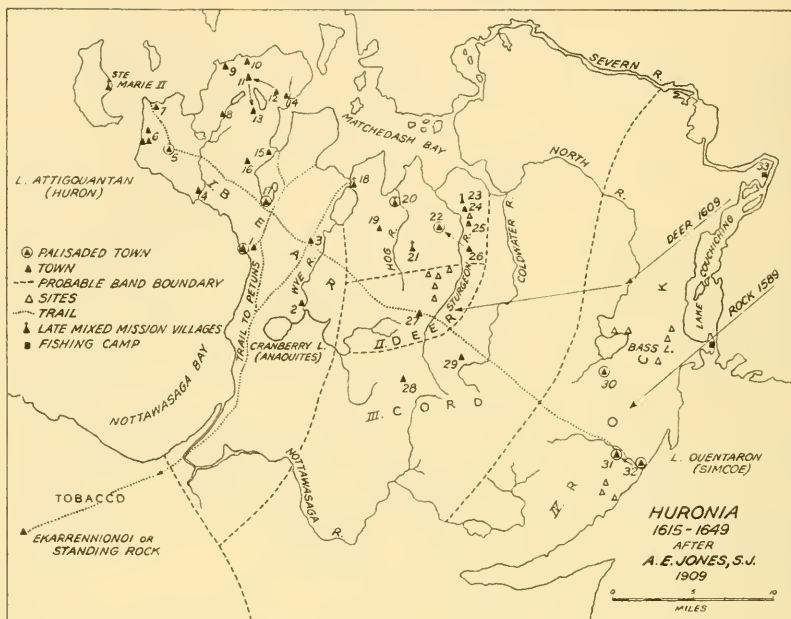


FIG. 12.—Bands and towns of Huronia, 1615-1649
Key to the map of Huronia

I. Bear Band, or Nation.

	Period	Remarks
1. Ossossané; La Conception (Jesuits) (Tequenonquiaye; St. Gabriel (Sagard)) (Brébeuf introduced bastions here, 1635.)	1632-49	Capital town.
2. Andiatæ	1636	Feast of 24 kettles.
3. St. Xavier	1639-42	Mission.
4. Arenta; St. Madeleine		
5. Carhagouha (Champlain) (Arontaen (Jesuit Relations))	1615	Triple palisade.
6. Khinonascarant (Quiéunonascarant (Sagard))	1615-25	Triple village of the Relations.
7. Tondakea (—hra)	1637	
8. Anonatea		
9. Ihonatoria; St. Joseph I.	1634-39	Brébeuf's Mission.
10. Carmaron (Champlain) Kerenoron, Karenhassa	1615	Shore town.
11. Teandeouiata, Toanche II.	1630-	An offshoot of 12.
12. Toanche I; St. Nicolas (Toenchain (Sagard))	1620-30	Brébeuf's first Mission, 1626-9. Abandoned before 1633.
13. Oënrïo		Offshoot of 11.
14. Otoñcha	1620-34	Landing for 11 and 12.
15. Touagnainchain (Champlain)	1615-	Small; not mentioned later.

FIG. 12.—*Continued*

	Period	Remarks
16. Onnentisati (Jesuit Period).....	1637	"Sand dwellers."
17. Angontenc (Jesuit Period).....	1636	Fortified.
Mission towns of mixed population; a medley of several bands who had moved near the missions, "People on the fens."		
18. Ste. Marie I.....	1639-49	Central Mission.
19. Kaontia; St. Anne.....	1639-49	Dependent on 18.
(Center whence smallpox spread throughout Huronia, 1639.)		
20. St. Louis (no Huron name).....	1639-49	Dependent on 18.
(Brébeuf and Lalement captured, 1649)		
21. St. Denis	1639-49	Dependent on 18.
22. St. Ignace II; (no Huron name)...	1647-49	Successor to 26.
(Bressani introduced bastions here; Brébeuf and Lalement fell when sacked by Iroquois.)		
23. St. Jean; (no Huron name).....	1639-49	Dependent on 18.
24. St. Joachim	1639-41	Small hamlet dependent on 31.
25. Arethsi (Arhetsi)		Not mentioned in Relations.
26. Taehatentaron; St. Ignace I.....	1639-48	Former site of 22. Jesuits expelled 1640.
II. Deer Band: immigrants 1609.		
27. Tohontaenrat, Skanonaenrat; St. Michel	1636-50	Palisaded? Not destroyed with 29.
(One of Huronia's largest villages sheltering one whole band.)		
III. Cord Band.		
28. Ekhiondastsaan	1637-49	Fortified?
(Mentioned only twice in Relations.)		
29. Teanaostaiaë; St. Joseph II.....	1636-48	Successor to 9; destroyed with 28 by Iroquois; remnants go to Quebec.
(In 1638, largest Huron town.) (Jesuits expelled 1640, return 1641.)		
IV. Rock Band: immigrants 1589.		
30. Contarea, Kontarea; (Jesuits never admitted)	1635-42	Iroquois destroyed, June 1642.
(Feast of 30 great kettles, 1636; principal bulwark of Huronia.)		
31. St. Jean-Baptiste (no Huron name in Relations)	1639-48	Later site of 32; abandoned; remnants at Onondaga, 1656.
32. Cahiagué (Champlain spent most time here)	1615-	(See 31) 200 large lodges; chief town.
33. Ste. Elizabeth (Algonkin).....	1639-44	Hamlet, annual wintering grounds.
(Refugees from St. Lawrence settled here and at 31, 1644.)		

Great Lakes down to 1649. They were there when Cartier ascended to Hochelaga (Montreal) in 1535, and a century later they were the chief Huron group, filling about half of the towns of Huronia. Dense population and concentration of their towns on the peninsula north-east of Nottawasaga Bay, all within 12 miles of their capitol, Ossossané (fig. 12, 1), indicates prior arrival and long occupation.

"What is significant historically is that the Hurons were older in culture than the Iroquois and longer established in their locale," (Hunt, 1940, pp. 38-39).

Moreover, they were confronted by far-reaching waterways over which hunting, fishing, and trading Algonquians traveled to them in birchbark canoes. Bear band men went over readily to an Algonquian fishing and trading economy, and soon after the arrival of the French they obtained a monopoly of the canoe-borne fur trade, attempting even to exclude men of other Huron bands. Despite the radical changes that crept into Huron village life, early seventeenth century Huron culture retained the marks of an inland agrarian origin. Because Huron women were maize growers, proximity to good ground was still more important than fishing in choosing village sites. They chose town sites on high ground near spring water at a safe distance from the larger waterways. All war parties had to travel overland to attack such strongholds as Ossossané (fig. 12, 1) and Carhagouha (fig. 12, 5) which was triply palisaded and provisioned to withstand a siege. These forts had been built against their inland enemies, the related Tobacco and Neutral tribes, and the prairie-dwelling Mascouten, who pressed them from the southwest. Huron men were primarily foot travelers and secondarily canoemen. Until 1640 Huron war parties still made long overland journeys along upland trails that led from their villages toward enemies on the prairies of Illinois.

The Cord people, Attigeneongnahac, were early contemporaries of the Bear people, and continued to occupy the center of Huronia throughout the Jesuit period. Between 1636 and 1648 they had two villages, a stronghold Ekhiondastan (fig. 12, 28) and Teanaostayé (fig. 12, 29) (St. Joseph II), from which they expelled the Jesuits in 1640, only to readmit them the next year. After the Iroquois destroyed both towns in 1648, the remnants of the Cord people settled at La Jeune Lorette, near Quebec where their descendants now live (Arthur E. Jones, 1909, pp. 447, 499).

Two other Huron-speaking bands, the Rock and the Deer, moved into Huronia in 1589 and 1609. They were adopted by the Bear and the Cord peoples, who then formed the Huron proper. In 1639 the latter related with certainty to Lalement (Jesuit Relations, vol. 16,

p. 227) the different sites that their villages had occupied during 200 years. Allowing for village removals every 10 years, this dates the Iroquoian migration into Ontario back to 1440. Hewitt (1912, vol. 1, p. 584) and others identify the later arrivals with the Canada and Hochelaga bands of Laurentian Iroquois who started back from the St. Lawrence about 1584. Champlain himself hints that concentration at Huronia had followed abandonment of the inland lake country between Lake Simcoe and the Bay of Quinte above Lake Ontario, shortly before 1615.¹⁰

The Rock and Deer bands were the savages who had been compelled to abandon residence there. Moreover, the westward drift of the eastern Huron bands between 1580 and 1609 coincides with the disappearance of the Hochelagans who, when Champlain arrived in 1609 (vol. 2, p. 263), had withdrawn to the interior because of the wars.

The Rock people, Arendahronon, which Jones (Arthur E. Jones, 1909, p. 72) thought was etymologically the same as Cord, held the eastern outposts of Huronia against the Iroquois from their arrival in 1589 until 1642, when they were forced to abandon their villages and join the other Huron. There are not many sites around their two fortified towns because they stood near Lake Simcoe during scarcely 50 years. In 1615 Cahiagué (fig. 12, 32) was the largest of five palisaded towns that Champlain visited. He spent most of his time there recruiting his war party before setting out against the Iroquois, and estimated that the town contained 200 large lodges of as many as 12 fires (Champlain, vol. 3, p. 123). This suggests several thousand inhabitants.¹¹ The other town, Contarea (fig. 12, 30), located just south of Bass Lake, remained the bulwark of Huronia, standing off Iroquois and Jesuits alike, until the summer of 1642 when the Iroquois sacked it. The Jesuits, excluded from that stronghold of

¹⁰ Of this country, which he traversed on his expedition with the Huron against the Iroquois, he says:

"It is certain that all this country is very fine and of pleasing character . . . Moreover all these regions in times past were inhabited by savages, who have since been compelled to abandon them out of fear of their enemies." (Champlain, vol. 3, p. 59.)

Returning, the Huron spent over 2 months here at fall deer hunting. They were thoroughly familiar with the country.

¹¹ Huron lodges ordinarily covered from three to five fires with two families to a fire. Sagard and Champlain mention as many as 12 or 13 fires to a house. Jesuit figures were based on 5, and later 3.5, fires to a house, and an average of 6 individuals to a fire. This would mean 4,000 to 6,000 persons in Cahiagué, which seems far too many.

paganism, had a mission at St. Jean-Baptiste (fig. 12, 31), a later site of Cahigué, until 1648 when the Rock band withdrew to the others (Arthur E. Jones, 1909, p. 70). In the Huron dispersal Rock and Bear remnants settled on the Island of Orleans at Quebec, where they remained until 1656, when the Bear were forced to join the Mohawk and the Rock remnants joined the Onondaga, while the Cord alone remained among the French (*ibid.*, p. 477).

The White-eared or Deer people, Tohontaenrat, who had arrived in 1609, occupied the single village of Scanonaenrat (fig. 12, 27), one of the largest communities in Huronia, situated just north of the Cord people and west of Sturgeon River. Jesuits who labored here in 1636 named the mission St. Michel and claimed many converts. The inhabitants numbered several thousand, for in 1649 the town dispatched 700 warriors to pursue Iroquois who had destroyed St. Ignace II (fig. 12, 22) (Jesuit Relations, vol. 34, pp. 135, 137, 197). Before the posse returned, the inhabitants had burned St. Michel in desperation and abandoned it. For a time Deer band warriors led the Neutral against the Iroquois, but as early as 1650, the people of St. Michel and a considerable part of the Rock people went over bodily to the Seneca, forming the nucleus of the captive town that Chaumonot named St. Michel 5 years later.

The Huron had grown by accretion throughout the historic period. The custom of adopting whole populations to replenish the stock was a common Iroquois trait which enabled nations to form out of peoples of diverse languages. The later immigrants concentrated in the mission villages dependent on Ste. Marie I (fig. 12, 18). They were a mixed lot, including Bowl people, fragments of earlier bands known as Marsh people, Ataronchronon, and remnant Algonkin who had been expelled by the Iroquois. The Otter people, Atontrataronon, of Ste. Elizabeth (fig. 12, 33) had previous to 1641 been an Algonkin tribe of the upper St. Lawrence, but the Iroquois had driven them to take asylum with the Rock people of Huronia in 1644 (Arthur E. Jones, 1909, p. 71). Their movement strengthens the argument that the Rock band had also migrated from the St. Lawrence. One other group, the Iroquoian Wenro from east of Lake Erie, had abandoned their country after a dispute with the Seneca in 1638 (Jesuit Relations, vol. 17, pp. 25, 33; vol. 27, pp. 25, 29; vol. 29, p. 191); having assured themselves a welcome, 600 of them set out for Huronia where they were adopted in 1639 and assigned to different villages. The greater number settled in Ossossané (fig. 12, 1), the principal town of the Bear people.

TOBACCO NATION

The villages of the Huron-speaking Tobacco Nation, whom Champlain first visited in 1616, lay a day's journey around Nottawasaga Bay to the southwest of Huronia (fig. 11). They were geographically nearest and culturally closest to the Huron Bear band. We have names for 10 villages, and there are other sites scattered over Grey and Bruce Counties, Ontario (Arthur E. Jones, 1909, pp. 225, 422). Farther west the Lake Huron shore of their country was occupied seasonally by nomadic bands of friendly Algonquians, principally Ottawas whom Champlain had previously encountered on the French River west of Lake Nipissing. Before their last war with the Mascouten or Fire Nation, whom Michelson (1934) grouped with the Illinois, against whom they had alliances with the Ottawa and Neutral, the country of the Tobacco had extended west to the Saugeen River and north over Bruce Peninsula (Arthur E. Jones, 1909, p. 219). After 1639 they withdrew eastward to the Blue Hills in Grey County—whence their Huron name, Tionontati, "there stands the mountain," or "highlanders." Until the Iroquois finally dispersed them, they remained between the hills and Georgian Bay.

They occupied sedentary palisaded villages like those of the Huron whom they had fought before 1640. Thereafter Huron voyageurs who controlled the trade outlets held them in economic subjugation (Hunt, 1940, p. 43). The Tobacco raised great quantities of maize, sunflowers, beans, and, especially, tobacco, for which the French called them *Petuns*. These agricultural products and hemp, which they gathered for fishnets,¹² were traded at first to Algonquians and later entirely to Hurons. In 1648 there were two distinct Tobacco bands presumably named for the dominant clan in each of two towns (fig. 11, 1, 2): Ekarenniondi (St. Mathias) of the Deer, and Etharita (St. Jean) of the Wolf clan (Arthur E. Jones, 1909, pp. 234, 363): the latter harbored between 500 and 600 families. The exact sites of these towns had not been located by 1909 (*ibid.*, p. 260), but they lay about 12 miles apart. The Wolf town, being nearest to the Iroquois frontier, was the first to fall.

The details of the *Petun* dispersion of 1649 are unknown. They had given asylum to some Hurons and furnished a war party that pursued the Iroquois in the spring of 1649. The following December, a party that had gone to search out expected Iroquois invaders returned to find St. Jean in ruins. The greater portion of the tribe, thereafter

¹² I am not convinced that hemp was actually domesticated, but it was unquestionably collected from its native habitat.

called Wyandots, took refuge among the Ottawa of Manitoulin Island, with whom they later fled westward to Green Bay. Following a bitter defeat by the Dakota near the Mississippi, they returned to Chequamegon Bay, Manitoulin Island, and ultimately settled in 1701 along the Detroit River (Barbeau, 1915b, p. ix; Hunt, 1940, pp. 95-96 et seq.). A small number of their descendants survive in Anderdon township, Ontario and Detroit; but, about 1744, most of the Wyandots under Chief Nicolas separated from the Assumption Mission and removed to Sandusky on the southern shore of Lake Erie (Arthur E. Jones, 1909, p. 447). For a century they hunted over northeastern Indiana and northwestern Ohio until, in 1843, they were removed to the site of Kansas City, and then, in 1868, to the Wyandotte reservation in Oklahoma, where they had 250 descendants in 1911 (Barbeau, *op. cit.*).

NEUTRAL

Thirty leagues (90 miles) south of Huronia and 6 days' journey to the nearest village lay the country of the Neutral, a populous confederacy of at least three tribes. The Huron and the Neutral called each other "stammerers," Attiwandaronk, "their language is awry," because they spoke different dialects. Their territory (fig. 11) extended from well east of the Niagara indefinitely west of Detroit River and Lake St. Clair, for they had villages just east of that river; it embraced all of southern Ontario north of Lake Erie to a line drawn from Oakville below Toronto to Goderich on Lake Huron (Arthur E. Jones, 1909, p. 291). Down to 1639 their eastern member, the Wenro, inhabited a row of four villages stretching west toward the Erie. Hewitt thought that at one time the Wenro lived as far south as Oil Spring near Cuba in Allegany County, N. Y. The Neutral abandoned their alliance with the Wenro in 1638, leaving them prey to the Erie, who were being pushed inland by western enemies, and to the Seneca, who coveted Wenro lands for beaver hunting. Forsaken and outnumbered, the Wenro migrated to Huronia, leaving Tonawanda Creek and the Niagara Ridge in the hands of the Seneca.

In their heyday the Neutral numbered about 12,000 living in 40 villages, according to Brébeuf and Chaumonot, who in 1640 estimated 3,000 people where they stopped in 10 towns of the 18 settlements they passed (Jesuit Relations, vol. 21, pp. 189, 223). We have fewer data for locating them than we had for Huronia. Sanson's map of 1656 and DuCreux's map of 1660 place some of them, and Father Jones (Arthur E. Jones, 1909, p. 423) has summarized all that can

be said concerning the towns and their respective positions (fig. 11). Niagara Falls is marked, there was a village near Youngstown, N. Y., called Ongiara (fig. 11, 1), and Brébeuf speaks of possibly three other Wenro villages extending eastward. Our Lady of Angels stood on the west bank of Grand River between Cayuga and Paris in Brant County (fig. 11, 2); St. Alexis (fig. 11, 3) to the southwest has been identified with Southold Earthworks 3 miles in from Lake Erie near Port Stanley and east of St. Thomas (Coyne, 1895, p. 13; Harris, 1896, p. 228); St. Joseph (fig. 11, 4) was in Essex or Kent County very near Lake Erie; and St. Michel (Kihioetoa) (fig. 11, 5) to the northwest was a little to the southwest of Lake St. Clair not far from the present Sandwich and Windsor. Besides, DuCreux has St. Francis (fig. 11, 6), east of Sarnia in Lambton County. There are several others not mapped: Brébeuf and Chaumonot gave Christian names to 10 towns where they stopped (Jesuit Relations, vol. 21, p. 223), but they only mention Gandoucho, or All Saints (*ibid.*, p. 225), nearest to Huronia; Ongniaahra on the Niagara (*ibid.*, p. 209); Teotongniaton, surnamed St. William (*ibid.*, p. 225), situated in the center of the country, probably in Beverley Township; and the village of chief Tsohahissen 4 miles to the east (see Hunter, *Jesuit Relations*, vol. 21, note on p. 317).

As early as 1640 the Jesuits believed that all the Iroquoians had recently been one people. They stated that some bands had separated until feuds had intensified into prolonged wars, while others remained neutral (*Jesuit Relations*, vol. 21, pp. 193, 195). The Neutral were considered the older and parent body of the Huron-Iroquois stock, since one of their maternal families transmitted the title of mother of nations (djigósa'shǽ') (Djigóhsáhse', Hewitt, 1932), the lineal descendant of the first woman on earth. Harris (1896, p. 239) argued that their traditional position as neutrals between the Huron and Iroquois was guaranteed by large deposits of flint along the east end of Lake Erie in Neutral territory. We find archeological support for his theory, for artifact distributions indicate that both the Huron and Iroquois came to these beaches for nodules of chert. Furthermore, Lips (1938, p. 505) has shown that neutral territories that are closed to warfare by international treaty because they have vital resources that occur here only in limited supply are not uncommon among preliterate societies of even lower cultural levels. This theory is further bolstered by the right of asylum for members of the warring Huron and Seneca nations whenever they could reach the villages of the Neutral, where sworn enemies remained friends as long as

they did not go out into the fields (Jesuit Relations, vol. 21, p. 193). Since Lips holds that the two principles—neutral areas and the right of asylum—are related, it lends weight to Harris' theory (Lips, 1938, p. 510).¹³

The Neutral had retained their inland agrarian culture. They had settled a rich grain-producing area that was partly covered by mixed deciduous—elm-beech-maple—and coniferous—pine-hemlock—forest, well south of the canoe birch. Consequently, they remained overland travelers. The Huron insulated them from canoeing Algonquians, except the Ottawa, and, like the Iroquois, Neutrals made only miserable elm-bark canoes. Except during campaigns against the Mascouten, they found little reason to travel, but stayed at home hunting and fishing over their domain, which was abundantly stocked. Like the Petun, they traded surplus tobacco, corn, and hemp through the Huron to the northern Algonquians. Later the Huron, lest they lose control of the trade, sought desperately to keep the French traders and missionaries from reaching the Neutral (Hunt, 1940, pp. 50-52).

Hunt (*ibid.*, pp. 96-100) has pointed out that, following the Huron dispersion, the Neutral harbored many refugees and stood between the Seneca and the realization of their fur-trade ambitions in the lower Great Lakes. They also threatened to form an encircling league of Neutral, Erie, and Andaste. Therefore, during 1651 the Mohawk, in exchange for help against the French, combined with Seneca to attack them, but even successful retaliation on the Seneca for their one defeat did not restore their confidence. Within a year they were dispersed or incorporated into the Iroquois; they formed half a captive town among the Seneca. A few fled to the Ottawa and Tobacco, and others went to the Erie or fled into the wilderness.

ALGONKIN-HURON TRADING RELATIONS

Before turning to the Iroquoians east of Niagara River, let us consider the trading relations between the Algonkin and Huron, because these contacts have important bearing on the problem of the adaptation of Iroquois culture to that of the people who preceded them in the lower Great Lakes area.

Pushing north of Lake Erie and Ontario the Huron invaded a region of connecting waterways that teemed with fish, where mixed

¹³ That I agree with Lips' conclusions based on the cases illustrating neutral territories and the right of asylum among harvesters does not mean that I subscribe to his evolutionary theory of correlated economic stages and type of government.

birch and coniferous forests extended up to the height of land, affording habitat for moose, deer, and small fur-bearing mammals. They reached the limit of the area in which maize will mature; hence, on the Canadian shield, agriculture was little developed. The Algonquian bands who receded before them had devised fishing and trapping techniques, methods of cooking and storing food in bark containers, skin tanning and tailoring, and inventions for getting about by land and water—the snowshoe and toboggan in winter, and the birchbark canoe and the pack line in summer. Life here had demanded dividing in small family hunting bands during winter, with summer rendezvous at fishing grounds where social life and trade were effected. As the Iroquoians approached the periphery of maize-producing climate, they had to adopt an Algonquian or Woodland type of culture.

Economic and political alliances between Algonquian and Iroquoian peoples, therefore, have especial significance for our understanding of the development of Iroquois culture because they suggest a type of situation that occurred when the agrarian Iroquoian villagers moved into a country that had previously been dominated by hunters. In southern Ontario and central New York the transition between the Woodland (probably Algonquian) and Iroquois cultures are represented in archeology by what Ritchie (1936) calls the Owasco aspect of Woodland culture. The Owasco people had agriculture from the Ohio Valley and coastal tribes, and pottery that shows incipient Iroquois elements. The Owasco situation suggests an analogy with the early history of the Ottawa, who under Huron influence had partially made the transition to a horticultural economy, whereas the Huron had acquired the appurtenances of a fishing and trading economy from the Ottawa. This process of cultural assimilation between the Algonkin-Nipissing-Ottawa and the Huron was going on during the first half of the seventeenth century, and, as the demand for white goods increased, the Huron became voyaging merchants more like the canoeing Algonkin than like their former selves.

Algonkin.—The Algonkin of the Ottawa valley (fig. 11) included several bands. Of these the Iroquet succeeded the Hochelagans on the island of Montreal, but by the middle of the century the Iroquois had absorbed those who had not fled to Huronia. The Little Algonkin, the Noquet above them, and the few other small bands were unable to hold the lower valley against the lower Iroquois who preyed upon the trading fleets from Huronia.

The "Island Algonkin" of Allumette Island, protected from assault by dangerous rapids, levied toll on commerce passing up and down the

river. Although the Huron far outnumbered them, the 400 warriors of Allumette easily enforced the toll because they outnumbered the encumbered Huron trading parties who must portage their canoes and goods at the island to avoid the rapids. As the traffic increased during the historic period, the Allumettes prospered.

Collecting the levies became a ritualized procedure involving a night's stop and a feast at the Algonkin village. On these occasions Huron and Algonkin met and exchanged ideas. Not only was Huron corn, tobacco, and hemp exchanged for fish and skins or free passage, but social customs, songs, ideas about the supernatural, and shamanistic procedures became known to both peoples. However, I suspect that the Huron gains were on the manual level of things easily observed or felt, whereas the Algonkin were enriched by Huron concepts of society and cosmology, for the Huron language had prestige over Algonkin, which the Hurons refused to learn (Sagard, 1939, p. 86).

The Allumette Algonkin naturally strained to keep their status of middlemen between the French and upriver tribes. They had established canoe routes south and east to Tadoussac and the Abnaki south of the St. Lawrence in the previous century. These river pirates were possibly the Agojuda of whom the Hochelagans complained to Cartier (Biggar, 1924, p. 171). It seems probable that, to circumnavigate tolls, the Nipissing or Huron had pioneered the trade routes via Lake Temiscaming and the Gatineau, or via Bell River and the Saguenay, to reach Quebec in the previous century, for by 1535 the chief of Stadacona (Quebec) had seemingly traveled this route to Georgian Bay (*ibid.*, p. 221). In 1613 the Allumettes opposed Champlain's going up to the Nipissing, and by 1636 tribute taking had bereft them of friends, and they were unable to contract alliances with Nipissing and Huron to protect them from larger numbers of Iroquois. (See Champlain, vol. 2, p. 282 ff.; vol. 3, pp. 36-38; vol. 5, p. 103; Sagard, 1939, pp. 63-64, 65-66, 251, 255-258; and for a general discussion, Hunt, 1940, pp. 43-45.)

The Nipissing.—Higher up the Ottawa travelers bound for Huronia ascended the Mattawan River by many portages to Lake Nipissing. (See Hunt, 1940, p. 45.) Here the "Little Water People," a tribe of Algonkin, inhabited the islands and shores of the lake for which they were named. When first discovered in 1613, they raised some maize, but they were primarily seminomadic hunters and traders and, therefore, the chief rivals of the Allumette islanders. Their trading routes, however, lay in opposite directions: the Nipissing

traveled north and west to the Cree each spring via Sault Ste. Marie, the Missinabi River to James Bay, and returned in the late summer and autumn up the Abitibi River and down the Sturgeon; then, going south to fish in Georgian Bay, they wintered in Huronia. (See Hunt, *op. cit.*, end maps.) The trade began in aboriginal times when the agricultural Huron had vegetable products, tobacco, and hemp to exchange for skins, fish, meat, and hunting and traveling equipment; but the European demand for beaver at the end of the sixteenth century and the Indian demand for white goods expanded trading relations and trade routes enormously. Peoples who had formerly been hunters or semihorticulturists now became entirely traders (Innis, 1930, p. 9).

Cordial relations between Nipissing and Huron peoples facilitated cultural exchange on a level above economic necessity. The visiting Nipissing spoke both languages, but Hurons did not learn Algonkin (Sagard, 1939, p. 86). In Huronia the Nipissing were reputedly great sorcerers, and among them the Huron observed elements of northern shamanism (*ibid.*, pp. 64-65, 192 ff.). The trick of handling hot objects (Michelson, 1913, p. 13; Sagard, 1939, p. 200) and certain practices associated with clairvoyancy and conjuring have northern distributions (Cooper, 1928a, 1928b). In considering the development of Iroquois shamanistic fraternities we must look for northern elements that the Huron brought to the Seneca.

The Nipissing shared the Huron custom of the Feast for the Dead. Among the Huron and Neutral the ceremony attended ossuary interment, which the Seneca did not practice. There were differences between the Nipissing and Huron ceremonies that have been pointed out in the *Relations* (vol. 23, p. 209 ff.). If anything, the Nipissing ceremony was more elaborated. About 1640 they invited their trading partners from afar, seated them according to their importance in the trade, and gave them valuable presents, the Hurons and Jesuits receiving the greatest share. They lavished surplus wealth in furs on their guests, on bereaved members of the tribe, and on the bones of their dead. We usually associate competition for the display of wealth with the Potlatch of the Northwest coast, but this feature, and sacrifice of mortuary goods, became increasingly important elements of the Dead Feast as the trade developed. From the Nipissing, display of wealth spread to Huronia along with dog sacrifice, and from Huronia to Iroquoia; and only after the contact period do mortuary goods appear in Seneca graves.

In 1650 the Iroquois penetrated to Lake Nipissing and massacred part of the tribe, forcing the others to seek refuge at Lake Nipigon until 1667 when they returned. Some of their descendants live with the Mohawks of Oka at Lake of the Two Mountains near Montreal (Jesuit Relations, vol. 10, p. 83; vol. 30, pp. 109-125; Orr, 1917, pp. 9-23).

Ottawa.—The Ottawa domain included the French River, flowing west from Lake Nipissing to Georgian Bay, Manitoulin Island, and the Lake Huron shore of Bruce Peninsula beyond the Tobacco Nation. Champlain dubbed them "Cheveux Relevés," "high hairs," because the men wore their hair roached. They used the same weapons and wore the same armor as the Iroquois. He encountered them in summer drying blueberries on the French River, and again in winter he visited their agricultural settlements west of the Tobacco and north of the Neutral (Champlain, vol. 3, pp. 96-99). He considered their trading enterprise, mat-making industry, and personal neatness remarkable (Champlain, vol. 4, pp. 280-282). They had allied themselves with the Tobacco and Neutral in a war with the Fire Nation (Mascouten), and with the Huron in their wars with the Iroquois. Both traditional and later history indicate that the Ottawa were drifting westward with the Chippewa, who moved to Lake Superior, and the Pottawatomi who moved south across Michigan. Later they reunited under Pontiac. (See Jesuit Relations, vol. 18, p. 231; Champlain; Sagard, 1939, pp. 66-67; and Hunt, 1940, pp. 47-49 and notes.)

The Ottawa occupied the Lake Huron shore west of the Tobacco and north of the Neutral during winter. This position represents a southern thrust of a northern people, or it represents the retreat of Algonquians before advancing Iroquoians. Archeology may suggest a solution. After the war with the Mascouten in 1639, the Ottawa retreated to Bruce Peninsula, and the next year to French River, Manitoulin Island and finally to the mainland north of Georgian Bay (Thwaites, Jesuit Relations, vol. 14, note on pp. 285-286). Trading expeditions took them west to Green Bay where they met the Winnebago, Menomini, and Dakota, picked up western furs, and distributed European goods obtained through the Huron. As the trade increased, the Ottawa abandoned what little agriculture they had acquired, and resumed a hunting, fishing, and trading economy. In 1633 they were the first of the upper Lakes peoples to venture to Quebec, and following the Huron dispersion in 1649, the trade between the French and inland tribes fell to the Ottawa.

Under the name "Ottawa," which means "traders," came to be included several remnant Huron and Algonkin tribes (Jesuit Relations, vol. 38, p. 181). Shrewd traders but cowardly warriors, they followed the receding beaver and fled westward to Green Bay to escape the Iroquois (Jesuit Relations, vol. 45, pp. 249-255). For a few years Radisson (1885, p. 53) had considerable difficulty persuading the tribes of the upper lakes to bring their furs down the Ottawa to Three Rivers and Montreal. In 1660 (Jesuit Relations, vol. 45, pp. 161-163) 60 of the 100 canoes that had left Lake Superior reached Montreal to trade, and the following year Ménard returned with them to Keewenaw Bay and Chequamegon Bay (Jesuit Relations, vol. 46, pp. 139-141). Following Ménard's death, Allouez (Jesuit Relations, vol. 49, p. 161; vol. 50, p. 249) in 1665 went up from Quebec with a party of 400 Ottawa who had come from Lake Superior to exchange beaver skins (Jesuit Relations, vol. 50, p. 241). Lake Superior was then a rendezvous for 12 or 15 distinct tribes coming from north, south, and west for fishing and trading (Jesuit Relations, vol. 50, p. 267): Cree, Ojibwa, Mississauga, Sioux and Winnebago, and the central Algonquians of Wisconsin and Michigan, and even the Illinois (Jesuit Relations, vol. 54, pp. 133, 167). The mission village of Ste. Esprit at Chequamegon Bay included 800 warriors of seven nations who raised corn and led a settled life (*ibid.*, pp. 263-265). Probably the Tobacco remnants managed the crops. The westward drift of Algonkins was displacing the eastern Dakota from the lake country west of Superior, and rash Ottawa youths provoked warfare during momentary lulls of trading (Jesuit Relations, vol. 50, p. 279). The Ottawa and Tobacco were glad to return to Manitoulin Island in 1670.

After this time the Iroquois encouraged the Ottawa to come to their villages to trade through them with the English. During the next century when the Ottawa and Wyandot were living in the neighborhood of Detroit, between Saginaw Bay and Sandusky, Ohio, they had considerable contact with the Seneca.

The importance of the Ottawa for the Iroquois problem is the opportunity which intertribal visits to exchange goods, feasts, and military services afforded for the diffusion of culture between Ottawa and Huron, and later, between Ottawa and Seneca. The Ottawa probably acquired their agriculture and taste for village life from the Tobacco and Huron. The Huron employed Algonkin white-fishing techniques and observed the Algonkin tabus and fish-preaching ritual after they met the Ottawa and Ojibwa (see Sagard, 1939, pp. 185-190). The Ottawa were celebrated feast makers (Jesuit Relations, vol. 50,

p. 291 ff.; vol. 54, p. 171; Champlain, vol. 4, p. 282). The medicine-bundle type of shamanistic society which celebrates feasts to propitiate earth-bound animal spirits has a continuous distribution from the Iroquois through the central Algonquians of the Great Lakes area to the Siouans of the northern Plains. We must consider the possibility that the Iroquois developed those society rituals, which stress hysteria and possession, during contact with northern peoples.

In pre-Columbian times, traders like the Ottawa began to disseminate copper nuggets and artifacts throughout the region around the Great Lakes. The copper trade was flourishing in 1535 (Biggar, 1924, p. 170), and as late as 1665 Ottawa shamans kept copper nuggets as fetishes (Allouez, Jesuit Relations, vol. 50, p. 265). At the turn of the eighteenth century, when the calumet and its ritual was first observed among the Iroquois, again Ottawa traders had facilitated its spread (Fenton, 1937, ms.).

The Ojibwa proper of Upper Michigan and Sault Ste. Marie were seminomadic hunting and fishing peoples who gathered wild rice and had little agriculture. They were closely related to the other Central Algonquians (William Jones, 1906, p. 136 ff.; Skinner, 1911, p. 117). However, the Chippewa or Mississauga of Lower Michigan and southeastern Ontario, who succeeded the Huron around Mud and Rice Lakes and Georgian Bay late in the seventeenth century, were more sedentary. They lived in bark cabins and raised maize. Their social organization reflected Iroquois influence. They once had a False Face ceremony possibly derived from the Iroquois (Skinner, 1911, p. 117). The Iroquois failed to adopt with any avidity the Mississauga wild-rice industry, although *Zizania aquatica* was native to western New York (Chamberlain, 1888; Parker, 1910, p. 109; Orr, 1915, pp. 7-15).

ERIE

A people whom the Huron called the Cat Nation, Eriechronon, inhabited the southern shore of Lake Erie from Eighteenmile Creek west across northern Ohio. We know very little about them because no Caucasian reached their country until after their dispersion. The Jesuit Relations for the period of 1647 (vol. 33, p. 63; vol. 38, p. 237) record hearsay that the Erie had been forced to retire farther from the lake to escape western enemies. Hewitt believed that this movement forced the Wenro out of the country between them and the Seneca. The Seneca continually speak of a people formerly living west of them called the Kahgwa'ge'o'no', which refers first to the Wenro and later to the Erie. The latter are represented as typical

Iroquoian horticultural villagers who spoke a dialect similar to Huron. From their position we would expect their language to resemble Seneca.

The Erie controlled the headwaters of the Allegheny and Ohio Rivers. The Alleghenies, the habitat of the panther, their eponymous animal (Hewitt, 1912, vol. 1, p. 430), bordered their country on the east and south. Their probable boundaries were the lake shore, Eighteenmile Creek, the west watershed of the Genesee, the east watershed of the Allegheny to about Pittsburgh, and then for a way down the Ohio River. Their western limit is difficult to define because it receded eastward as they were pressed by tribes behind them. Northern Ohio, northwestern Pennsylvania, and southwestern New York roughly comprised their terrain.

Historical documents and maps mention names of towns and tribes that were destroyed during the conquest of the Erie, giving us the impression that they were a numerous people occupying an extended area. Names of two palisaded villages survive: 1, Riqué (Jesuit Relations, vol. 42, p. 187), "At the place of the panther" (Hewitt); and 2, Gentaienton (ibid., p. 197), "Meadows [or Prairies] lying together" (Hewitt) or "Within the prairies" (Seneca). Franquelin's map of 1684 (Jesuit Relations, vol. 63), which is based on information that LaSalle collected, places the first, "Rakougeya," which seems to be cognate with modern Seneca *kahgwa'ge'ya'*, just north of the mouth of a stream, which I judge is Cattaraugus Creek, near the Lake Erie shore. We find the second, "Kentaientonga 19 V. détruits," [gentayε'dō'geh (Seneca)] "Place within the prairies, 19 villages destroyed," on the right bank of the lower Allegheny or upper Ohio, indicating that the Erie occupied the country between the rivers and Lake Erie, probably near the valley of Beaver Creek.

The Prairie people were, I think, Erie. Although the southern portion of their habitat was mountainous, the Lake Erie shore is one plain of broadening meadows. The Jesuit ethnologist Lafitau (1724, vol. 1, p. 47) who studied under Garnier, a contemporary of the Erie dispersion, speaks of the Gentageronnons, inhabitants of the Prairies, but later (vol. 2, p. 523) he discusses the Erie dispersion without referring to the Prairie people. Nevertheless, I think they are the same.

"The crook-necked squashes place people" or "the people of the place where they wear crosses [gorgets]," Honniasontkeronon (Hewitt, 1912, vol. 1, p. 559), were apparently the next people farther down the Ohio River. "Oniassontke 2 V. détruits [Honniasontgeh,

"On his neck, 2 villages destroyed"], with one village on the river and the other toward Lake Erie, appears on Franquelin's map of 1684 south of what may be intended for Cayahoga Bay. Their name is an Iroquois euphemism for the land of departed spirits, which was believed to be a village somewhere in the west; or it was a term jokingly applied to any related people living that far toward the sunset. Although the Honiasont have not been heretofore identified, I think that these "gorget-wearing people" were Iroquoians who, known as the Black Minquas, Arregahaga, came to trade with the Dutch and Swedes on the Delaware as early as 1643.¹⁴ Van der Donck, writing just before the Erie dispersion, assigns the Black Minquas a far inland position, and he says that they ". . . are thus named because they wear a *black badge on their breast*, and not because they are really black, by the Senecas [Oneida at this period], by the Maquas [Mohawk], and by the Rondaxes [Algonkin]" (Van der Donck, 1841, p. 209; italics mine).

The term "Black Minquas" then was most certainly applied to part of the Erie, who, before their dispersion, were being attracted by the trade to the white settlements on the Delaware. Other tribes, drawn by the same magnet, were closing in west of them, driving them inland away from Lake Erie. We would expect then to find their settlements near the Allegheny River. Competition for the beaver-hunting grounds of western New York and Pennsylvania and for control of the trade with Ohio Valley tribes would eventually lead them to war with the Iroquois. This had happened in 1654.

The Erie were a warlike people. Their superior marksmanship and poisoned arrows (Jesuit Relations, vol. 8, p. 302; vol. 41, p. 83) were a terror to the Iroquois. They were credited with 2,000 warriors, which indicates a population between 8,000 and 10,000, but Mooney (1928, p. 11) puts them at 4,000. Huron and Neutral refugees who had joined them, incited the Erie against the Iroquois. The thoroughly

¹⁴ Soon after the Swedes settled on the Delaware in 1638, they established trading relations only with the White Minquas (Susquehanna) and the Black Minquas (Erie and possibly some Conestoga). The former came to them over Christina or Minquas Kill and the Schuylkill River from their settlements on the lower Susquehanna. The Black Minquas came from the Ohio and Allegheny via Kiskiminitas and Conemaugh Rivers and the valley of the Juniata, over what later was known as Frankstown Path, or by the West Branch of the Susquehanna, and then crossed over by the Schuylkill to the Delaware. The Swedes and Dutch of New Amsterdam were soon competing for the trade in furs, and the Swedes built trading posts along the road which the Black Minquas traveled to the Dutch to intercept their trading expeditions. (See Hanna, 1911, vol. 1, pp. 15-16, 76, 257; Johnson, 1917, pp. 277-278; Hunt, 1940, p. 102.)

aroused upper Iroquois—Seneca, Cayuga, Onondaga, and Oneida—besieged their principal town on Lake Erie in 1654 when the Erie still had comparatively few guns and little powder. The war lasted 2 more years, but the Erie, like the Tobacco and Neutral, were unable to take more than one heavy blow. Some Erie settled among the Seneca, and others fled to the Susquehanna or survived as the Black Minquas of the upper Ohio.

The Black Minquas made common cause with the Susquehanna against the Seneca in 1662³⁶ when they crossed from beyond the Alleghenies to join a Susquehanna expedition to the Seneca country. Four years later a tribe whom the Seneca called the Honniasontkeronons³⁶ lived a month's journey from the Seneca down the Allegheny and Ohio Rivers, somewhat above the rapids at Louisville. I think these are the same people as Herrman's Black Minquas,³⁷ who had been drawn to the upper Ohio by the trade, but who had probably fled downriver after the Erie conquest. However, following the dispersion of the Susquehanna in 1675, the Black Minquas gravitated

³⁵ William Bleekman in a letter to Gov. Peter Stuyvesant, dated Dec. 23, 1662, writes from Wilmington:

"On the 3d. inst. five Minqua chiefs with their suite arrived here at Alteena [now Wilmington] . . . The chiefs informed us among others, they were expecting shortly for their assistance 800 Black Minquas, and that 200 of this Nation had already come in, so they were fully resolved to go to war with the Sinnecas next Spring, and visit their fort." (Hanna, 1911, vol. 1, pp. 15-16, citing Pennsylvania Archives, 2d ser., vol. 7, p. 742.)

³⁶ Gallinée (Margry, vol. 1, p. 116) relates that in the fall of 1668 two canoe loads of Seneca traders came to Montreal and stayed with LaSalle. "These people . . . told him of such marvels of the River Ohio, which they said they knew perfectly, . . . [To the Seneca, the Allegheny and Ohio are still one river.] They told him that this river took its rise only three days journey from *Sonnontouan* [Victor, N. Y.], and after one month of traveling one came upon the Honniasontkeronons and the Chiouanons [Shawnee] . . . [above the rapids of the Ohio River]" (italics mine). In 1669 LaSalle tried among the Seneca to get guides to take him there.

³⁷ Augustine Herrman, a Bohemian adventurer, had been commissioned by Lord Baltimore to settle the Maryland and Virginia boundary dispute. After 1659 he became thoroughly acquainted with this entire district, and his map of 1670 carries a notice of the Black Minquas who lived beyond the mountains on the large Black Minqua River, presumably the Ohio. Formerly by means of a branch of this River [the Conemaugh], which approached a branch of the Susquehanna above the Susquehana [sic] fort [which he places on the right bank at the rapids—hence probably the Juniata River is intended] "formerly those Black Minquas came over . . . as far as Delaware to trade; but the Sasquahana and Sinnicus Indians went over and destroyed that very Great Nation; . . ." This also suggests that they were part of the Erie.

to the Seneca camp¹⁸ during the campaigns that swept the Siouan remnants from the Ohio valley and subdued the Illinois, Miami, and Shawnee.¹⁹ It has been difficult to place the Honiasont exactly, for some of the maps²⁰ locate them around a lake at the head of a tributary entering the Ohio from the south, which may be the Kanawha or the Big Sandy in Siouan country; but Hewitt (1912, vol. 1, p. 559) thought that the tributary (DeL'Isle's map, 1722) made into the Wabash from central Ohio or Indiana. If the former were true, they were possibly the rearguard of the Tuscarora who had crossed over to the Neuse River, North Carolina, an outlying Cherokee group, or a Siouan group. However, the Honiasont were more probably the Black Minquas, part of the Erie whose town sites were still visible between Beaver Creek and Lake Erie in 1754.²¹

The "Antouaronons N. Détruit" that occupy the Lake Erie shore just east of Sandusky, on Franquelin's map of 1684, were probably

¹⁸ On August 22, 1681, Jacob Young appeared before the Maryland council with two Iroquois, an Onondaga and an Oneida, to report on the remnants of the Susquehanna. The Indians reported that the "Black Mingoës" had recently joined themselves to the Seneca proper. (Hanna, 1911, vol. 1, pp. 16, 68, citing Maryland Archives, vol. 17, p. 5.) The name "Mingoës" persisted for the mixed Iroquoian group that continued to live in Ohio under Seneca protection.

¹⁹ The quest for new beaver-hunting grounds south and west of Lake Erie was the major reason for these campaigns, and until tribes who were pushing in from the west were subdued or induced to trade through the Iroquois, the hunting grounds could not be controlled. (LaSalle to Bernou, Aug. 22, 1681 (or 1682), cited in Hanna, 1911, vol. 2, pp. 96-97; see also Hunt, 1940, pp. 145-151). For the dispersion of the Siouan peoples see Swanton (1936).

²⁰ No. 3 of the Parkman Collection (Winsor, 1884, vol. 4, p. 215), a map of the basin of the Great Lakes circa 1682; see Hanna, 1911, vol. 2, footnote on p. 117 for others.

²¹ Lewis Evans, the outstanding colonial cartographer, mapped the Ohio Valley in 1754 (Gipson, 1939, p. 56 ff.). His "Analysis" and "Map of the Middle British Colonies in 1755" contain invaluable information from traders and Indians respecting the location of Indian towns and tribes in the Ohio Valley (*ibid.*, p. 64). He decided that Indian domains were not bounded by lines but by hunting territory surrounding towns which they established on river bottoms to grow maize (*ibid.*, p. 155). He not only connects the Erie linguistically to the Iroquois, but, interestingly enough, with the Tuscarora. He says that the Erie, whom he extends too far west, ". . . were seated on the Ohio and its branches, from Beaver Creek [which flows south into the Ohio near the Pennsylvania boundary] to the Mouth of the Quiaághtena [Wabash] River. The far greater Part have been extirpated, some incorporated into the Senecas, and the rest have retired beyond the woodless Plains over the Mississippi [*sic*], and left the Confederates the entire Masters of all the Country. From the Ruins of the Eriga Towns and Fortresses we suppose they were the most numerous of any in these Parts of America." (*Ibid.*, p. 157.)

a remnant Neutral group that had fled from east of St. Clair River during the Neutral dispersion.

IROQUOIS

The territory south of Lake Ontario is one vegetational as well as physiographic unit with the country just north of Lake Ontario, Lake Erie, and southeast of Lake Huron. Deciduous birch-beech-maple-elm forests with coniferous admixture of pine and hemlock give way in the north to fir and spruce (Kroeber, 1939, pp. 17, 91-92). Therefore, Huron, except in the north, Neutral, and Iroquois proper inhabited one ecological area. Erie and Conestoga territory merged into the Appalachian deciduous forest of oak-chestnut-yellow poplar (*ibid.*, p. 18). There were remarkable concordances of race language and culture throughout this entire area.

The territory of the Iroquois proper extended from Lake Champlain to the Genesee River and from the Adirondacks south of the St. Lawrence to the headwaters of the Susquehanna, where the territory of the Conestoga began at the forks of the river (fig. 11). The Mahican, an Algonquian-speaking tribe, held the upper Hudson River. The Iroquois were at war with them and with the related Algonquian tribes of New England when the Dutch arrived at New Amsterdam. The Iroquois were five nations, at first, who had confederated about 1570, a generation ahead of the Huron. They referred to themselves as "we longhouse builders" (*ogwánq̄hša·ni*) (Seneca); and they referred to the confederacy as if they had erected a longhouse together (*hodínq̄hša·ni*), or as "longhouse-building residents" (*ganq̄hša·nigea·'*). The greater part of their domain was devoid of habitation, for their towns, situated on hills away from streams, were strung along an east-west trail which was the hallway through the longhouse. They carried the analogy of the longhouse to the point where the town was to the individual as the nations were to families living across the fire from one another in a symbolic longhouse of five fires which one entered by the east door beyond Schenectady and emerged from the west door on the Genesee.²² Population was heavily concentrated in a dozen towns, but elsewhere, as outside any

²² The analogy is not quite precise. In the Iroquois and Huron longhouses ordinarily two families lived across the fire from each other. In the symbolic longhouse of the Confederacy, each nation constituted a fire to itself, but at the same time the Mohawks, Onondagas, and Senecas, the elder brother nations, occupy the north sides of their respective fires, and the Oneidas and Cayugas sit to the south of their fires.

town, there were fields and woods and hunting country. It was this "league of ragged villages" (Van Doren, 1938, p. xv) that for two centuries held off two great empires of Europe.

MOHAWK

The Mohawk kept the eastern door of the longhouse. They called themselves "people of the place of the flint" (Kanyé'gehá'ga), but the Algonquian-speaking tribes of New England called them Mohawk or "man-eaters" (Hewitt, 1912, vol. 1, p. 921). The name "Mohawk" and the intensity of their continual wars with surrounding Algonquian tribes suggest that the latter were descended from tribes whom the Iroquois had displaced. They fought the stubborn Mahikan or Hudson "river Indians," who had held Saratoga and claimed land 2 days' journey west of Albany, with varying success during 40 years until 1673. Thereafter, the Mahican sold out piecemeal to the Dutch and emigrated. The name Mohawk was terror to the southern New England tribes: The Wappinger Confederacy of western Connecticut, the Mohegan Pequot of the Thames River who paid them annual tribute in wampum; and the Narragansett who lived at a safer distance. They gave the little-known Pocumtuc of Deerfield and the Nipmuc of central Massachusetts little rest, and the confederated Massachusetts around the Bay feared them.

The Algonquian peoples of northern New England above the Merrimac River had migrated south from the St. Lawrence at an early time. The Penobscot, Passamaquody, Malecite, and Micmac—the four nations of the Wabanaki Confederacy (Speck, 1915, p. 493)—retained their dread of the Iroquois into recent times. The Iroquois called them Owenunga, a corruption of Abnaki, but now the Iroquois speak disparagingly of all the northeastern Algonquians as "log-eaters" (hadíōda's) (Seneca), (ratīřōntaks), "wood-" or "tree-eaters" (Prince, 1900, p. 123), a name used originally for the Algonkin proper and for the Montagnais above Three Rivers who hunted in the Adirondacks after Hochelaga was abandoned. Speck (1931a, p. 561) found that among their descendants in the far interior of Quebec and even among the Naskapi of Labrador the word Iroquois is one to frighten little children. This fear and hatred of the Iroquois that is so deep-seated among descendants of neighboring Algonquian tribes probably began before the wars of the seventeenth century in the fifteenth century. When Cartier arrived, the Laurentian Iroquois had already driven a wedge down the St. Lawrence Valley to the mouth of the Saguenay. The Laurentian wedge had split the

Algonquians into northern and southern groups, and in 1535 the latter were fighting the Laurentian Iroquois.

The Mohawk were the most prominent eastern tribe, and their name became synonymous with the Confederacy. Their eastern boundary coincided with that of the League; it was never much east of Schoharie Creek, but passed roughly west of Schenectady south down the creek and down the East Branch of the Susquehanna nearly to Oneonta. On the west the territory of the Oneida commenced at a line drawn north to the St. Lawrence just west of Herkimer. Mohawk hunting territories in the Adirondacks were not always free of Algonkin intruders, and the Conkhandeenrhonon, a Huron band living north of Bay of Quinté, Lake Ontario until 1635 (Jesuit Relations, vol. 8, p. 115), probably hunted south of the St. Lawrence.

The location of Mohawk sites from period to period indicates that the Mohawk were refugees from the St. Lawrence River late in the sixteenth century. Their protohistoric sites were fortified on the hilltops overlooking tributaries north of their historic valley (fig. 13). For the period of about 1600, there are three of these protohistoric sites: 1, Cayadutta, a mile north of Sammonsville and Cayadutta Creek; 2, Garoga, 2 miles northeast of Ephratah and east of Garoga Creek—both in Fulton County (Jesuit Relations, vol. 51, p. 294; Parker, 1922, p. 559 and pl. 171); and 3, Otstungo or Minden, 4 miles northwest of Fort Plain, south of the Mohawk River in Montgomery County (Jesuit Relations, vol. 51, p. 294; Parker, 1922, p. 623). Following the reverses which the Mohawk experienced in 1603 at the hands of the Etchemin, Algonkin, and Montagnais (Champlain, vol. 1, pp. 100, 141, 178), who had driven them from the St. Lawrence, and in 1609 from the Algonkin and Huron, the Mohawk presumably moved the first two towns south of the Mohawk River to put it between them and their enemies. Hendrickson's *Carte Figurative of 1614* locates them north of the river.

The Mohawk moved their villages frequently during the historic period. At times they were on both sides of the river, but they remained on the south side for a generation after they were first known. The general trend was from the hilltops to the river bottoms (Beauchamp, 1900, pp. 13, 15, 100 ff.).

In 1634 an unknown Dutch journalist and two companions ventured "Beyond the Pines" (Schenectady) to explore the trails to the Iroquois country (James Grant Wilson, 1896). Seeking the Iroquois fur trade, they penetrated as far as Oneida, then to Munnsville (fig. 13, Oneida, 2), where they met the Onondaga chiefs in council and learned that French traders had preceded them. Returning to Fort

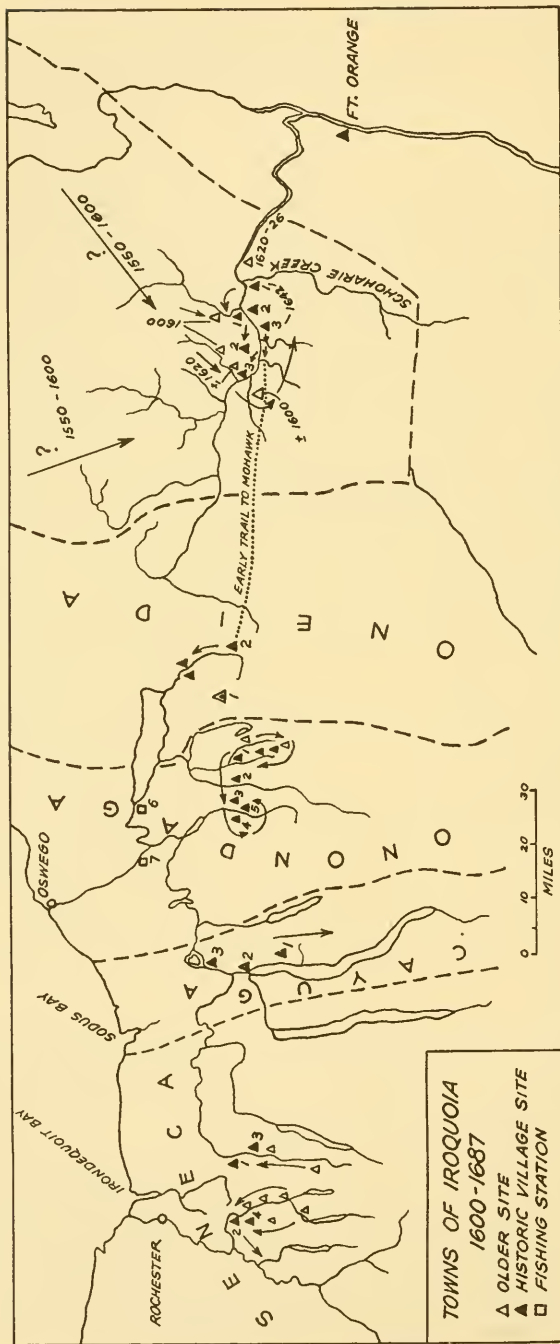


FIG. 13.—For explanation see opposite page.

FIG. 13.—Twelve Towns of Iroquoia, 1600-1687.

Mohawk, 3 towns: 1634-1666; 1667-1693.

1. Lower Castle—Ossernenon, Turtle.
2. Middle Castle—Kanagaro, Bear.
3. Upper Castle—Tionontoguen, Wolf.

Oneida, 1 town.

1. Probable site of Iroquois Fort of Champlain, 1615.
2. Oneida Castle, 1634-1696.

Onondaga, 1-2 towns.

1. 1654-1687. "On the Mountain," St. Jean Baptiste.
2. 1682-1696. Frontenac's Onondaga.
3. 1720-1743. Bartram's Onondaga.
4. 1756-1779. Johnson-Van Schaick.
5. 1784-1940. Modern Onondaga longhouse settlement.
6. Techiroguen, fishing station.
7. Fishing station.

Cayuga, 3 towns: 1668-1678.

1. Cayuga, St. Joseph.
2. Thiohero, St. Stephen.
3. Onontaré, St. René.

Seneca, 2-4 towns.

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| <ol style="list-style-type: none"> 1. 1650-1687. Kanagaro, St. Jacques 2. 1650-1687. deyódihakdó', Conception 3. 1649-1687. Gandougarae, St. Michel (Captive Huron, Neutral town). 4. 1650-1672. Gandachiragon, St. Jean, Garnier's Mission. 1675-1687. Keinthe-Gannondata. | } Two original Seneca communities. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|

Orange, they had pointed out to them by the guides the place where in 1626 the Mahikan had driven the Mohawks to abandon their eastern "castle"²³ that stood east of Schoharie Creek. After that time the Mohawks did not wish to live there (*ibid.*, p. 99). This site marks the eastern limit of Mohawk expansion. The journalist's party visited four "castles," the Upper one being triply palisaded, and passed four villages, in a space of not over 15 miles west of Schoharie Creek, all south of the Mohawk River in the present Montgomery County, N. Y. Beauchamp (1900, p. 101) locates them all east of modern Canajoharie. Recent local authorities (Lathers and Sheehan, 1937, p. 6), place the Upper Castle west of modern Fort Plain, the Middle Castle a league east of the Upper one near Canajoharie, and the Lower Castle still farther east.

Early Dutch writers imply that the Mohawks had three localized totemic sibs identified with particular villages. They continually speak of village chiefs, as if the sibs were bands localized at the Lower, Middle, and Upper castles and adjacent settlements. The sib or clan was a lineage group composed of descendants through females of an original matriarch. The band, however, would include males of other clans who had married in. Therefore, the populations of each of the towns would contain members of all three clans, but the home clan gave its name to the band. The band was the community.

Megapolensis (1857, pp. 159-160), the first Dutch Reformed missionary to the Mohawks, writing in 1644, divides the Mohawks into three tribes [clans or bands], the Turtle, Bear, and Wolf, which he assigns to the Lower, Middle, and Upper castles respectively. The Turtle clan was the greatest and most eminent, boasting descent from the first woman on earth. They had recently palisaded their town (Asserué), which would suggest that they had moved since 1635. The Bear band occupied the next town (Kanagirow), and the Wolf, who occupied the farthest castle (Thenondiogo), he says, were the progeny of the former two. Hence it appears that before white contact the Turtle village comprised one moiety and the Bear the other. Their progeny, Turtle being the eldest, with unilateral matrilineal descent and matrilocal residence, should be of the same moiety, if not the same sib, as Turtle. Moreover, in later times the Wolf clan has been aligned with Turtle in one moiety over against the Bear clan who comprise the other. When we recall that of the oldest sites,

²³ The Dutch writers called the fortified Mohawk towns "castles," and the name stuck. By general usage, the eastern fortified town was known as "Lower Castle," the next to the west, "Middle Castle," and the western citadel, "Upper Castle." I have designated these as Mohawk, 1, 2, and 3 on fig. 13.

two are north of the Mohawk and the third is south of the River in the position later occupied by the Wolf town, it seems likely that the Turtle town either became overpopulated or factions developed within it, and the younger Wolf group split away from the Turtle during a village removal. They adopted a new eponym while retaining their sense of kinship to the parent clan. The separation possibly occurred during the flight from the St. Lawrence. In this case, the Wolf band represents the last or first group to reach the Mohawk, and the Turtle and Bear bands arrived together, before or after them.

In view of this situation it is interesting to speculate how a dual system of moiety exogamy actually functioned. If the Turtle clan outnumbered the Bear, Turtle men would compete for wives in the Bear town, while Bear men would have a choice of several Turtle women. Unless the Turtle men resorted to polyandry, which is un-Iroquois, and the Bear men to polygyny, which might occur, some provision would eventually have to be made for the unmarried Turtle men, and the surplus of Turtle progeny. Then, if the latter separated during a removal and formed the Wolf band, it is conceivable that after a separation of a generation or so, they might commence intermarrying with the parent group on a basis of clan exogamy. However, the original tie of kinship was commemorated by ceremonial alignment into moieties.

Usually, the number of houses gives a fair estimate of population. We take the Dutch journalist's figures (James Grant Wilson, 1896, pp. 87-98), and assume that the three bands occupied the same relative positions in 1640 as in 1635 because both the journalist and Megapolensis give the same names for the Middle and Upper Castles. We assign to the Turtle band the Lower castle (*Onegagógeh*) of 36 houses and two villages, *Ganawaróde* of 6, and *Senatsycrosy* of 12 houses, a total of 54 houses. To the Bear band belong a small castle (*Canagere*) of 16 houses, a larger castle (*Sohanidisse*) of 32 houses, and a small village (*Osguage*) of 9 houses, making 57 in all. This leaves for the Wolf band a small village (*Cawaoge*) of 14 houses and the Upper Castle (*Tenotoge*) of 55 longhouses, a total of 69. The grand total is 180 houses. It would appear from these figures that the Wolf band had gained at the expense of the Turtle, and that it was by far the most populous band. Considering also his estimates of the size of the houses, which grow larger to the west, the Wolf were the most populous clan. In the first and the third castles the houses were 100, 90, or 80 paces long, and in the latter place he saw four, five, and six fireplaces to a house (*ibid.*, pp. 87, 89); whereas, at *Canagere*, the second castle, houses were somewhat

smaller, and one was only 16 paces; but at the Upper Castle, he saw the largest houses (*ibid.*, p. 90). The population of the Lower Castle had been so reduced by smallpox that the head chief had moved out of the fort (*ibid.*, p. 88). Since smallpox had also caused deaths in the western castle (*ibid.*, p. 98), the epidemic had apparently moved up the valley, and may account for the population disparity. Even so, allowing three fires to a house—for there were undoubtedly many single family dwellings—and five people to a fire, we compute for 1634 populations of 810 Turtle, 855 Bear, and 1,035 Wolf, or 2,700 Mohawks. The latter figure agrees reasonably with that of 2,500 made in 1660 (Hewitt, 1912, vol. 1, p. 924).

From their position south of the Mohawk River in 1634, the Mohawk moved their castles downstream about 1640 and rebuilt them. These were the sites of the three villages to which Jogues was taken captive in 1642 (Jesuit Relations, vol. 8, p. 300; vol. 29, p. 45; vol. 51, p. 295) and which Megapolensis (1857, pp. 159-160) ascribed to separate clans (fig. 13, Mohawk, 1, 2, 3). The Lower Castle of the Turtle clan occupied a hilltop west of Schoharie Creek, a quarter of a mile south of the Mohawk River, southeast of Auriesville (fig. 13, Mohawk, 1). The Mohawks called the locality Teatontaloga, "two mountains apart" (Hewitt, 1912, vol. 2, p. 713), but the town at this period was Osseruenon, or Ossernenon (misprint). This place name may hark back to Oserake, "at the beaver dam," of which Hochelaga, the old name for Montreal, is a corruption (Cuq, 1882, p. 36) or an Oneida cognate. Local authorities (Lathers and Sheehan, 1937, p. 6) claim evidence of a large beaver dam on Goupil Creek. Here was the Mission of the Martyrs. The town was doubly palisaded and contained 24 large cabins, sheltering possibly 600 inhabitants (Martin, 1885, p. 85).

The second or Middle Castle of the Bear clan was about 6 miles west of the first (Jesuit Relations, vol. 39, p. 191), 1½ miles west of modern Fultonville (fig. 13, 2). Various orthographies resolve themselves into Mohawk, Kanágaro', "a pole in the water" (Hewitt, 1912, vol. 1, p. 649), which persisted as the name for the Middle Castle after it was moved to the north side of the river.

The Upper Castle of the Wolf clan (fig. 13, 3) was on a hill 3 miles west of the Middle Castle, 4 miles southeast of Canajoharie, and south of modern Spraker's Basin (Martin, 1885, pp. 85, 259-263; Jesuit Relations, vol. 51, p. 295). The Jesuits named the town St. Mary's and the Mohawks called it consistently some variant of Tionontoguen. It was by far the largest Mohawk town. It remained here until 1666, when the French destroyed it.

Vischer's map of 1655 and Van der Donck's map of 1656 locate one other town (Schanatisse) midway between the Middle and Upper Castles on the south side of the Mohawk River. Schanatisse was probably the name of one of the small villages between castles, but the Dutch journalist gave this name to a large castle of 32 houses in 1634 (James Grant Wilson, 1896, p. 89).

About 1659 the Lower Castle was moved less than a mile to the hilltop west of Auries Creek. A smallpox epidemic has been blamed for the removal. Thereafter it was called a variant of Caughnawaga, "at the rapids," (Gahnawá'ge), (Hewitt, 1912, vol. 1, pp. 220-221).

Mohawk population losses during the conquests on which the Iroquois embarked after 1648 were hardly made up by ingesting captive bands. The remnants of the Bear band of Hurons who had fled to the Island of Orleans near Quebec were absorbed in 1656. But in 1662 war losses to the Ottawa, Susquehanna, and Algonkin decimated the men, and the plague (smallpox) had swept Iroquoia taking a terrific toll. The next year the French were in no mood to grant them peace to fight the Susquehanna. In 1666, they sent De Tracy and Courcelles on a punitive expedition which burned all three Mohawk castles south of the river (Hunt, 1940, pp. 134-135). Mohawk population, estimated at 2,500 in 1660, had declined rapidly.

The following year the castles were rebuilt west of their former positions. Fear of the Susquehanna was a motive for removing the Lower and Middle Castles to the north side of the Mohawk River. The increase of Mohawk settlements from five to six or seven in 1667-1668 (Jesuit Relations, vol. 51, p. 205; vol. 52, p. 123) has been attributed to the adoption of captives. It was more probably due to the decreasing of the size of forts and the growing custom of living outside the forts. The Turtle band built the Lower Castle on a high point between Cayadutta Creek and the Mohawk River, west of modern Fonda (Jesuit Relations, vol. 51, pp. 201, 295, 291). It was situated above the rapids and retained the name Caughnawaga. The main town, which had several satellites (Lathers and Sheehan, 1937, p. 7), withstood an attack in 1669 by the Mahikan, who were later pursued and ambushed at Hoffman's Ferry on the north side of the river. This was the last major battle with the Mahikan; a final peace soon followed (Jesuit Relations, vol. 51, p. 295; vol. 53, pp. 137-145; Hunt, 1940, p. 136).

The Middle Castle of the Bear clan (Gandagaron) (Jesuit Relations, vol. 53, p. 139) was then situated on the Fox Farm in the town of Mohawk north of the river, 3 miles west of Fonda (Lathers and Sheehan, 1937, p. 8).

In 1667 the Wolf band moved and rebuilt the Upper Castle a mile to the west (Jesuit Relations, vol. 51, p. 201), "the new location being just west of the present town line between Root and Canajoharie, and a half mile south of the river." (Lathers and Sheehan, 1937, p. 8.) Tionmontoguen, the capital, remained the largest Mohawk town. In 1673, despite the Jesuit Mission of Ste. Marie, it was a stronghold of paganism (Jesuit Relations, vol. 57, pp. 83, 109).

In 1668 converts of the lower Mohawk town near Auriesville had been induced to migrate to La Prairie on the St. Lawrence opposite Montreal, where they might enjoy the blessings of Christianity without being molested by their pagan cousins of the Upper Castle. Converts from the other towns and from Oneida joined them. The League failed several times to persuade the "praying Indians" to return to their ancestral valley. In 1676, having exhausted the soil at La Prairie, the Christian Indians moved upriver to Sault St. Louis (La Chine Rapids), and settled "at the rapids" (Caughnawaga), preserving the old place name of their town in the Mohawk valley. Renounced by the Iroquois in 1684, they and a few relatives who had settled at Lake of the Two Mountains (Oka) guided DeNonville's expedition of 1687 against the Seneca. When in 1755 factions arose within the Caughnawaga community, part of the band ascended the river to St. Regis Point, where they had found good fishing at the confluence of the Racquette, St. Regis, and St. Lawrence Rivers. Moreover, game was plentiful in the Adirondacks to the south.

By 1677 the seven Mohawk settlements of a decade earlier had dwindled to five which Greenhalgh found situated north of the Mohawk River. Despite frequent removals since 1634, several of the place names had persisted. That year (1677) the Wolf band had moved the Upper Castle across the river a mile east of modern Palatine Church (Lathers and Sheehan, 1937, p. 8). Simultaneously, the Middle Castle changed to a new site southwest of modern Stone Arabia and was renamed "kettle fixed on the end of it" (Kanadjó-hare). Meanwhile the Turtle band moved the Lower Castle to the hill near "Big Nose" on the north side of the Mohawk River (*ibid.*). Whereas in 1634 the four castles were situated on very high hills, only two of the castles of 1677 were still on the hills, and three of the communities were built on the river flats. In 1634 only the eastern and western castles had been palisaded, the latter with three rows of posts; but in Greenhalgh's time the majority of towns had palisades with four sally ports. The early forts were built against the Mahikan on the east, but it seems significant that in 1634 the strongest fort was the Upper Castle toward the heavily fortified Oneida, and that

beyond them, the Onondaga, whose quadruply walled town had withstood Champlain's siege of 1615, risked an open village in 1677. The early forts indicate that the Lower Iroquois had been compelled to fight to hold the terrain which they had recently occupied in central New York.

Greenhalgh's estimates reflect how Mohawk population had suffered from disease and the Indian wars. The Mahikan and Susquehanna wars had terminated a few years before his visit. Although there are discrepancies in his figures, the reported number of houses shrank from 180 to 96 and the number of villages from 8 in 1635 to 5 in 1677, when Greenhalgh estimated 300 Mohawk warriors (O'Callaghan, 1849, vol. 1, p. 12). Although the male population had suffered most heavily in the wars, an average of three warriors to a house seems too few unless there were many single family dwellings. The Dutch journalist and Greenhalgh exaggerated the size and number of houses.

A second French punitive expedition in 1693 destroyed four castles, one of which was almost unoccupied. The latter was probably the site of the Upper Castle that the Wolf band had abandoned west of Nelliston before moving to a site in Wagoner's Hollow (Lathers and Sheehan, 1937, p. 8). After the disaster all three Mohawk bands wintered at Tribes Hill across the Mohawk from Schoharie Creek, and they petitioned the council at Fort Orange to assist them in relocating.

On rebuilding, the order of bands and castles that had obtained during 60 years was reversed. The Wolf band usurped the position of the Lower Castle so that the Mohawk capital was at the eastern door of the longhouse toward the English and Dutch (fig. 14, New York, 2). They erected their town south of the Mohawk on the flats just west of Schoharie Creek. The Bear band retained their old position as the Middle Castle, and located just west of Fort Plain on the south side of the River (fig. 14, New York, 3). But the Turtle band, who now became the Upper Castle, built on a hill east of East Canada Creek and north of the Mohawk (fig. 14, New York, 4). Later, because of the liquor problem, King Hendrick moved the town across the Mohawk to a site known as Indian Castle (fig. 14, New York, 5). After the battle of Lake George, in which Hendrick was killed, Sir William Johnson built Fort Hendrick in his honor. The Indian Castle Church, built in 1769 on lands owned by Joseph Brant, marks the location of this castle. At this period the Mohawk no longer lived within palisades. Small, bastioned forts, about 150 feet square, were

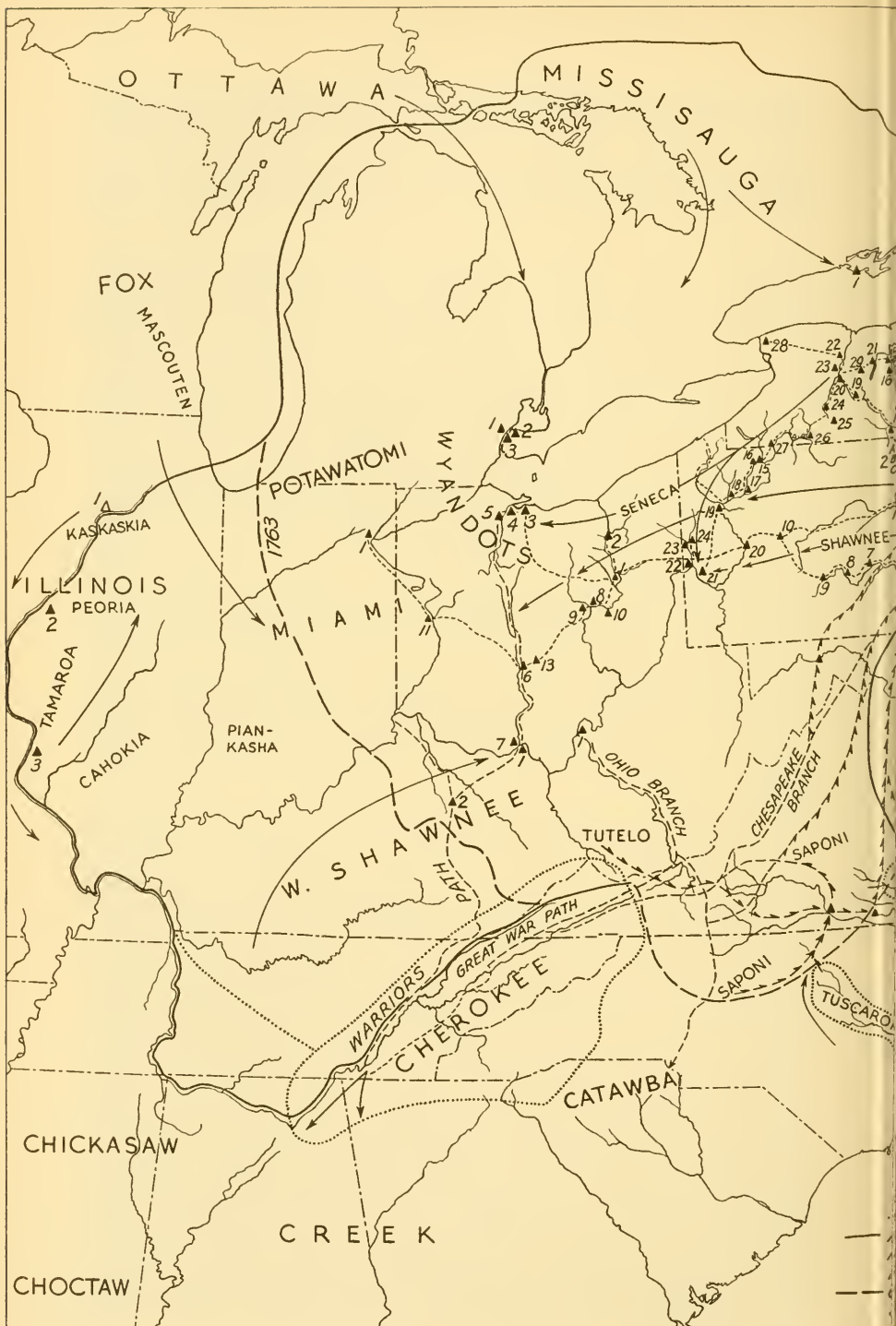
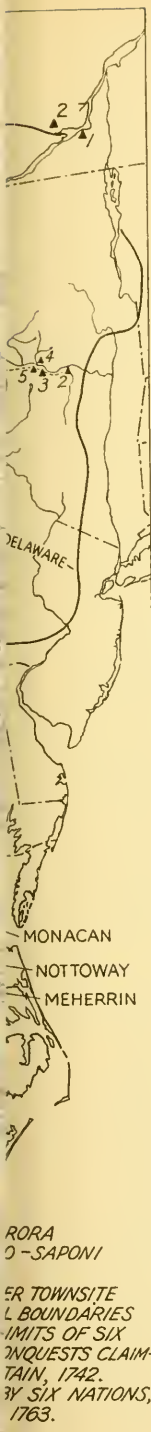


FIG. 14.—For explanation see adjacent and following page.

FIG. 14.—The Iroquois position circa 1755. (After Evans (Gipson, 1939), Mitchell, and Hama)



Key to the Map of the Iroquois Dominion

Town	Tribe	Remarks
Quebec:		
1. Caughnawaga	Mohawk	
2. Oka, Two Mountains	Mohawk	
Ontario:		
1. Kenté	Mohawk (?)	
2.	Ottawa	
3.	Pottawatomi	
Michigan:		
1.	Wyandot	
New York:		
1. Oswegatchie, La Gallette	Mohawk-Onondaga	
2. Lower Mohawk Castle	Wolf band	
3. Middle Mohawk Castle	Bear band	
4. Upper Mohawk Castle	Turtle band	
5. Fort Hendrick	Turtle band, Mohawk	A later site of 4.
6. New Oneida Castle		A chief town.
7. Ganaseraga	Tuscarora	
8. Onondaga	Onondaga	A chief town.
9. Onoghquagy	Tuscarora	"Hulled corn soup place."
10. Otseningo	Delaware, Shawnee, Mahican, Nanticoke	
11. Chugnut		20 miles above Owego.
12. Owego	Cayuga	1756, deserted; 1766, Cayuga sentinel chief's post.
13. Cayuga	Cayuga	Chief town.
14. Toderighrono	Tutelo	Village of Siouan remnants.
15. Canadasegy	Seneca	Near Geneva, N. Y.
16. Kashong	Seneca	South of Geneva.
17. Kendiaia	Cayuga-Seneca	
18. French Catherine's Town	Seneca	Catherine Montour's town, 1758-1779.
19. Ganuskago	Seneca	Near Dansville, N. Y.
20. Chenusio Castle	Seneca	Chief town, destroyed 1779.
21. Kanandague	Seneca	Canandaigua, destroyed 1779.
22. Canawagus	Seneca	West of Avon, N. Y.
23. Ohagi	Tuscarora	Near Mt. Morris.
24. Karaghiyadiha	Seneca	Canadea, chief town.
25. Gistaguat	Seneca	
26. Tioniogarunte	Seneca	Before 1767, the upper Seneca town on the Allegheny.
27. *Dyonosongohta	Seneca	At old town modern Coldspring, before 1767.
28. Tuscarora	Tuscarora	Site of the modern reservation.
29. Anarara	Seneca	Now Honeoye, destroyed 1779.
30. Assinisink	Munsee-Delaware	Site of three Munsee towns before 1760.
Pennsylvania:		
1. Susquehanna Fort	Susquehanna	Various sites discussed in text.
2. a. Carantouan	Big Flats	Spanish Hill, before 1615.
	Tioga	Shawnee, Delaware, Mahicans, and Munsees.. From 3, settled here 1749.
b. Ogehage	Big Flats	
c. Gohontoto	Big Flats	Later, a Tutelo town.
3. Shamokin	Delaware	1728-1749, Oneida sentinel chief's post.
4. Paxtang	Shawnee Delaware	1727-30, leave for Allegheny. Later occupied site. Eastern terminus of Franktown Path.
5. Shawnee Town	Shawnee	
6. Shawnee Town	Shawnee	
7. Oheson	?	
8. Standing Stone		
9. Frankstown		
10. Punxsatawny	Delaware	Before 1755.
11. Conestoga Fort	Conestoga	Before 1743.
12. Wyoming (Skahentoa)		"Big Flat"; 1728-43, Shawnee, later Mahican, Delaware, and Nanticoke.
13. Onochsae	Tutelo	
14. Tehotitachsae	Tutelo	"Trees standing in line" (Gohontoto).
15. Ganawagon	Seneca	"Beneath the rapids," Warren.
16. Buckaloons	Seneca-Delaware	
17. Goschgosching		Near Tionesta Creek.
18. Shinango		
19. Venango	Seneca	
20. Kittaning	Delaware	
21. Logstown	Shawnee	Founded 1743 by Shawnees from Wyoming. Later, mixed town.
22. Sauconk	Delaware	One mile below Beaver Creek.
23. Kuskuskies	Seneca	"Pig place" (gwisgwisgeh); chief town of Six Nations on Ohio.
24. Kaskaskunk		

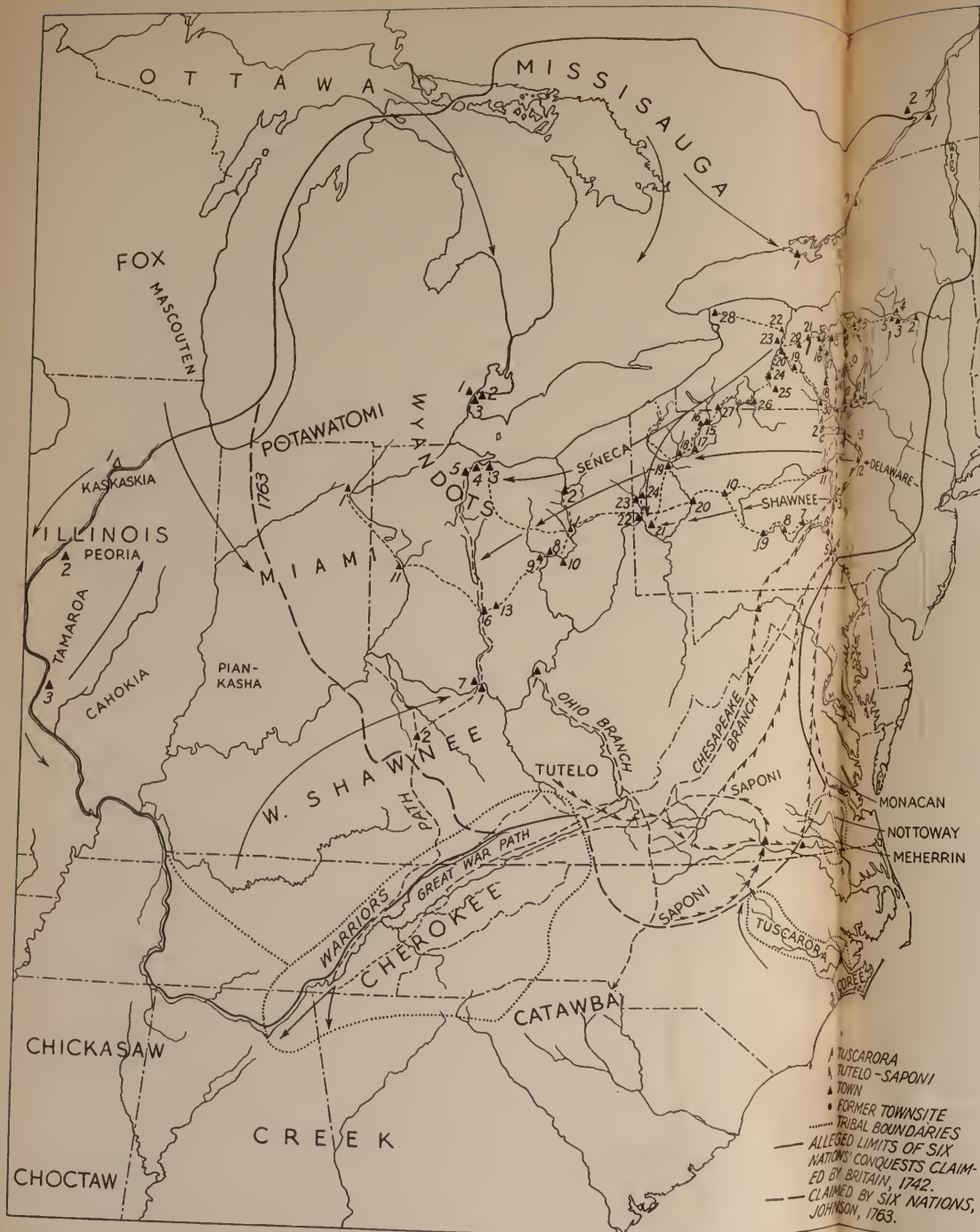


FIG. 14.—The Iroquois position circa 1755. (After Evans (Gipson, 1939), Mitchell, and Hanna)

Key to the Map of the Iroquois Dominion

	Town	Tribe	Remarks
Quebec:			
	1. Caughnawaga	Mohawk	
	2. Oka, Two Mountains	Mohawk	
Ontario:			
	1. Kenté	Mohawk (?)	
	2.	Ottawa	
	3.	Pottawatomi	
Michigan:			
	1.	Wyandot	
New York:			
	1. Oswegatchie, La Gallette	Mohawk-Onondaga	
	2. Lower Mohawk Castle	Wolf band	
	3. Middle Mohawk Castle	Bear band	
	4. Upper Mohawk Castle	Turtle band	
	5. Fort Hendrick	Turtle band, Mohawk	A later site of 4.
	6. New Oneida Castle		A chief town.
	7. Ganaseraga	Tuscarora	
	8. Onondaga	Onondaga	A chief town.
	9. Onoghquagy	Tuscarora	"Hulled corn soup place."
	10. Otseningo	Delaware, Shawnee, Mahican, Naticoke	
	11. Chugnuitt		20 miles above Owego.
	12. Owego	Cayuga	1756, deserted; 1766, Cayuga sentinel chief's post.
	13. Cayuga	Cayuga	Chief town.
	14. Toderighrono	Tutelo	Village of Siouan remnants.
	15. Canadasegy	Seneca	Near Geneva, N. Y.
	16. Kashong	Seneca	South of Geneva.
	17. Kendaia	Cayuga-Seneca	
	18. French Catherine's Town	Seneca	Catherine Montour's town, 1758-1779.
	19. Ganuskago	Seneca	Near Dansville, N. Y.
	20. Chenusio Castle	Seneca	Chief town, destroyed 1779.
	21. Kanandague	Seneca	Canandaigua, destroyed 1779.
	22. Canawagus	Seneca	West of Avon, N. Y.
	23. Ohagi	Tuscarora	Near Mt. Morris.
	24. Karaghiyadiha	Seneca	Caneadea, chief town.
	25. Gistaguat	Seneca	
	26. Tionioharunte	Seneca	Before 1767, the upper Seneca town on the Allegheny.
	27. *Dyonosonghoita	Seneca	At old town modern Coldspring, before 1767.
	28. Tuscarora	Tuscarora	Site of the modern reservation.
	29. Anarara	Seneca	Now Honeoye, destroyed 1779.
	30. Assinisink	Munsee-Delaware	Site of three Munsee towns before 1760.
Pennsylvania:			
	1. Susquehanna Fort	Susquehanna	Various sites discussed in text.
	2. a. Carantouan	Big Flats	Spanish Hill, before 1615.
		Tioga	Shawnee, Delaware, Mahicans, and Munsees.. From 3, settled here 1749.
	b. Ogehage	Big Flats	
		Osohu	
	c. Gohontoto	Big Flats	Later, a Tutelo town.
	3. Shamokin	Delaware	1728-1749, Oneida sentinel chief's post.
	4. Paxtang	Shawnee Delaware	1727-30, leave for Allegheny. Later occupied site. Eastern terminus of Frankstown Path.
	5. Shawnee Town	Shawnee	
	6. Shawnee Town	Shawnee	
	7. Obeson	?	
	8. Standing Stone		
	9. Frankstown		
	10. Punxsatawny	Delaware	Before 1755.
	11. Conestoga Fort	Conestoga	Before 1743.
	12. Wyoming (Skahentoa)		"Big Flat"; 1728-43, Shawnee, later Mahican, Delaware, and Naticoke.
	13. Onochsae	Tutelo	
	14. Tehotitachsae	Tutelo	"Trees standing in line" (Gohontoto).
	15. Ganawagon	Seneca	"Beneath the rapids," Warren.
	16. Buckaloons	Seneca-Delaware	
	17. Goschgosching		Near Tionesta Creek.
	18. Shinango		
	19. Venango	Seneca	
	20. Kittaning	Delaware	
	21. Logstown	Shawnee	Founded 1743 by Shawnees from Wyoming. Later, mixed town.
	22. Sauconk	Delaware	One mile below Beaver Creek.
	23. Kuskuskies	Seneca	"Pig place" (gwisgwisgeh); chief town of Six Nations on Ohio.
	24. Kaskaskunk		

FIG. 14.—For explanation see adjacent and following page.

FIG. 14.—*Continued*

	Town	Tribe	Remarks
Ohio:			
1.	Tuscaroras Town	Tuscarora	Before 1756.
2.	Mingo Town	Seneca-Cayuga?	Before 1755.
3.	4, 5. Junnodot		Before 1754.
6.	Maguck		
7.	Chillicothe, Lower Shawnee Town		
8.	Conchake		Before 1747; Muskingum.
9.	White Woman's Town		Before 1750.
10.	White Eyes' Town	Delaware	
11.	Pickawillany	Miami	English Miami Town.
13.	French Margaret's	Delaware	Margaret Montour's Town of Hockhocking.
Indiana:			
1.	Kiskakon		
Illinois:			
1.	Ancient Illinois Villages	Illinois	Destroyed by the Iroquois.
2.	Peoria	Illinois	
3.	Tamaroa	Illinois	
West Virginia:			
1.	Shawnee Town		Before 1755.
Kentucky:			
1.	Shawnee Town		
2.	Eskippakithiki	Shawnee	At the junction of the Warrior's Path.

points of refuge that were more easily defended by gunfire than the old circular, palisaded Iroquois towns. In 1711 Queen Ann sponsored a similar fort with four block houses and a chapel, which was built on the east side of Schoharie Creek, to protect the Indians of the Lower Castle who occupied the flats across the creek (*ibid.*, p. 9).

At the outbreak of the Revolution the faithful Mohawks remained loyal to the Crown. They abandoned their ancestral valley and followed Sir John Johnson and Joseph Brant to Canada. Only a few die-hards remained at the Lower Castle. The descendants of the loyalist Mohawks now have reserves at Deseronto or Bay of Quinte, and at Six Nations Reserve in Ontario (fig. 15).

The Caughnawaga and Two Mountain Mohawks became voyageurs for the fur companies (Chamberlain, 1904). Their expeditions took them in quest of furs to the country beyond Red River, and soon after 1798, a Mohawk party had skirmished with the Blackfoot (Tyrell, 1916, p. 315). In 1811 David Thompson met Caughnawaga Mohawks who had reached the eastern slopes of the Rockies (*ibid.*, p. 457). A small band of their mixed descendants still live at "Michel's Reserve" near Edmonton, Alberta, but by 1903 they are reported to have lost any semblance of Iroquois language or culture (Chamberlain, 1904, p. 462), although at an earlier day they possibly introduced the dugout canoe and the crossbow to the Carrier, and some notions of Catholicism to the Flathead of Montana. Meanwhile on the St. Lawrence the Caughnawaga and St. Regis bands furnished raftsmen and lumberjacks to the timber industry. Although today there are successful dairy farmers at St. Regis, Mohawk youths prefer to find

employment in the dangerous and highly skilled iron working and structural steel building industry, at which they have earned an international reputation.

ONEIDA

The Oneida, "people of the standing stone," (oné'yotde'á'ga'), referring to a large boulder near an old village site, were the second fire of the longhouse. Their single town was at first situated in the high hills at the headwaters of Oneida and Oriskany Creeks southeast of Oneida Lake in Madison and Oneida Counties. During the historic period, as their power increased, they moved gradually down the valley toward Oneida Lake, where they had extensive fisheries (fig. 13, Oneida, 2). They claimed territory from the west boundary of the Mohawks, between Little Falls and Herkimer, west to Chittenango Creek, which the Onondagas controlled. Northeast of Oneida Lake their hunting territory in the Black and Oswegatchie River valleys was largely wilderness, and to the south they held the valley of the Chenango River and the country north of the East Branch of the Susquehanna (Beauchamp, 1900, pp. 12-13, and maps). Boundaries did not remain fixed. In 1654 Onondaga fishing stations occupied the foot of Oneida Lake, and later Oneida claimed these fishing stations, which, according to Bruyas (Jesuit Relations, vol. 51, p. 121), furnished fish to nearly all the Iroquois. Near Cazenovia the boundary receded westward as the Onondaga descended into their valley. The initial impact that sent the Iroquois moving westward came when the white settlers, crowding into the Mohawk valley, struck the eastern end of the longhouse, and successively stirred each nation farther west until the Seneca on the Genesee were set in motion.

It has been argued that the quadruply palisaded village which Champlain and his Huron allies invested in 1615 stood at Nichols Pond on lots 64-67, Fenner Township, Madison County (Beauchamp, 1900, p. 88; Parker, 1922, vol. 2, p. 606). The Nichols Pond site is in the highlands about 10 miles west of the Oneida town of 1634, and a similar distance south of Oneida Lake in Oneida territory (fig. 13, 1). However, Marshall (1878) has sensibly argued from Champlain's text that the "Onondaga" town stood on the east shore of Onondaga Lake, that the distance and altitude to Nichols Pond is too great for Champlain to disregard; and Biggar, a recent editor of Champlain's works, has concurred. Until someone demonstrates that there is a suitable site on the east shore of Onondaga Lake, the proponents of Gen. John S. Clark's old theory, which favors

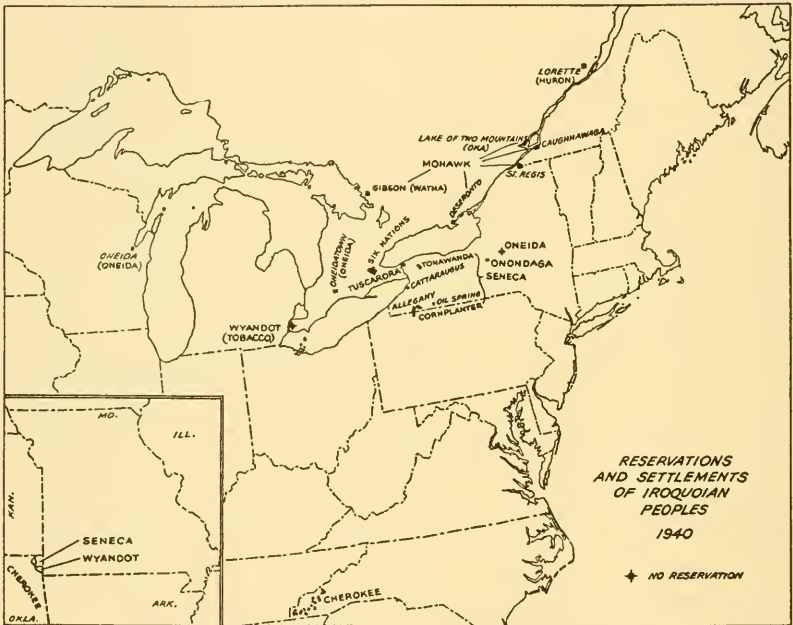


FIG. 15.—For explanation see opposite page.

FIG. 15.—Reservations and settlements of Iroquoian peoples, 1940^a

Band	Tribe	Area, acres	Approx. population	Location
Lorette	Huron		350-400	10 miles from Quebec city.
Oka, or Lake of Two Mountains	Mohawk	?	400	Ottawa River, west of Montreal.
Caughnawaga	Mohawk	12,625	2,250	St. Lawrence River at La Chine Rapids, Montreal.
St. Regis	Mohawk	14,640	(N. Y.) 1,050	Mainland and islands of St. Lawrence River at International Boundary.
		24,230	(P. Q.) 1,500	
		6,938	(excluding islands)	
Deseronto	Mohawk	17,000	1,400	Bay of Quinte, Ontario.
Gibson (Watha, from Oka)	Mohawk		150	Moon and Muskoka Rivers, near Bala, Georgian Bay, Ontario.
Oneida	Oneida	(No res.)	90	Oneida, N. Y.
Oneidatown	Oneida	5,271	780	River Thames, Middlesex County, London, Ontario.
Oneida	Oneida		2,000	Green Bay, Wis.
Onondaga	Onondaga	6,100	500	Syracuse, N. Y.
Six Nations Reserve.	Onondaga		150	Grand River, near Brantford, Ontario.
	Cayuga	43,606	1,000	
	Onondaga		375	
	Seneca		200	
	Mohawk		1,900	
	Oneida		386	
	Tuscarora		400	}
	Tutelo		?	
Tonawanda	Seneca	7,549	600	Tonawanda Creek, east of Buffalo.
Cattaraugus	Seneca	21,680	1,500	Cattaraugus Creek, southwest of Buffalo.
	Cayuga		200	
Allegany	Seneca	30,469	900	Allegheny River, Salamanca, N. Y.
Cornplanter	Seneca	1,500	30	Allegheny River, below Pennsylvania line.
Oil Spring	Seneca		(not inhabited)	Allegany County, N. Y.
Tuscarora	Tuscarora	6,249	400	Niagara Falls, N. Y.
Anderdon	Wyandot	?	(few)	Detroit River, Essex County, Ontario.
Wyandotte	Wyandot		250	Quawpaw Agency, northeastern Oklahoma.
Seneca	Wyandot			

^a Vertical letters on map are tribal or band designations. Place names are in slanting letters.

the Nichols Pond site, have offered the only concrete evidence. The town was typical of either Onondaga or Oneida of the period and, even if located at Fenner in Oneida country, could have been inhabited by Onondaga since it is half way between their later town and the Oneida town of 1634.

The party of the Dutch journalist of 1634 (James Grant Wilson, 1896, pp. 93-94) traveled 4 days from the Upper Mohawk Castle before reaching Oneida, which stood on a very high hill with Oneida Creek to the northwest (fig. 13, 2). It was doubly palisaded, 767 paces in circumference, with an east and west gate, the latter being $3\frac{1}{2}$ feet wide and surmounted by three carved human figures and scalps. They counted 66 houses, larger and superior to Mohawk houses, and many had wooden fronts displaying paintings of the (eponymous clan) animals (of the householders). There were possibly 1,000 inhabitants. This town stood near Munnsville, Stockbridge Township, Madison County, and the Oneida apparently lived in this neighborhood a long time (Beauchamp, 1900, p. 90). In 1668 Bruyas' Onneiot (Jesuit Relations, vol. 51, p. 121), where the Jesuits had established the Mission of St. François Xavier, was situated on a hill 15 miles from Oneida Lake, in the same locality.

In 1677 Greenhalgh found Oneidatown recently removed to a new location. Greenhalgh grossly exaggerated distances, but Beauchamp (1900, p. 90) thought Oneida was then 2 miles east of Oneida Creek. Greenhalgh (O'Callaghan, 1849, vol. 1, p. 12) said that the town was newly settled, and there was little cleared ground, so that the Oneida were forced to send to Onondaga to buy corn; it was doubly stockaded and contained about 100 houses for 200 warriors (possibly 1,000 inhabitants), and he implies that they had no other town. In 1696 Vaudreuil, Frontenac's lieutenant, coming from near Syracuse, encamped on Oneida Creek bank 1 league (3 miles) from the village and next morning crossed to the east side and destroyed both the town and their corn (*ibid.*, pp. 335-336). There already may have been a second town farther down the creek toward Oneida Lake (*ibid.*, p. 339), where they lived during the eighteenth century.

The Oneida had two villages in 1757, the great Oneida village 2 leagues in from the lake (near the present city of Oneida) (fig. 14, New York, 6), where the English had built a fort which the Oneida destroyed in accordance with their promises to Vaudreuil in 1696, and a smaller village on the bank of the lake (*ibid.*, p. 526, note). In 1762 Guy Johnson distinguished two towns, Upper Castle, or Oneida, and "Canowaroghere," a new village of the Oneida (O'Cal-

laghan, 1856, vol. 7, p. 512), the present Oneida, N. Y. (fig. 14, New York, 6). In 1763 Sir William Johnson estimated that there were 250 Oneida men living in "two villages, one 25 miles from Fort Stanwix [probably exaggerated], the other 12 miles west of Oneida Lake, with emigrants in several places toward the Susquehanna River" (O'Callaghan, 1849, vol. 1, p. 26).

The Tuscarora, numbering 140 men, who, having come from the south in 1712, were given lands among the Oneida and admitted to the Confederacy, had before 1722 one village 6 miles from the first Oneida town and several others about the Susquehanna (*ibid.*, p. 27). (See fig. 14, New York, 7, 9, 10, 11.)

Sauthier's map of 1779 has three Oneida villages in the valley of Oneida Creek, agreeing with Guy Johnson: 1, the Old Oneyda Cast(le), east of the headwaters of the creek; 2, "Canowaroghere" lower down the valley on the west bank; and 3, New Oneyda Castle, on the east bank of the creek below the fork of another creek flowing in from the east. Besides, Sauthier places "Canadasseo" on the east bank of Canaseraga [?] Creek and "Canasseraga Castle" on the east bank of Chittenango [?] Creek, equally south from Oneida Lake, along the trail leading from the Old Oneida Castle to "Three Rivers," the junction of the Onondaga [Oneida], Seneca, and Oswego Rivers. The latter was a Tuscarora town, "at the place of waterhemlock" (Ganaserage), which Hewitt (1912, vol. 1, p. 486) locates on Canaseraga Creek, at the present site of Sullivan, N. Y. (fig. 14, New York, 7).

In 1774 Montauk Indians from Long Island settled at Ganowarohare, and in 1779 when the town was on the east bank of Oneida Creek, loyalist Iroquois under Brant burned the town to punish the Oneida for befriending Herkimer's Revolutionists. The town name, which means "skull fastened to the top of it" (Kanowalohare) (Oneida), had been in continuous use since before 1677 for the Oneida town which became St. François Xavier of the Jesuits. The name suggests an ancient Iroquois custom of displaying enemy heads on poles above the palisade.

Oneida and Mohawk social systems are genetically related, but history has shaped them differently. The Oneida have the same three clans as the Mohawk, but their ranking in one moiety differs slightly from that of the Mohawk. Like the Mohawk, the Oneida have only three clans, the Turtle, the Wolf, and the Bear, each divided into three maternal lineages with a chiefship title. The Turtle and the Wolf constitute one phratry and the Bear another. This is also true

of Mohawk, the only difference being that at the Federal councils among the Mohawk, Mud-turtle is in control and Wolf is his brother, whereas Bear are the cousins in the other moiety; and among the Oneida, Wolf is in control, and Mud-turtle is brother, while again Bear are the cousins (Goldenweiser, ms. field notes). The generic similarity of the two social systems suggest that before the two tribes settled in their historic seats they were one people. I think that study of the two dialects will bear this out. Also, their archeological remains reveal a common material culture.

However, unlike the Mohawk at the time of their discovery, the three Oneida clans were concentrated in a single community, instead of being identified with separate towns. Living in one band possibly affected the ranking of their chiefs. Another factor affecting Oneida society was the composite character of Oneida population. As early as 1677 the 1,000 Oneida were largely composed of captive Huron and Algonkin. Also, the Oneida were more active than the Mohawk in exterminating the Susquehanna and in conquering the tribes of the Potomac. Furthermore, they had a traditional friendship with the Iroquoian Tuscarora, who when first known were living on the Neuse River in North Carolina.

The Oneida-Tuscarora friendship antedates the Tuscarora migration northward after 1712 when they took asylum among the Oneida (fig. 14). It made the Oneida bitter enemies of the Catawba during the eighteenth century. It is possibly older than the punitive expeditions which the Iroquois undertook against the Siouan tribes of Virginia who aided and then sheltered the Susquehanna enemies after 1675. These campaigns brought the Oneida and Tuscarora together. The tradition that the Tuscarora had formerly been part of the Oneida-Iroquois and had separated from them suggests the possibility that the Tuscarora had gone but recently into the tidewater country of North Carolina. This is a problem that archeology of the historic Tuscarora sites on the Neuse River might solve. This investigation should also demonstrate the archeological relationship, if any, of Tuscarora material culture to so-called Iroquois archeology of the lower Great Lakes. The latter, based almost exclusively on pottery and bone artifact types, may turn out to be merely an areal development peculiar to the region around the lower Great Lakes. If this is true, the culture elements that archeology yields change more rapidly than language or social culture. Therefore, studies of Iroquois social culture and languages should provide better evidence of old historic connections than archeological studies. It may also be that some of the so-called southern traits in Iroquois culture, such as the blowgun

and poisoning with herbs, came from the Southeast with the Tuscarora and Cherokee captives after 1700. The Tuscarora had previously crossed over the Kanawha River or the Big Sandy to tidewater country, or they had crossed from the Allegheny to the Susquehanna and then moved south from the head of Chesapeake Bay. If the latter were supported by archeology, it would then be important to know whether there is archeological evidence that the Oneida arrived in their historic locale before or behind the Mohawk. The fact that they were huddled into one town suggests the latter. They may well be the descendants of a single large Laurentian Iroquois town such as Hochelaga.

Throughout the eighteenth century the Oneida furnished the overseer of the subjected Algonquian tribes living on the Susquehanna River. The Delaware, Nanticoke (or Conoy) and Shawnee settled in his jurisdiction. After the Revolution, the Stockbridge remnants of the Mahican settled near Oneida in 1785. The possibility that the Stockbridge people introduced techniques that enabled the Oneida to surpass the other Iroquois at splint basketry is as good as the possibility which Speck (1920) advanced that Iroquois splint basketry is marginal to Southeastern cane basketry, which was converted and disseminated by the Cherokee. Splint basketry is probably a post-European development. It rests on the use of steel tools, and none of the earliest travelers mention it among northeastern peoples (Flanery, 1939, p. 53).

When the bulk of the Oneida were transplanted in 1833, the Stockbridge Indians accompanied them to Green Bay, Wis. At the same time part of the Oneida settled beyond the other Iroquois, at Oneida-town on the Thames River, Ontario (fig. 15).

ONONDAGA

The Onondaga kept the central fire of the longhouse. Protected on either side by buffer nations, they were relatively safe from invasion except from the Huron to the north and the Andaste south of them. The early Onondaga boundary on the east followed northward from Chenango Forks up the Otselic River valley and down Chittenango Creek to Oneida Lake. North of the lake, they held the watersheds of streams falling into Lake Ontario, i. e., the Salmon River and Sandy Creek, and northeast to Deer River, and from its junction with Black River (at Carthage) northwest to the Thousand Islands (at Clayton). They claimed that this area, now in Jefferson County, had been their ancient homeland. On the west the Cayugas held the shores of Owasco Lake, its inlet, and its drainage north through the

city of Auburn to Lake Ontario. However, it must be remembered that, as with the others, actual territorial limits were provisional and changed with residence. Morgan neglected this fact when he studied their geography. We have said that the west end of Oneida Lake passed into Oneida hands during the colonial period. The Onondaga held Cazenovia Lake and its outlet at an early time, but after the Revolution, the line passed north through Deep Spring on the summit of Canaseraga Hill, near the present road from Chittenango to Manlius (Beauchamp, 1900, p. 15; Morgan, 1851 (1901), vol. 1, p. 41).

Throughout its history Onondaga seldom comprised more than one town, which was also the capital of the Confederacy; the town was called Onondaga, "on the mountain," because it was first situated on the hills of Onondaga County, and later, Onondaga Castle, after it had been moved into Onondaga Valley. At the time of discovery, and for a hundred years afterward, Onondaga occupied hilltop sites west of Cazenovia Lake (Cazenovia Township, Madison County) and bordering the headwaters of Limestone Creek (Pompey Township, Onondaga County), shifting about 1690 to the east bank of Butternut Creek, and then descended into Onondaga Valley, where they resided during the eighteenth century, first east of the creek, then west, before they assumed their present location just east of the stream (Beauchamp, 1900, p. 112; Parker, 1922, p. 636) (fig. 13). The number of prehistoric Onondaga sites in central New York, allowing for removals about twice in a generation, is not great enough to admit of their arrival earlier than 1500. They probably moved south from Jefferson County east of Lake Ontario earlier than the Mohawks (Beauchamp, *Jesuit Relations*, vol. 8, p. 299).

About 1600 (Beauchamp, *Jesuit Relations*, vol. 51, p. 294 and map) they lived 2 miles west of Cazenovia (fig. 13) and east of West Limestone Creek, and they retreated southwestward to the relatively inaccessible hilltops around Pompey following Champlain's campaigns of 1609 and 1615, when for a number of years Algonkin and Huron enemies had the initial advantage of firearms. They next moved the town north along the east bank of West Limestone Creek: two sites are accredited to 1620, the one about 2½ miles southwest and the other 1 mile south of Delphi; the site attributed to 1630 was half a mile northwest of Delphi; that of 1640 was a mile south of Pompey center; until in 1654-55, it stood on "Indian Hill" 2 miles south of Manlius (fig. 13, 1). Here the Jesuits established the Mission of St. Jean Baptiste, and this site "on the mountain" gave the tribe its classic name. This was the largest village the Onondaga ever had (Beauchamp, *Jesuit Relations*, vol. 8, p. 299; vol. 51, p. 294) and it

remained here over 20 years until about 1681. Greenhalgh, who in 1677 came here 36 miles southeast from Oneida, said Onondaga consisted of one very large town 15 miles south of Oneida Lake on a mountain top having 2 miles of cleared land, from which they sold surplus maize to Oneida (O'Callaghan, 1849, vol. 1, p. 12). He said this town was not fenced, although the earlier French mentioned a stockade. It contained 100 houses, and a second, smaller town, 2 miles beyond, contained 24; he estimated both towns could muster 350 warriors.²⁴ Onondaga population then included captive Algonkins, Montagnais, Hurons, Neutrals, and Conestogas, who composed a large part of the population. The great village coincided with the height of the Confederacy's power and preceded the destructive French punitive expeditions of the next two decades. About 1682, in order to have new fields and plenty of firewood, the community next shifted 4 or 5 miles westward to the right bank of Butternut Creek (fig. 13, 2) where they erected a triple stockade 1 mile south of Jamesville (lot 3, Lafayette Township). Count Frontenac frightened them into burning this town in 1696 (*ibid.*, p. 332), and the cornfields, which stretched nearly 6 miles from the fort, were destroyed.

During all this period the Onondaga migrated each spring to fishing villages on the outlet of Oneida Lake, the outlet of Onondaga Lake, and the Seneca River. Techiroguen was a fishing village east of Brewerton on the outlet of Oneida Lake (fig. 13, 6). Champlain had crossed here in 1615, Le Moyne in 1654, and Dablon and Chaumonot in 1655. At the same time there was a second fishing village opposite Phoenix on Oswego River (fig. 13, 7). In 1700 Kaneenda was a fishing village on the inlet of Onondaga Lake, and nearby was the famous salt spring which Le Moyne visited in 1654 and where Frontenac encamped in 1696. Ganeenta, the French fort and Mission of Ste. Marie (1656), held the east shore of Onondaga Lake, between Liverpool and Syracuse.

They settled in Onondaga Valley about 1720. The main settlement of John Bartram's Onondaga of 1743 (Bartram, 1751, pp. 40, 41) consisted of about 10 longhouses which stood well east of Onondaga Creek on the east side of the present reservation (on U. S. Route 11) (fig. 13, 3), but Bartram says the town was strung out over 2 or 3 miles on both sides of the stream, made up of scattered groups of

²⁴ In 1763 Sir William Johnson reported that Onondaga still comprised a big town and a smaller town (O'Callaghan, 1849, vol. 1, p. 27), and, to this day, the longhouse party has possibly commemorated the unequal dual division by separating the clans into the longhouse and mud-house phratries for dream guessing at the Midwinter Festival.

4 or 5 houses not above 40 in number (*ibid.*, pp. 41-42). This was the period of the wars against the southeastern tribes; villages were open because there was no immediate danger of invasion. Firearms had opened up warfare because there was no point in risking the lives of the whole community within the walls of an inflammable stockade. When they were invaded, they simply burned their buildings and took to the woods. In 1756 Sir William Johnson built them a fort west of the creek at the north end of the present reservation (fig. 13, 4). Van Schaick burned it in 1779, together with two villages, which Johnson reported in 1763, that stood south of the fort. Onondaga community has now been at rest in Onondaga Valley east of the creek during 150 years (fig. 13, 5).

After the Jesuits had departed, many of the Onondaga joined the Catholic Iroquois colonies on the St. Lawrence. In 1751 about half the tribe was reported living in Canada, and in 1763 Johnson (O'Callaghan, 1849, vol. 1, p. 27) reported that the Oswegatchies were emigrants from the Six Nations, chiefly Onondaga to the number of 80 men settled at La Galette or Indian Point, 3 miles below Ogdensburg (fig. 14, New York, 1).

In 1775 the Onondaga remained loyal to Britain, and after the Revolution part of them migrated with Brant to the Grand River in Ontario, where their descendants still live, while others threw themselves on the mercy of the new government, which reserved for them a small tract south of Syracuse, where they maintain a semblance of their old culture (fig. 15).

CAYUGA

The fourth fire of the longhouse burned beyond Owasco Lake from Onondaga. Known under several names to early writers, (Jesuit Relations, vol. 8, p. 298), the etymology of Cayuga is still open to question. Hewitt (1912, vol. 1, p. 223) gives Kwenio'gwe²⁵, "the place where locusts were taken out," but to my Iroquois informants it means the people who live "at the place where the boats were taken out," in the sense that nations who were traveling would beach their boats at the head of Cayuga Lake.²⁵

²⁵ According to Simeon Gibson of Six Nations Reserve, Ontario, who speaks Onondaga or Cayuga equally well, gayo'k'wó·nų (Cayuga) is a shortened form of gahyo'gwéhó·nų, "at the place where boats were taken out nation." "All of the old Cayugas will say that it means where they land the boats." This interpretation is confirmed by Prof. Frank G. Speck, who had a similar interpretation from Deskaheh, Alex General, his principal Cayuga informant at Upper Cayuga, Six Nations Reserve.

The village sites of this people need rechecking against the documentary evidence, and the student who attempts the research should be sufficiently familiar with archeological criteria to visit the sites and reclassify them in terms of the remains which they yield. Skinner has pointed out (1921, p. 39; and in his review of Parker (1922) in the *American Anthropologist*) that sites of the Jesuit period have been given names of towns that Sullivan destroyed during his campaign of 1779, and pre-Iroquoian sites have been classed as Jesuit stations. Errors in the initial surveys have been twice repeated in the same series of State publications. Unfortunately, Skinner's own publication does not clarify the situation.

Seneca County to the west was probably an early home of the Cayuga, who may have been offshoots of the Seneca. When Jesuit Ménard (*Jesuit Relations*, vol. 43, p. 307) first visited the Cayuga in 1656, their country was already devoid of any Algonquian tribes that may have preceded them. Their villages lay 2 days' journey, a distance of 30 leagues (90 miles), southwest of Onondaga (*Jesuit Relations*, vol. 52, p. 255) between Owasco and Cayuga Lakes and south of the Seneca River in Cayuga County. In 1668 (fig. 13) they had three great villages (*Jesuit Relations*, vol. 51, p. 293; vol. 52, pp. 179, 262): 1, Oioguen (Cayuga), (seat of the Mission of St. Joseph), which seems to have occupied the Great Gully site, lot 113, Ledyard Township, several miles in from Cayuga Lake, which Skinner excavated (1921, p. 55 ff.) (fig. 13, 1); 2, Thiohero (St. Stephen), named for the great quantity of rushes bordering the "river of rushes" (Seneca River), and situated 4 leagues (12 miles) north from the first and located by Beauchamp as 2 miles north of Cayuga village (*Jesuit Relations*, vol. 51, p. 293); and 3, Onontaré (St. René), 2 leagues (6 miles) beyond on the same river to the north, and named for a hill opposite. Beauchamp locates the last 2½ miles east of Savannah. Fear of the Andaste to the south had prompted some Cayugas to resettle north of Lake Ontario (*ibid.*, p. 257).

Sometime during the next 10 years the home villages were moved together. Greenhalgh (*O'Callaghan*, 1849, vol. 1, pp. 12-13) reported in 1677 that the Cayugas still had three open villages spaced about a mile apart, situated 60 [?] miles south(west) of Onondaga within 2 or 3 miles of Lake Tichero [Cayuga]. In all they had about 100 houses which they planned the next spring (1678) to concentrate and stockade within a single village. They had an abundance of corn and might muster 300 men. However, Moravians Cammerhoff and Zeisberger found to their dismay that in July 1750 the Cayuga corn had given out, so that they had been compelled to procure much from

Onondaga (Beauchamp, 1916, p. 85). The Cayuga had a better reputation as hunters. In 1763 Johnson (O'Callaghan, 1849, vol. 1, p. 27) reports one large village near the lake, with others toward the Susquehanna. For a hundred years their principal village was called Gayagaanhe (gaya'gáãheh, "its body is inclined").

In the mid-seventeenth century they lived east of the lake, but afterward they had several villages on the west shore, which Sullivan burned in 1779. They had settled on the Susquehanna and its branches after the Andaste conquest. Here Delaware, Shawnee, and Nanticoke—Algonquian-speaking refugees from Jersey, Maryland, and the South—lived under Iroquois jurisdiction; and the Siouan-speaking Tutelo from the mountains at the back of Carolina and Virginia joined them after the Iroquois carried their conquests against the Catawba. Following 1675 the Saponi and Tutelo had been driven to abandon their positions in western Virginia and on the Big Sandy and had retired to North Carolina. In 1714 Governor Spotswood induced them to settle with other Virginia Siouans at Fort Christanna on the Meherrin River. After 1722, when peace was made between the Iroquois and the Virginia tribes (Swanton, 1936, pp. 374-375), these Siouan remnants came to live first at Shamokin on the upper Susquehanna about 1740 (fig. 14), and later at the head of Cayuga Lake (fig. 14). They were taken into the Confederacy about 1753 (Mooney, 1894, p. 51; Speck, 1935, p. 208 ff.) and the Oneida adopted the Nanticoke from the eastern shore of Maryland.

The Cayuga have been a composite people throughout their history. Possibly themselves an early offshoot from the Seneca, in 1668 the population of the three Cayuga villages was composed partly of Cayuga and partly of Huron and Andaste captives (Jesuit Relations, vol. 52, p. 179). Adding to these Tutelo and Saponi, some Delaware, Catawba, Cherokee, and odd Muskhogean, not to mention captives from the Erie, Neutral, Algonkin, Ottawa, Miami, Illinois, and other of the Central Algonquians, we see how mixed Cayuga population was. In any one of the Iroquois nations, there were diverse opportunities for acquiring new elements of culture, so that today we cannot speak of Cayuga, or even Iroquois culture, with any degree of certainty.

During the American Revolution most of the Cayuga removed to Canada and never returned. Today they live at Six Nations Reserve on the Grand River with the remnants of the Tutelo (fig. 15). Other Cayuga settled among the Seneca of Buffalo Creek, and accompanied them to Cattaraugus. They sold their reservation on the east side of

Cayuga Lake. Still others joined the outlying bands of Seneca and Wyandot then living in the Ohio settlements at Logstown and Sandusky (fig. 14) and removed with them to Indian territory, Oklahoma.

SENECA

The fifth fire of the longhouse burned on the hills west of Seneca Lake. Toward the Genesee, the "great hills people" (djonondowanh'á'ga' (Mohawk), onondewa'ga' ó'nq (Seneca)) guarded the western door. They received delegations who came from the western tribes to sit at the great council fire at Onondaga. From their own viewpoint, the Seneca were the first fire.

As elsewhere in Iroquoia, the Seneca domain was largely hunting territory. At first, their limits were the east watershed of the Genesee; the eastern boundary coursed roughly along the highland between Seneca and Cayuga Lakes. Irondequoit Bay proved the easiest approach to their villages from Lake Ontario, whereas to the east, Sodus Bay was the Bay of the Cayugas. Their southern boundary skirted the headwaters of the lesser Finger Lakes. After they destroyed the tribal integrity of the Neutral and Erie, they pushed their settlements to the Niagara River and down the Allegheny River to the Ohio. Until the Andaste were defeated in 1675, the southern hills of the Seneca country were too dangerous for occupation. In 1615 Champlain dispatched Étienne Brulé and a band of Huron to lead the "Big Flats people" against Onondaga from the south while his Huron army attacked from the north. Brulé and his guides slipped west of the Seneca and reached a town called "Carantouan" near Athens, Pa.; but returning the next year he became separated from his party and wandered into a Seneca village (Champlain, vol. 3, pp. 213-221). There was considerable unoccupied wilderness between the warring tribes. Had Brulé left a journal, we might know the locations and populations of Susquehanna, Seneca, and Wenro villages in 1615.

Specific information is lacking concerning Seneca town sites before 1655. "Seneca" derives from the Mahican term for the Oneida, and the Dutch used the term as early as 1616 (Hewitt, 1912, vol. 2, p. 503). The anonymous Dutch journalist celebrated the New Year of 1635 at the castle of the Oncidas or "Sinnekens" (James Grant Wilson, 1896, p. 94). Afterward the Dutch applied the term loosely to the four upper Iroquois tribes, who successively asserted their real names as they became known to the Dutch; but the general term "Senecas" stuck to the group living farthest west. The Oneida had used stones and maize cakes in mapping the Iroquois towns for their

Dutch guests (*ibid.*), but no copy of this map has survived. They said “. . . that on the highland there lived men with horns on their heads; . . . but they dared not go so far because of the French savages . . .” The allusion may be to the antler headdress that Onondaga and Seneca federal chiefs anciently wore.²⁶ Apparently the few Dutch and French traders who penetrated to the Seneca towns after 1635 were content to let Colonial officials and their competitors know only that the Seneca lived somewhere west of Onondaga. The Mohawk, who desired to remain middlemen between the Dutch and the upper Iroquois, naturally opposed establishing trading posts in the interior.

Despite the lack of early literature, Seneca townsites have been established (fig. 13). We were comparatively uncertain regarding Cayuga village locations. We know, thanks to Houghton's researches (1912 and 1922), the position of Seneca villages during the contact period and their relationship to prehistoric and later historic Seneca sites. Houghton (1912) assembles successive accounts enumerating and locating Seneca villages from 1657 to 1687. He correlates the accounts with actual contact period sites which he has mapped and sampled. The sites yielded refuse which, dated by trade artifacts, enabled him to place the sites in a continuous chronologic and geographic series. The identified sites commence on the hilltops at the headwaters of Honeoye Creek and Mud Creek and parallel each other in two rows extending northward down the valleys through Livingston, Ontario, and Monroe Counties toward Lake Ontario. The Seneca had been slowly moving northward during 150 years. Two bodies of population followed parallel watercourses. There were at first only two big Seneca communities, with one or two small, satellite settlements.

Throughout their history the Seneca have had a dominant chief in each moiety. We suspect that they were the leaders of the two original villages because when the League was formed, chiefs bearing their titles were given special functions as doorkeepers of the Confederacy. Before confederation, I can conceive that each of these two individual

²⁶None has ever been described. However, the ritual literature concerning investiture of League officers contains many references to “horns of office” that are symbolically placed on the head of the new chief or removed from the head of an impeached officer. We would expect that the original officers of the League wore an antler headdress resembling the one Moorehead (1892, p. 194) found at the Hopewell type site in Ohio. We would not expect that the Iroquois headdress had elaborate copper overlay. The Iroquois still liken their chiefs to buck deer. A social dance that is invariably held on the eve of a great council of the League is called “they rub their antlers together.”

village chiefs led a localized exogamous band. As the soil and firewood became exhausted, about twice in a generation, they moved the towns to new sites, leaving the series from which Houghton has read their movements. It is possible that towns subdivided at removal, giving rise to satellite communities under separate leaders.

In 1649 the Seneca incorporated survivors of the Huron Deer band of Scanonaenrat village and colonized them in a third town, which the Jesuits named St. Michel. In 1656 part of the Erie joined the Seneca. Thereafter there were three or four relatively large towns.

The French Jesuits knew of the Seneca long before 1655. During Brébeuf's mission at Huronia in 1635, Huron ambassadors urged him to go along to "the great hill" (Sonontoen, Sonnontouan) to confirm a peace which the other four Iroquois tribes desired to enter (Jesuit Relations, vol. 8, p. 117). Brébeuf did not encourage the embassy because a Huron-Iroquois peace would ruin the Quebec trade interests if the trade from the Upper Lakes were diverted to Fort Orange. Not until after the Peace of 1653, which followed the Huron dispersion, did Fathers Chaumonot and Dablon venture forth from Quebec, September 19, 1655, to reconnoiter the Seneca country. Chaumonot (Jesuit Relations, vol. 44, p. 21) reported it as being more fertile and more populous than the other Iroquois provinces. The "great hill" country ". . . contained two large villages and a number of small ones, besides the Huron Village . . . Saint Michel, whose inhabitants . . . retain their own customs and peculiar usages, and live apart from the Iroquois . . ." There were four-plus Seneca towns: one of them was an island of Huron culture transplanted in their midst. The Huron community probably introduced among the Seneca ossuary burial, masked shamanistic societies, and new clans, like the Deer, Beaver, and Heron, that lack League officer's titles among the Seneca. Gandagan, the name Chaumonot assigned to the principal Seneca village, at Boughton Hill south of Victor, N. Y., resembles modern Seneca, "in the village" (ganondagó). Annonkenroutaoui, Chaumonot's prize convert (*ibid.*, p. 23), was chief of the small western village. We recognize his title as "Hair singed off" (ganog'gé'dawi' (Seneca), ganongerihdawi' (Mohawk)), that of the head chief of the Seneca Snipe clan, who serves as one of the two western doorkeepers of the Confederacy.

Two great towns and two lesser towns persisted throughout the contact period from 1655 until 1687, when Denonville destroyed them. The great eastern Seneca town stood on Boughton Hill, a mile south of Victor, N. Y., (fig. 13, Seneca, 1); here was the Mission of St.

Jacques. The second was a large western village known as "Where it bends" (deyódihakq'), which occupied a terrace where Rush Creek bends at Rochester Junction (fig. 13, 2); it was the site of La Conception. The third was the captive town of Huron, Neutral, and other rennant tribes situated a league south of the first at East Bloomfield (fig. 13, 3). Chaumonot established the Mission of St. Michel here, but the town burned in 1670 and was rebuilt.

The fourth village, the smaller western town, presents a problem (fig. 13, 4). It was probably one of a number of small villages in 1655 (*ibid.*, p. 21). Gandachiorágon was the site of Garnier's Mission from 1669 until 1672 (Jesuit Relations, vol. 54, pp. 115, 121; vol. 56, pp. 59, 61), when he last mentions it as the home of "Hair singed off" (above). The following year Garnier definitely reported to the Governor of Canada that there were just three Seneca villages (Jesuit Relations, vol. 57, p. 27). We think that one town, which Gallinée in 1669 credits with about 25 houses (Coyne, 1903, p. 25 and map) was moved to Greenhalgh's Keint-he ("in the field") of 1677, which stood 4 miles south of the large western town (fig. 13, 2) and contained about 24 houses (O'Callaghan, 1849, vol. 1, p. 13). This was probably Denonville's Gonnondata (Gannounata) of 1687, which he places at two leagues (6 miles) from the second town and which displayed the coat of arms of England that Governor Dongan had given the Senecas in 1684 to place over its gate (O'Callaghan, 1855, vol. 9, p. 367). Nevertheless, if these towns are not the same, they at least represent a small western town which occupied two or more sites during the contact period. Houghton (1922, p. 51) assigns Gandachiragon to Lima, N. Y., and Gannounata to the Dann site near Honeoye Falls, a mile or so to the north, where it was moved after 1672.

We have a clue to one other village. In 1669 Gallinée (Coyne, 1903, p. 25 and map) specified four towns, but he mapped Father Fremin's village as a fifth. He placed it northwest of the second town toward the falls of the Genesee at Rochester which he labels "gask8nchia-kons." I equate this with modern Seneca, gasgósago, "beneath the falls," which the Tonawanda Seneca call Rochester. I do not think this is Father Fremin's town, which apparently stood southeast of the bend in the Genesee River above Rochester. No site had been assigned to it.

The various spellings of Seneca town names can be resolved to a few forms. First, it is important to remember that the Jesuit fathers had first learned Huron for which they had an established orthography.

Second, other travelers had Mohawk guides or were more familiar with that dialect. Third, the Seneca dialect since 1650 has become progressively more differentiated from Huron and Mohawk, so that the town names do not resemble modern Seneca.

For the first great Seneca town at Boughton Hill, one set of variants resolve themselves to Kanágaro' (Mohawk) or Kanákao' (Seneca and Onondaga), "a pole in the water" (Hewitt, 1912, vol. 1, p. 649), also the name of a Mohawk Castle. However, I submit that this name could have been derived from mishearing ganṇdagó·wa' (Seneca) "the great town," or, ganṇdowá·neh (Seneca), Kanatowanen (Mohawk) (Cuoq, 1882). O. H. Marshall (Houghton, 1912, p. 377) obtained from Blacksmith, an aged Seneca chief of the last century, the equivalent of "sky dwellers" (geṇya'éhgea') as the name of this hilltop community. Apparently some Mohawks knew the town as Kohoseraghe, "basswood place" (O'Callaghan, 1849, vol. 1, p. 250), kohoserá'geh (modern Mohawk). The reference to the tree persisted as "basswood bark lying around" (gaṇsageṇ) the name of a Seneca town which reoccupied the site about 1740 (Hewitt, 1912, vol. 1, p. 649).

The name of the great western town where Rush Creek bends was simply "where the stream bends" (deyódihakdṇ'). Hennepin (1903, vol. 1, p. 81) gives Tagarondies, as the town which he reached 32 leagues from Niagara, and La Hontan (1703, vol. 1, p. 77) mentions Thegaronhies. This was the town of 'ča'degéṇye's, "skies of even length," a League chief of the Seneca Snipe clan. Hewitt (1912, vol. 2, p. 795) gives the corrected Mohawk form as Shadekaronhies (Sha'tekaró'hyes). The Seneca perpetuate the first form as the place name for Horseshoe Bend in the Allegheny River east of Salamanca, N. Y. The third small captive town was called a variant of ganondagarae. Mohawk, ganondaraye', means "there's the town," and Seneca, ganṇdagái', means a "raider" or "town destroyer." The name of the community possibly made some reference to its inhabitants who came from towns that the Seneca had destroyed.

Besides the names we have discussed, the fourth town was first known as Gandachiragon, and after moving, as Gannoudata. Although both defy analysis just now, they refer to a town (ganṇda') (Seneca), (ganáda) (Mohawk). Šiná'gṇ (Seneca) means "knee," or "leg." We cannot be certain of these early forms.

Seneca towns of the contact period were sometimes palisaded. Jesuit writers do not record this feature. Garnier (Jesuit Relations, vol. 55, p. 79) infers that St. Michel had been palisaded against the Andaste before and after the fire of 1670. In 1669 Gallinée (Coyne,

1903, p. 23) described the first village and implied that the others were similar. They occupied hills remote from water and failed to take advantage of natural terrain. The first town had a perfectly square palisade without flanking bastions, but piles of wood buttressed it on the inside to the height of a man. However, Gallinée's map (*ibid.*, p. 81) contradicts the text, saying the towns were "without any fortification . . ." Greenhalgh in 1677 (O'Callaghan, 1849, vol. 1, p. 13) reported, "None of their towns are stockaded." However, in 1687, they had erected a fort outside of the first town. With one exception, the small western town where Denonville (O'Callaghan, 1855, vol. 9, p. 367) found the coat of arms of England on the gate, the Seneca did not fortify their towns after they defeated the Andaste in 1675. When Denonville attacked, the Seneca ignited their cabins and hustled their women and children off to Cayuga. Denonville, although expansive about other detail, is curiously silent about fortifications.

Seneca women and interned captives cultivated extensive maize fields near the villages, or in scattered plots through the woods. None of the early writers describes the Senecas as starving from lack of corn. The land was fertile, and they raised large surpluses, which they stored in pits or in bark barrels in the lofts of houses (Greenhalgh, *in* O'Callaghan, 1849, vol. 1, pp. 13-14). Maize foods constituted the bulk of Seneca subsistence, whereas animal foods were a relatively small part of their diet. This was particularly true of this period when most of the male hunters were afield with war parties or spending their time hunting beaver pelts for the fur trade instead of deer for venison (Houghton, 1912, p. 449). In 1687 Denonville's army labored more than 4 full days destroying fields of "large corn, beans and other vegetables." His report (O'Callaghan, 1855, vol. 9, pp. 365-368) later estimated that they had destroyed at the four Seneca villages 350,000 minots of green corn and burned 50,000 minots of old corn in cache (about 1,200,000 bushels). Even if he exaggerated in an effort to write a good report, the Seneca had raised enough grain to support a large population. The Seneca had almost no horses or black cattle, a few fowl, but a considerable number of pigs²⁷ at this period (La Hontan, 1703, vol. 1, p. 78; Denonville, *op. cit.*).

²⁷ The pig had been first introduced at Quebec about 1620 along with geese, ducks, and chickens (Wrong, *in* Sagard, 1939, pp. xxxiv-xxxv), long before the horse arrived in 1665 (Bailey, 1933, p. 65). The pig quickly supplanted the fattened bear as the principal Seneca feast food. The Dutch probably supplied domesticated animals to the Iroquois, but horses were very rare even in the eighteenth century.

The number of Seneca houses is important for estimating population density. Curiously, the Jesuits, who had meticulously counted houses and hearths at Huronia a generation earlier, neglected to publish these vital statistics for Iroquoia. Garnier (*Jesuit Relations*, vol. 57, p. 27) estimated 800 warriors in three villages. Only Gallinée (1669), a careful observer, and the lavish Greenhalgh (1677) counted houses.

Town	Houses			Warriors			Ratio warriors to houses
	Gallinée		Greenhalgh	Gallinée	Garnier	Greenhalgh	
	1669	map	1677	1669	1673	1677	
1.....	150	100	150		} 800 ^b		
2.....	150	100	120 ^a				
3.....	30	25	30				
4.....	30	20	24				
4.....	360	245	324	1,000	1,200	1,000	3. plus

^a Some very large. ^b Estimate for villages 1, 2, and 3.

Greenhalgh (O’Callaghan, 1849, vol. 1, p. 13) said the houses of the second town were the largest he saw, the ordinary ones being from 50 to 60 feet long with 12 to 13 fires—twice too many fires for the length of the house. Both estimates agree that there were about three warriors to a house. There were probably a great many single family dwellings, and the trend during the contact period was toward smaller houses. Nevertheless, if the houses averaged about three fires, accommodating about 6 persons to a fire (Arthur E. Jones, 1909, p. 425), and if there were about 300 houses, the population was about 5,000. This figure agrees with the Jesuit estimate of 1660 and 1677, but the Seneca had grown by accretion. In 1656 there were 11 different tribes represented in the Seneca country (*Jesuit Relations*, vol. 43, p. 265). Mooney (1928) credits the whole Iroquois with only 5,500 in 1600, which Kroeber (1939, p. 140) accepts, but considers too low (p. 133).

SUSQUEHANNA

The Susquehanna watershed defines the range of several Iroquoian tribes in 1600. It is an area of deciduous forest, the northern transition forest of birch-beech-maple-hemlock giving way to Appalachian oak-chestnut forest toward the south (Kroeber, 1939, pp. 17-18). Northern Iroquoians from the Appalachian plateau area of southern New York or western Pennsylvania followed the watercourses through valley and ridge and settled on the piedmont above tidewater Chesapeake Bay. Here they separated the Algonquians of the Middle

Atlantic slope, Delaware-Mahican-Wappinger, from the transitional tidewater Algonquians, Conoy-Nanticoke-Powhatan, and the tribes of the South Atlantic slope, the southern Siouans on the piedmont, and the lowland Iroquoians, the Nottoway and Tuscarora. On the lower Susquehanna, as on the St. Lawrence, Iroquoians were expanding at the expense of Algonquians when Europeans arrived.

The marginal position that the coastal Algonquians occupy along the Atlantic slope from North Carolina to the Merrimac River supports the thesis that they arrived in the region ahead of the Iroquois. Even the Nottoway-Meherrin and the Tuscarora had Algonquians between them and the sea, and Siouans behind them toward the mountains. The cultures of Iroquoians of the Atlantic slope should reflect the transitional position that their neighbors occupy between the southeast and the north. Only archeology can tell us how long the Tuscarora were on the Atlantic slope, but there seems little likelihood that the northern Iroquoians migrated from a position southeast of the Appalachians (Lightall, 1931). Rather on physiographic grounds we should look for the Iroquoian center of dispersal somewhere beyond the mountains, in either the high Appalachian plateaus, the interior low plateaus of the Ohio Valley, or the Ozark plateaus beyond. However, Huron-Iroquois culture as we know it developed near the lowlands around the Lower Great Lakes.

There were at least two groups of Iroquoians on the Susquehanna. Ascending the river, they were the "roily water people," the Susquehanna proper or Andaste living along the lower river at the falls, and the "big flats people" (*Skahendawanehronon) on the North Branch above Wyoming. The Sasquesahanockes, as they became known to Smith from tidewater Algonquians, were the Minquas or White Minquas of the Dutch and Swedes on the Delaware,²⁸ the Gandastoguehronons of the Hurons and French Jesuits, and the Conestogas of the later English. Likewise, Smith's Massawomekes are probably the same as the Carantouannais of Brulé (Champlain, vol. 3, p. 217), and the latter are the Scahentoarrhonons of Brébeuf, 1635 (Jesuit Relations, vol. 8, p. 115). The Iroquois term meaning the "great grassy flats people" is an equivalent of the Algonquian root from which Massawomeke and Wyoming are derived (Hewitt to Stirling,

²⁸ Distinguish Minquas from Mengwes, the Oneida overseers of the Delaware on the Susquehanna River during the early eighteenth century, and from the Senecas of Ohio who were later known to the English as Mingoes. However, all these terms appear to be derived from the same Delaware Algonquian root, Mingwe, meaning "stealthy" or "treacherous." (Mooney, in Hodge, 1912, vol. 1, p. 867).

Dec. 20, 1936; Bur. Amer. Ethnol. Ms. No. 3816). Hewitt concluded that they were the same people. His argument rests on three points: 1, the linguistic equivalence of Algonquian Massawomeke and Wyoming to Iroquoian Scahentoa—and Carantouan [*Skahentawaneh-], meaning "big grassy flat"; 2, the similar position and number of towns of the Massawomeke, who have three kings' houses on Smith's map of Virginia, 1612, and the Carantouannais, whom Brulé assigned three towns; and 3, Brébeuf's enumeration of Iroquoian tribes in 1635 (Jesuit Relations, vol. 8, p. 115) . . . Andastoerrhonons (Susquehanna), Scahentoarrhonons (Wyoming), Riierhonons (Erie), and Ahouenrochrhons (Wenro), which clearly shows that his Huron informants considered them distinct tribes.

While exploring Chesapeake Bay in the late summer of 1608 Smith's party met a group of 60 Susquehanna men who seemed like giants to the English. Smith describes their physique, dress, and the resonant character of their speech, which was due to typical Iroquoian nasalization. He credits them with 600 warriors, suggesting a population of about 3,000, and their six villages, which were situated 2 days' journey above Smith's Falls, were palisaded against the enemy Massawomeke. Smith's map of Virginia, 1612, which Bushnell has found an accurate guide for locating Indian towns of Virginia, is partly based on native sources, and is certainly superior to the "Carte Figurative" of 1614 for locating towns on the Susquehanna. Smith's map locates six Susquehanna towns with kings' (chiefs') houses. They are: 1, Sasquesahanough on the east bank of the river near Columbia, Pa. (Murray, 1931, pp. 50, 119); the name may mean either "river full of . . . projections above the water" (Delaware), or "people who live along a muddy stream" (Nanticoke and Conoy) (Speck, in Murray, 1931, p. 139). Town 2, named "Attaock" appears at the head of a stream that flows east into the river below the first town. Attaock is probably derived from a common Algonquian root meaning "sellers" or "traders,"²⁹ as in the case of the Ottawa. Quadroque, town 3, appears on the east bank just below another western tributary which has Utchowig, town 4, just southwest of its source. Quadroque has an Iroquoian ring, and is possibly from the Andaste dialect, but Utchowig is probably a form of Algonquian "mountaineers." Higher on the east bank above the fork is the fifth town named "Tesinigh," which suggests "leggings wearers." North of the source of the central branch of Willoughbyes Flu, which falls

²⁹ The Algonquian derivations are offered only as suggestions worked out in conversation with Prof. Frank G. Speck.

into Chesapeake Bay just west of the Susquehanna, is the sixth town, Cepowig, meaning probably "river people."

Gen. John S. Clark's interpretation (Murray, 1931, p. 50) of the Smith map, based partly on Visscher's map of 1656, compacts the Susquehanna towns within 50 miles of the mouth of the river. This distance to Tesinigh reaches Conewago Falls near Falmouth below the ridge of South Mountain. He places Quadroque 32 miles from the river mouth, assigning it to an ancient fort-site at Wiltner's run. Clark locates Sasquesahannough 20 miles from the river mouth above Muddy Creek on a line with Copper Mine Ridge, just a few miles above Octorara Creek. To the Susquehannas of Maryland, Clark assigns the Utchowig, Attaock, and Cepowig. The first he places near York, the second, at the head of Muddy Creek; and the river of the Cepowig, Willoughbyes Flu, he recognizes as Gunpowder River. Clark's contention is further substantiated by land cessions. The tribes living east of the river, whom the Dutch and Swedes called Minquas, granted lands from the Delaware back to the great falls, the territory of the three tribes whom Smith located on the east bank, and this was as far up the river as the Susquehanna ever granted land.

Others have thought that Utchowig occupied the West Branch of the Susquehanna and have assigned it a village site on the north end of Great Island, near Lockhaven, Clinton County. This location is consistent with the name "mountaineers," but not with later maps. However, it is extremely difficult to locate the latter five towns because Smith, who never saw them, does not mention them in his text. Nevertheless, Hewitt at one time (1912, vol. 2, p. 655) leaned to the broader interpretation that would locate Attaock in the region of the Juniata River, Quadroque at the forks at Northumberland, Tesinigh on the North Branch near Wyoming, and Utchowig on the West Branch near Lockhaven. Clark himself at an earlier time advocated the broader interpretation (Clark to Craft, 1878, in Murray, 1931, p. 5).

The "Carte Figurative," circa 1614, outlines with some distortion the tribes which a Dutchman named Kleynties and his companions were reported as finding on their expedition from the Mohawk into the interior of southern New York and northern Pennsylvania (O'Callaghan, 1854, vol. 1, p. 14). They apparently descended the East Branch of the Susquehanna to the Ogehage, "hair" or "scalp people," enemies of the Mohawk. The latter occupy a similar position and status with reference to the Mohawk as the Carantouannais whom Brulé sought as allies of Champlain's Hurons the following year. The tribes which the "Carte Figurative" delineates—Sennecas, Gachooos, Capitanasses, and Jottecas—between the Maquaas (Mohawk) and the

Minquas (Susquehanna), might be equated with other known tribes, if we knew how their names were pronounced in sixteenth century Dutch. The cartographer says that the position of these four tribes ought to be marked down considerably farther west into the country. His Sennecas, who have four houses on the northeast side of a tributary, occupy the right position and are probably the precedent for the anonymous Dutch journalist naming the Oneida (q. v.). The Gachooos, spelled "Gacheos"—"Gachoy" by Visscher—who have four houses southwest of a tributary, may be part of the Erie (Káhgwa') or Black Minquas, while the Capitanasses, who have seven houses strung along the left bank of a western tributary are probably Champlain's Carantouannais. A huddle of five Joteccas towns appears lower in the interior; and considerably farther down, at about latitude 38° 30' N., there are four palisaded Minquas towns along the west bank of the Susquehanna River.

Despite the error of showing the Susquehanna rising in Lake Ontario and flowing into Delaware Bay, and discounting the possibility that the Capitanasses and Gachooos may be Onondaga and Cayuga (Clark to Gatschet *in* Murray, 1931, p. 119), the "Carte Figurative" establishes one fact that was continued in the later maps of Visscher. The towns of the Minquas or Susquehanna occupied the lower falls of the river below Harrisburg, and between them and the Mohawk were tribes that were hostile to both. These problematical tribes held the junction of the Chemung and the East Branch at Tioga Point, and they had settlements between there and Wyoming on the North Branch. Possibly one group occupied the West Branch near Jersey Shore. In general, they include Champlain's Carantouannais, the Scahentoarrhonons of Brébeuf, and the Massawomeke of Smith. Furthermore, when we consider that the Iroquois of 1609 were a beaten people, hiding within palisaded towns to escape their north-eastern Algonquian enemies, that they had as yet no contact with the French traders, and that for years before their initial overthrow by the Maryland settlers, the Susquehanna were more than holding their own in their wars with the Iroquois, there remains little likelihood that Smith's Massawomeke were a party of Iroquois marauders (see Hunt, 1940, pp. 23-24). They were more probably a war party from higher on the Susquehanna River.

In the summer of 1615 when Champlain was preparing at Cahiagué (fig. 12, 32) to set out against Onondaga, he learned that a nation situated 3 days' journey beyond the Entouhonorons (Onondaga) wished to collaborate with his expedition by sending 500 men (Champlain, vol. 3, pp. 53-55). The latter lived 7 days' journey

from where the Dutch went to trade with their enemies (the Susquehanna), on the 40th degree, (in southern Pennsylvania). According to the Huron, this tribe was warlike, but they were *only 3 villages* in the midst of more than 20 others with whom they were at war, being unable to get help from the Huron who must pass through thickly populated Seneca country, or else make a wide detour, to reach them. The preceding year this people had sent home three Dutch prisoners whom they had taken in war, thinking that they were Champlain's men. The prisoners were undoubtedly Kleynties and his two companions, employees of the New Netherland Company in the trade with the Mohawk and Mahican, whom Captain Hendricksen reported having ransomed from the Minquas (O'Callaghan, 1853, vol. 1, pp. 10-15). Brulé accordingly set out from Cahiagué to lead the 500 proffered warriors against the Onondaga. After a brush with the Seneca (?), in which he took captives, Brulé's party reached a palisaded town called Carantouan (fig. 14, Pennsylvania, 2a) (Champlain, vol. 3, pp. 214-216). The fortifications and dwellings at Carantouan resembled those of the Huron and Iroquois. Carantouan had a garrison of 800 warriors and was 3 short days' journey from the Onondaga fort which Champlain besieged, at Fenner, Madison County, N. Y., (fig. 11, and fig. 13, Oneida, 1).

Clark (Murray, 1931, p. 21) estimated a day's journey for an Indian at 25 to 30 miles, and as Brulé passed twice over the ground between Carantouan and Fenner, he probably estimated the distance correctly. Champlain's map of 1632 locates the town Brulé visited a short distance north of two main branches of a river on the west branch. Discounting the error that Champlain was led into by consulting Hendricksen, namely, that the river drained into Delaware Bay, Clark concludes that Carantouan occupied Spanish Hill on the east bank of the Chemung, south of the Pennsylvania State line (*ibid.*, p. 22) (fig. 11, and fig. 14, Pennsylvania, 2a). Clark felt that his own surveys of Spanish Hill justified assigning Carantouan to that site. Clark (Murray, 1931, p. 34) located Ogehage, a second town of the Carantouannais, just above the mouth of Sugar Creek, near Towanda (fig. 14, 2b); the town was later called Oscohu. The town of Gahontoto [géodo·dó'—"a row of standing poles," or "trees"] that the Tutelo later occupied on their way north (fig. 14, Pennsylvania, 2c) above the mouth of Wyalusing Creek was possibly the third town of the Carantouannais (Hanna, 1911, vol. 1, pp. 31-32; Clark, *in* Murray, 1931, p. 36).

Brulé, while spending the winter of 1615-16 with the Carantouannais, explored the Susquehanna to the sea. He met many powerful

and warlike tribes which made war upon one another; and he apparently reached the upper waters of Chesapeake Bay, where the islands and coasts were inhabited by several tribes well disposed toward the French but complaining of the Dutch with whom they traded (Champlain, vol. 3, p. 218). Brulé's remarks on intertribal wars give further grounds for distinguishing between the upper and lower Susquehanna tribes.

Archeology and Hanna's research in the historical sources enable us to locate the lower Susquehanna towns and trace their movements. I have mapped these sites (fig. 14, Pennsylvania, 1) to show their relationship to the villages of the eighteenth century. The sites of the Susquehanna fort before 1660 were on the east bank of the river above Conestoga Creek. (See the fifth site from the river mouth, fig. 14, Pennsylvania, 1.) According to Herrman's map of 1670, "Canoage [Kahnawa]ge—"at the rapids"], the Present Sasquehannock Fort," was a circular palisaded town situated below the Falls of Falmouth south of Conewago Creek (Murray, 1931, p. 49), where it had moved west across the Susquehanna River (fig. 11 and fig. 14, Pennsylvania, 1). As Susquehanna power increased when they obtained firearms from the Swedes and Dutch, so did their interest in the fur trade, and accordingly they soon had settlements on the West Branch (Clark, *in* Murray, 1931, p. 49 ff.; Hunt, 1940, p. 138 ff.). However, the Jesuit Journal for 1652 records that the eastern Iroquois had been losers and gainers in their campaigns against the Andaste. Hanna (1911, vol. 1, p. 34) suggests that this campaign cleared out the Carantouannais of Tioga Point and the Upper Susquehanna. In 1669 Fremin (Jesuit Relations, vol. 54, p. 81) reported Onnontioga remnants living with Neutral and Huron captives at Gandougaraé, the captive town of the Seneca (fig. 13, 3). The capture of Atra-kwae may refer to Quadroge on Smith's map, and may therefore refer to tribes lower down the river who petitioned the Maryland government for help against the Iroquois.

From 1663 to 1674 was a dark period in Iroquois history. Their failure to humble the Susquehanna town east of the river, which was bastioned and mounted artillery, the French expeditions against the Mohawks in 1666, and the interference of the Canoage Susquehannas, backed by the Marylanders, with the fur trade, brought Susquehanna enemies to the doors of the western Iroquois. Fear of raids drove many of the Cayuga to settle north of Lake Ontario in 1667. The Susquehanna blockade required that Seneca manpower be divided into a band of warriors to fend off the Susquehanna

and a band of beaver hunters to ply the fur trade (Jesuit Relations, vol. 51, p. 257). Until 1675 the only Iroquois triumphs over the Susquehanna were minor ones (Hunt, 1940, p. 142); but that year the Susquehanna nation was destroyed, dispersed, or incorporated into the Seneca tribe. The Susquehanna were first attacked by a force of Marylanders and Virginians, and the Iroquois vigorously pursued the fleeing remnants and defeated them "*while in retreat 'behind Virginia'*" (Hunt, 1940, p. 143, citing Nicolls to the Magistrates in O'Callaghan, vol. 13, p. 516). Nevertheless, some Conestoga remained in Pennsylvania.

The following were remnant towns on the lower Susquehanna after the defeat: Meanock on the east bank above Octarara Creek from before 1690; Conestoga on the third site from the river mouth above Pequea Creek before 1690; Pequea just south of the creek from 1697; and Dekanoageh about 1701 at Wright's Ferry just north of the old Susquehanna fort of 1660.

Those Susquehanna who did not join the Iroquois fled south into Virginia where they were later known as Meherrin (see Bushnell's paper in this volume). A large number were finally exterminated during Bacon's rebellion in Virginia, and others were sold as slaves (Hunt, 1940, p. 143). Meanwhile, the Eastern Shawnee and various eastern Siouan groups who had aided and abetted the Susquehanna wars against the Five Nations became the next victims. The southeastern wars continued into the next century and resulted in the incorporation or destruction of nearly all of the tribes of the piedmont. "The great overmastering fact in the history of the Siouan tribes of the east is that of their destruction by the Iroquois." (Mooney, 1894, p. 14.)

These southern Iroquois conquests were memorialized by Canassatego, an Onondaga chief, in a speech before the council at Lancaster in 1744, which the governments of Maryland and Virginia had called to adjust a boundary dispute with the Six Nations. The chief emphatically denied that the English had conquered any tribes in that direction except the Powhatan and Tuscarora. He asserted that all the world knew that the Iroquois conquered the tribes formerly living on the Susquehanna and Potomac and at the back of the great mountains in Virginia, or their remnants were now a part of the Iroquois and their lands at the disposal of the Iroquois alone. He enumerated, among others, the Conoy, Kanawha, Tutelo, and one group whom I cannot identify, whose name, Connutskin-ough-roonaw, suggested [* ganuṭsgehroró·nq'] a Mohawk form, to Simeon Gibson, my Cayuga informant. This means "the nation living at

the end corner (last apartment) of the longhouse." Gibson did not know of such a tribe, but if it was the last tribe conquered and absorbed, it would occupy the end position in the symbolic longhouse of the League. (See Mooney, 1894, p. 22; and Indian treaties printed by Benj. Franklin, Van Doren, 1938, pp. 50-56.)

The early dispersion of the Susquehanna tribes has created unsolved problems. The linguistic position of the Andaste dialect is unknown, but it might be determined by comparing the brief word lists with those of other dialects.³⁰ The Andaste dialect need not be close to Huron because the two tribes had a military alliance. However, determining the linguistic position of Andaste might indicate former relationships between tribes. The vocabularies may have more value for solving ethnological problems of clan groupings, personal names, place names, and ecological terminology. Archeological work in the historic territory of the Susquehanna has not lacked enthusiasm. Unfortunately, much of the work has proved abortive because it was undertaken without definite historical problems in mind or without publication as an end. Of late, two publications (Cadzow, 1936, and Moorehead, 1938) have appeared, clarifying the confusion somewhat; but in the latter, problems of field work were badly conceived, and although the former treats certain historic sites of the Susquehanna proper in detail, we still need a systematic and comparative introduction to the archeology of the Susquehanna. I shall pass over the problems of the physical anthropology of this area because T. D. Stewart has treated them in his paper in this volume. However, the tall strain that appears notably among the modern Onondaga, and infrequently among the Seneca, may reflect certain dominant physical traits of John Smith's giant Sasquesahanoughs (Murray, 1933, p. 257), who were distributed as captives among the Iroquois.

THE EIGHTEENTH CENTURY IROQUOIS POSITION

If the central fact of seventeenth century intertribal warfare was the struggle for control of the fur trade (Hunt, 1940), in the succeeding century tribal locations, wars, and movements were dependent upon French and British colonial policy and the outcome of the struggle for control of the continent. We need not devalue the striking power of Iroquois war parties or the range of their raids

³⁰ Prof. F. G. Speck informs me that there is a Conestoga Vocabulary, taken circa 1755 at Fort Augusta (Sunbury) by an officer, in the Archives of the American Philosophical Society.

which followed the Chesapeake branch of the Great War Path (fig. 14) to the Catawba of South Carolina and to the Cherokee of Tennessee, and even into the country of the Creek during the middle eighteenth century. However, the distribution of Iroquois villages during the period does not show that they effectively controlled the enormous territory that they claimed to have subjugated. Rather, Iroquois delusions of empire were converted to Britain's advantage by Sir William Johnson, who largely controlled the destiny of the Six Nations from the Mohawk River. In 1742 Britain conveniently argued that the Five Nations had conquered all the tribes from the Ottawa to the Tennessee, Mississippi, and Illinois Rivers in the previous century, entitling the King, their guardian, to rule over this vast area, but at Lancaster 2 years later, as we have observed, the governments of Maryland and Virginia were less eager to acknowledge the Iroquois claim to the country west of a line drawn to the forks of the James. Still later, in 1763, Johnson asserted that the Six Nations claim extended to a line drawn from the Kentucky River to the foot of Lake Michigan. The latter line encompasses the effective limits of Iroquois dominion (fig. 14).

Let us consider the nature of Iroquois dominion and then indicate the cultural problems that arise from it. Just before the turn of the century, the Delaware, who had previously been victims of superior Susquehanna war tactics and organization, were made "as women" by the Iroquois. Hanna (vol. 1, p. 108) assigns the Delaware acceptance of their role as women to 1677. Both the Mahican and Delaware lacked whatever the Iroquois and Susquehanna had, an ability to destroy enemies effectively by diplomacy and seemingly disorganized war parties and then absorb the remnants into their matrilineal social system. Surely both the Mahican and Delaware were nearer the source of firearms and, had they been better organized socially, might have played the role of middlemen in the trade had it not been for the Iroquois who made up in ingenuity what they lacked in materials and men.

The early Delaware-Iroquois contacts were with the eastern or Lower Iroquois, the Mohawk and Oneida, and to a less degree the Onondaga. When the pressure of white settlement brought land cessions, the Delaware removed to the Susquehanna, settling at Paxtang (fig. 14, Pennsylvania, 4), about Wyoming (fig. 14, Pennsylvania, 12), and Shamokin (fig. 14, Pennsylvania, 3), where they were under the surveillance of an Oneida overseer. Following the complete subjection of the Delaware in 1727, Shikellamy was overseer at Shamokin from 1728 until he died in 1739 (Hanna, vol. 1,

p. 110), when the Shamokin Delawares removed to Tioga (fig. 14, Pennsylvania, 2a). Iroquois dominion ended about 1757, when the Delawares who had removed to the upper Allegheny at Kittaning (fig. 14, Pennsylvania, 20) and Sauconk (fig. 14, 22) asserted their independence. Administrative responsibility shifted to the Seneca, who exercised diminishing control as the Delaware extended their settlements to the Muskingum and Scioto Rivers in Ohio. Here Shawnee, Delaware, and Seneca cultures mixed at Logstown (fig. 14, Pennsylvania, 21), which Shawnees who had lived at Wyoming (fig. 14, Pennsylvania, 12) since 1728 had founded in 1743 (Hanna, 1911, vol. 1, p. 155). Meanwhile, the Munsee occupied Tioga on the North Branch (fig. 14, Pennsylvania, 2a) (Hanna, 1911, vol. 1, p. 237) and three towns on the Chemung (fig. 14, New York, 30), where they came under the jurisdiction of Cayuga.

Following Denonville's campaign of 1687 the Seneca had expanded east and southwest. The people of the two eastern towns (fig. 13, Seneca, 1 and 3) removed to the foot of Canandaigua and Seneca Lakes, establishing Canandaigua (fig. 14, New York, 21) and Seneca Castle near Geneva (fig. 14, New York, 15), and they advanced along both shores of Seneca Lake. The two western towns (fig. 13, Seneca, 2 and 4) shifted to the Genesee, where a series of towns sprang up around Chenusio Castle (fig. 14, New York, 20). From here the Seneca pushed up the Genesee to Caneadea (fig. 14, New York, 24) and across to the headwaters of the Allegheny, where Zeisberger visited them in 1767 (fig. 14, New York, 26, 27, Pennsylvania, 15, 16, 17). From here the Seneca ranged into Ohio, their population soon intermingling with Delaware and Shawnee at Logstown and Kuskuskie (fig. 14, Pennsylvania, 23), the chief town of the Six Nations on the Ohio. Other Senecas moved to Sandusky Bay (fig. 14, Ohio, 3, 4, 5) where they intermingled with the Ottawa and Wyandot. Sullivan and Brodhead (Cook, 1887) destroyed most of the Cayuga and Seneca towns in 1779.

Considering the positions of Delaware and Eastern Shawnee relative to the Iroquois during the early and late eighteenth century, we find that Delaware-Iroquois and Eastern Shawnee-Iroquois contacts were first with the Lower Iroquois, notably the Oneida. After 1755, and from then until after the Revolution, the primary contacts between Iroquois and Delaware and Shawnee were with the Seneca and Cayuga. Therefore, we should expect to find certain basic early similarities between Lower Iroquois and Delaware cultures. It is probably not fortuitous that Mohawk, Oneida, and Delaware tribes have

three sibs, or at least tripartite band groupings. Flannery (1939, p. 182) finds that Iroquois influence was strongest on the Algonquians of northern New England and the Delaware, and that one-third of all the traits attributable to Iroquoian influence are connected with political culture, and especially with war. Speck's studies of Iroquois influence on Algonquian political organization (Speck, 1915) and his study of Algonquian influence upon Iroquois social organization where the modern Mohawks of St. Regis, Oka, Deseronto, and the Huron of Lorette adapted to an Algonquian hunting economy bear this out (Speck, 1923 and 1927). The Iroquois influences connected with politics and war are probably early. However, certain specific resemblances that Delaware alone of the coastal Algonquians share with the Iroquois (Flannery, 1939, p. 181), such as dashing water in child's face, suicide via poisonous herbs, similarities of masked shamans, association of bear with curing society, horn rattle, funeral customs such as the moccasin game used for gambling at the night wake, and holes in a baby's moccasins to prevent spirits from stealing baby, and I might add from Speck (1931b and 1937) certain elements in the Delaware Big House Ceremony that have their analogies in Seneca Longhouse ceremonies—and the blowgun—probably passed between Delaware and Seneca and Cayuga after the Delaware had removed to settlements in the Allegheny-Ohio area. Likewise, the resemblances between the Seneca Eagle Dance and that of one division of the Shawnee (Fenton, 1937) serve only to point out the need for a comparative study of Shawnee and Seneca cultures during the late eighteenth and early nineteenth centuries.

THE RESERVATION PERIOD

The modern or reservation period in Iroquois culture history begins with the establishment of reservations after the Revolution. Living together in isolated communities has meant the preservation of tribal languages which are still available for study. Culture has changed, and although the Iroquois no longer wear their tribal costumes, enough of social organization and ceremonial life survive in the conservative Seneca, Cayuga, and Onondaga centers, where Handsome Lake, the prophet, preached about 1800, to occupy the research time of several ethnologists. Speck has studied the ceremonies of the Cayuga at Sour Springs, Six Nations (fig. 15), and I have undertaken similar studies at Allegany and Tonawanda among the Senecas. Onondaga (N. Y.) and Onondaga (Six Nations) ceremonies await study. The ceremonies of the Cattaraugus Seneca have been studied, but merit fur-

ther consideration. Whoever undertakes this research should analyze the social organization of the community in which the rituals survive as expressions of group behavior. The status and roles of Iroquois woman have not been adequately studied. Iroquois music has not received the thorough treatment it demands. There are possibilities of establishing old historic connections through comparison of song patterns. Finally the different adjustments which Iroquois have made to French and British culture in Canada and to the culture of the United States offer attractive problems for the sociologist.

CONCLUSION

Despite the large amount of historical and anthropological attention that the Iroquois have received, they remain improperly understood. The main task facing anthropologists is to demonstrate the intrusive cultural and linguistic position of the Iroquois in the northeast. To accomplish that end analytic and comparative studies are needed in the related disciplines of linguistics, physical anthropology, archeology, and ethnology. In order that these future studies may be coordinated toward a common end, a direct historic approach is suggested, and it is recommended that these studies proceed from the known Iroquoian groups to the unknown cultures and peoples that precede them. I have therefore located the known historic Iroquoian groups and traced their movements during the historic period. The main outlines of the movements are sound, but in some details they may be subject to revision.

The problem of the identity and disappearance of the Laurentian Iroquois remains an open question. Further studies of their vocabularies would prove helpful, and the archeology of their historic village sites needs investigating. However, Laurentian Iroquois village life was like that of later Huron and Iroquois, the characteristic social unit being the village or band with its chief. This conclusion has implications for modern field studies, which must inevitably focus on the village community, the unit of Iroquois culture.

The Huron were a confederacy of bands similar to the Iroquois nations, but they were longer settled in their habitat than the Iroquois. When the Iroquois conquered the Huron, they benefitted by the adjustments that the Huron had made to an Algonquian hunting, fishing, and trading economy.

The Iroquois were a dozen straggling villages that had not been established long in their historic position in central New York before they confederated. Accidents of white contact and the history of the

fur trade enabled the Iroquois to subject enemies, rival traders, from the Ottawa nearly to the Mississippi. These conquests have been overrated, and because of their spectacular successes, the Iroquois have been credited with deeds which they never accomplished.

At the turn of the eighteenth century the stream of cultural infusion shifted from the Huron-Ottawa south to the Delaware, Shawnee, and Siouan tribes and to the southeastern Iroquoians. Iroquois culture, which had had a long period of growth around the lower Great Lakes, was refreshed by southeastern traits. In assaying the southeastern affiliations of the Iroquois, we must discount traits like the blowgun and the calumet ceremony, which came to the Iroquois in relatively late historic times.

For future studies I offer the following periods in Iroquois cultural history as a frame of reference: 1, the prehistoric period of internecine wars before confederation; 2, the protohistoric period of confederation when Cartier ascended the St. Lawrence; 3, the period of Iroquois wars for the fur trade from confederation to the destruction of the Seneca by Denonville, or the French Jesuit period; 4, the period of the Colonial wars from Denonville to Sullivan, or the English period, while the Iroquois were fighting tribes of the southeast; 5, the modern Reservation period since Handsome Lake, the prophet, or from land cessions to reservation culture.

The time has come when cultural history of the Iroquoian peoples demands a new synthesis.

LITERATURE CITED

BAILEY, ALFRED GOLDSWORTHY

1933. The significance of the identity and disappearance of the Laurentian Iroquois. *Proc. and Trans. Roy. Soc. Canada*, 3d ser., vol. 27, sec. 2, pp. 97-107.

1937. The conflict of European and Eastern Algonkian cultures, 1504-1700. *Publ. New Brunswick Mus., Monogr. Ser. No. 2.*

BARBEAU, C. M.

1915a. Classification of Iroquoian radicals with subjective pronominal prefixes. *Canada Geol. Surv., Mem. 46, Anthrop. Ser., No. 7.*

1915b. Huron and Wyandot mythology. *Canada Geol. Surv., Mem. 80, Anthrop. Ser., No. 11.*

BARTRAM, JOHN

1751. Observations on the inhabitants . . . in . . . travels . . . to Onondaga, etc. London. (Reprinted at Geneva, N. Y., 1895.)

BEAUCHAMP, WILLIAM M.

1900. Aboriginal occupation of New York. *New York State Mus. Bull. 32.*

BEAUCHAMP, WILLIAM M., (Editor)

1916. Moravian journals relating to central New York. *Onondaga Hist. Assoc., Syracuse, N. Y.*

BIGGAR, H. P.

1924. *The voyages of Jacques Cartier*. Publ. Public Archives Canada, No. 11 Ottawa.

BIRKET-SMITH, KAJ.

1936. *The Eskimos*. Methuen, London.

BLAIR, EMMA HELEN, (Editor)

- 1911-12. *The Indian tribes of the upper Mississippi Valley and region of the Great Lakes*. 2 vols. Cleveland.

BOAS, FRANZ

1907. *Ethnological problems in Canada*. Congr. Int. Américanistes, 15th Sess., Quebec, 1906, vol. 1, pp. 151-160.
1910. *Ethnological problems in Canada*. Journ. Roy. Anthropol. Inst. Great Britain and Ireland, vol. 40, pp. 529-539.

CADZOW, DONALD A.

1936. *Archaeological studies of the Susquehannock Indians of Pennsylvania*. Publ. Pennsylvania Hist. Comm., vol. 3. Harrisburg.

CHAMBERLAIN, A. F.

1888. *Notes on the history, customs, and beliefs of the Mississagua Indians*. Journ. Amer. Folk-Lore, vol. 1, pp. 150-160.
1904. *Iroquois in Northwestern Canada*. Amer. Anthropol., n.s., vol. 6, No. 4, pp. 459-463.

CHAMPLAIN, SAMUEL DE

- 1922-1936. *The works of Samuel de Champlain*, edited by H. P. Biggar. 6 vols. Champlain Soc., Toronto.

COOK, FREDERICK

1887. *Journals of the military expedition of Major Gen. John Sullivan against the Six Nations Indians in 1779* Auburn, N. Y.

COOPER, JOHN M.

- 1928a. *Field notes on northern Algonkian magic*. Proc. 23d Int. Congr. Americanists, New York, pp. 513-518.
1928b. *Northern Algonkian scrying and scapulimancy*. P. W. Schmidt Festschrift, pp. 205-217. Wien.

COYNE, JAMES H.

1895. *The country of the Neutrals . . . from Champlain to Talbot*. St. Thomas, Ontario.

COYNE, JAMES H., (Editor)

1903. *Exploration of the Great Lakes, 1669-1670, by Dollier de Casson and De Bréhant de Gallinée; Gallinée's narrative and map*. Ontario Hist. Soc., Papers and Records, vol. 4, pt. 1.

CUOQ, J. A.

1882. *Lexique de la Iroquoise*. Montreal.

CURTIN, JEREMIAH, and HEWITT, J. N. B.

1918. *Seneca fiction, legends and myths*. 32d Ann. Rep. Bur. Amer. Ethnol., pp. 37-819.

FENTON, WILLIAM N.

1936. *An outline of Seneca ceremonies at Coldspring Longhouse*. Yale Univ. Publ. Anthropol. No. 9.
1937. *The Seneca Eagle Dance: a study of personality expression in ritual*. Doctoral diss., Yale Univ. Library (ms.).

FLANNERY, REGINA

1939. An analysis of coastal Algonquian culture. *Catholic Univ. Amer., Anthropol. Ser.*, No. 7.

GILBERT, WILLIAM H., JR.

1937. Eastern Cherokee social organization, *in* *Social Anthropology of North American Tribes*, pp. 285-338. Univ. Chicago Press.

GIPSON, LAWRENCE HENRY

1939. Lewis Evans: to which is added Evans' A brief account of Pennsylvania. 246 pp., 6 maps. *Hist. Soc. Pennsylvania*.

GOLDENWEISER, ALEXANDER A.

1910. Totemism, an analytical study. *Journ. Amer. Folk-Lore*, vol. 23, No. 88, pp. 179-293.
1913. On Iroquois work, 1912. *Canada Geol. Surv., Summ. Rep. for 1912*, pp. 464-475.
1914. On Iroquois work, 1913-14. *Ibid for 1913*, pp. 365-372.
- No date. Iroquois field notes (ms.).

GREENHALGH, WENTWORTH

1849. Observations of in a journey from Albany to Ye Indians May 20, 1677 July 14 following, *in* O'Callaghan, E. B., *Doc. Hist. State of New York*, vol. 1, pp. 11-14. Albany.

HALE, HORATIO

- 1883a. The Iroquois book of rites. Brinton's library of aboriginal American literature, No. 2, Philadelphia.
- 1883b. Indian migrations as evidenced by language. *Amer. Antiquarian*, January-April 1883 (reprint). 27 pp.

HANNA, CHARLES A.

1911. *The wilderness trail*. 2 vols. New York.

HARRINGTON, M. R.

1913. A preliminary sketch of Lenápe culture. *Amer. Anthropol.*, n.s., vol. 15, pp. 208-235.

HARRIS, WILLIAM R.

1896. A forgotten people: the flint workers. *Publ. Buffalo Hist. Soc.*, vol. 4, pp. 227-244.

HENNEPIN, LOUIS

1903. A new discovery of a vast country in America. Reuben G. Thwaites, editor. Chicago.

HEWITT, J. N. B.

1894. Era of the formation of the historic League of the Iroquois. *Amer. Anthropol.*, vol. 7, pp. 61-67.
1903. Iroquoian cosmology; first part. 21st Ann. Rep. Bur. Amer. Ethnol., pp. 127-339.
1912. (Various articles on Iroquoian subjects.) *In* Hodge, Frederick Webb, editor, *Handbook of American Indians Bur. Amer. Ethnol. Bull.* 30, 2 vols.
1918. *See* Curtin, Jeremiah.
1928. Iroquoian cosmology; second part, with introduction and notes. 43d Ann. Rep. Bur. Amer. Ethnol., pp. 449-819.
1932. Field studies among the Iroquois tribes. *Expl. and Field-work Smithsonian Inst. in 1931*, pp. 175-178.

- No date. Notes and extracts regarding the Mohawk claim . . . Bur. Amer. Ethnol., Misc. Ms. No. 3687.
For Hewitt's bibliography, *see* Swanton, 1938.
- HODGE, FREDERICK WEBB, (Editor)
1912. Handbook of American Indians North of Mexico. Bur. Amer. Ethnol. Bull. 30. 2 vols.
- HOOTON, E. A.
1933. Racial types in America and their relation to old world types. *In* Jenness, D., editor, *The American Aborigines*, pp. 133-163. 5th Pacific Sci. Congr., Canada, 1933. Toronto.
- HOUGHTON, FREDERICK M.
1912. The Seneca nation from 1655 to 1687. Bull. Buffalo Soc. Nat. Sci., vol. 10, No. 2, pp. 363-464.
1922. The archeology of the Genesee country. New York State Arch. Assoc., Res. and Trans., vol. 3, No. 2, pp. 1-66, 21 pls.
- HRDLIČKA, ALEŠ
1927. Catalogue of human crania in the United States National Museum collections. (The Algonkin and related Iroquois; Siouan, Cad-doan, etc.) Proc. U. S. Nat. Mus., vol. 69, pp. 1-127.
- HUNT, GEORGE T.
1940. The wars of the Iroquois: a study in intertribal trade relations. Univ. Wisconsin Press, Madison.
- INNIS, H. A.
1930. The fur-trade in Canada: an introduction to Canadian economic history. Yale Univ. Press.
- JENNESS, DIAMOND
1932. Indian prehistory as revealed by archaeology. Univ. Toronto Quart., January 1932, pp. 164-182.
- JESUIT RELATIONS. *See* THWAITES, REUBEN G., (Editor)
- JOHNSON, AMANDUS
1917. The Indians and their culture as described in Swedish and Dutch records from 1654 to 1664. Proc. 19th Int. Congr. Americanists, Washington, 1915, pp. 277-282.
- JONES, ARTHUR E.
1909. "8endake Ehen," or Old Huronia. 5th Rep. Bur. Archives, Ontario, 1908. Toronto.
- JONES, WILLIAM
1906. Central Algonkin. Ann. Arch. Rep., 1905, Ontario. Toronto.
- KROEBER, A. L.
1939. Cultural and natural areas of native North America. Univ. California Publ. Amer. Arch. and Ethnol., vol. 38. Univ. California Press.
- LAFITAU, J. F.
1724. Moeurs des Sauvages Amériquains. 2 vols. Paris.
- LA HONTAN, LOUIS A., BARON DE
1703. New voyages to North America, 1683-94. London.
- LATHERS, WILLIAM, JR., and SHEEHAN, EDWARD J.
1937. The Iroquois occupation of the Mohawk valley. Reprinted from the Van Epps-Hartley Chapter Bulletin, New York State Arch. Assoc. St. Johnsville, N. Y.

LIGHTHALL, W. D.

1899. Hochelagans and Mohawks: a link in Iroquois history. *Trans. Roy. Soc. Canada*, 2d ser., vol. 5, sec. 2, pp. 199-211.

1931. The remoter origins of the Iroquoian stock. *Trans. Roy. Soc. Canada*, 3d ser., vol. 25, sec. 2, pp. 71-81.

LIPS, JULIUS E.

1938. *Government*. Franz Boas, editor, *General Anthropology*, pp. 487-534. D. C. Heath, New York.

MARGRY, PIERRE

1876-1886. *Découvertes et établissements des Français dans l'ouest et dans le sud de l'Amérique Septentrionale*, 1614-1754. 6 vols. Paris.

MARSHALL, O. H.

1878. Champlain's expedition of 1615. *Mag. Amer. Hist.*, vol. 2, pp. 470-483, map. New York.

MARTIN, REV. FELIX, S. J.

1885. *The life of Father Isaac Jogues*. Translated from the French by John Gilmary Shea, with a map of the Mohawk country by Gen. John S. Clark. New York.

MEGAPOLENSIS, JOHANNES, JR.

1857(1644). A short sketch of the Mohawk Indians in New Netherland, their land, stature, dress, manners, and magistrates, written in the year 1644. Amsterdam, 1651. Revised from the translation in Hazard's *Hist. Coll.* with an introduction and notes, by John Romeyn Brodhead. *Coll. New York Hist. Soc.*, 2d ser., vol. 3, pt. 1, pp. 137-160. New York.

MICHELSON, TRUMAN

1913. Notes on the Fox Wapanowiweni. *Bur. Amer. Ethnol. Bull.* 105.

1934. The identification of the Mascoutens. *Amer. Anthropol., n.s.*, vol. 36, No. 2, pp. 226-233.

MOONEY, JAMES

1889. Cherokee and Iroquois parallels. *Journ. Amer. Folk-Lore*, vol. 2, p. 67.

1894. The Siouan tribes of the east. *Bur. Amer. Ethnol. Bull.* 22.

1928. The aboriginal population of America North of Mexico. *Smithsonian Misc. Coll.*, vol. 80, No. 7.

MOONEY, JAMES, and OLBRECHTS, FRANS M.

1932. *The Swimmer Manuscript: Cherokee sacred formulas and medicinal prescriptions*. *Bur. Amer. Ethnol. Bull.* 99.

MOOREHEAD, WARREN KING

1892. *Primitive man in Ohio*. G. P. Putnam's Sons, New York.

1938. *A report of the Susquehanna River expedition*. Arthur C. Parker, editor. Andover Press, Andover, Mass.

MORGAN, LEWIS H.

1851(1901). *League of the Ho-dé-no-sau-nee, or Iroquois*. Rochester, 1851. Herbert M. Lloyd, editor. 2 vols. New York, 1901.

1870. Systems of consanguinity and affinity of the human family. *Smithsonian Contr. Knowl.*, vol. 17.

1877(1909). *Ancient Society*. Chicago, 1909.

1881. Houses and house life of American aborigines. *Contr. North Amer. Ethnol.*, vol. 4, Washington.

MURRAY, ELSIE

1933. The "noble savage." *Sci. Month.*, vol. 36, pp. 250-257.

MURRAY, LOUISE WELLES

1908. A history of Old Tioga Point and early Athens, Pennsylvania. Athens, Pa.

MURRAY, LOUISE WELLES, (Editor)

1931. Selected manuscripts of Gen. John S. Clark, relating to the aboriginal history of the Susquehanna. *Publ., Soc. Pennsylvania Arch.*, vol. 1. Athens, Pa.

O'CALLAGHAN, E. B., (Editor)

1849-1851. The documentary history of the State of New York. 4 vols. Albany.

1853-1857. Documents relative to the colonial history of the State of New York. 15 vols. Albany.

ORR, R. B.

1915. The Mississagas. *Ann. Arch. Rep.*, 1915, Ontario. Toronto.

1917. The Nipissings. 29th *Ann. Arch. Rep.* . . . Ontario, pp. 9-23. Toronto.

PARKER, ARTHUR C.

1909. Secret medicine societies of the Seneca. *Amer. Anthropol.*, n.s., vol. 2, pp. 161-185.

1910. Iroquois uses of maize and other food plants. *New York State Mus., Bull.* 144.

1922. The archeological history of New York. *New York State Mus., Bull.* 235-238.

PRINCE, J. DYNELEY

1900. Some forgotten Indian place-names in the Adirondacks. *Journ. Amer. Folk-Lore*, vol. 13, pp. 123-128.

RADISSON, PIERRE ESPRIT

1885. *Voyages of . . . being an account of his travels and experiences among the North American Indians from 1652 to 1684.* Gideon D. Scull, editor. *Publ. Prince Soc.*, vol. 16. Boston.

RITCHIE, WILLIAM A.

1936. A prehistoric fortified village site at Canandaigua, Ontario County, N. Y. *Rochester Mus. Arts and Sci., Res. Rec.*, No. 3.

1938. A perspective of northeastern archaeology. *Amer. Antiquity*, vol. 4, pp. 94-112.

RUTTENBER, E. M.

1872. *History of the Indian tribes of Hudson's River . . . Albany.*

SAGARD, FATHER GABRIEL

1939. The long journey to the country of the Hurons. Introduction and notes by George M. Wrong, editor. *Champlain Soc., Toronto.*

SAPIR, EDWARD

1911. An anthropological survey of Canada. *Science*, n.s., vol. 34, pp. 789-793.

SEAVER, JAMES E.

1932. A narrative of the life of Mary Jemison: the white woman of the Genesee. C. D. Vail, editor. *Amer. Scenic and Hist. Preservation Soc. New York.*

SKINNER, ALANSON B.

1911. Notes on the Eastern Cree and Northern Saulteaux. *Anthrop. Pap., Amer. Mus. Nat. Hist.*, vol. 9, pp. 1-177.
1921. Notes on Iroquois archeology. *Indian Notes and Monogr., Mus. Amer. Indian, Heye Foundation.*

SPECK, FRANK G.

1915. The eastern Algonkian Wabanaki confederacy. *Amer. Anthrop., n.s.*, vol. 17, No. 3, pp. 492-508.
1920. Decorative art and basketry of the Cherokee. *Bull. Milwaukee Public Mus.*, vol. 2, No. 2, pp. 53-86.
1923. Algonkian influence on Iroquois social organization. *Amer. Anthrop., n.s.*, vol. 25, No. 2, pp. 219-227.
1925. Northern elements in Iroquois and New England art. *Indian Notes*, vol. 2, No. 1, *Mus. Amer. Indian, Heye Foundation.*
1926. Culture problems in northeastern North America. *Proc. Amer. Philos. Soc.*, vol. 65, No. 4, pp. 272-311.
1927. Huron hunting territories in Quebec. *Indian Notes*, vol. 4, No. 1, *Mus. Amer. Indian, Heye Foundation.*
- 1931a. Montagnais-Naskapi bands and early Eskimo distribution in the Labrador Peninsula. *Amer. Anthrop., n.s.*, vol. 33, No. 4, pp. 557-600.
- 1931b. A study of the Delaware Indian Big House Ceremony. *Publ. Pennsylvania Hist. Comm.*, vol. 2. Harrisburg.
1935. Siouan tribes of the Carolinas as known from Catawba, Tutelo, and documentary sources. *Amer. Anthrop., n.s.*, vol. 37, pp. 201-225.
1937. Oklahoma Delaware ceremonies, feasts, and dances. *Mem. Amer. Phil. Soc.*, vol. 7.

SPIER, LESLIE

1925. The distribution of kinship systems in North America. *Univ. Washington Publ. Anthrop.*, vol. 1, No. 2, pp. 69-88, maps 1-9.

SWANTON, JOHN R.

1905. The social organization of American tribes. *Amer. Anthrop., n.s.*, vol. 7, pp. 663-673.
1936. Early history of the eastern Siouan tribes. *Essays in Anthropology presented to A. L. Kroeber*, pp. 371-381. *Univ. California Press.*
1938. John Napoleon Brinton Hewitt. *Amer. Anthrop., n.s.*, vol. 40, No. 2, pp. 286-290.

SWANTON, JOHN R., and DIXON, ROLAND B.

1914. Primitive American history. *Amer. Anthrop., n.s.*, vol. 16, pp. 376-412.

THWAITES, REUBEN G., (Editor)

- 1896-1901. *The Jesuit Relations and allied documents.* 73 vols. *Cleveland.*

TYRELL, J. B., (Editor)

1916. David Thompson's narrative of his explorations in western North America, 1782-1812. *Champlain Soc., Toronto.*

VAN DER DONCK, ADRIAEN

1841. *A description of the New Netherlands . . .* Amsterdam, 1656. *Coll. New York Hist. Soc.*, 2d ser., vol. 1, pp. 125-242.

VAN DOREN, CARL

1938. Introduction, *in* Indian treaties printed by Benjamin Franklin, 1736-1762. With historical and bibliographical notes by Julian P. Boyd. Hist. Soc. Pennsylvania. Philadelphia.

VOEGELIN, ERMINIE W.

1939. Some possible sixteenth and seventeenth century locations of the Shawnee. Proc. Indiana Acad. Sci., vol. 48, pp. 13-18.

WAUGH, FREDERICK W.

1916. Iroquois foods and food preparation. Canada Geol. Surv., Mem. 86, Anthropol. Ser., No. 12.

WILSON, [SIR] DANIEL

1885. The Huron-Iroquois of Canada, a typical race of American aborigines. Proc. and Trans. Roy. Soc. Canada, vol. 2, sec. 2, pp. 55-106.

WILSON, JAMES GRANT

1896. Arent Van Curler and his journal. Ann. Rep. Amer. Hist. Assoc. for 1895, pp. 81-101.

WINSOR, JUSTIN

- 1884-1889. Narrative and critical history of America. 8 vols. New York.

WINTENBERG, W. J.

1927. Was Hochelaga destroyed or abandoned? Amer. Anthropol., n.s., vol. 29, pp. 251-254.
- 1936a. The probable location of Cartier's Stadacona. Trans. Roy. Soc. Canada, 3d ser., vol. 30, sec. 2, pp. 19-21.
- 1936b. Roebuck prehistoric village site, Grenville County, Ontario. Nat. Mus. Canada, Bull. 83, Anthropol. Ser., No. 19.
1939. Lawson prehistoric village site, Middlesex County, Ontario. Nat. Mus. Canada, Bull. 94, Anthropol. Ser., No. 25.

ARCHEOLOGICAL PERSPECTIVES IN THE NORTHERN MISSISSIPPI VALLEY

BY FRANK M. SETZLER

U. S. National Museum

Archeological work in the northern Mississippi Valley began, as in most other areas, because of curiosity about the past and an appreciation of the extraordinary and distinctive prehistoric art of the area. The first active and continued interest in the mysterious mounds of the Ohio and Mississippi Valleys was a result of the engineering and medical curiosity of E. G. Squier and E. H. Davis. Their monumental report, "Ancient Monuments of the Mississippi Valley," published as volume 1 of the Smithsonian Contributions to Knowledge in 1848, presented one of the most important archeological summaries in the United States during the middle of the nineteenth century. It revealed a prehistoric past in the Mississippi Valley, which was so developed artistically and culturally that it could not be accredited to any of the then existing American Indians. Thousands of publications since that time deal with these so-called Mound Builders.

During the last 25 years much has been done to solve the problems of the nature and origin of the prehistoric cultures of the Mississippi Valley. Present information seems to point to a definite relationship between what formerly appeared as highly divergent cultural groups.

Archeology today has more adequate methods and techniques and consequently more sound hypotheses than those of Squier's and Davis's day. This northern section of the Mississippi Valley has been one of the proving grounds of American archeology. No broad historical discussion of archeological developments in America has been possible without reference to this portion of the United States. In this area, some States have been quicker than others to foster archeological exploration. In each State, public interest had to be aroused before financial support for research could be obtained.

The area to be covered in this paper includes Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa, and Minnesota, considered for the purpose of archeological treatment as the northern Mississippi Valley. Generally speaking, it has distinctive geographical and ecological features and closely related archeological horizons.

To review accurately and properly the detailed archeological developments in this area would go beyond the scope of this paper. An attempt will be made, however, to outline the more significant prehistoric manifestations and at the same time point out the gaps in our present reconstructions. In the past, considerations of money, time, personal interest, and inclination rather than purely scientific objectives have often dictated research problems. At present, however, the archeological program of the above-mentioned States is well coordinated, and scientific enthusiasm and cooperation is unprecedented. Problems have been selected by the various State archeological agencies which will accomplish the most good for the entire area rather than for local or State interests. Many factors have been responsible for the present situation, the most important no doubt being the caliber of the men directing these investigations.

FOLSOM PEOPLES

The most recently recognized manifestation in this northern Mississippi area is the oldest. After the association between man-made tools and extinct forms of animals was shown to establish their contemporaneity at Folsom, N. Mex., most museums throughout the country reexamined their collections of stone projectile points. They were amazed to find many fluted Folsom points which had come from the northern Mississippi Valley. Such reports as "The Folsom Phenomena as Seen from Ohio" (Shetrone, 1936) however, seem to indicate that none of these points was associated with any of the archeological complexes of sedentary, horticultural peoples east of the Mississippi River. Practically all were random surface finds. Nevertheless, their widespread distribution throughout the area permits us to assume that the people who made them must have hunted and dwelt throughout these various States. This simple complex, known at present almost exclusively by projectile points, constitutes the earliest evidence of man in the Mississippi Valley. Evidence from sites in the West and High Plains (see Roberts in this volume) indicates that the people were nomadic hunters. In the East, this manifestation is doubtless the earliest evidence of prehistoric man. It may be termed "Folsom" or "Hunting-Fishing."

AGRICULTURAL PEOPLES

To distinguish the Folsom hunters from a later and more sedentary group who were mainly responsible for the extensive mounds and village sites, we could coin the term "Agpo" (an abbreviation

of Agriculture-Pottery making) for the latter. Thus far we have no exact date for the beginnings of either peoples. The Folsom people may have been dispersed before any of the more sedentary Aggo groups inhabited the area. If the Folsom period in the northern Mississippi Valley is at all contemporaneous with its manifestations farther west, then a hiatus of many thousands of years separated it from the establishment of the Aggo in the area. By a conservative estimate, 2,000 years is sufficient for the entire development of the agricultural groups in the Mississippi Valley (see table 1, pp. 256-257). The age of the Folsom period east of the Mississippi River will, however, remain undetermined until a datable site comparable to the Folsom, Clovis, or Lindenmeier sites is found. Meanwhile, it can be stated with certainty only that Folsom people roamed this section of the country at some time before agriculture reached it.

An Aggo base, having agriculture and pottery and involving a semisedentary mode of existence, underlies practically all of the cultural manifestations other than the Folsom in the Mississippi Valley.¹

Interpretation and classification of agricultural remains of the northern Mississippi Valley was first attempted by such men as Fowke, Holmes, Mills, Moorehead, Putnam, Thomas, and others who have since passed away. Through broad comparisons of related complexes they differentiated the more obvious cultural groups. Theirs was the period of exploration, emphasis being placed on excavation of the larger and more conspicuous aboriginal cultural centers, especially in the Ohio River valley. Less attention was given the neighboring States. Some generalizations were attempted. The most important of these was Holmes' pottery analysis (Holmes, 1903) which outlined, primarily on the basis of form and decoration of pottery vessels, most of the significant ceramic classifications accepted at the present time.

The reconstruction of prehistoric peoples, however, must be based on more than one cultural element. Within the past 10 years, especially since 1932, considerably more emphasis has been placed on the detailed analysis and comparison of all artifacts and archeological records as a basis for classifying the archeological cultures of the northern Mississippi Valley. Analyses have been refined with the

¹There are instances of cultural complexes in the caves of Kentucky and Ozark Bluff Dwellers, Copena, etc., which have not contained pottery, but these are peripheral to the main problem, and may represent an offshoot of an early nomadic type.

TABLE I.—Hypothetical ch

TIME		OHIO	INDIANA
Historic	Ca. A. D. 1800	Iroquoian Siouan (?)	Algonquian (?) Siouan (?) Algonquian (?)
		↑	↑
Proto-historic	A. D. 1600		Woodland
		↑	↑
P	A. D. 1400		Upper Mississippi
		↑	↑
R			
		↑	↑
E			
		↑	↑
H	A. D. 1200	Upper Mississippi	Middle Mississippi
		↑	↑
I			
		↑	↑
S	A. D. 1000		
		↑	↑
T			
		↑	↑
O			
		↑	↑
R		Adena	Adena
		↑	↑
I	A. D. 500	Hopewellian	Hopewellian
		↑	↑
C			
		↑	↑
	B. C.	AGPO	BASE
	Pleistocene	FOLSOM	BASE

TABLE 1.—Hypothetical

TIME		OHIO	INDIANA
Historic	Ca. A. D. 1800	Iroquoian Siouan (?) Algonquian (?)	Siouan (?) Algonquian (?)
Proto-historic	A. D. 1600	Woodland	Woodland
P	A. D. 1400		Upper Mississippi
R	A. D. 1200	Upper Mississippi	Middle Mississippi
E	A. D. 1000		
H	A. D. 500	Adena	Adena
I	A. D. 500	Hope- wellian	Hope- wellian
S	A. D. 500		
T	B. C.		AGPO BASE
O	Pleistocene		FOLSOM BASE

the northern Mississippi Valley

		MICHIGAN	WISCONSIN	IOWA
Historic	Ca. A. D. 1800	Algonquian (?) Iroquoian Siouan (?) Algonquian	Siouan Algonquian	Siouan Algonquian
Proto-historic	A. D. 1600	Woodland	Upper Mississippi	Upper Mississippi
P	A. D. 1400	Upper Mississippi		
R	A. D. 1200		Middle Mississippi	Woodland
E	A. D. 1000			
H	A. D. 500		Hope- wellian	Hope- wellian
I	A. D. 500			
S	B. C.		AGPO BASE	
T	Pleistocene		FOLSOM BASE	

help of geologists (soil profiles), ethnobotanists, conchologists, mammalogists, dendrochronologists, ceramists, and other specialists. Classification of these increasingly detailed data has been made more efficient and accurate by the development of a taxonomic method (Indianapolis Archeological Conference, 1936; McKern, 1934). Considerable emphasis has been placed upon the mechanical handling of these data. It must be stressed, however, that, like any classification, the taxonomic method is merely a tool or a short cut for the proper grouping of cultural materials and the reconstruction of prehistory. Thus far the taxonomic classification has proved sufficiently elastic to accommodate the necessary changes and adjustments required by continued research. Several workers are now also making detailed reanalyses of the materials procured in earlier field excavations. This is producing more accurate and finer cultural divisions. (Deuel, 1935, 1937; Greenman, 1932, 1939; Griffin, 1935, 1937b).

The taxonomic method of classification employs a five-fold division. The more general cultural groups, having a few diagnostic elements in common, are called patterns. Patterns are subdivided into phases, each including sites which are more closely related to one another. Phases are subdivided into aspects, aspects into foci, and foci into components. Components are really individual sites. Archaic sites of the northern Mississippi Valley may be summarized as follows:

Pattern	Phase	Aspect
Mississippi	Upper	Fort Ancient
		Iroquois
Woodland	Lake Michigan	Oneota
		"Floating" foci
Unknown	Hopewellian	Monks Mound
		Effigy Mound
		Wolf River
		Northern (Hopewell)
		Southern (Marksville)

To indicate the first of anything is risky, whether in evolution, patents, discoveries, or anthropology. So it is with regard to the first settled agricultural group to inhabit the northern Mississippi Valley. Nevertheless, a beginning must be made somewhere. I attempt here to reconstruct only the agricultural groups in this area. These can be encompassed within a period of about 2,000 years.

HOPEWELLIAN PHASE

One of the most widespread manifestations is known as the Hopewell (see appendix A, publications cited under Hopewellian phase),

the highest cultural attainment of which seems to have extended throughout the southern half of Ohio and probably into eastern Indiana. Other ramifications of this complex have been traced in northwestern Indiana and southwestern Michigan, south-central and northwestern Illinois, southeastern Iowa and west-central Wisconsin (see map, fig. 16). It has sometimes been considered the earliest agricul-

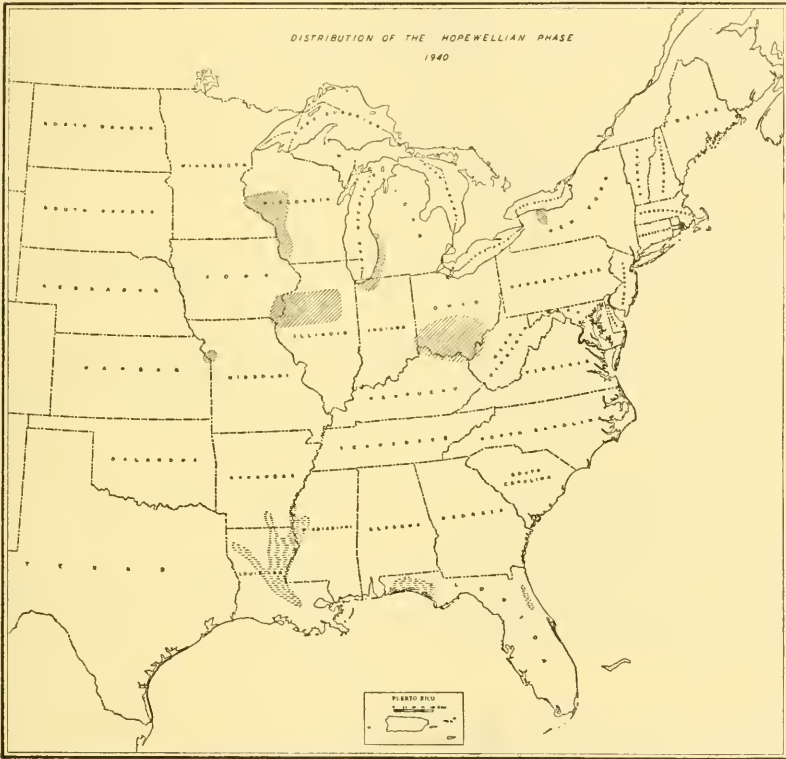


FIG. 16.—Distribution of the Hopewellian phase in 1940.

tural manifestation within the northern Mississippi Valley.² Unfortunately, no recent reanalysis of the Hopewellian phase has been published. For this reason difference of opinion exists as to just what elements constitute this phase and as to its position among the prehis-

² Cole, F.-C., and Deuel, T., 1937, p. 13, and others believe the Black Sand focus antedates the Hopewellian in Illinois, but the potsherds seem to indicate a blending with their later Hopewellian phase. Ford, J. A., correspondence, indicates an earlier pottery horizon along the shores of Lake Pontchartrain than the Marksville in Louisiana.

toric complexes. Certain diagnostic traits differentiate it from the Upper and Middle Mississippian phases and from the Lake Michigan and Northeastern phases of the Woodland pattern. The closest relative of the Hopewellian phase is probably the Adena phase, but whether the Adena represents an early or later development within the Hopewellian is still undetermined.

The following diagnostic traits seem to me to serve as an outline of the Hopewellian phase. This list was not based on a reclassification of Hopewell material in various museums, but on several seasons of excavations in southern Ohio (Hopewell and Seip No. 1 mounds); a pictorial survey made for the University of Chicago in 1929, covering the Ohio State Museum, Peabody Museum, and the Milwaukee Public Museum; excavations at Marksville, La.; and the literature dealing with Hopewellian cultures.

1. Remarkable development of artistic elements: Sculptured stone pipes, carved repousse copper, modeling of the human figure, weaving of conventionalized and intricate colored textiles, conventionalized and realistic designs incised on pottery vessels.

2. Complex mortuary ritual: Individually prepared graves within mounds; numerous burial mounds covered by a single large mound; ceremonial association of a large group of artifacts and trophy skulls with individual or group burials; cremation of from 60 to 75 percent of the bodies.

3. Association of geometric earthworks with large mounds or a large group of small mounds.

4. The use of foreign material, such as obsidian, copper, conch shells, mica, etc., for the manufacture of artifacts.

5. Distinct types of decorative elements on pottery vessels, including: Cross-hatched rims; smooth panels around the neck; design elements over the round or lobed body, consisting of smooth or roughened panels between incised grooves, portraying conventionalized or realistic forms of birds; and flat or footed vessels.

I select these elements as diagnostic of the Hopewellian phase, however, not without several qualifications. First, my judgment is admittedly somewhat subjective. It is necessarily so, because a published reanalysis of material from all Hopewellian sites is not yet available. Second, the elements may be considered as representing only mortuary and ceremonial material. Village sites have not yet been excavated in Ohio. Third, I have chosen elements characteristic mainly of Ohio. Many of them do not occur at Hopewellian sites in Indiana, Illinois, and Wisconsin. Finally, I have deliberately refrained from weighting some elements so that they have greater diagnostic value than others.

In stating that these traits are diagnostic of the Hopewellian phase I do not mean to imply that the presence of any one of them in a site is sufficient to mark that site as Hopewellian. There has been

some tendency to assume that a site should be classed in the Hopewellian phase if it has a single platform pipe, or a cut mica ornament with designs like those of the Hopewell mounds. These give a clue to cultural influences. But one element does not make a culture. The strength of the present taxonomic method of classifying archeological materials is that it employs all elements from each site. It should be noted, however, that even this comprehensive method cannot and, indeed, need not pigeonhole cultural materials with the precision of biological taxonomy. These materials are the somewhat variable products of human beings, and it is not expectable that even two sites of closely related peoples should yield identical series of specimens. The greatest value of the taxonomic method, therefore, is that it shows approximate degrees of relationship between sites and affords a more or less objective means of listing traits common to, i.e., diagnostic of, various groups of related sites. But it is doubtful whether archeologists can ever agree on what percentages of diagnostic traits sites must possess to be placed in the different categories of the taxonomic scheme.

A list of traits that distinguish as Hopewellian sites in Porter County, Ind., and in Iowa, southwestern Michigan, and Wisconsin includes only the following: Burial mounds; log tombs; copper celts; plain and effigy platform pipes; use of a roulette or notched rocker for decorating pottery; cross-hatched rim sherds; and probably cord-roughened pottery. A great many more traits than these, however, are shared by Hopewellian sites in Ohio, Illinois, and Wisconsin. On the other hand, the Ohio mound group, including sites at Mound City, Hopewell, Seip, Harness, Tremper, and Turner (Shetrone and Greenman, 1931, pp. 500-509) has many additional diagnostic traits not yet reported elsewhere.

In addition to these elements of material culture, the Hopewellian complex is also characterized by certain implied traits of social culture. Although the latter are no less important than the former, the archeologist too often is so interested in specimens per se that he fails to recognize the possibility of recovering valuable data on the social, political, and economic features of prehistoric peoples. After all, the material specimens upon which classifications of archeological cultures are based were the products of a series of activities that also involved nonmaterial traits. The archeologist has an obligation to throw all possible light on these nonmaterial traits. In his reconstructions of social features, however, he must naturally take care not to exceed deductions which can legitimately be made from his data.

Several features of Hopewellian social culture can confidently be inferred. Construction of the large mounds, the surrounding earthworks, and the hundreds of small mounds clearly required a dense population and well-coordinated society. This population must have had some stable economic basis. Hunting and fishing no doubt were of some importance as evidenced by barracuda jaws and other fish remains and by the representation of birds and animals in realistic carvings on pipes. But even though direct evidence of maize is lacking, the practice of intensive horticulture must be admitted, because it alone could have supported the large population aggregates in which the Hopewell people obviously lived. There must also have been conscription of labor to construct mounds which are as large as 30 feet high, 150 feet wide, and over 200 feet long. We do not know what division of labor there was, but the excellence of Hopewellian art suggests a special craft of sculptors and modelers. To obtain obsidian from the Rocky Mountains, mica from the southern Appalachians, copper from Wisconsin, and amphibians and fishes from the Gulf of Mexico required time for exploration. Since most of the large mounds were built to cover the bodies of the dead, accompanied by their personal adornments and other objects, one can postulate a well-developed ritual associated perhaps with a remarkable religious fervor.

The specific form of Hopewellian governmental organization cannot be known. But certainly some regimentation is indicated by the great communal works. I incline to deduce, from the widespread influence of these people, that if a select ruling class existed, they dominated a very large portion of the Mississippi Valley. Perhaps no conflicting culture or governmental organization existed along the Mississippi River at the time the Hopewellians were living in southern Ohio. Possibly their political organization was a northern extension of the system that prevailed in Mexico and Yucatan. (Very few specimens can, however, be identified with Mexican deities.) Copper head ornaments and colored woven garments decorated with fresh-water pearls and mica suggest insignia of authority; at least, persons with such attire would be set apart.

Many problems of the Hopewellian phase may be solved only by reclassification of all data now available from sites within the Mississippi Valley. One of the most important of these is the origin of this highly developed complex. Prior to 1930 the presence of certain Hopewellian traits at sites in various localities in the Southeast was explained by trade. The artifacts and data from Marksville, La. (Ford, 1935a, 1935b, 1935c; Fowke, 1927; 1928, pp. 405-434;

Setzler, 1933b; 1934), definitely indicate, however, that the southern Mississippi Valley was inhabited by an early sedentary group whose pottery and tobacco pipes were related to those of the Hopewell peoples of the north. Moreover, the work of Ford (1935a, 1935b, 1935c), Lemley (1936), Lemley and Dickinson (1937), and others, shows that Marksville pottery had a wide distribution and exerted a definite influence on decorative motifs of later cultural horizons in the area, such as the Coles Creek, Caddo, Tunica, and Natchez (see map, fig. 16). Wedel (1938a) has extended the range of Hopewell pottery traits to the west, in and around Kansas City, Mo. (See Wedel in this volume.)

What historical conclusions can be drawn from these data? Did the classical Hopewell culture as we know it in the Ohio Valley originate in the south or in the north? If the center of distribution of its most complex and diversified elements indicates the original home of these people, it must have developed in the Ohio Valley (Shetrone and Greenman, 1931, p. 497). If, however, the complex in southern Ohio is an amalgamation of northern and southern traits, the problem becomes complicated by trying to determine which traits are northern and which are southern. Many objects, such as barracuda jaws, alligator and shark teeth, tortoise and conch shells, came definitely from the Gulf States. Other elements that may have originated in the south are: Burial mounds, simple earthworks, flexed burials, pit-platform burials, bark-lined graves, pottery incised with realistic designs, plain clay platform pipes, sites situated near streams, multiple burials in mounds, and maize and tobacco. Mica came from North Carolina. This evidence leads me to believe that a people having a few basic Hopewellian elements appeared first in the southern Mississippi Valley and later spread to the north. In the Ohio Valley these southern migrants may have conquered and amalgamated with an earlier but highly developed group. From this amalgamation originated the complex and rich social and material culture which became the northern Hopewellian phase.

The occurrence of many elements only in the north supports the hypothesis that there were well-developed precursors of the Hopewell peoples in that area, though no pre-Hopewellian Agpo culture has yet been found. Elements found in the north and not yet reported from the south are: Flint Ridge chalcedony, fresh-water pearls, copper, galena, obsidian, Ohio pipestone, grizzly bear teeth, cord-roughened pottery, gravel-covered primary mounds, stone gorgets, burial platforms outlined with log molds, celts, breastplates, earspools, and carved human bones.

This speculation does not account for the beginnings of the distinctive and complicated Hopewell ceramic decoration. It could not have originated full-blown in its perfected form without a more simple precursor. But we have no means of knowing whether it developed in the north or south.

Another problem is the origin of the platform pipe. At Marksville one more or less complete baked-clay platform pipe and several fragments were found. In the northern Mississippi Valley the plain and animal-effigy platform pipe is typically carved from stone. Baked-clay platform pipes have never been reported as far as I know from Hopewell mounds north of the Ohio River. Which came first, the clay or carved-stone pipe? No doubt the cultivation and use of tobacco was first adopted in the southern States. It is also significant that Louisiana has very few rock outcroppings, none being as suitable for carving as Ohio pipestone or catlinite. The idea of the platform pipe may therefore have originated in the clay pipe of the south, and been adapted in the north to carved soft stone.

The occurrence in Hopewell sites of widely diversified materials foreign to the Ohio Valley, such as Yellowstone obsidian, Gulf of Mexico fishes and amphibians, North Carolina mica, and Wisconsin copper also requires explanation. As the Hopewell peoples were the only prehistoric group in the Mississippi Valley to use all these products for decorative and ceremonial purposes, we must credit them with a remarkable interest in travel and exploration. All this raw material may have been obtained through trade, but anything the Hopewellians gave in return for it has not survived or been identified. Most of it was probably transported in its raw state to be fashioned into their elaborate specimens at home. Although no example of boats or canoes has been preserved, river travel may have been the principal means of transporting the raw material. Southern Ohio exceeds any other area in the quantity and manufacture of this foreign material.

Hopewellian mortuary customs, including both primary burial and a high percentage of cremated burials and elaborate grave construction, imply some well-organized ritual. Copper tubes inserted in the corpse's nose to preserve the original facial contour (Shetrone and Greenman, 1931, pp. 408-410), and clay facial masks (Cooper, 1933) may evidence unusual concern about life after death.

How long ago did this civilization develop and how long did it flourish? Evidence, even from the entire Mississippi Valley and the Gulf States, permits only a guess (see table 1, pp. 256-257). Thus far no Hopewellian site has produced any certain post-Caucasian

materials; consequently they fall into the prehistoric period. Hopewellian materials have been related to other cultures in a time sequence only in the south. In Louisiana and Arkansas Ford (1935c) and Lemley (1936) have shown, on the basis of pottery designs and some stratification, that the Marksville (Hopewellian) precedes the Coles Creek and Deasonville complexes, which in turn may have given rise to the protohistoric Natchez, Tunica, and Caddo material complexes. In the north, however, nothing has been recovered to prove a connection between the Hopewellian and any later cultural horizons (see below). The occurrence of cord-marked pottery in a few Hopewellian sites in the north has led some (see Cole and Deuel, 1937, p. 203) to infer that a connection exists between it and later Woodland tribes. If by "Woodland" is meant traits that might have been indigenous to the northern Mississippi Valley before the full blossoming of the culture represented at the Hopewell, Turner, Mound City, Harness, Seip, and Trempealeau groups of mounds, then we may be justified in regarding this manifestation as a part of the Woodland pattern. Until further specific evidence of a definite connection between Woodland and Hopewellian has been established, however, I shall continue to advocate classifying the latter phase under a separate pattern in our taxonomic classification.

As there seems to have been little connection in the northern Mississippi Valley between the Hopewellian phase and any of the other prehistoric complexes, we cannot place the former in any developmental sequence. One can therefore state only that the Hopewellian phase existed between the beginning of the Christian era and A. D. 1200 or 1400, or less specifically within the last 1,900 years. Since none of the diagnostic elements of the Hopewellian phase has been found associated with any of the later manifestations, such as the Upper or Middle Mississippian phases or the Lake Michigan and Northeastern phases, one may conclude that the Hopewellian culture had become extinct before these later cultures were established in the northern Mississippi Valley. As a guess, I should choose A. D. 1400 as its possible closing date.

The final fate of the Hopewell culture is another important but difficult problem. If it were assumed that it originated from a general Woodland culture in the north (characterized by grit-tempered, cord-marked pottery and generalized flint projectile points), then it developed or blossomed into the typical Hopewellian culture with large mound sites in Ohio, Illinois, and Wisconsin. In this case, it might later have migrated southward, losing all the traits that are peculiar to it in the north, and, in the southern Mississippi

Valley, have given rise to the protohistoric and historic tribes of Louisiana, Mississippi, Arkansas, and eastern Texas. Although this hypothesis would give a neat cycle of cultural development, it has too many gaps and forced explanations to be tenable. Its greatest weakness is that present evidence seems to show that in early Hopewellian development, influence was from south to north, rather than the reverse (see p. 263). Marksville was probably not later and may have been earlier than the great northern mound sites. The northern Hopewellian cultures, therefore, seem to have faded into extinction rather than to have migrated south.

Many other problems of the Hopewellian culture also await solution. For example, discovery and excavation of Hopewellian village sites in Ohio would greatly enlarge our knowledge of the culture, giving data on house types, relation of villages to burial mounds, approximate size of villages, types of household artifacts, and whether such artifacts differ from the objects buried with the dead. Such excavations would definitely determine whether or not the Hopewellian complex represents only the ceremonial aspects of a people using entirely different types of utilitarian objects.

The wide distribution of the Hopewellian phase and the many controversial problems it involves have required that considerably more space be allotted to it than will be given to other archeological complexes within the northern Mississippi Valley.

ADENA PHASE

The next division to be discussed is the Adena phase. It takes its name from the estate of that name, where the mound first producing its characteristic traits was located. An analysis of the Adena culture was made by E. F. Greenman (1932), who lists its diagnostic traits and compares the evidence from 70 sites in Ohio, Pennsylvania, West Virginia, Indiana, and Illinois. No evidence of the Adena complex had been found in Kentucky until the past year, when material from several mounds excavated by Webb extended the distribution of the Adena phase and contributed to the solution of some of its problems.

Several traits characterize the Adena culture (see appendix A for publications concerning the Adena; and map, fig. 17). Conical mounds without earthworks were built (an exception is the Fudge Mound in Indiana, Setzler, 1931). The most important burial, often wrapped in bark, was usually located in the center of the mound in a subfloor pit surrounded by wooden timbers. Numerous copper

bracelets encircled the lower arm, and finger rings made from copper wire were worn. The Adena complex also includes: Various types of stone gorgets—expanded center, rectangular, convex, and concave sides and ends; leaf-shaped and stemmed projectile points; tubular pipes, one being an effigy in tubular form. Red ochre covered a number of skeletons, especially in Ohio and Illinois. One of the most curious features of the Adena phase is the scarcity of

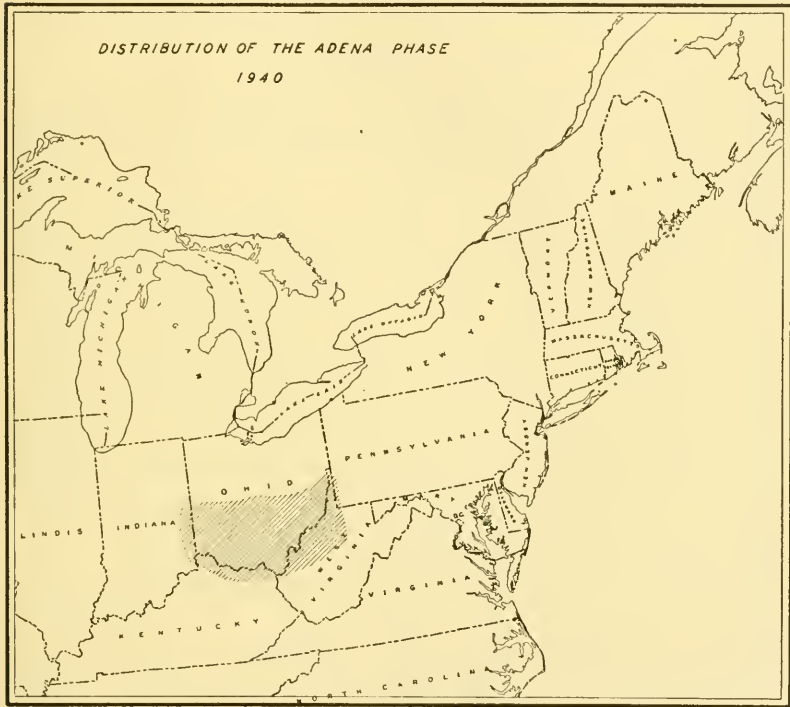


FIG. 17.—Distribution of the Adena phase in 1940.

pottery vessels. The Nowlin Mound in Indiana (Black, 1936) produced only 17 potsherds. For other traits see Greenman (1932, pp. 450-478).

Because some Adena mounds were in close proximity to Hopewellian sites and because both cultures used copper, some mica, log tombs, and other traits, a relationship between the Hopewellian and Adena people has been postulated by some authors. Mills concluded (Mills, W. C., 1917a, p. 266), after his excavation of the Westenhaver Mound, that the material from the Adena and Westenhaver Mounds showed that they belonged to an early developmental stage

of the Hopewellian. He assumed that the Hopewell culture had evolved through three progressively higher stages; namely, the Adena and Westenhaver mound material representing the earliest, the Seip and Harness being intermediate, and the Hopewell and Tremper mounds being the highest development. Shetrone reanalyzed these possible connections and pointed out the wide divergence between the Hopewellian and Adena phases (1920, pp. 159-161). He believes, as do most of us at the present time, that some relationship may exist but states that its exact nature may only be determined by stratigraphy or association of objects.

The Adena mounds excavated by Webb in Kentucky contained restorable earthenware vessels (correspondence Nov. 16, 1938, and Feb. 6, 1939). One vessel was decorated with concentric squares or diamonds, somewhat reminiscent of what I have termed "the closely spaced incised line technique," a style classified by Ford as the Marksville incised ware (for illustration see Setzler, 1933b, pl. 3, *C* and *D*). Webb noted a similarity between his Kentucky Adena and the Copena complex in northern Alabama. Since few if any examples of the closely spaced incised line technique have been recorded from northern Hopewellian sites, the presence of this ware in the Kentucky Adena site may indicate that the Adena phase was only one of several elements which combined in the Marksville focus to make up the southern Hopewellian aspect. This would argue that in the north the Adena and Hopewellian phases amalgamated and gave rise to the southern Hopewellian. If so, the Hopewellian and Adena phases were contemporaneous in southern Ohio.

Even though the scarcity of pottery in the Adena sites serves as a negative characteristic, the building of mounds, and the use of specialized mortuary customs, the characteristic tubular tobacco pipe, and native and foreign material for decorative purposes imply some elaboration of the social culture. No charred corn has been recovered, but the mounds suggest a sedentary population, and pipes suggest that at least tobacco was grown. I would, therefore, classify the Adena sites under the Agpo base.

MISSISSIPPI PATTERN

The Mississippi pattern in the northern Mississippi Valley is divided into the Middle and Upper phases. There is little evidence to show which is older. Both were probably established in the area after the disappearance of the Hopewell peoples and were therefore relatively late. My guess is that neither antedates A. D. 1400. Of the two I incline to place the Middle phase a trifle earlier than the

Upper phase because European-made objects were found in one of the foci of the Fort Ancient aspect.

The Middle Mississippian phase contains numerous traits found in sites in Arkansas, Missouri, and Kentucky, and in the middle as well as the northern portions of the Mississippi Valley. In the south, this phase may have been an early Muskogean manifestation. Only a few sites, especially Aztalan, have been systematically excavated and the results classified. This Middle phase, in the area herein treated, has been divided into only one aspect—Monks Mound (at Cahokia, East St. Louis, Ill.).

The most important site, which produced the diagnostic traits, is near Aztalan, Jefferson County, in the southeastern part of Wisconsin (for detailed analysis see Barrett, 1933). Aztalan seems very definitely to represent a northern outpost of a southern archeological complex and to have been surrounded by foreign and no doubt hostile people. It constituted an island of southern culture in this northern territory, in the midst of, and in considerable contact with, some of the Woodland groups then inhabiting this portion of Wisconsin. Its need for protection is clearly demonstrated by its well-made and strong wooden palisades, with watch towers and specially constructed gates for defense of the entrance. Within this strong stockade was the village consisting of rectangular and circular plastered wooden houses, with fireplaces and baked clay lined pits. One can easily surmise from the clam-shell hoes and flint spades that a considerable amount of primitive agriculture was practiced. But the people also subsisted on wild foods—berries, nuts, fish, birds, and mammals. One striking feature was the evidence of cannibalism. Arts and crafts were well advanced, especially in the manufacture of bone, shell, stone, sheet copper, and excellent pottery vessels. Numerous pipes suggest the use and possible cultivation of tobacco. These traits, together with use of Gulf Coast shells, earth platforms, truncated and terraced earth mounds, readily justify the conclusion that this culture was strongly related to cultures in the middle and even lower Mississippi Valley (Barrett, 1933, p. 372).

Because of the similarity of Aztalan mounds to Monks Mound at Cahokia, and of Aztalan materials to one of the dominant Cahokia complexes, Aztalan has been classified as a part of the Monks Mound aspect. Other closely related sites are also found along, and to the south of, Rock River, in Illinois near Carbondale, and at the famous Angel site near Evansville in western Indiana. All have some resemblance to one another in such features as embankments, platform mounds, pottery, and other objects. Further clarification

of problems connected with this wedge of southern culture which pushed into the northern Mississippi Valley will be forthcoming from future excavations and analyses of such sites as the Angel site, where work is now being conducted.

It is hoped that the chronology of this manifestation may be established by means of pottery types belonging to the Lake Michigan phase of the Woodland pattern. If a date for these wares can be established, either through documents or dendrochronology, we may, through a study of their association with other artifacts, be able to erect a more extended chronology. At present, I should allot about

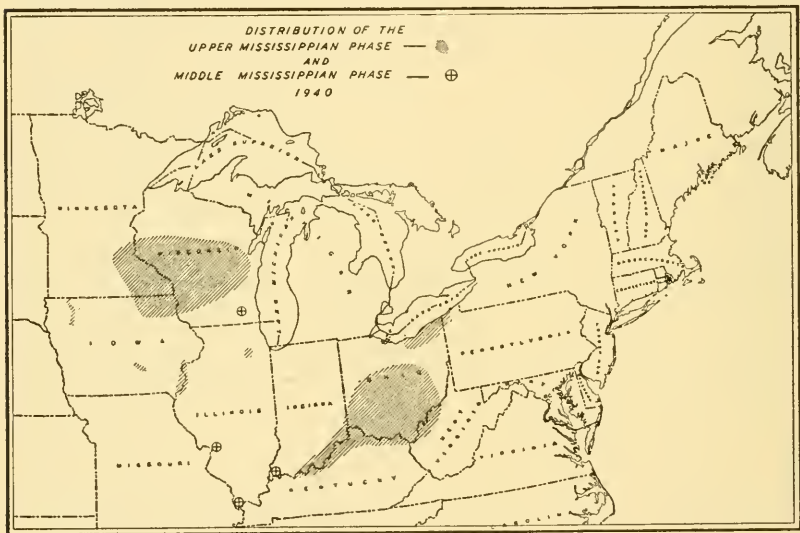


FIG. 18.—Distribution of the Upper and Middle Mississippian phases.

one century to the migration and occupation of this territory (see map, fig. 18) by people with the Middle Mississippian phase.

The Upper Mississippian phase has a much wider distribution throughout our area and has received more attention than any other manifestation. Research on this phase represents perhaps one of the most encouraging examples of how, by a meticulous classification of data and specimens, certain widespread relationships can be established. As European-manufactured objects have been found in association with materials of this complex, we may hope some day to identify the historic Indian tribes who were responsible for the archeological manifestations.

The Upper phase of the Mississippi pattern has been divided into three distinct aspects—Fort Ancient (Ohio and Kentucky), Iroquois

(northern Ohio, western New York, and southern Canada), and Oneota (Kansas, Iowa, Minnesota, and Wisconsin). (See map, fig. 18.) A fourth aspect, including most of the Illinois sites, has been left unnamed because it seems to represent a mixture of Ohio and some Wisconsin manifestations. It will no doubt be clarified in the near future by excavations in northern Illinois. (For detailed analyses see Cole and Deuel, 1937, pp. 207-219; Deuel, 1935, and Griffin, 1935.)

The Fort Ancient aspect includes a number of foci, with components located in southern Ohio and Indiana, and one site in northern Kentucky (Fox Farm). No detailed analysis of these foci is possible here. Only the more general characteristics will be enumerated, to distinguish between this and the other Ohio manifestations. Griffin (1935) gives a preliminary summary of the analysis and reclassification of these sites; his more comprehensive report on the Fort Ancient aspect has not yet been issued.

A number of traits characterize the Fort Ancient aspect. Thousands of mounds were built throughout the Ohio Valley, but, in contrast to the Ohio Hopewell, the Fort Ancient culture also has large village sites. Mounds and villages were both used as cemeteries and contain very similar specimens. Bodies were evidently interred soon after death. When placed in the mounds they were seldom provided with any prepared graves. The bodies were usually extended, except in the Feurt component, where most of them were flexed. When a subsurface burial was made in the village, a rectangular grave was dug. In some instances, however, the body was tightly flexed and placed in an abandoned storage pit. Often several disarticulated burials were placed in circular or elliptical pits. Very often a cache pit was subsequently dug through the grave of an extended burial. These facts seem to indicate some indifference and carelessness in burial procedure, the corpse evidently having been disposed of in the most convenient type of grave as quickly as possible after death.

Fort Ancient material culture consisted primarily of utilitarian objects. A few stone pipe bowls were carved to represent birds and animals, and some had engraved designs on the sides, but the majority were plain egg-shaped or conoidal bowls. A few pebbles were also engraved to represent the crude outlines of animals. On the whole, artistic ability, if judged by the nonperishable objects, was far inferior to that of the Hopewellians. Stone objects include triangular projectile points, notched, leaf-shaped, and triangular knives, flat stone mortars and bell-shaped pestles, chipped and polished celts without grooves, and grooved club stones or hammers. Bone

was used for every conceivable purpose—fishhooks, harpoon points, needles, pins, awls, chisels, scrapers, flaking tools, antler blades and digging tools, whistles, flutes, notched ribs for counting or rasping instruments, bone and antler projectile points, beamers or draw-shavers. Many ornaments were made from such articles as plain beads, tubes, and pendants. From the local fresh-water pearly mussels were fashioned hoes, spoons, scrapers, circular and rectangular gorgets, and disk-shaped beads.

The pottery of the Fort Ancient aspect is quite distinct from the other Ohio manifestation. It is both shell- and grit-tempered. According to Griffin's analysis (1935), that of the Madisonville-Fox Farm focus is predominantly shell-tempered, whereas that of the Baum-Gartner focus is grit-tempered. Most vessels are jars with strap handles and semicircular and horizontal lugs. Decoration, primarily incised, consists of curvilinear, rectilinear, and guilloche patterns. The few vessels buried with the dead do not differ from those found in the village sites and cache pits.

Hundreds of cache pits were used for storing food and have yielded charred maize cobs and a variety of beans. This proves that horticulture was practiced, though it may have been interspersed with considerable hunting and fishing. It implies a somewhat sedentary mode of life. Fort Ancient people had domesticated dogs, which, judging by their burial in human graves, were cherished household pets.

Fort Ancient villages indicate a rather large and widespread population, well adapted to the environment, but with very few outside contacts. There is no evidence of extensive travel or exploration. Copper, mica, and obsidian were never used to any great extent. In Ohio, mounds and villages were located on many streams that were previously settled by the Hopewellians. At the Baum village site along Paint Creek, near Bournville, Ohio, they settled directly on a Hopewellian site. Shetrone and Mills (Shetrone, 1920) considered the Fort Ancient and Hopewell groups to have been contemporaneous. I incline to believe, however, that the Hopewellians had left the Ohio Valley a few hundred years before it was reoccupied by the Fort Ancient people.

None of the Ohio manifestations has direct evidence of European contact except the Madisonville site (Hooton and Willoughby, 1920), a component of the Fort Ancient aspect. Because this site contains European objects, various attempts have been made to identify its occupants with historic tribes or their ancestors in the northern Mississippi Valley. The most widely accepted theory is that propounded

by Swanton (Indianapolis Archeological Conference, various authors, 1936, pp. 22-35; Swanton, 1923; Willoughby and Hooton, 1922, pp. 95-96). He has identified the site as the one shown on Franquelin's map and marked as the location of the Mosopelea. Before 1673 a tribe by this name was driven from southern Ohio or southeastern Indiana, and either disappeared forever or else became the historic Ofo, who, by linguistic evidence, as pointed out by Swanton, probably made this sort of migration.

Even though the objects of European manufacture recovered from the Madisonville site cannot be compared with the aboriginal material from other Fort Ancient sites, they constitute a very important diagnostic trait of this component. The site is the only manifestation falling within the historic period. It provides an important point of reference for establishing a time sequence. The Madisonville village must have been occupied for some time before any European goods were acquired. It was probably abandoned before European missionaries or traders visited or came in contact with it, certainly before any permanent white settlements were established nearby. Swanton has identified the Madisonville site as the former home of the Mosopelea, and the Ofo as descendants of the Mosopelea. If he is correct in believing that the Ofo were Siouan, it may be suspected that other sites of the Fort Ancient archeological aspect were occupied by ancestors of some of the historic Siouan tribes.

The Madisonville site has also been considered the former home of the Shawnee, Miami, and other Algonquian groups, but the evidence is less convincing.

An area in northeastern Ohio, believed to be the former home of Iroquoian Indians (no one can prove that the inhabitants actually spoke the Iroquoian language), has been considered the source of Upper Mississippian materials.

Along the Ohio River in Dearborn and Ohio Counties, southern Indiana, there are village sites that have yielded artifacts somewhat comparable to those of the Fort Ancient aspect. These sites may have been the homes of the Siouan (?) people during their southwestern migration out of southern Ohio. Across the Ohio River from Louisville, Ky., are the extensive Clarksville sites, where excavations have revealed vertical stratification of considerable deposits. The upper stratum has been identified by Guernsey (Indianapolis Archeological Conference, various authors, 1936, p. 15) as belonging to the Upper Mississippian phase.

In northeastern Illinois, southwest of Joliet at the mouth of the Kankakee River, is an important site belonging to the Upper Mississippian phase and classified with the Fort Ancient aspect (Langford, 1927). Blue Island, Big Stone Lake, and Plum Island are tentatively classified in the Upper Mississippian phase, but because of an unstratified mixture with the Middle Mississippian sites, they are distinguished as the Wisconsin aspect.

Along the southwestern border of Wisconsin, near the banks of the Mississippi and Wisconsin Rivers, the dominant archeological culture, judging from the pottery, belongs to the Oneota aspect of the Upper Mississippian phase. The most important site is known as the Grand River Group, in Green Lake County, southwest of Lake Winnebago. Most of the sites belonging to this phase in Indiana, Illinois, Wisconsin, and Ohio were predominantly village sites. Mounds were built but are of secondary importance. The Grand River site in Wisconsin, however, is unusual in having 17 mounds (Jeske, 1927).

On the western shore of Lake Winnebago in Wisconsin, surrounded by sites of the Lake Michigan phase, is an area formerly inhabited by the historic Winnebago. It contains pottery and other artifacts comparable to the Oneota aspect and very similar to the material from the western portion of Wisconsin and from the Grand River site. McKern (1931b, p. 386) concludes that the pottery recovered from these sites along the lake was made by the Winnebago. At the time of the first white contact, 1634, the Winnebago were living on Green Bay and their villages extended to Lake Winnebago. During this period they were completely hemmed in by tribes of the Central Algonquin, especially the Sauk, Fox, and Menominee, but maintained contact with related Siouan tribes, such as the Iowa, Oto, and Missouri farther west. The Siouan dialect in common usage among the Winnebago, Oto, Iowa, and Missouri is considered to be related to the northern, eastern, and southern (Biloxi) Siouan dialects, but the exact relationship is not definitely known. Because of the general similarity of archeological materials in sites of Ohio, Indiana, Illinois, and Wisconsin, these have been grouped together as forming the Upper Mississippian phase.

Archeologists working in Iowa, Minnesota, and Wisconsin are fully aware of the importance of attempting to identify archeological sites with Siouan villages mentioned in historic documents. The recently organized committee on ethnohistory, studying documentary sources on the Indian-White contact period in the northern Mississippi Valley, will provide important materials for this approach

(see Mott, 1938). All effort should be made to excavate sites that can be reliably identified as villages of known tribes mentioned in the documents. With such sites and with sufficient material, the ancestors of historic Indian tribes may be traced into the proto-historic and perhaps into the prehistoric periods. Following the direct historic approach to archeology in Wisconsin, Iowa, and southern Minnesota, certain Oneota sites have been identified with historic villages inhabited by the Winnebago and by the Chiwere Siouan group (Iowa, Oto, Missouri). The similarity of Madisonville archeological materials, especially pottery, to these western Siouan sites, supports Swanton's theory that the aboriginal inhabitants of Madisonville were Siouan.

The archeological survey in Iowa, under the direction of C. R. Keyes (1920, 1925, 1929), has contributed much to establishing the outline of the various archeological manifestations within the State.³ The Oneota aspect of the Upper Mississippian phase is one of the most widespread archeological manifestations in northeastern Iowa. This aspect has several foci—Orr, Blood Run, Correctionville, and Burlington. The best known is the Orr focus, consisting of a concentration of sites in Winneshiek and Allamakee Counties in the northeast corner of the State. The western portion of Iowa along the Missouri River contains the Glenwood manifestation comparable to the Upper Republican and especially to Nebraska cultures. Since these show a close relationship to cultures farther west, they will not be described in this section (see Wedel, in this volume).

Some of the diagnostic traits in the Oneota aspect of Iowa include shell-tempered pottery; presence of European materials, similar to those found at the Madisonville site in Ohio, consisting of brass coils, iron, and glass beads; and intrusive burials placed in mounds constructed by people of another culture. (Some of the mounds in western Iowa may have been built by the Oneota group.) The presence of European trade material in the sites as well as the historical documents regarding the area (Mott, 1938) seem to leave little doubt that the Iowa Indian tribe of the seventeenth century was responsible for the material now classified as the Orr focus of the Oneota aspect. This evidence contributes much to the prehistory of the northern Mississippi Valley, for it not only adds reliable depth to the ethnology of the Chiwere Sioux, but gives a historic starting point from which to carry the archeological mani-

³ For a distributional map of the archeological cultures in Iowa patterned after C. R. Keyes, see Mott, 1938, p. 284.

festations backward in time. Further investigations bringing history to bear on archeological programs will clarify the anthropological problems not only in Iowa but also in the other States in this portion of the Mississippi Valley.

WOODLAND PATTERN

This third primary division constitutes one of the most widespread archeological complexes in the northern United States. If cord-marked, grit-tempered pottery be considered its most diagnostic trait, it also extends over many southern States, especially along the Mississippi River and the northeastern periphery of the Southwest to the Rocky Mountains, and a large portion of southern and eastern Canada. This discussion will be limited to the northern Mississippi Valley, however, and an attempt will be made to reconstruct the general features of this major archeological division.

Considerable difference of opinion exists with regard to the diagnostic traits of certain phases of the Woodland pattern. Except for the work of Parker and Ritchie in New York, and Barrett and McKern in Wisconsin, very few sites have produced what might be regarded as a complete diagnostic group of traits. All participants at the Indianapolis Conference (Indianapolis Archeological Conference, various authors, 1936, pp. 65-67) believed that we required more information regarding specific Woodland sites. Prior to the Indianapolis Conference, many Hopewell-like sites were classified under the Central Basin phase of the Woodland pattern (Cole and Deuel, 1937, pp. 15-18). At the Conference McKern seemed to believe that only a possible 20 percent of Hopewell traits in Wisconsin were similar to Woodland traits (Indianapolis Archeological Conference, various authors, 1936, p. 61).

The differences between the Woodland pattern and Mississippi pattern seem obvious enough. There is some mixture at the Aztalan site in Wisconsin, a Middle Mississippian phase and Woodland, but this is probably due to contact between the people. The presence of numerous Woodland sherds and some vessels at Hopewellian sites, especially in Illinois, have given rise to speculation. Does the Hopewellian phase represent only the ceremonial side of the Woodland culture? Were these cultures contemporaneous? Did Hopewellian develop out of the Woodland, or are the protohistoric Woodland groups descendants of the Hopewellian?

My own view is that the Woodland archeological pattern represents the prehistoric ancestors of the recent eastern Woodland tribes, or, more specifically, of the central and eastern divisions of

the Algonquian family. The entire area of the northern Mississippi Valley, except for the northeastern portion of Ohio, the southeastern corner of Michigan, and the southwestern sections of Iowa and Minnesota, was inhabited in recent times by tribes of these Algonquian divisions. If the prehistoric sites of the Woodland pattern are assignable to Algonquian groups (if the term Algonquian has too definite a linguistic connotation, East Woodland may be used instead), it can scarcely have been Hopewellian. Moreover, I cannot see any connection between the material from the thousands of Woodland surface sites scattered throughout the area and that from the Hopewellian sites. As McKern pointed out at the Indianapolis Conference, "We speak of Woodland basic culture in Wisconsin, realizing that we don't know exactly what it is." (Indianapolis Archeological Conference, various authors, 1936, p. 1.) There is still lack of agreement concerning its basic determinants. A difficulty that hinders research not only in Wisconsin, but in Ohio and other States, is that Woodland sites are primarily on the surface, where intensive agriculture has scattered the material during the last hundred years. Even though most museums contain quantities of specimens derived from these sources, very little systematic excavation, outside of Wisconsin and Iowa, has been made in Woodland sites. Woodland sites are better known in Wisconsin than elsewhere, however. This must be accredited to the archeologists and ethnologists at the Milwaukee Public Museum, who have taken a lively interest in ascertaining the prehistoric ancestors of the many diverse Indian groups within the State during the early historic period (Skinner, 1913; Skinner and Parker, 1923), and in investigating prehistoric villages. Farther south, in Illinois, Indiana, and Ohio, the area had, due to warfare during the period just prior to the historic white settlements, become a "no man's land." The most important sites in Wisconsin which are classified in the Lake Michigan phase of the Woodland pattern are: The Kratz Creek mound group (Barrett and Hawkes, 1919); the Neale and McClaughry mound groups (McKern, 1928); the Kletzien and Nitschke mound groups (McKern, 1930); and certain mounds and village sites of Shawano and Oconto Counties, Wis. (Barrett and Skinner, 1932). They occur mainly in the eastern half of the State along the shores of Lake Michigan and in the Fox and Rock River valleys. Judging by pottery collections, the Lake Michigan phase also occurred in western Michigan, northern Illinois, various parts of Iowa, and at many sites in Minnesota. The pottery from these sites is identical with ware from numerous sites of the eastern Algonquian groups. On many of the long-occupied historic

Algonquian sites only this type of pottery is found. For this reason there seems little doubt that this manifestation represents the prehistoric ancestors of the historic Indians. (See map, fig. 19.)

An outstanding characteristic of sites throughout the southeastern section of Wisconsin is the association of Woodland materials with a large number of scattered effigy mounds.

The most common features of Woodland culture are: Pottery, which is tempered with coarse, granular grit, lightly fired, shaped with a pointed or conoidal base, a shallow neck, and an outflaring rim, usually decorated or roughened by means of a cord-wrapped

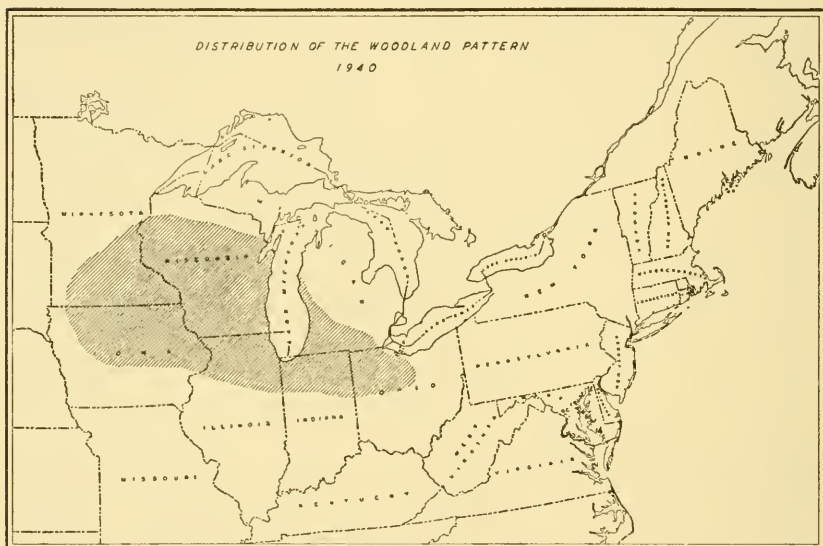


FIG. 19.—Distribution of the Woodland pattern in 1940.

paddle on the outer surface, the outer rims being given additional decoration by other cord-wrapped implements and sometimes by incising or stamping; tubular and elbow-shaped pipes of stone and clay; various problematical polished stone specimens, including bannerstones, probably birdstones, and others; grooved stone axes and polished celts; and notched and stemmed projectile points. Only a few bone specimens have been found. Burials are usually flexed and bundle reburials.

On the basis of the present archeological evidence it is difficult to reconstruct much of the culture of these people. If, as seems to be the case in Wisconsin, Iowa, and Minnesota, the Lake Michigan phase does represent the prehistory of the Central Algonquian

groups, one is amazed at the paucity of evidence left by one of the most widespread groups of aborigines north of Mexico.

SUMMARY

An attempt has been made to outline in a very general way the outstanding archeological manifestations in the northern Mississippi Valley. These have been grouped according to the various phases under the three distinct patterns. Their relative position in a tentative time scale has been discussed and graphically illustrated in table I. Numerous problems have been pointed out. Wherever data permit, a partial reconstruction was suggested.

The bibliography does not cover all publications dealing with mound explorations. Many papers covering generalized phases as well as those reporting the location of specific sites have had to be omitted for lack of space. Appendix A is intended to guide the general reader and student who has not specialized in the mound area of the northern Mississippi Valley to source material relating to the main divisions of the cultural manifestations.

SELECTED BIBLIOGRAPHY

ATWATER, CALEB

1820. Description of the antiquities discovered in the State of Ohio and other western States. *Archaeologia Americana*, vol. 1, pp. 119, 210-214, 238-242.

BARRETT, S.A.

1933. Ancient Aztalan. *Bull. Milwaukee Publ. Mus.*, vol. 13.

BARRETT, S. A., and HAWKES, E. W.

1919. Kratz Creek mound group. *Bull. Milwaukee Publ. Mus.*, vol. 3, No. 1.

BARRETT, S. A., and SKINNER, A.

1932. Archeology of Shawano and Oconto Counties. *Bull. Milwaukee Publ. Mus.*, vol. 10, No. 5.

BLACK, G. A.

1933. The archaeology of Greene County. *Indiana Hist. Bull.*, vol. 10, No. 5.

1934. Archaeological survey of Dearborn and Ohio Counties. *Indiana Hist. Bull.*, vol. 11, No. 7.

1935. The excavation of a Blackford County site. *Indiana Hist. Bull.*, vol. 12, No. 5, pp. 148-160.

1936. Excavation of the Nowlin Mound. *Indiana Hist. Bull.*, vol. 13, No. 7.

BUSHNELL, D. I., JR.

1904. Cahokia and surrounding mound groups. *Peabody Mus. Amer. Arch. and Ethnol.*, Harvard Univ., Pap. vol. 3, No. 1.

1922. Archeological reconnaissance of the Cahokia and related mound groups. *Expl. and Field-work Smithsonian Inst. in 1921*, *Smithsonian Misc. Coll.*, vol. 72, No. 15, pp. 92-105.

COLE, FAY-COOPER

1933. Archeological field work in North America in 1932. *Amer. Anthrop.*, n.s., vol. 35, No. 3, p. 493.

COLE, FAY-COOPER, and DEUEL, THORNE

1937. Rediscovering Illinois. Archeological explorations in and around Fulton County. *Univ. Chicago Publ. Anthrop., Arch. Ser.*

COOPER, L. R.

1933. Red Cedar River variant of the Wisconsin Hopewell culture. *Bull. Milwaukee Publ. Mus.*, vol. 16, No. 2.

DEUEL, THORNE

1935. Basic cultures of the Mississippi Valley. *Amer. Anthrop.*, n.s., vol. 37, No. 3, pt. 1, pp. 429-445.
1938. Lower Mississippi traits in the middle phase in Illinois. *Trans. Illinois State Acad. Sci.*, vol. 31, No. 2, pp. 68-70.

DICKINSON, S. D., and LEMLEY, HARRY J.

1939. Evidences of the Marksville and Coles Creek complexes at the Kirkham Place, Clark County, Arkansas. *Bull. Texas Arch. and Paleont. Soc.*, vol. 11, pp. 139-189.

ESTES, L. C.

1867. The antiquities on the banks of the Mississippi River and Lake Pepin. *Ann. Rep. Smithsonian Inst. for 1866*, pp. 366-367.

FARQUHARSON, R. J.

1876. Recent archaeological discoveries at Davenport, Iowa. *Proc. Davenport Acad. Nat. Sci.*, vol. 1, pp. 117-143.

FORD, J. A.

- 1935a. Outline of Louisiana and Mississippi pottery horizons. *Louisiana Conservation Rev.*, vol. 4, No. 6.
- 1935b. An introduction to Louisiana archeology. *Louisiana Conservation Rev.*, vol. 4, No. 5.
- 1935c. Ceramic decoration sequence at an old Indian village site near Sicily Island, Louisiana. *State of Louisiana Dep. Conserv. Anthrop. Study No. 1*, Louisiana Geol. Surv.
1939. Archeological exploration in Louisiana during 1938. *Louisiana Conservation Rev.*, vol. 7, No. 4, pp. 15-17.

FOWKE, GERARD

1902. Archeological history of Ohio.
1927. Archeological work in Louisiana. *Expl. and Field-work Smithsonian Inst. in 1926*. *Smithsonian Misc. Coll.*, vol. 78, No. 7, pp. 254-259.
1928. Archeological investigations—II. *44th Ann. Rep. Bur. Amer. Ethnol.*, pp. 399-540.

GASS, J.

- 1876-1878. Report of mound excavation. *Proc. Davenport Acad. Nat. Sci.*, vol. 2, pp. 92-98.
- 1881a. Recent exploration of mounds in Rock Island County, Illinois. *Proc. Davenport Acad. Nat. Sci.*, vol. 3, pp. 135-140.
- 1881b. Exploration of mounds in Mercer County, Illinois. *Proc. Davenport Acad. Nat. Sci.*, vol. 3, pp. 147-148.

GILLMAN, HENRY

1875. Perforation of the humerus conjoined with platycnemism. *Amer. Naturalist*, vol. 9, No. 7, pp. 427-428.

GREENMAN, E. F.

1927. Michigan mounds, with special reference to two in Missaukee County. Pap. Michigan Acad. Sci., Arts, Letters, vol. 7 (1926).
1932. Excavation of the Coon Mound and an analysis of the Adena culture. Ohio State Arch. and Hist. Quart., vol. 41, No. 3.
- 1935a. Excavation of the Reeve village site, Lake County, Ohio. Ohio State Arch. and Hist. Quart., vol. 44, No. 1, pp. 3-65.
- 1935b. Seven prehistoric sites in northern Ohio. Ohio State Arch. and Hist. Quart., vol. 44, No. 2, pp. 220-238.
1937. The Younge site. Occasional Contr. Mus. Anthrop., Univ. Michigan, No. 6.
1938. Hopewellian traits in Florida. Amer. Antiquity, vol. 3, No. 4, pp. 327-332.
1939. Cultural relationships of archaeological sites in the upper Great Lakes region. Pap. Michigan Acad. Sci., Arts, Letters, vol. 24 (1938), pt. 4.

GRIFFIN, JAMES B.

1935. An analysis of the Fort Ancient culture. Notes from the Ceramic Repository for the Eastern U. S., Mus. Anthrop., Univ. Michigan, No. 1.
- 1937a. The archaeological remains of the Chiwere Sioux. Amer. Antiquity, vol. 2, No. 3, pp. 180-181.
- 1937b. The chronological position and ethnological relationships of the Fort Ancient aspect. Amer. Antiquity, vol. 2, No. 4, pp. 273-276.

GUERNSEY, E. Y.

1924. Archeological survey of Lawrence County. Indiana Hist. Bull., Extra No., July.
1926. An aboriginal cemetery and village site in Jackson County. Indiana Hist. Bull., vol. 3, No. 8.

GUSTAVSON, F. T.

1935. Our archaeological resources. (Minnesota.) Minnesota Conservationist, pp. 16, 40-44, May.

HENDERSON, JOHN G.

1884. Aboriginal remains near Naples, Ill. Ann. Rep. Smithsonian Inst. for 1882, pp. 686-721.

HINSDALE, W. B.

1925. Primitive man in Michigan. Michigan Handbook Ser., No. 1.
1930. Reports of archaeological field work in the summer of 1928 in Montmorency, Newaygo and Lake Counties, Michigan. Michigan Acad. Sci., Arts, Letters, vol. 12, pp. 127-135.

HINSDALE, W. B., and GREENMAN, E. F.

1936. Perforated Indian crania in Michigan. Occasional Contr. Mus. Anthrop., Univ. Michigan, No. 5.

HOLMES, W. H.

1886. Ancient pottery of the Mississippi valley. 4th Ann. Rep. Bur. Amer. Ethnol., pp. 361-436.
1893. Traces of glacial man in Ohio. Journ. Geol., vol. 1, No. 2.
1901. Aboriginal copper mines of Isle Royale, Lake Superior. Amer. Anthrop., n. s., vol. 3, pp. 684-696.
1903. Aboriginal pottery of the eastern United States. 20th Ann. Rep. Bur. Amer. Ethnol., pp. 1-201.

- HOMSHER, G. W.
 1884a. The Glidwell Mound, Franklin County, Indiana. *Ann. Rep. Smithsonian Inst.* for 1882, pp. 721-728.
 1884b. Remains on White Water River, Indiana. *Ann. Rep. Smithsonian Inst.* for 1882, pp. 728-752.
- HOOTON, E. A., and WILLOUGHBY, C. C.
 1920. Indian village site and cemetery near Madisonville, Ohio. *Peabody Mus. Amer. Arch. and Ethnol., Harvard Univ., Pap., vol. 8, No. 1.*
- HUBBARD, BELA
 1880. Ancient garden beds of Michigan. *Pioneer Coll., State of Michigan, vol. 2, pp. 21-35.*
- INDIANAPOLIS ARCHEOLOGICAL CONFERENCE (VARIOUS AUTHORS)
 1936. Report of Conference, published by National Research Council.
- JACKMAN, F.
 1880. Mounds and earthworks of Rush County, Indiana. *Ann. Rep. Smithsonian Inst.* for 1879, pp. 374-376.
- JENNESS, DIAMOND
 1940. Prehistoric culture waves from Asia to America. *Journ. Washington Acad. Sci., vol. 30, No. 1, pp. 1-15.*
- JESKE, J. A.
 1927. The Grand River mound group and camp site. *Bull. Milwaukee Publ. Mus., vol. 3, No. 2.*
- KEYES, C. R.
 1920. Some materials for the study of Iowa archeology. *Iowa Journ. Hist. and Politics, vol. 18, No. 3, pp. 357-370.*
 1925. Progress of the archeological survey of Iowa. *Iowa Journ. Hist. and Politics, vol. 23, No. 3, pp. 339-352.*
 1929. Some methods and results of the Iowa archeological survey. *Wisconsin Archeologist, n.s., vol. 8, No. 4, pp. 135-143.*
- KROEBER, A. L.
 1931. Historical reconstruction of culture growths and organic evolution. *Amer. Anthrop., n.s., vol. 33, No. 2, pp. 149-156.*
 1939. Cultural and natural areas of native North America. *Univ. California Publ. Amer. Arch. and Ethnol., vol. 38.*
- LANGFORD, G.
 1919. Kankakee River refuse heap. *Amer. Anthrop., n.s., vol. 21, pp. 287-291.*
 1927. The Fisher mound group, successive aboriginal occupations near the mouth of the Illinois. *Amer. Anthrop., n.s., vol. 29, pp. 153-205.*
- LAPHAM, I. A.
 1855. The antiquities of Wisconsin. *Smithsonian Contr. Knowl., vol. 7, pp. 1-95.*
- LEMLEY, HARRY J.
 1936. Discoveries indicating a pre-Caddo culture on Red River in Arkansas. *Bull. Texas Arch. and Paleont. Soc., vol. 8, pp. 25-55.*
- LEMLEY, HARRY J., and DICKINSON, S. D.
 1937. Archaeological investigations on Bayou Macon in Arkansas. *Bull. Texas Arch. and Paleont. Soc., vol. 9, pp. 11-47.*
- LILLY, ELI
 1937. Prehistoric antiquities of Indiana. Published by Indiana Historical Society.

LINTON, RALPH

- 1924a. Use of tobacco among North American Indians. *Field Mus. Nat. Hist., Anthropol. Leaflet No. 15.*
1924b. The significance of certain traits in North American maize culture. *Amer. Anthropol., n.s., vol. 26, pp. 345-349.*

MACLEAN, J. A.

1927. Excavation of Albee Mound, 1926, Sullivan County. *Indiana Hist. Bull., vol. 4, Extra No. 3.*
1931. Excavations of Albee Mound, 1926-27. *Indiana Hist. Bull., vol. 8, No. 4.*

MCALLISTER, J. GILBERT

1932. The archaeology of Porter County. *Indiana Hist. Bull., vol. 10, No. 1.*

MCKERN, W. C.

1927. Archeological field-work in Green Lake and Marquette Counties. 1925 Yearbook Milwaukee Publ. Mus., vol. 5, pp. 39-53.
1928. Neale and McLaughry mound groups. *Bull. Milwaukee Publ. Mus., vol. 3, No. 3.*
1929. A Hopewell type of culture in Wisconsin. *Amer. Anthropol., n.s., vol. 31, No. 2, pp. 307-312.*
1930. Kletzien and Nitschke mound groups. *Bull. Milwaukee Publ. Mus., vol. 3, No. 4.*
1931a. A Wisconsin variant of the Hopewell culture. *Bull. Milwaukee Publ. Mus., vol. 10, No. 2.*
1931b. Wisconsin pottery. *Amer. Anthropol., n.s., vol. 33, No. 3, pp. 383-389.*
1934. Certain culture classification problems in middle western archaeology. *Nat. Res. Council, Circ. Ser., No. 17, August.*
1939a. Wisconsin aspect of the Upper Mississippi culture. *Bull. Milwaukee Publ. Mus., vol. 16, No. 3. (In press.)*
1939b. Wisconsin archeology in the light of recent finds in other areas. *Wisconsin Archeologist, n.s., vol. 20, No. 1, pp. 1-5.*
1939c. The midwestern taxonomic method as an aid to archaeological culture study. *Amer. Antiquity, vol. 4, No. 4, pp. 301-313.*

MERWIN, BRUCE W.

1934. Archaeological reconnaissance work in southern Illinois, 1933. *Trans. Illinois State Acad. Sci., vol. 27, No. 2, pp. 1-53.*

METZ, C. L., and PUTNAM, F. W.

1886. Explorations in Ohio. 18th and 19th Ann Rep. Peabody Mus. Amer. Arch. and Ethnol., vol. 3, Nos. 5-6, pp. 449-466.

MILLS, TRUMAN B.

1919. The Ulrich group of mounds. *Certain Mounds and Village Sites in Ohio, vol. 3, pt. 2, pp. 153-166.*

MILLS, W. C.

1902. Excavations of the Adena Mound. *Ohio Arch. and Hist. Quart., vol. 10, No. 4.*
1904. Explorations of the Gartner Mound and village site. *Ohio Arch. and Hist. Quart., vol. 13, No. 2, pp. 129-190.*
1906. Explorations of Baum prehistoric village site. *Ohio Arch. and Hist. Quart., vol. 15, No. 1, pp. 45-136.*
1907. The explorations of the Edwin Harness Mound. *Ohio Arch. and Hist. Quart., vol. 16, No. 2, pp. 113-193.*

- 1909a. Explorations of the Seip Mound. Ohio Arch. and Hist. Quart., vol. 18, No. 3, pp. 269-321.
- 1909b. The Seip Mound. Putnam Anniversary Volume. Anthropological Essays. G. E. Stechert & Co., New York.
1916. Exploration of the Tremper Mound. Ohio Arch. and Hist. Quart., vol. 25, No. 3, pp. 262-398.
- 1917a. Explorations of the Westenhaver Mound. Ohio Arch. and Hist. Quart., vol. 26, No. 2.
- 1917b. The Feurt mounds and village site. Ohio Arch. and Hist. Quart., vol. 26, No. 3, pp. 304-449.
1921. Flint Ridge. Certain Mounds and Village Sites in Ohio, vol. 3, pt. 3, pp. 169-239.
1922. Exploration of the Mound City group. Ohio Arch. and Hist. Quart., vol. 31, No. 4, pp. 423-584.
- MOOREHEAD, W. K.
1922. The Hopewell mound group of Ohio. Field Mus. Nat. Hist., Anthropol. Ser., vol. 6, No. 5, Publ. 211.
1929. Culture affinities and differences in Illinois archeology. Trans. Illinois State Acad. Sci., vol. 22, pp. 23-40.
- MOTT, MILDRED
1938. The relation of historic Indian tribes to archaeological manifestations in Iowa. Iowa Journ. Hist. and Politics, vol. 36, No. 3, pp. 227-314.
- NASH, P.
1933. Ross mound group I. Bull. Milwaukee Publ. Mus., vol. 16, No. 1.
- NEUMANN, G. K.
1934. Earliest inhabitants of Illinois (abstract). Trans. Illinois State Acad. Sci., vol. 27, No. 2, p. 54.
- ORR, ELLISON
1914. Indian pottery of the Oneota or upper Iowa River valley in north-eastern Iowa. Proc. Iowa Acad. Sci., vol. 21, pp. 231-239.
- PEET, STEPHEN I.
1891. The Great Cahokia Mound. Amer. Antiquarian, vol. 13, pp. 1-31.
- PRATT, W. H.
- 1867-1876. Report of explorations of the ancient mounds at Albany, White-side County, Illinois. Proc. Davenport Acad. Nat. Sci., vol. 1, p. 99.
- PUTNAM, F. W.
1871. Ancient fortification on the Wabash River. Bull. Essex Inst., vol. 3, pp. 148-155.
1872. Mounds at Merom and Hutsonville on the Wabash. Proc. Boston Soc. Nat. Hist., vol. 15.
1875. Archaeological researches in Kentucky and Indiana, 1874. Proc. Boston Soc. Nat. Hist., vol. 17.
1880. Cahokia Mound. 12th Ann. Rep. Peabody Mus. Amer. Arch. and Ethnol., vol. 2, No. 3, pp. 470-475.
- 1884a. Account of archeological explorations at the Liberty Works, Ohio, 1884. Proc. Boston Soc. Nat. Hist., vol. 23, pp. 215-218.
- 1884b. Report on Madisonville and Turner groups of mounds in 16th and 17th Ann. Rep. Peabody Mus. Amer. Arch. and Ethnol., vol. 3, Nos. 3-4, pp. 165-176.

QUICK, EDGAR R.

1880. Mounds in Franklin County, Indiana. *Ann. Rep. Smithsonian Inst. for 1879*, pp. 370-373.

QUIMBY, GEORGE I., JR.

1939. Aboriginal camp sites on Isle Royale, Michigan. *Amer. Antiquity*, vol. 4, No. 3, pp. 215-223.

REDDING, T. B.

1891. The prehistoric earthworks of Henry County, Ind. *Proc. Indiana Acad. Sci.*, [vol. 1], p. 98-106.

RITCHIE, WM. A.

1937. Culture influences from Ohio in New York archaeology. *Amer. Antiquity*, vol. 2, No. 3, pp. 182-194.

ROBERTSON, R. S.

- 1875a. Antiquities of La Porte County, Indiana. *Ann. Rep. Smithsonian Inst. for 1874*, pp. 377-380.
1875b. Antiquities of Allen and De Kalb Counties, Indiana. *Ann. Rep. Smithsonian Inst. for 1874*, pp. 380-384.

SCHMIDT, EDWARD A.

1935. A group of Minnesota lowland mounds. *Minnesota Hist.*, vol. 16, No. 3, pp. 307-312.

SETZLER, F. M.

1930. The archaeology of the Whitewater valley. *Indiana Hist. Bull.*, vol. 7, No. 12.
1931. The archeology of Randolph County and the Fudge Mound. *Indiana Hist. Bull.*, vol. 9, No. 1.
1933a. Hopewell type pottery from Louisiana. *Journ. Washington Acad. Sci.*, vol. 23, No. 3.
1933b. Pottery of the Hopewell type from Louisiana. *Proc. U. S. Nat. Mus.*, vol. 82, art. 22, No. 2963, pp. 1-21.
1934. A phase of Hopewell mound builders in Louisiana. *Expl. and Field-work Smithsonian Inst. in 1933*, Publ. 3235, pp. 38-40.

SHETRONE, H. C.

1920. Culture problem in Ohio archeology. *Amer. Anthropol.*, n.s., vol. 22, No. 2, pp. 144-172.
1923. Explorations of the Campbell Island village site and the Hine Mound and village site. *Ohio Arch. and Hist. Quart.*, vol. 32, No. 3, pp. 435-468.
1924. Exploration of the Wright group of prehistoric earthworks. *Ohio Arch. and Hist. Quart.*, vol. 33, pp. 341-358.
1925a. Exploration of the Ginther Mound. *Ohio Arch. and Hist. Quart.*, vol. 34, No. 2, pp. 154-163.
1925b. The Miesse Mound. *Ohio Arch. and Hist. Quart.*, vol. 34, No. 2, pp. 163-168.
1926. Explorations of the Hopewell group of prehistoric earthworks. *Ohio Arch. and Hist. Quart.*, vol. 35, No. 1, pp. 5-227.
1930. *The moundbuilders*. D. Appleton Co.
1936. The Folsom phenomena as seen from Ohio. *Ohio State Arch. and Hist. Quart.*, vol. 45, No. 3, pp. 240-256.

SHETRONE, H. C., and GREENMAN, E. F.

1931. Explorations of the Seip group of prehistoric earthworks. *Ohio Arch. and Hist. Quart.*, vol. 40, No. 3, pp. 349-509.

SIMPSON, A.

1934. Kingston (Illinois) focus of the Mississippi culture. *Trans. Illinois State Acad. Sci.*, vol. 27, No. 2, p. 55.

SKINNER, A., and PARKER, A. C.

1923. The Algonkian occupation of New York and Wisconsin. *Res. and Trans. New York State Arch. Assoc.*, vol. 4, No. 2.

SMITH, G. HUBERT

1939. Excavating the site of old Fort Ridgley. *Minnesota Hist.*, vol. 20, No. 2, pp. 146-155.

SMITH, HARLAN I.

- 1901a. An archaeological survey of Michigan. 3d Rep. Michigan Acad. Sci., pp. 35-37.
 1901b. Summary of the archaeology of the Saginaw Valley, Michigan. (1.) *Amer. Anthropol.*, n.s., vol. 3, No. 2, pp. 286-293.
 1901c. Summary of the archaeology of the Saginaw Valley, Michigan. (2.) *Amer. Anthropol.*, n.s., vol. 3, No. 3, pp. 501-512.
 1901d. Summary of the archaeology of the Saginaw Valley, Michigan. (3.) *Amer. Anthropol.*, n.s., vol. 3, No. 4, pp. 726-736.

SQUIER, E. G.

1848. Observations on the aboriginal monuments of the Mississippi valley. *Trans. Amer. Ethnol. Soc.*, vol. 2, pp. 131-207.

SQUIER, E. G., and DAVIS, E. H.

- 1848a. Correspondence relative to the acceptance for publication of the ethnological memoir of Messrs. Squier and Davis. 2d Ann. Rep. Smithsonian Inst., pp. 185-188.
 1848b. Ancient monuments of the Mississippi valley. *Smithsonian Contr. Knowl.*, vol. 1, pp. 1-306.

STARR, FREDERICK

- 1889-1897. Summary of the archaeology of Iowa. *Proc. Davenport Acad. Nat. Sci.*, vol. 6, pp. 53-125.

STEWART, JULIAN H., and SETZLER, FRANK M.

1938. Function and configuration in archaeology. *Amer. Antiquity*, vol. 4, No. 1, pp. 4-10.

SWANTON, JOHN R.

1923. New light on the early history of the Siouan peoples. *Journ. Washington Acad. Sci.*, vol. 13, No. 3, pp. 33-43.

TEEL, WILLIAM R.

1926. Mounds near Terre Haute. *Indiana Hist. Bull.*, vol. 3, No. 6, pp. 95-99.

THOMAS, CYRUS

1888. Burial mounds of the northern sections of the United States. 5th Ann. Rep. Bur. Amer. Ethnol., pp. 3-119.
 1889a. The problem of the Ohio mounds. *Bur. Amer. Ethnol. Bull.* 8.
 1889b. The circular, square and octagonal earthworks of Ohio. *Bur. Amer. Ethnol. Bull.* 10.
 1891. Catalogue of prehistoric works east of the Rocky Mountains. *Bur. Amer. Ethnol. Bull.* 12.
 1894. Report on the mound explorations of the Bureau of Ethnology. 12th Ann. Rep. Bur. Amer. Ethnol., pp. 3-730.
 1907. Cahokia or Monk's Mound. *Amer. Anthropol.*, n.s., vol. 9, pp. 362-365.

TITTERINGTON, P. F.

1935. Certain bluff mounds of western Jersey County, Illinois. *Amer. Antiquity*, vol. 1, No. 1.

WEDEL, WALDO R.

- 1938a. Hopewellian remains near Kansas City, Missouri. *Proc. U. S. Nat. Mus.*, vol. 86, No. 3045, pp. 99-106.
- 1938b. Inaugurating an archeological survey in Kansas. *Expl. and Field-work Smithsonian Inst. in 1937*, Publ. 3480, pp. 103-106.
1939. Excavations in Platte County, Missouri. *Expl. and Field-work Smithsonian Inst. in 1938*, Publ. 3525, pp. 95-98.
1940. Archeological investigations in Platte and Clay Counties, Missouri (manuscript).

WHITTLESEY, CHARLES

1863. Ancient mining on the shores of Lake Superior. *Smithsonian Contr. Knowl.*, vol. 13, art. 4, Publ. 155.

WILLOUGHBY, CHARLES C.

1917. The art of the great earthwork builders of Ohio. *Ann. Rep. Smithsonian Inst. for 1916*, pp. 489-500.
1919. Serpent Mound of Adams County, Ohio. *Amer. Anthrop.*, n.s., vol. 21, pp. 153-163.
1935. Michabo the Great Hare: a patron of the Hopewell mound settlement. *Amer. Anthrop.*, n.s., vol. 37, No. 2, pt. 1, pp. 280-286.
1938. Textile fabrics from the burial mounds of the great earthwork builders of Ohio. *Ohio Arch. and Hist. Quart.*, vol. 47, No. 4.

WILLOUGHBY, C. C., and HOOTON, E. A.

1922. The Turner group of earthworks, Hamilton County, Ohio. *Peabody Mus. Amer. Arch. and Ethnol.*, Harvard Univ., Pap., vol. 8, No. 3.

WINCHELL, N. H.

- 1906-1911. The aborigines of Minnesota. 2 vols. Published by The Minnesota Historical Society.

WOOD, E. F.

1936. A central basin manifestation in eastern Wisconsin. *Amer. Antiquity*, vol. 1, No. 3, pp. 215-219.

WRAY, DONALD E.

1938. Hopewell traits in certain bluff mounds of Fulton County, Illinois. *Trans. Illinois State Acad. Sci.*, vol. 31, No. 2, pp. 81-82.

APPENDIX A

Bibliographical references arranged according to the archeological manifestations in the Northern Mississippi Valley.

FOLSOM

See bibliography after Roberts in this volume; Shetrone, 1936.

HOPEWELLIAN PHASE

- | | |
|-------------------------------------------------|----------------------------------------------------|
| Cole and Deuel, 1937. | Moorehead, 1922. |
| Cooper, 1933. | Mott, 1938. |
| Dickinson and Lemley, 1939. | Putnam, 1884a. |
| Farquharson, 1876. | Ritchie, 1937. |
| Ford, 1935b, 1935c. | Setzler, 1933a, 1933b, 1934. |
| Fowke, 1927, 1928. | Shetrone, 1920, 1924, 1925a, 1925b,
1926, 1930. |
| Gass, 1876-1878. | Shetrone and Greenman, 1931. |
| Greenman, 1938. | Squier and Davis, 1848b. |
| Indianapolis Archeological Conference,
1936. | Wedel, 1938a, 1939, 1940 (manuscript). |
| Lemley and Dickinson, 1937. | Willoughby, 1917. |
| McAllister, 1932. | Willoughby and Hooton, 1922. |
| McKern, 1929, 1931a, 1931b. | Wood, 1936. |
| Metz and Putnam, 1886. | Wray, 1938. |
| Mills, 1907, 1909a, 1909b, 1916, 1922. | |

ADENA PHASE

- | | |
|-------------------------------------------------|-----------------------|
| Black, 1936. | Mills, 1902, 1917a. |
| Greenman, 1932. | Setzler, 1930, 1931. |
| Homsher, 1884a. | Shetrone, 1920, 1930. |
| Indianapolis Archeological Conference,
1936. | |

MIDDLE MISSISSIPPI PHASE

- | | |
|-------------------------------------------------|----------------|
| Barrett, 1933. | McKern, 1931b. |
| Bushnell, 1904, 1922. | Peet, 1891. |
| Cole and Deuel, 1937. | Putnam, 1880. |
| Indianapolis Archeological Conference,
1936. | Simpson, 1934. |

UPPER MISSISSIPPI PHASE

- | | |
|-------------------------------------------------|-----------------------------|
| Greenman, 1935a, 1935b. | Langford, 1927. |
| Griffin, 1935, 1937a, 1937b. | McKern, 1927, 1931b, 1939a. |
| Guernsey, 1926. | Mills, 1904, 1906, 1917b. |
| Hooton and Willoughby, 1920. | Mott, 1938. |
| Indianapolis Archeological Conference,
1936. | Orr, 1914. |
| Jeske, 1927. | Shetrone, 1920, 1923, 1930. |
| | Swanton, 1923. |

LAKE MICHIGAN PHASE

- | | |
|-------------------------------------------------|----------------------------|
| Barrett and Hawkes, 1919. | McKern, 1928, 1930, 1931b. |
| Barrett and Skinner, 1932. | Mott, 1938. |
| Cole and Deuel, 1937. | Shetrone, 1920. |
| Greenman, 1935b. | Skinner and Parker, 1923. |
| Indianapolis Archeological Conference,
1936. | |

APPENDIX B

A selected bibliography of source material and general references arranged according to the various States within the Northern Mississippi Valley.

OHIO

- | | |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Atwater, 1820. | Putnam, 1884a, 1884b. |
| Fowke, 1902. | Ritchie, 1937. |
| Greenman, 1932, 1935a, 1935b. | Shetrone, 1920, 1923, 1924, 1925a,
1925b, 1926, 1930, 1936. |
| Griffin, 1935. | Shetrone and Greenman, 1931. |
| Holmes, 1893. | Squier, 1848. |
| Hooton and Willoughby, 1920. | Squier and Davis, 1848a, 1848b. |
| Metz and Putnam, 1886. | Swanton, 1923. |
| Mills, T. B., 1919. | Thomas, 1888, 1889a, 1889b, 1891, 1894. |
| Mills, W. C., 1902, 1904, 1906, 1907,
1909a, 1909b, 1916, 1917a, 1917b,
1921, 1922. | Willoughby, 1917, 1919, 1938. |
| Moorehead, 1922. | Willoughby and Hooton, 1922. |

INDIANA

- | | |
|--------------------------------|---------------------------|
| Black, 1933, 1934, 1935, 1936. | Putnam, 1871, 1872, 1875. |
| Guernsey, 1924, 1926. | Quick, 1880. |
| Holmes, 1903. | Redding, 1891. |
| Homsher, 1884a, 1884b. | Robertson, 1875a, 1875b. |
| Jackman, 1880. | Setzler, 1930, 1931. |
| Lilly, 1937. | Teel, 1926. |
| MacLean, 1927, 1931. | Thomas, 1891, 1894. |
| McAllister, 1932. | |

ILLINOIS

- | | |
|-----------------------|---------------------------|
| Bushnell, 1904, 1922. | Moorehead, 1929. |
| Cole, 1933. | Neumann, 1934. |
| Cole and Deuel, 1937. | Peet, 1891. |
| Deuel, 1938. | Pratt, 1867-1876. |
| Gass, 1881a, 1881b. | Putnam, 1880. |
| Henderson, 1884. | Simpson, 1934. |
| Holmes, 1903. | Thomas, 1891, 1894, 1907. |
| Langford, 1919, 1927. | Titterington, 1935. |
| Merwin, 1934. | Wray, 1938. |

IOWA

Farquharson, 1876.
Gass, 1876-1878.
Griffin, 1937.
Holmes, 1903.

Keyes, 1920, 1925, 1929.
Orr, 1914.
Starr, 1889-1897.
Thomas, 1894.

MICHIGAN

Gillman, 1875.
Greenman, 1926, 1937, 1939.
Hinsdale, 1925, 1930.
Hinsdale and Greenman, 1936.
Holmes, 1901, 1903.

Hubbard, 1880.
Quimby, 1939.
Smith, 1901a, 1901b, 1901c, 1901d.
Thomas, 1891.
Whittlesey, 1863.

WISCONSIN

Barrett, 1933.
Barrett and Hawkes, 1919.
Barrett and Skinner, 1932.
Cooper, 1933.
Holmes, 1901, 1903.
Jeske, 1927.
Lapham, 1855.

McKern, 1927, 1928, 1929, 1930, 1931a,
1931b, 1939a, 1939b.
Nash, 1933.
Skinner and Parker, 1923.
Thomas, 1891, 1894.
Whittlesey, 1863.
Wood, 1936.

MINNESOTA

Estes, 1867.
Gustavson, 1935.
Holmes, 1903.
Schmidt, 1935.

Smith, 1939.
Thomas, 1894.
Winchell, 1906-1911.

CULTURE SEQUENCE IN THE CENTRAL GREAT PLAINS

By WALDO R. WEDEL
U. S. National Museum

(WITH PLATES 3 AND 4)

INTRODUCTION

The area under consideration in this paper is a somewhat arbitrarily defined subdivision of the vast interior grassland region west of the Missouri which early explorers termed the "Great American Desert." For various reasons it has remained one of the last major geographical provinces of the United States to attract the interest of trained students of human prehistory. Within recent years, however, systematic researches have shown that the historically conditioned concept of the area as one dominated by hunters and nomads is only partially correct, and that its earlier native history is a long and rather complicated one. Because scientific investigation along this line here is so young and the territory so extensive, our knowledge of past cultural happenings is still deficient in many details, both as regards areal diversity and in respect to temporal changes. Nevertheless, where the matter of sequence has been most persistently attacked, a tentative outline of the succession of native cultures has been set up with considerable promise of permanence. In terms of present-day political units, the discussion will center in Nebraska and immediately contiguous parts of Kansas, northwestern Missouri, and Iowa. So far as it is practicable to harmonize them, cultural manifestations reported from South Dakota, eastern Wyoming, Colorado, and Oklahoma, will also be touched on briefly.

From the standpoint of physical environment, the region may be broadly characterized as a semiarid, windswept, sparsely vegetated country developed on horizontal or slightly inclined sedimentary rocks which have been in large measure mantled by alluvial, aeolian, and glacial materials. Actually, there is much diversity, local and otherwise (fig. 20). The true plains, or High Plains of the physiographer, are a broad, flat, eastward-sloping fluvial belt 100 to 200 miles wide extending from Texas across western Kansas and Nebraska and eastern Colorado nearly to the Black Hills of South Dakota. Here the yearly rainfall averages under 15 inches, and surface water is

scant. Grass is short and sparse, though sufficient to form a tight sod under natural conditions, and trees are generally absent save for occasional clumps of cottonwood and willow along the watercourses. For aboriginal man the chief attraction, aside from limited occupancy of arable creek bottoms, was undoubtedly the vast herds of bison and the pronghorn. From north to south this High Plains belt was the historic habitat of roving bands of Dakota, Cheyenne, Arapaho, Comanche, Kiowa, and Apache. On the west, erosion of the High Plains mantle has produced a much more rugged zone extending as the Colorado Piedmont to the foot of the Rocky Mountains. Here, particularly along the western border, is a better-watered and more amply vegetated strip, the influence of which on early human activities was evidently considerable.

North of the Platte River, the High Plains merge eastward with the Sandhills province which includes some 18,000 or more square miles of thinly grassed "dead" dunes in north- and west-central Nebraska. Like the High Plains, this is an area of little timber, water, and arable land. It was probably always primarily a hunting ground with human occupancy concentrated in the deeply incised valleys of such perennial streams as the Loup, Calamus, and Dismal, and on the shores of the innumerable small lakes of the western and northern districts.

East of the 100th meridian, which we may regard as the approximate eastern limit of the High Plains and Sandhills provinces, the landscape changes markedly. The eastern third of Nebraska is surfaced by loess deposits increasingly dissected by a network of creeks and rivers as one travels toward the Missouri. On the south these Loess Plains merge into the much-eroded and highly scarped Plains Border of central Kansas and into the gently rolling prairies of the Central Lowlands. Throughout, there is heavier precipitation, much more surface water, a richer and more varied flora and fauna, than characterize the western Plains. Along the immediate valley of the Missouri and on the lower portion of its major tributaries, the terrain is rugged and hilly, with forested bluffs lining most of the watercourses. To native peoples with a horticultural bent, the fertile alluvial bottoms bordering the streams offered every inducement to settlement—shelter, water, wood, game, easily worked soil. And here, from the time of earliest white penetration, were concentrated the semi-sedentary corn-growing tribes—the Ponca and Omaha of northeastern and the Pawnee of east-central Nebraska, the Kansa and Osage of northeastern and eastern Kansas, and the Wichita of central Kansas.

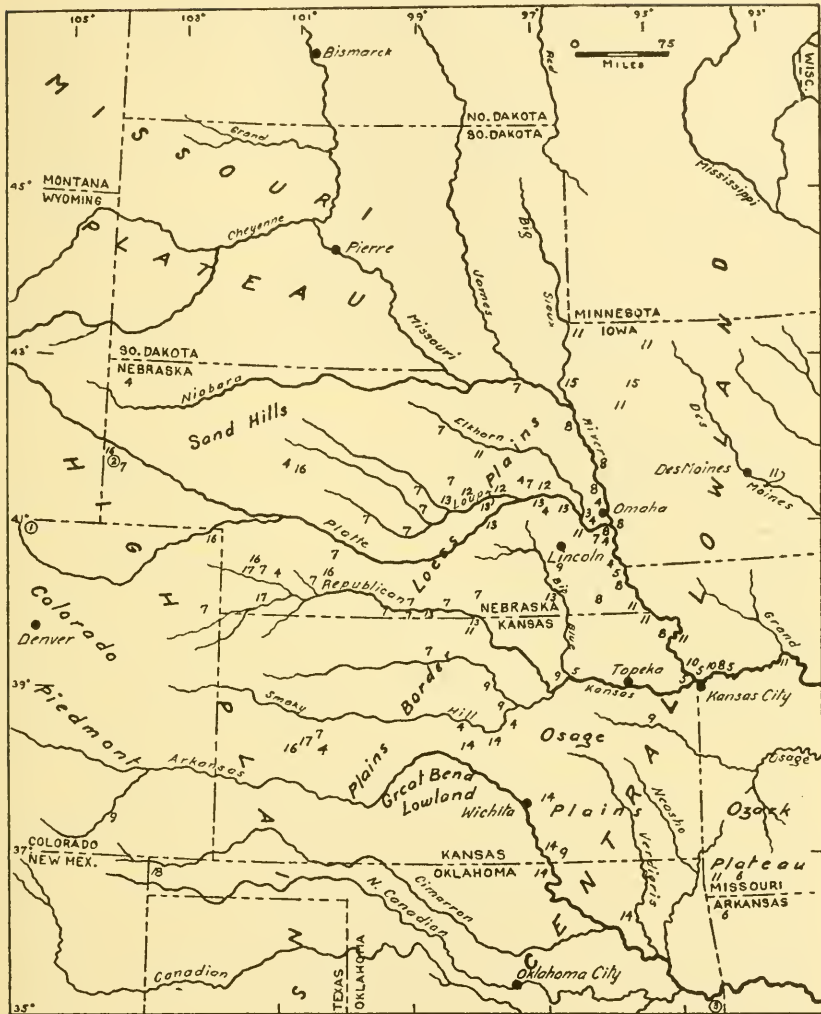


FIG. 20.—Physiographic areas and distribution of certain sites and cultural manifestations in the central Great Plains. Nos. 1 to 3 refer to single sites; others indicate localities but not necessarily individual stations.

1, Lindenmeier site; 2, Signal Butte; 3, Spiro mound group; 4, "Woodland" remains; 5, Hopewellian; 6, Ozark Bluff Dwellers; 7, Upper Republican; 8, Nebraska aspect; 9, unclassified "Plains Mississippi"; 10, unclassified Middle Mississippi; 11, Oneota aspect; 12, Lower Loup focus; 13, historic Pawnee; 14, Paint Creek (Kansas); 15, Mill Creek; 16, Dismal River culture; 17, puebloan traces; 18, Oklahoma "Basketmaker."

All the major streams in the central Plains, from the Niobrara in the north to the Canadian in the south drain eastward, generally through wide flat-floored valleys of easy gradient. In the eastern Plains, annual rainfall averages up to 35 inches or more, comparing favorably with that of the eastern Mississippi drainage. As a result, woodland floral and faunal associations have extended their habitats along the watercourses westward well into our region. Generally speaking, the Plains appear to have been far more accessible to biotic and, incidentally, cultural increments from the east, northeast, or southeast, i.e., up the rivers, than from the west or southwest. The poorly watered High Plains and the scarcity there of arable valleys seem to have discouraged any pronounced movements northeastward by the early puebloan peoples, at any rate beyond the panhandles of Texas and Oklahoma.

Since this paper deals extensively with horticultural peoples, it may be well to call attention to the fact that, climatically, the Plains are a borderland area between the humid East and the arid West and Southwest. As such, they are, and probably for a long time have been, subject to recurrent droughts of varying duration and intensity. It has been noted that the average annual precipitation diminishes from about 35 inches along the Missouri to less than 15 inches in the High Plains, with the lines of equal rainfall trending north-south. The western limit of the corn belt today is near the 30-inch isohyet, beyond which wheat and other crops assume a relatively more important position. The limit for successful general farming on the uplands by ordinary methods is sometimes considered to be the 20-inch line. In normal years this roughly bisects the region between the Rockies and the Missouri, but over a period of a few abnormal or subnormal years it may shift as much as a hundred miles one way or the other, i.e., to east or west. It is these wide fluctuations recurring at irregular and unpredictable intervals with their attendant agricultural uncertainties that make the white man's record of achievement in the western Plains to a great extent a story of alternate settlement and abandonment. If the pre-white farmers of the region were any more successful in coping with adverse climatic conditions, it was probably because their smaller scale but more intensive horticulture was confined to the better-watered, better-sheltered, and more dependable valley bottoms. It is also possible, though unproved, that special early maturing and deep-rooted drought-resistant varieties of maize had been developed (cf. Will, 1924). We shall refer to this question of climate again.

As conceived by Wissler (1922; cf. 1938), the Plains culture area included some 31 historic tribes, most of whom followed or at least

emphasized one or the other of two fairly distinct subsistence economies. The "typical" tribes were those ranging over the western bison plains (i.e., the High Plains), most of whom have already been named herein. Their most distinctive traits included dependence almost exclusively upon the bison, use of the skin tipi, dog (or horse) and travois, strong development of skin working, simple band organization, the camp circle, men's societies, the Sun Dance, scalp dances, etc. Absent were agriculture, basketry, pottery, true weaving, and any appreciable amount of work in wood, stone, and bone. Highly mobile and warlike, with no gardens or permanent villages to bind them to the soil of any one locality, these were the tribes who, after the Civil War, figured so heavily in the colorful Indian wars from Adobe Walls to the Rosebud and Little Bighorn. Farther east, along the Missouri, was a group of 12 or 15 tribes, mainly Caddoan and Siouan speaking, who had most of the above-listed positive traits in addition to the negative ones. These were the so-called village tribes, who subsisted largely by horticulture, lived in semipermanent grass, bark, or earth lodges, with pottery, maize festivals, etc. In contrast to the camps of the migratory bison hunters, the settlements of the latter were relatively stable for years at a time and usually contained larger numbers of people. Since they were larger and more fixed, and because their inhabitants were culturally richer than the hunters, they offer through their accumulations of refuse a much better opportunity for piecing together and interpreting the surviving fragments of their past.

Although the possibilities of archeology in the Plains were so long neglected, observations worthy of reexamination by present-day students went into the record shortly after 1800. The journals of Lewis and Clark (Thwaites, 1904) refer to several ancient village sites and burial mounds along the Missouri River in Missouri, Kansas, and Nebraska. A quarter of a century later, during the boundary survey for the Delaware Indian reservation in 1830, one of several prehistoric mounds near Fort Leavenworth, Kans., was opened and the findings briefly described (McCoy, 1840). The reports of the railroad surveys across Nebraska and Kansas contain surprisingly little relevant material, but with inauguration of geologic explorations in the West after the Civil War came a growing interest in the remains of primitive man. As early as 1873 sherd-littered sites and evidence of earth-lodge remains were recorded 200 miles west of the Missouri (Mudge, 1896, p. 70). Three years later appeared a notice of artifacts in proximity to mammoth bones in eastern Nebraska (Hayden, 1876, p. 254), and by 1900 various village sites, mounds, and aboriginal

chert quarries had been noted (see Strong, 1935, pp. 40-55; Wedel, 1935, pp. 211-214). In all of this, because the earthworks were generally small and the village remains unspectacular, the papers describing them were soon forgotten.

The attention of professional anthropologists was first drawn to the eastern Plains just after the turn of the present century by discovery of human skeletal remains in the loess bluffs of the Missouri River near Lansing, Kans., and Omaha, Nebr., under conditions supposedly indicating geologic antiquity (Hrdlička, 1907). Although their authenticity, or rather their great age, was never generally accepted, interest engendered at this time led in a few years to archeological studies on a wider front in eastern Nebraska and northeastern Kansas. These were confined almost entirely to the eastern part of the Great Plains. By comparison with the mound area and the Southwest, archeological problems a hundred miles west of the Missouri were still virtually undreamed of as late as 1920. Since that time scientific activity has increased by leaps and bounds, with the result that a number of heretofore wholly unsuspected cultural manifestations have been outlined.

Because the tribes resident there were for many years in contact with white men, the Plains offer an excellent opportunity to tie in the archeological record at its upper end with written history and ethnography. This fact has given direction to much of the recent work. To date it has not been possible to trace out in detail the antecedents of each of the many tribes who, either as bison hunters or as tillers of the soil, are known to have made this their habitat since the Conquest. For one tribe—the Pawnee—however, a good beginning has been made. Excavations at sites known to have been inhabited by this large and powerful group, and by no one else, in the nineteenth century, have revealed the distinguishing characteristics of their material culture, which in many particulars have been verified through historical documents. Through a combination of archeology, history, and ethnography this story has been pushed back into protohistoric times—that twilight zone separating the well-documented present from the unwritten prehistoric past. As yet it has not been practicable to link the sequence directly to that of the precontact peoples, but the general antecedents of the semisedentary Pawnee type of life can be definitely indicated from data now at hand. Currently, such tribes as the Ponca, Omaha, and their kindred, and, outside our immediate area, the Mandan and Cheyenne have been approached along similar lines, but there is no published literature from which the results may be judged.

Reconstructions of Plains prehistory must at the present time necessarily be viewed as tentative. Aside from the regional lacunae, workers here are confronted by the absence of a well-established chronology. Absolute dates are wanting except perhaps in a few very late sites, and there is no way of determining the probable duration of occupancy by the different peoples who were demonstrably present. Prior to the coming of white men we have only relative chronology, and it is quite evident that even in those localities where the most intensive studies have been pursued, considerable time gaps of undetermined length still exist. The current picture of culture history in the Plains thus might be likened to a discontinuous series of separate frames taken at intervals from a lengthy cinema reel.

Lacking precisely datable remains the archeologist makes use of other less exact devices for setting up relative chronology. In the Plains there has been made first a broad division into the historic, or later, and the prehistoric, or earlier. Perhaps it would be less confusing if the terms contact and precontact, respectively, were employed, since sites are usually assigned to one or the other of these periods according to the presence or absence of materials showing intercourse with white men. Historic or contact sites may be further dated approximately by the relative amounts of Caucasian trade materials, by the presence of datable European and American objects, or by direct allusions in literature. Sites that are identifiable with villages actually visited and described by explorers and other travelers are herein designated as historic; those clearly occupied in contact times but not specifically identifiable with recorded villages are termed protohistoric. This is in accord with the usage adopted by the First Plains Archeological Conference for the Plains area (see Wedel, 1936, p. 24, n. 33). For precontact or prehistoric undocumented remains the matter of sequential arrangement is more difficult, but a few clear-cut instances of stratification at certain sites have materially clarified the issue by showing which types of remains came earliest. Such evidence is of course not entirely foolproof but at present seems to constitute our most reliable guide. Cross finds of sherds have permitted the equating temporally of certain other complexes. Finally, for some of the older cultures, the faunal lists and geologic context become significant, because the earliest known hunting peoples in the Plains made some use of animals extinct since or shortly after Pleistocene time.

In the ensuing discussion, the succession of events has been reviewed in the order in which they transpired so far as that order has been supported by evidence to date.

EARLY HUNTING PEOPLES

The oldest known traces of human activity in the western Plains are believed to be also among the oldest found anywhere in the New World to date. They have been coming to light since 1874. Included are numerous finds of chipped projectile points, blades, and scrapers in association with the bones of extinct bison, mammoth, and other species, or otherwise under geologic conditions suggesting a very considerable antiquity. Several different types of artifacts are represented, some of them being markedly unlike those usually found on the later Indian sites of the region. Very likely several cultures or culture stages are represented. The time of their existence, like their duration, is not known, but the age of the artifacts is generally thought of in terms of millenia rather than of centuries.

The archeological evidence can be divided into three types. The first, which is also most difficult to obtain, comes from true habitation or camp sites where the ancient hunters carried on their domestic activities for periods of some length. This will be discussed in more detail presently. Otherwise, there are isolated artifacts either associated in the ground with skeletal parts of extinct animals or else occurring in geologic or topographic formations indicative of age; and surface finds dissociated from identifiable geologic or paleontologic horizons. Among the last two groups, the finds have frequently been challenged or discredited because of uncertain geologic or paleontologic context, or because the possibility of accidental intrusion has not been entirely ruled out (Bell and Van Royen, 1934).

So far as known the first of these ancient hunter folk were probably those who left the so-called Folsom artifacts. The single known station where extended investigations have been made is the Lindenmeier site in the South Platte drainage on the extreme western edge of the Plains where they merge into the Rocky Mountain foothills of northern Colorado (Roberts, 1935, 1936). Here, on the floor of an ancient valley now buried by 3 to 17 feet of alluvium, is the debris of a prolonged if perhaps intermittent occupancy by prehorticultural peoples. Objects of chipped stone include characteristic fluted projectile points, knives, graters, drills, and scrapers. Among the latter is the snubnose form characteristic of many later Plains cultures. The chips and flakes left in the manufacture of these tools remain. There are few core implements. Worked hematite, bone, and shaft-buffers are present. The culture stratum contains ashes, charcoal, and burned animal bones, but no true hearths have been found. Absent, too, is any evidence of habitations, pottery, textiles, cultivated plants, or the domestic dog. Human bones have not been recovered, and the

physical type of the people is wholly unknown. It has been suggested that the site was perhaps occupied as a seasonal camp by hunters who returned year after year because of nearby marshes and meadows, now dry, where bison could readily be taken from ambush or by stalking. The type of weapon can only be inferred, and it is generally thought the spear and spear-thrower were used. The bow and arrow may have been known. Among the animals whose bones occur in the middens is an extinct form of the bison (*B. taylori*). Subsistence, presumably, was very largely by the chase, supplemented by the gathering of wild fruits, roots, seeds, and other natural vegetal products. If such an economy was followed, the natives were probably present in small bands only, residing in temporary dwellings of skin or other perishable materials. The rudeness of the culture as revealed by archeology may be more apparent than real, since perishable materials doubtless figured more heavily in their manufactures than the surviving evidence indicates.

A second and evidently later stage in this old hunting-gathering economy is also represented by a single excavated site—Signal Butte, in the North Platte Valley in western Nebraska (Strong, 1935, pp. 224-239). Its remains comprise the lowermost of three separate superimposed cultural horizons on an isolated hilltop. The stratum is a foot or more thick, very dark gray in color, and heavily impregnated with charcoal, animal bones, stones, artifacts, and similar debris of human occupancy. Stone-lined hearths are present, but there is no evidence of fixed lodge sites. Associated with the fireplaces were small pocket caches containing bones and occasionally implements. A few of these were lined with stone. That the chase was very important is indicated by the high proportion of broken and split bison and other mammal bones, among which only species existing today have been recognized. Flintwork, as in the Folsom horizon, is primarily a flake industry, but no blades or projectile points of true Folsom type are known from this station. Numerous projectile points occur, the majority showing a lanceolate outline with concave base which is commonly thinned by the detachment of small flakes from each face. So far as size is concerned most of these could have been used either on darts or on arrows. There are stemmed points and knives. The usual debris from manufacture of artifacts is abundant throughout the level. Scrapers, drills, awls, and knives in profusion are evidence of a well-developed skin-working industry. There is no sign of pottery, weaving, or domesticated plants and animals. Ground stone objects include hammerstones, pestlelike forms, and rude axes, as well as such recent Plains types as the elongate sandstone shaft-polisher

and a grooved hammer. Geometrically incised pieces of bone suggest the gambling chips of historic times, and for adornment of the dress and person there were shell pendants, tubular bone beads, hematite, and limonite. Clothing presumably was mainly of skins. Burials have not been found. The evidence suggests that the primitive hunters killed their game at springs or water holes close at hand, since it is unlikely that such quantities of useless bones would have been packed very far. Whether occupancy here was seasonal or continuous is uncertain, but the exposed and wind-swept nature of the site would have made it extremely uncomfortable if not untenable in midwinter.

Although the recorded finds of artifacts usually attributed to early man, when plotted on a map, show a much greater frequency in the western High Plains of Colorado and Wyoming, they nevertheless occur in diminishing numbers eastward to and beyond the Missouri River. The great majority are regarded as "generalized" Folsoms or as variants of the so-called Yuma type. The Folsoms seem to be more closely restricted to the High Plains proper and to the Rocky Mountain foothills with only scattering examples farther east. In Nebraska, where relevant field studies in paleontology and archeology have been prosecuted with much greater vigor than in most neighboring States, more than 400 specimens of early type have come to light (Barbour and Schultz, 1936a). Many are "borderline" forms, but where they can be placed with some assurance in a recognized and named category, the Yuma type apparently predominates. Yuma artifacts present a rather bewildering range of varieties and subtypes, and some of the better pieces exhibit unexcelled mastery of the art of flaking on the part of the ancient craftsmen. The technique has been noted as reminiscent of the fine ripple-flaking found on Scandinavian daggers of the Neolithic period. To date, there is no indication of the archeological context in which these objects belong, nor has the existence of a distinct Yuma complex been established. On typologic grounds the suggestion has been advanced by one student that these implements preceded the Folsom type, and by another that they followed it (Figgins, 1934, p. 6; Renaud, 1934a, p. 3). So far as actual stratigraphic evidence is concerned, excavations at the Lindenmeier site indicate that there at least the Yuma artifacts are later than the Folsom. This may or may not be the situation in other localities. The recently announced discovery of extensive and deeply buried soil zones in the White River valley in Crawford County, Nebr., wherein are reported numerous hearths, animal bones, and Yuma artifacts, raises the hope that the nature of the implied complex may soon be

made known, and its position relative to the other defined cultures of this ancient period clarified (Barbour and Schultz, 1936a, 1936b).

Aside from the sites already considered, the outstanding finds in and touching our area are those at Folsom and Clovis, N. Mex., Dent, Colo., and perhaps Scottsbluff, Nebr. At all these the association of artifacts with mammoth or extinct bison skeletons has been conclusively demonstrated (Cook, 1927; Figgins, 1927, 1933; Howard, 1935; Schultz and Eiseley, 1935; Cotter, 1937). It is thus established beyond question that man was at least partially contemporaneous with such ancient species. As yet paleontology and related earth sciences offer no clue to the time of their extinction, so that the age of the artifacts cannot be stated in terms of years. Geologists are inclined to believe that Folsom man lived at the Lindenmeier site while glaciers still existed in the mountains to the west, and estimates of its age run from 6,000 to 25,000 years. Signal Butte I, pretty definitely younger, is tentatively dated at 5,000 to 10,000 years ago. These, it should be emphasized, are only estimates and cannot be regarded as final.

Although it is true that certain of these early artifacts are distinct in appearance, form, and workmanship from those left by the later Indians, it is worth noting that the archeological inventory from the only two habitation sites so far extensively explored includes also a number of simple utilitarian types that did persist into historic times with little if any modification. Among these are chipped knives, scrapers, perforators, graters, and other implements probably used in food gathering, hunting, and skin working, for which certain techniques developed by the early peoples thousands of years ago may have been just as effective in much more recent times. One is tempted to suspect that some of the ancient practices and customs were probably much like those witnessed among the bison-hunting Apaches by the earliest Spaniards to venture into the Great Plains in the sixteenth century.

In passing it may be noted that some topographic changes have taken place in this region since the passing of the early hunters. This need not have been very profound though locally the evidences are occasionally striking. At the Lindenmeier site, for example, ancient meadows and marshes have been deeply covered by wash from nearby ridges which have since largely eroded away, transforming the filled-in valley into a terrace. The culture-bearing stratum rests directly on the hard Oligocene clay. At Signal Butte, the lowest occupational level lies immediately on what are thought to be water-borne silts and gravels of Pleistocene age, and there is good reason to believe that the area of the Butte has been materially reduced since

the laying down of these deposits. In and about the Goshen Hole district, on the Nebraska-Wyoming line, there are numerous small hearth sites which rest on or just above the Brule (Oligocene) clay beneath accumulations of recent unconsolidated materials that reach depths of 15 feet or more. These have not been studied in any detail and may be more recent than the other remains so far described herein. At the same time, it would be interesting to know the significance of the repeated occurrence of preceramic sites throughout this region on denuded Oligocene or later fluvial formations. It has been conjectured that some of these people may have arrived shortly after withdrawal of the mountain glaciers, before the ice- or water-scoured landscape could again build up a soil cover. Perhaps a climate wetter and colder than that at present is to be suspected (Eiseley, 1937). This, like many other relevant cultural and ecological problems, still awaits solution.

The intensive study of human prehistory in the High Plains, particularly as it is concerned with the various hunting cultures, has scarcely begun. There are many difficulties. Not the least of these is the matter of sequence, since the remains are usually meager by comparison with those of later peoples and there are fewer threads to follow. Stratified sites, properly excavated, will provide the most reliable clues. Typology will help, but its unguarded use and a blind faith in its results are likely to lead the incautious worker far astray. Very perplexing, and at present defying solution, is the question of origin for the Folsom and other early complexes. As cultural entities they represent the closest approach yet found in the New World to a paleolithic level. The search for beginnings may lead northward along the piedmont of the Rockies, since there is geologic evidence that man could have reached the interior United States even in Pleistocene times via an ice-free corridor up the Yukon. If such a route was followed by the early immigrants, the location of the Great Plains at its southern end may partly explain the observed fact that many of the authentic finds of earliest human activities in the United States have occurred in or near this region (Howard, 1936, and in *Amer. Antiq.*, vol. 4, No. 3, pp. 277-279, 1939; Roberts, 1939). Because of the peculiar nature of the problems involved, it is self-evident that the archeologist must work hand in hand with the geologist, physiographer, paleontologist, and ecologist. Through the combined efforts of these several sciences it may eventually be possible to establish not only the origin, nature, and temporal order of these very ancient cultures or culture phases but also their relation, if any, to the more recent peoples of the area.

PREHISTORIC SEMISEDENTARY PEOPLES

For the next act in the drama of prehistoric life in the Great Plains the theater of action shifts eastward from the High Plains into the better-watered region bordering on the Missouri River. Here the environment offered, in addition to bison and other natural resources, stream valleys of unsurpassed fertility where man could provide himself with more constant and dependable means of livelihood than were available to the first hunter folk. We do not know as yet at what early date maize and beans were first cultivated in this region, but there is no reason to believe that climatic or other environmental factors would have prevented such an economy as much as several millenia ago.

Present evidence suggests discontinuous occupation of the central Plains by several distinct pottery-making horticultural groups, with intervening periods of undetermined length. Though widely spread and numerous, the sites of the various cultures are seldom of great size or, inferentially, indicative of prolonged occupancy. It is doubtful whether a single village site so far discovered in this area was inhabited intensively and continuously for more than a few decades. Although concrete evidence is wanting, it also seems improbable to the writer that any of the known ceramic remains in the Plains or the usually inferred horticultural associations will prove to be more than 10 centuries old. At some sites sterile soils in varying thickness intervene between culture strata or between the latter and the present ground surface, and this circumstance has been cited in support for great antiquity. Actually, so far as this relates to ceramic horizons, the noncultural deposits are readily interpreted in terms of ordinary present-day processes involving at most comparatively local climatic or other fluctuations in the environment but not necessarily any prolonged changes of larger regional or continental magnitude.

The principal prehistoric culture horizons recognized in the Plains area today evidently had their roots in civilizations more typical of the eastern United States.¹ Thus, the earliest ceramic complex of

¹ Remains attributed to preceramic horticultural groups have been reported so far only from the southern peripheries of the area considered in this paper. To the southeast, in the caves and rock shelters of the Ozark Plateau, was the habitat of the "Bluff-dwellers" (Harrington, 1924). Present are bones of deer, wild turkey, bear, elk, bison, turtle, fish; the atlatl and dart; fire-hardened cane arrows; cane spearshafts and wooden foreshafts; the hafted ax of chipped stone; hemp fish or rabbit nets; red and yellow maize, beans, squash, gourds, the domestic sunflower, wild seeds, nuts, and acorns; shell and stone hoes; the digging stick; mealing slabs and manos; sieve and winnowing baskets; cache pits lined with grass, leaves, stone slabs, or basketry fragments; deerskin,

which record exists, shows many similarities to certain so-called Woodland manifestations, which are also old east of the Mississippi. In Nebraska these remains occur on small camp sites of one to a few acres extent, frequently in well-hidden tree-sheltered pockets on the lesser creeks. In several instances they are in strata buried by 6 to 25 feet of alluvial materials. This excessive overburden makes detailed investigation difficult and costly, and because in addition most of the known sites do not appear overly prolific of cultural materials, they have received comparatively little serious attention. They are much more abundant, varied, and apparently richer in Iowa, where some of the stations have been found in rock shelters. Unpublished reports indicate presence of numerous related or identical sites in

rabbit fur, and feather robes; the breechcloth of grass; deerskin leggings and soft-soled moccasins; double-soled grass sandals and grass "overshoes"; feather fans; seed and conch columella beads; triangular apically perforated shell pendants; white, yellow, and red mineral pigments; awls of bone, wood, and cane; antler cylinders or knapping tools; large cane needles; hammerstones and rude scrapers; receptacles of terrapin and mussel shell, and spoons made from the latter; gourd vessels; birchbark buckets; twined woven bags of grass, bark, and wild hemp; coil-without-foundation textiles (rare); coiled, wicker, and twilled cane basketry; twilled cradles; rush mats; braided and twisted cordage; tubular pipes; a medicine bundle; carved and painted sticks; flexed burials in grass- or robe-lined pits. A few grit- and shell-tempered sherds are thought to indicate some slight use of pottery "toward the end of their stay." The Bluff Dweller remains are entirely precontact and may be in part at least rather old, but direct evidence as to their temporal position in the Plains culture sequence is wanting. Cultural relationships seem at present to be strongest with the Southwest, but influences from other directions have also been postulated.

From published data it is still impossible to determine satisfactorily what connection, if any, existed between the Bluff Dwellers and the much less fully inventoried Basket Maker-like horizon reported from caves in the Oklahoma Panhandle (Renaud, 1930). Here have been found traces of a semihorticultural and hunting people who used the mealing slab; perforated food cakes made from acorns; rabbit fur and twisted vegetal cordage; double-soled, diagonally and square-woven yucca sandals; tubular bone beads; bone awls; sandstone abraders (paired?); chipped scrapers, knives, borers, and points; bags of grass and others of prairie dog skin for holding maize; coiled and checker basketry; wooden fire drills; and, perhaps linked with the above, square-shouldered anthropomorphic and other pictographs in red. It has been suggested that this is perhaps a marginal survival of an ancient southwestern cultural phase, in which event it could be relatively late. Some of the items, including coiled basketry, sandals, rabbit-fur string, etc., seem once to have been widely distributed throughout portions of the southern United States. If future researches establish the antiquity of the Oklahoma remains and show them to be directly related to those of the Ozark Bluff Dwellers, one would be tempted to view these two complexes as local manifestations of an old "Basket Maker-like" horizon once extending from the Southwest well into the Mississippi drainage.

Missouri, with fewer in Kansas and perhaps in Oklahoma. So far as published information goes, wherever these remains have been found west of the Mississippi River in stratified sites, they occur at the bottom of the series below all other ceramic horizons.

West of the Missouri the remains that have been called Woodland are of several types. One type is represented at the Walker Gilmore site in Cass County, Nebr., about a quarter mile west of the Missouri River (Strong, 1935, p. 175-198). The evidences of occupation occur at depths of 6 to 27 feet in the sheer walls of the entrenched Sterns Creek channel, which has been cut through a series of living levels. Masses of thatch and small post molds indicate the probable type of habitation, an eastern rather than western form. Hearths and ash lenses are plentiful, and from their distribution the camp was scattered along the old valley floor for about 400 yards. Occupation was probably intermittent, since the remains are on several slightly different levels. Traces of squash and gourds but none of maize or beans have been found. Deer and other mammals were much used for food, bison rarely if at all. Numbers of eyed bone needles, including both small and large mat-weaving types, are present. Interesting evidence for the existence of the cup-and-pin game was found in the form of a dressed deer-toe bone, archeologically not unique to this site or complex. Bone awls and antler knapping tools were present, as they are in most complexes in the region. Very few objects of stone were found other than roughly made knives or picks. Polished celts and possibly grooved axes are suggested. The only two projectile points found were unlike those usually considered Woodland. Ceramics comprised small to medium-sized thin-walled jars with more or less conical bases, small mouth openings, smooth exteriors, and scalloped ("pie-crust") or incised rims.² In very rare instances cord- or straw-roughening covers the outside. Clay pipes are indicated, but their exact form is problematic. Burials have not been found, and the physical type is unknown. In several respects this site is unique in Nebraska, but our comments may profitably be withheld until after the presentation of certain additional facts.

Remains of a second type are widely distributed in the central Plains, with the list of sites growing steadily. To date, no less than 20 counties in Nebraska have contributed to the record, including every section of the State from the Missouri River to the Colorado and Wyoming boundaries. The all too limited data on Kansas indicate similar antiquities as common in the northeastern part, less so in the

² Closely similar sherds of this ware have recently been sent the writer from Holt County, Mo.

north-central and southeastern portions. Highly characteristic potsherds are found on these sites. Most of the sherds are from large, wide-mouthed, evidently pointed-base jars, with heavy walls and coarse granular paste. Often a row of punctations made with the end of a cylindrical tool encircles the vessel about an inch below the rim, producing rounded knobs or bosses on the outer (rarely on the inner) surface. Vessel exteriors are generally but not always cord-roughened. Simple stamp impressions of the "snowshoe" type have been found on sherds near Junction City, Kans., and other types of stamping have been noted on sites in the lower Platte drainage and elsewhere in Nebraska. Published descriptions of most of this material and of the circumstances under which it occurs are not extant. It is known, however, that some of the stations are surface-sherd areas, whereas others occur in buried "soil zones" and as exposures at varying depths in newly cut banks. Associated artifacts are rare because detailed excavations have not been made, but they usually include large stemmed projectile points. The three-quarter grooved ground ax has been picked up on several sites, and is strongly suspected of belonging to the as yet undefined complex. A single site in Platte County, Nebr., has been linked tentatively with a group of nearby burial pits, from which came disarticulated human remains and a few sherds identical with those in the habitation level.³ This would indicate secondary interment of bones after exposure on scaffolds. Another site suggests burial in the flesh under low mounds. Hunting must have been important, but as yet these sites have not yielded direct proof of horticulture. Evidences for weaving, basketry, and house types are all negative.

East of the Missouri, in Iowa, the Woodland manifestations are much richer, but the sites are uniformly small (Keyes, 1929, p. 138). Pottery resembles less that from the Walker Gilmore site and more the second type described above, but in addition to cord-roughening there is a greater emphasis on stamping, punching, roulette impressions, and some incising. Stone artifacts are abundant and varied, whereas work in bone, shell, and metal is feebly represented. Warfare, hunting, and skin-dressing techniques are indicated by various types of projectile points, knives, scrapers, ground celts, grooved axes, and bone awls. Nonutilitarian forms, not common, include discoidals, gorgets, bannerstones, birdstones, boatstones, and plummets. Milling stones, possibly for grinding maize but equally suited to crushing of seeds, are present. There are a few shell gorgets, and copper beads

³ Unpublished field notes of A. T. Hill.

have been recorded. In line with the generally richer nature of the remains is a more elaborate mortuary complex, involving both flexed and extended primary burials in cemeteries, and secondary interments in mounds. Conical mounds in most parts of the State, linears in the northeastern portion and the Des Moines Valley, and effigies in and along the immediate valley of the Mississippi are all assigned to this culture.

For Missouri our data are disappointingly meager, but Woodland remains are said to be plentiful especially throughout the northern half of the State. Some of the sherds from Millers Cave in Pulaski County are strikingly reminiscent of the large, subconical, cord-roughened jars described above, but along with them occurred other different wares. The material itself suggests a mixture, or possibly a stratification of cultures, but the records of the work are silent on this point.

On that portion of the Missouri River where the stream swings from a general southward to an easterly course, and lying within a radius of 25 or 30 miles from Kansas City, is a group of village sites whose temporal position and cultural relation to the present Woodland problem are not yet clear (Wedel, 1938a). Thick, coarsely tempered, cord-roughened sherds are evidently from large pointed-base jars, usually with a row of punched bosses below the squared lip. Heavy stemmed projectile points and three-quarter grooved axes are likewise present, and here all three of these items have been found in undisturbed village sites along with a wide variety of other products in stone, bone, and horn. There was also some work in native copper. On some of the sites there are considerable accumulations of midden materials, with numerous trash-filled pits and other evidence of prolonged occupancy. By comparison with later sites, most of these are rather small, seldom covering more than 3 to 5 acres. No traces of dwellings have been found, from which it is inferred they must have been of perishable substances. Charred maize and beans give direct proof of horticulture. Several species of wild nuts and fruit pits have been found in carbonized condition, besides great quantities of deer and other animal bones. Bison and the dog are sparingly represented. Weapons included presumably the bow and arrow, the latter provided with bone or conical antler tips, and perhaps the lance. There is a rather surprising variety of knives, scrapers, drills, and other chipped flint implements, as well as ground celts and axes. The characteristic Plains hoe made of bison scapula is apparently absent, and it may be surmised that gardening tools consisted of the wooden digging stick and a stone-bladed hoe. For skin working and garment making there

were bone awls, needles, and metapodial beaming or dehairing tools, the latter identical with the drawshave type of implement so widespread throughout the eastern United States. At least one pastime is directly evidenced by a dressed deer-toe bone, pierced lengthwise and presumably used in the cup-and-pin game. Well-finished stone balls and certain disk-shaped flints may also have been used in games. Bird and other small figures were modeled in clay and, less frequently, appear to have been carved of bone. There are curious cone-shaped or mammiform objects of unknown use; curved "cylinders" and flint-flaking tools made of antler; and multiperforated ladlelike pieces of horn that resemble strainers. Very few ornaments have come to light, but there are lumps of hematite used for pigment, and it seems likely that polished stone gorgets resembling some of those from the Ohio Valley belong in the complex. Miniature clay pots and ladles may have been made by or for children, or perhaps as paint receptacles. It is believed burial was in or under mounds, sometimes at least in small rectangular stone-walled enclosures over which the earth was then heaped (Wedel, 1938a, 1939).⁴ Occasionally, the burials were accompanied by limited offerings of copper, pottery, or well-made stone objects. Skeletal material is rare, but the more or less fragmentary skulls so far submitted for expert study indicate a long-headed population in which occipital and bifrontal deformation was sometimes practiced. Pottery in the mounds is of distinctive type when compared with the cord-roughened jars above mentioned, but it is similar in techniques, designs, and shapes to a second ware commonly found on the village sites. Vessels were smaller, lighter, and differently shaped, often with rounded bases and relatively wide orifices; their surfaces bore decoration made with a rocked smooth tool, a simple stamp, or less commonly, a cord-wrapped stick or a notched roulette. Rims characteristically were cross-hatched with a row of punch marks below, and with smoothed slightly constricted neck. This pottery and some of the associated traits are strongly reminiscent of the Hopewellian remains widely distributed in the upper Mississippi and Ohio Valleys, but the burial complex appears to lack many of the more spectacular elements found in the East.

The widely scattered Woodland and related remains in the Great Plains are today still shrouded for the most part in uncertainty. In the absence of comprehensive and truly definitive studies any general-

⁴The small stone-walled burial enclosures excavated by Fowke and others on the Missouri below the mouth of Grand River appear to be of Woodland origin, if the pottery reportedly found therein is to be taken as a trustworthy clue.

izations are largely impressionistic and subject to revision. Recognizing this, it may nevertheless be worthwhile to set forth such suggestions and leads as the data offer. In the first place it seems that these remains diminish in number and richness as their distance west of the Missouri River increases. The greater number so far recorded from Nebraska is not conclusive proof that an equal profusion will not be found in Kansas and the Dakotas, when work in those States reaches its stride. The westward extension into and even beyond the High Plains has not been worked out, though sherds of suggestive character have been reported from Colorado and are known from as far as Yellowstone Park. An interesting but as yet unexplained resemblance between Navaho and Woodland pottery has been pointed out (Mera, 1938). The known sites in the Plains are small, often little more than transient camps, and impress one as a cautious thrust by an easterly people or peoples venturing into a new and unfamiliar environment. The rather striking variation in type of remains designated as "Woodland" may connote temporal, ethnic, or merely local differences. Culturally, the connections are clearly strongest with the east or northeast and may imply a penetration into our region from the upper Mississippi and Great Lakes area. In this event, northeast Nebraska would seem a promising region for study of the trans-Missouri remains, and results of recent digging here are awaited with keen interest.

From the east probably came the peoples with Hopewellian-like culture who settled in the Kansas City area, but whose traces have likewise been found more than 100 miles westward up the Kansas River and to the vicinity of Peru, Nebr., on the Missouri. Culturally, and perhaps somatologically, their nearest counterpart to the east so far as known today, is on the Mississippi River bluffs of southeastern Iowa, and in northwestern Illinois and adjacent Wisconsin. Additional sites may be expected in the intervening districts as field investigations continue. As noted, the Hopewellian complex at Kansas City seemingly includes most or all of the traits thus far reported at the majority of so-called Woodland sites in the Plains, along with an abundance and variety of other types and evidences of a much more fixed existence. The relationships here remain to be worked out. Whatever conclusion is eventually reached and held regarding Woodland and Hopewellian interrelationships on a wider basis, the latter has been discussed in the present section because it shows a closer affinity to what has been called Woodland than to any other known Plains pattern. All of these remains are strictly precontact in our area, and none can be linked with known protohistoric or historic peoples.

Following the Woodland peoples into the region west of the Missouri River, but still definitely preceding the European invasion, came others of semisedentary habit whose material remains suggest in general a much more firmly established occupancy. As might be expected from their wide distribution over the Plains and from a probably fairly prolonged tenure, several regional variations developed. Here and there some of these variations have been pretty clearly defined, but to date neither the information nor the techniques have been refined to the point where the time element can be controlled. Probably the hundreds of known sites belonging to this general period and culture were spread over a considerable period of time. Held in common by all the various subgroups so far recognized by the archeologist were such items as the following: Primary dependence upon horticulture with maize, beans, and squash as the staple crops and the hoe the characteristic implement; use of the semipermanent subrectangular (rarely circular) partly subterranean earth lodge; a pottery tradition readily distinguishable in nearly all respects from that of the Woodland peoples; small to medium fixed villages in open locations with no apparent attempt at concealment or fortification; and a fairly extensive series of artifact types in stone, bone, horn, and shell. At least three principal variants are now known for Nebraska and Kansas.

The first and westernmost has been termed the Upper Republican culture (or aspect), from the circumstance that it was first studied and is best known in the valley of the Republican River in southern Nebraska (Strong, 1935, pp. 69-124, 245-250, 275-278; Wedel, 1935, pp. 133-209; Champe, 1936, pp. 249-299). A second focal area is in the Loup River drainage of central Nebraska. Here loosely arranged villages varied in size from a few to several score houses, each presumably a communal affair sheltering two or three families. It is doubtful whether many of these communities numbered more than 50 or 100 inhabitants. The house floors were depressed 1 or 2 feet, and over the pit was raised a low dome-shaped structure of poles, brush, and earth with a central unlined fire pit, apical smoke hole, and a covered tunnellike entrance passage facing away from the prevailing northwest winter winds. The dwellings were set above the reach of floods on terraces along the smaller creeks, less commonly in the arterial river valleys. In the loose mellow alluvial soil of the nearby bottoms small garden patches were tilled with planting sticks and hoes made from the shoulder blade of the bison. Surplus crops were stored for future use in underground cache pits. There is no evidence of the metate and mano or of any similarly used mealing

implement. This suggests the possibility of a wooden mortar and pestle, of which however no traces have come to light. Small game was easily taken in the limited cover along the little valleys, and bison, antelope, and other larger animals could be shot down at water holes or stalked by hunters on foot in the upland "breaks" bordering the streams. Bone fishhooks indicate another source of food, and undoubtedly wild fruits, seeds, berries, and tubers figured heavily. The dog was the sole domestic animal. Weapons included the bow and flint-tipped arrow, possibly also the lance. For skin working there were snub-nose scrapers, flint knives, awls, bodkins, and much less frequently eyed needles and bone beamers or dehairing tools used like a drawshave. The cup-and-pin game was known, and from time to time there have been found small dressed bone objects suggestive of gambling devices. Of dress, woven textiles, and basketry there is no direct evidence, but for personal adornment there were red and yellow minerals, bracelets, gorgets, pendants and beads of bone, as well as beads, perforated clawlike pendants, and variously shaped ornaments of shell. Pipes were almost universally of stone, either of elbow type (equal armed) or with the stem projecting beyond the bowl. Pottery was abundant, entirely utilitarian, tempered with crushed rock or grit, and the surfaces of the large full-bodied vessels were almost invariably impressed with a cord-wrapped paddle. Incised decoration was confined to the thickened or collared rim, and handles are characteristically absent. The cord-roughening and perhaps other ceramic traits are reminiscent of certain forms of Woodland pottery. The nature of the material twisted into cordage, whether bison hair or a vegetal substance, is unknown. Disposal of the dead was by exposure of the corpse with subsequent interment of the dismembered bones in large communal ossuary pits usually situated on the lofty bluffs overlooking the village sites. Shell beads or broken pottery are found in some of the ossuaries. In one have been recovered wooden disks covered with copper foil, suggesting contact with more easterly copper-using peoples. Trade relations in other directions are implied in the presence of obsidian from Yellowstone and of conch and smaller marine mollusks from the Gulf of Mexico. There is a little steatite from somewhere to the west, and some of the quartzite is apparently from the Spanish Diggings in Wyoming. Miscellaneous artifacts not mentioned above include elongate sandstone shaft-polishers, hammerstones, chipped and, very rarely, polished celts, antler tapping tools or "cylinders," and shaft-straighteners of bison rib.

Outside the stated localities in Nebraska, traces of what is apparently the Upper Republican complex have been found in Kansas

in the Solomon Valley, in Lane and Scott Counties in the Smoky Hill drainage, and eastward to approximately the Big Blue River. Farther south, cord-roughened sherds and jars strikingly reminiscent of some of the southern Nebraska materials have been reported from the Texas Panhandle (Moorehead, 1931, pp. 81, 83, 89, 105). It is not clear to what extent the artifact inventory otherwise parallels that of the defined Upper Republican horizon. Characteristic sherds have been reported from eastern Colorado and Wyoming, though all too often the survey reports on this region are inconclusive on the score of pottery. Rock shelters as well as open sites are known in the Nebraska Panhandle, the former possibly representing hunting camps (Bell and Cape, 1936, pp. 357-399). They have not yielded any vestiges of textile or other perishable materials. An evidently late variant, to be discussed presently, occurs on the Missouri in north-eastern Nebraska. For South Dakota virtually no data are available, but there is reason to believe that the lowermost of two artifact-bearing strata in Ludlow Cave (Strong, 1935, p. 291; Over, 1936), in the extreme northwest corner of the State, will prove to be assignable to the Upper Republican culture. This identification, if verified by future analysis, is of interest not only from the standpoint of distribution but also because coiled-basketry fragments were found.

On the timbered and highly dissected bluffs lining the Missouri River in eastern Nebraska and northeastern Kansas are the vestiges of a related but slightly different cultural complex. In the absence of suitable terraces or for other reasons, the rectangular earth lodges here, usually larger and deeper than those in the western Plains, were characteristically strung out along the narrow winding ridges. Nearby burials in or under mounds, some of which at least are unquestionably artificial, may belong to these villages, but the association is still uncertain. Cracked and scorched human bones in a few sites have been interpreted tentatively as evidence for cannibalism, ceremonial or otherwise. On the whole, the archeological inventory of this, the so-called Nebraska culture (or aspect), parallels closely the list already given for the Upper Republican complex, differing principally in its somewhat greater richness and variety of types (Strong, 1935, pp. 124-175, 250-267; Bell and Gilmore, 1936, pp. 301-355; Hill and Cooper, 1937, pp. 253-292). Work in shell is more abundant, including spoons and hoes as well as numerous ornaments of zoomorphic shape. Pottery differs in the greater frequency of handles, presence of much plainware, occasional use of a slip, preponderance of bent tubular tobacco pipes, and abundance of human effigy heads of unknown function. The curved clay pipes vaguely recall the somewhat

similarly shaped but better-made Woodland style of the eastern United States. Other items not yet reported for the Upper Republican culture include a stone pottery anvil, antler combs and gouges, deer jaw sinew-stretchers, toggle-head harpoon points, and coiled-basketry impressions in clay. In the Weeping Water Valley, near Nehawka, were extensive chert quarries whence a readily worked characteristic flint was widely traded in all directions. Of as yet undetermined significance is the presence in some sites of aberrant sherds of apparent Middle Mississippi type, as well as rare fragments suggesting Oneota influences. This point will be discussed more fully elsewhere. Here we may stress again the rather curious geographical distribution of the Nebraska culture. As far as known the sites are closely confined to the bluffs zone of the Missouri, with a very short extension westward up the lower Platte Valley. They have been noted from Thurston County, Nebr., in the north to Clay County, Mo., in the south, a distance by river of over 350 miles. On the left side of the stream, in southwestern Iowa, closely similar remains have been designated the Glenwood culture. Recent excavations here have not yet been published. In general, village refuse is surprisingly meager on most of these sites, and this in conjunction with the limited distribution of the Nebraska-Glenwood remains suggests a relatively short-lived occupancy. Possibly migrating groups passing rapidly through the region were responsible, but if so, their destination and subsequent history are still a mystery.

From cross finds of sherds and for other reasons it is now generally believed that the Upper Republican and Nebraska cultures flourished at about the same time. The numerous similarities indicate a common ancestry at no very remote time, but there is nothing to indicate that either, as such, was derived from the other. Probably both were specializations from a somewhat more generalized and widespread complex. Neither has been convincingly identified with historic tribes in the Great Plains. Between the Upper Republican and the Pawnee there are a number of resemblances, and there is reason to suppose that the mode of life as inferred from archeology was basically much the same if due allowance is made for the effects of white man's innovations and the relatively greater emphasis on hunting in historic Pawnee society. At the same time, unexplained dissimilarities between the two are present, and some of the likenesses consist of very widespread traits which are of little or no import in tracing the relationship between two specific cultural entities. By comparison with the known Siouan, Shoshonean, and other tribes inhabiting the central Plains in historic times, the Pawnee probably have the strongest claim to the

title of true indigenes, and there is reason to believe that they were in the area long before the first Europeans arrived. At any rate there are those who believe that the structure of historic Pawnee material culture and economy stood with at least one leg on some such prehistoric horizon as the Upper Republican of southern and central Nebraska and northern Kansas, which it seems to resemble more closely than any other known precontact complex. The unlikenesses may be due to influences from other peoples and areas operating at various times throughout a culture history of several centuries. This suggestion does not exclude the possibility that other historic tribes, perhaps even of different linguistic affinities, may have had their roots in this or a closely related base. A Siouan authorship has been postulated for the Nebraska culture, but intensive excavations in the past 2 or 3 years have not yet offered satisfactory confirmation of this correlation. On the contrary, the complex generally recognized as Siouan by archeologists is markedly divergent, though this fact does not rule out possibility of an earlier movement through the region by tribes of this stock. The latter, to be discussed presently as the Oneota, may have had slight contact with some of the later Nebraska culture communities.

Separating the areas occupied in Nebraska and northern Kansas by the two archeological manifestations outlined above is a broad belt including numerous sites that have thus far been regarded as "hybrid" between them. The general contemporaneity of Upper Republican and Nebraska cultures has been established, and it is to be expected that where the two came most closely into contact there would be extensive interplay and exchange of ideas. The sites which cannot with assurance be assigned to one or the other extend from northern Nebraska southward through the Loess Plains at least as far as the Kansas River Valley. It may be suspected that they will be found yet farther south in the valleys crossing the Osage Plains of southeastern Kansas. In Nebraska and at a very few sites in northern Kansas, excavations have revealed small villages of rectangular earth lodges of the usual type. The metatelite mealing slab and muller occur rather commonly in the latter State. It is unnecessary to detail here the other specific traits found, since they would be little more than a repetition of what has been already presented (Wedel, 1935, pp. 210-237; Hill and Cooper, 1937, pp. 222-252). The resemblance is perhaps slightly closer to the Upper Republican, at least insofar as the complex is a little less varied than the Nebraska culture. In the Weeping Water Valley and elsewhere in eastern Nebraska, as well as in a few places on the North Loup, there are stone-covered pits containing bone frag-

ments, evidently the remains of secondary burials, but it is not clear to what village site complex these belong. Farther south, in the lower Kansas Valley, secondary interment was made under small stone cairns or in stone and dirt mounds, with offerings of incised bone beads and occasional shell or stone objects (Brower, 1898-1899). One burial ground recently discovered near Salina, Kans., contains massed primary burials, flexed, and accompanied by shell ornaments, chipped flint artifacts, and cord-roughened pottery. From this cemetery, in addition to vessels of strictly local type, came a large fragment of burnished blackware of foreign manufacture. In the nearby village site a cache yielded part of an exotic clay effigy pipe, which, like the sherd, is of a type found in the Caddo region in southwestern Arkansas. Trade contacts via the Arkansas, Neosho, or Verdigris are implied here. No evidences of puebloan contacts have yet been revealed in excavation, though surface finds of southwestern painted potsherds are occasionally reported from western Nebraska and northern Kansas. The relationship of all these sites to one another is obscure, and bound to remain so until far more extended systematic studies have been made available. Some may perhaps justly be regarded as due to a merging of influences from the contemporaneous Upper Republican and Nebraska cultures. It is a safe assumption that not all were inhabited simultaneously, though the length of time involved is unknown. Recognizing the probability of influences from the two named complexes and the further likelihood of minor local variants, it still seems pertinent to inquire whether some of the older "hybrid" sites may not represent a somewhat earlier generalized pattern out of which the more specialized or more localized manifestations, e.g., the Upper Republican, Nebraska culture, and perhaps others unnamed, subsequently differentiated themselves.

A few comments may be in order concerning certain recently worked sites in northeastern Nebraska, some of which are pretty clearly a result of fusion of true Upper Republican with Nebraska culture elements. These sites are located on the right or south bank of the Missouri where it forms the boundary between Nebraska and South Dakota and on its westerly affluents, notably Ponca Creek. When first reported these were suspected to be of comparatively late date, i.e., later than the typical Upper Republican manifestations in the southern and central parts of the State and the Nebraska culture in the Omaha region. Systematic investigations have since tended to strengthen these inferences (Strong, 1935, pp. 242, 275; Cooper, 1936, pp. 11-145). Some of the sites have yielded fragments of platform disk pipes, grooved mauls, and Oneota sherds. There is a suspicion

that the notched, chisel-shaped fleshing tool or grainer is also present. As far as excavations in and about Nebraska are any indication of age, these types are usually associated with protohistoric horizons and seem to be rare in, or absent from, the strictly prehistoric period. A few rim sherds bear decoration nearly identical with that found on some protohistoric Pawnee pieces. There is as yet no indication as to the possible connection between these sites and the historic Siouan and other tribes in the district. Obscure, too, is their relation, if any, to the little-known Mill Creek culture in northwestern Iowa.

Systematic excavation in the Mill Creek area remains unpublished, but earth lodges are thought to be present as well as a fairly extensive inventory of lesser antiquities. Typical Mill Creek sherds are said to have been found in association with Woodland remains in at least one rock shelter in Iowa, and it is thought the Mill Creek is definitely prehistoric.⁵ Adequate researches in this highly complex region, involving contiguous parts of South Dakota, Iowa, and Nebraska, are urgently needed to clarify a multitude of perplexing problems. One reason for this complexity may be the coming together and attendant commingling of culture elements of various Siouan, Caddoan, and perhaps other groups, whose early documentary and traditional history indicates tribal movements into and through the locality from time to time.

Widely circulated press dispatches in the summer of 1936 announced the discovery on Ponca Creek in Boyd County, Nebr., of an extensive artifactiferous stratum deeply buried beneath 1 to 8 feet of wind-laid sands.⁶ On physiographic grounds—chiefly the unusual depth of overburden—the possibility has been advanced of a “moderate antiquity,” whatever that may imply. The cultural manifestation has not been described in detail, but a rather varied ceramic complex, remains of charred maize and beans, and what seem to be evidences of earth lodges argue for a fairly sedentary horticultural mode of life. Drought conditions are strongly indicated, but it is not known whether these were widespread or only locally serious enough to affect community life.

⁵ Mill Creek remains have been briefly outlined by Keyes, 1929, Strong, *op. cit.*, p. 286, and Mott, 1938, pp. 287-292. Among the sherds collected by F. V. Hayden in 1867 at a protohistoric Pawnee site on the Loup in central Nebraska, now in the U. S. National Museum, are a half dozen typical Mill Creek sherds. Moreover, rim designs on the latter closely resemble those on some Pawnee specimens. This association, if not fortuitous, would suggest a relatively late date for the complex.

⁶ Nebraska State Journal (Lincoln), July 3 and 5, 1936; see also Van Royen, 1937.

In view of the rather startling claims set forth at time of the discovery, it may be remarked here that the archeological evidence is incompatible with the millennial antiquity once imputed to the site. Although the depth of overburden is striking, it must be remembered that the factors that determine the rate of such accumulation are very imperfectly known. On the other hand, the evidence from ceramic remains seems fairly clear-cut in the present instance, so that the findings of archeology promise to be a more reliable yardstick than the interpretations of the geographer. Artifacts said to be representative were seen by the writer on three visits to the site before and during excavation and again at the Third Plains Archeological Conference at Mt. Vernon, Iowa, in November 1936. If truly characteristic, these indicate a comparatively recent date. Specifically the ceramic remains suggest a mixture of Upper Republican and Nebraska aspect traditions, besides which definite Oneota influences are apparent. From what is known of Oneota archeology elsewhere, an estimate of not over three to five centuries at the very most would seem more in keeping with the archeological data at Lynch. At the moment it is impossible to say whether the nonceramic remains bear out this conclusion. As for the absence of white man's manufactures, cited in support of a prehistoric dating, it may be pointed out that direct trade contacts with tribes in the central Plains, to judge from Spanish and French documents, were probably not established until the latter half of the seventeenth century. Prior to that time the trading posts and settlements of the Europeans were so remote, relatively speaking, that metal or glass articles received indirectly by the Nebraska tribes must have been quantitatively insignificant. Sites inhabited into the first half of the seventeenth century might easily prove to be precontact as far as the findings of archeology are concerned.

In the writer's opinion, the prospects seem promising for linking the physiographic phenomena noted at Lynch with one or another of the late pre- or very early post-Columbian droughts revealed by unpublished tree-ring and other studies in the upper Mississippi-Missouri valley area.⁷ From such evidence as has been made available, there seems no adequate basis for comparing the site with Signal Butte, with regard either to age or to depositional processes involved. As to cultural implications, moreover, there is no reason whatever to regard this site or the cultural complex manifested, as older than the

⁷ Prehistoric droughts in the Mississippi Valley. Paper read by Florence H. Senter before the Society for American Archeology meeting at Ann Arbor, Mich., on May 5, 1939.

Upper Republican in southern Nebraska or the Nebraska aspect, much less as ancestral to either. At the same time, the data offer some extremely alluring possibilities concerning cultural fusion, ecological adjustments, and recent geologic processes. The full report on this very interesting site by those directly concerned with the investigations, together with their considered views as to age and affiliations, is awaited with keen interest.

The more or less consistent presence of certain intrusive sherd types in sites of the Nebraska culture from Omaha southward has been noted several times in the literature—by all workers, in fact, who have devoted more than passing attention to the manifestation (Gilder, 1926, p. 32; Strong, 1935, pp. 255-256; Hill and Cooper, 1938, pp. 292, 351-352). These consist of dark gray to black finely shell-tempered fragments whose well-smoothed or polished surfaces are relieved by nicely incised geometrical designs. Rims are usually low and but slightly recurved. Rarely, angular-shouldered vessels and handled dippers or bowls have been found. For these aberrant pieces a Middle Mississippi influence has several times been postulated, but there has been some uncertainty as to whether they were merely trade items carried in from a distance or were to be construed as evidence of another cultural group in the eastern Plains. Within the past year or two it has become evident through excavations that the second alternative is the correct one. Mounds and village sites yielding exclusively or preponderantly Middle or Lower Mississippi pottery types are now known to occur along the Missouri River and its tributaries in northwestern Missouri, but their extent and other details remain to be worked out. Pending analysis of the material recovered so recently, it is possible only to outline broadly some of the salient features that appear to be present. The only village site yet worked, on the Platte River just above Farley, Mo. (Wedel, 1939), yielded clear evidence of earth-covered pit houses with four primary supports as in the dwellings of the Nebraska culture. Pottery was present in profusion, the great majority of sherds being tempered with finely crushed shell and showing a brown or gray color. This ware and the Oneota with its derivatives appear at present to be the only ones in the central Plains in which shell tempering is decidedly prevalent over grit. Vessels frequently bear incised decoration on the upper body; rims are either direct and unmodified or else low and slightly recurved. More or less pronounced shoulders are of common occurrence, as are handles and lugs. The latter are often made in the likeness of human, animal, or bird heads, or of small bearlike creatures. The common vessel shape appears to have been a rather low, full-bodied olla, with

shoulder and constricted orifice. There are flat-bottomed, vertical-walled vessels often with an effigy head on one side of the rim and a tail on the other; or, at times, two heads face each other across the bowl. Water bottles, ladles, and miniature pots are indicated. The ceramic remains, in short, are unlike those characteristic of other Plains complexes as described herein, and undoubtedly have strong downriver connections. From them probably came a number of pottery traits found in the Nebraska culture, such as effigy heads, etc. With them occur such items as the following, which however do not represent the full range of types probably present: Small triangular side-notched and unnotched projectile points, the former often with a basal notch as well; end scrapers, drills, and knives; paired sandstone shaft-buffers and pumice abrasives; anvil stones and mullers; the polished gouge; a limestone pipe in form of a lizard (?) head; hematite pigments and polished fine red sandstone ornaments; bone awls and knives or scrapers; socketed antler objects (handles?); deer jaw sinew-stretchers and longitudinally pierced deer phalanges (cup-and-pin game?); shell hoes; twisted two-strand cordage of unidentified material; maize, beans, pumpkin and sunflower seeds, and other vegetal food remains. In an adjacent cemetery were primary extended, bundle, and flexed burials, and from the rather poorly preserved skeletons a short round-headed population is tentatively inferred. Artifacts were scarce in the graves, but several restorable vessels and a complete one are nearly identical with pottery from the village. Elsewhere in the region, the work of local collectors indicates burials with characteristic pottery in large earth mounds of somewhat involved construction and apparently intrusively in stone-walled mounds probably assignable to an earlier and different complex. In all likelihood, additional excavations between Kansas City and Omaha on the Missouri would do much to clarify the interrelation between this upriver thrust of a Middle Mississippi complex and the contemporaneous Nebraska culture manifestation.

The origin of the first two peoples above considered—the Upper Republican and the Nebraska culture—whose little villages of mud huts must once have been a familiar sight in the prehistoric Plains, is uncertain. Careful studies of skeletal remains may show the direction from which the people themselves came. There is not the slightest evidence of incipient or nascent earlier cultures in the area from which they can be thought to have sprung. This negative evidence confirms what general theoretical considerations suggested long ago, viz, that the basic elements were carried in virtually full blown from an older cultural environment. Just where we should look for the source of

specific items is not clear, but the general direction indicated is probably the southeast and east (Strong, 1935, p. 296). It is even more difficult to estimate in terms of years when this infiltration upriver into the Plains began or how long the ensuing occupancy endured. From the number and widespread nature of the villages it must have been a period of some length, and their small size and relative defenselessness indicates at least a large measure of freedom from attack by enemies. The greatest extension westward from the Missouri River, reaching into western Kansas, eastern Colorado, and perhaps Wyoming, came before the white man and his trade trinkets reached the area. Little or no evidence is at hand for puebloan influences on any of these prehistoric peoples, though further investigations in the westerly sites may necessitate revision of our current conception of the High Plains as a well-nigh impassable, or at any rate seldom passed, barrier to these ancients. In east-central Kansas, as already pointed out, there are hints of direct trade relations with peoples in the Caddo area of Arkansas. Additional excavations here and in southeastern Kansas ought to shed extremely valuable light on these relationships, since the Arkansas, Verdigris, and Neosho Rivers offer easy routes of travel southeastward out of or, of more import, northwestward into the Plains proper. This point is one to be borne in mind in future explorations aimed at a definition of Pawnee-Arikara and southern Caddo relationships. As yet this potentially important region has scarcely been touched by scientists (see Moorehead, 1931, pp. 82-88).

Before closing this discussion of the prehistoric pit-house peoples in the central Plains it may be appropriate to consider briefly one of their most characteristic and consistently uniform material traits—the earth lodge. The origin and diffusion of this structure, so familiar in slightly different form to the early travelers and ethnographers on the upper Missouri and in the eastern Plains, has been speculated on by various workers. Anticipating ourselves slightly, we may note at the outset that in historic times the circular lodge was everywhere the rule. One theory, advanced prior to initiation of intensive archeological research in the regions concerned, suggests that as a type the historic Plains earth lodge was elaborated in the lower Mississippi Valley from “a much older type of circular, partly excavated, earth-covered dwelling which was at one time used in the Southeast and probably over much of the western Mississippi drainage,” spreading northward in comparatively recent times with such migrating tribes as the Arikara and perhaps the Mandan (Linton, 1924). This is based on various historic and ethnographic facts, chiefly the resemblance of the Plains structure to the winter dwellings or “hot houses” of some

of the Muskogean tribes and their neighbors, and on the plausible theoretical consideration that it, like such concomitant basic arts as horticulture and ceramics in the upper Missouri, were rooted in the Southeast and lower Mississippi region. The hypothesis receives some support from recent excavations in the Southeast, where circular structures very like those of the north have been found in a prehistoric context. Thus, the remarkable "council house" near Macon, Ga., exhibits a number of very striking similarities to the Pawnee and Arikara habitations, even in such details as the specially constructed altar opposite the entrance passage (Stirling, 1935, pp. 390-391 and pl. 5).

Viewed in the light of archeology, the problem promises to be rather more complicated than this. It is now established that in Nebraska and Kansas the circular earth lodge was preceded by the rectangular type with rounding corners, houses of the latter form vastly outnumbering the others in prehistoric horizons (Strong, 1935, p. 276; Wedel, 1935, pp. 172-174). Except for the outline of the floor, the two types are essentially identical. Both consist of a sunken floor, a central unlined fire pit, a series of primary roof supports roughly midway between hearth and outer wall, a secondary series of lighter roof-and-wall supports just within the edge of the house pit, a presumably domed structure with apical smoke vent, a covering of brush and earth, a covered entrance passage, and usually one or more sub-floor cache pits. Variations occur, but it is not clear in all cases whether these are merely local specializations or whether they have temporal significance. In view of the fact that Pawnee traditions consistently speak of four primary supports, it may be significant that this is the all but universal number in the prehistoric structures, although after 1800 the Pawnee paid only lip service to this requirement (Wedel, 1936, pp. 43-50, 98-99; 1938b). The actual form at any given time would seem a rather trifling point were it not evident that in the central Plains the respective types are in large measure temporally distinct. In other words, whereas in the early period the rectangular lodge was the fixed type over a wide territory, at a later one the circular structure completely superseded it. It is reasonable to believe that the historic circular Plains lodge evolved in the region out of the closely similar and clearly earlier rectangular structure. Architecturally, the earlier is if anything the more complicated of the two types, and it must have had a fairly long developmental background. Nothing so far found in the Plains suggests an incipient or formative stage, from which fact it might be inferred that the developed type was an importation.

In casting about for clues in other earth-lodge-using areas the prehistorian looks first toward the Southeast. Here, so far as archeology itself is concerned, the literature is mainly silent. Square earth lodges or "town-houses" are indeed reported in the prehistoric Caddo area (Harrington, 1920, pp. 291-297; see also Webb, 1938, for Tennessee house types), but it is by no means clear whether this form occurs as a widespread type or only very locally. Even if this proves to be generally distributed in the lower Mississippi Valley and the Southeast, there are several noteworthy dissimilarities to the typical Plains dwelling. Specifically, the latter disagrees in the wider spacing of post molds comprising the single row of outer supports, in the characteristic use of four central supports, in the distinctly rounding rather than square corners, and perhaps in other respects. These differences may be minor points, and possibly future work in southeastern Kansas, northeastern Oklahoma, or adjacent districts to the east will yet show transitional stages to prove that the Plains structure grew directly out of something like the Caddo "town house" type. At present, however, such a relationship has not been empirically established. In some respects early pit houses in the southern Southwest more closely resembled those in the prehistoric Plains (Haury, 1936, pp. 79-90), though here there are differences in the internal arrangement of posts and other features and in the supposedly flat roofs. The environmentalist might contend that slope or lack of slope in the roof would be partly determined by the relative amount of rain or snowfall and that only minor changes would be required to adapt a generalized basic type to either situation.

The data presented up to this point will now be summarized. So far as general resemblances are any indication, the relationship of the Plains earth lodge at the moment appears about as close with the Southwest as with the Southeast, but this may be due in part to our much more complete knowledge of the former area. The possibility of a northern or northwestern origin cannot yet be entirely ruled out. One could with reason postulate a dual beginning, wherein the basic idea of the earth lodge was introduced at a very early date from one direction with subsequent alterations in form and details by later influences or actual importations, perhaps from other sources. It seems likely that helpful clues will come to light when systematic research is extended to the eastern, southern, and other margins of the area. Too, there is a very considerable body of recently acquired archeological data on the Plains earth lodge which still awaits critical analysis and comparison. Meanwhile, it seems permissible to regard this trait complex insofar as its constituent elements are at all unique

to the Plains, as a local development or modification from a basic idea which was introduced from elsewhere.

Very imperfectly known are scattered traces of one or several pottery-using peoples who formerly roamed the Sandhills and High Plains in western Nebraska. Hearth sites assigned to the "Dismal River Culture" (Strong, 1935, pp. 212-217, 270; Wedel, 1935, pp. 180-182) are rather common;⁸ they show no traces of earth lodges, although there is some evidence that they were at least in part coexistent with some of the Upper Republican peoples. Cultural deposits at most of the known sites are thin and give little promise of repaying extended excavation. Scrapers, knives, and projectile points occur, but bone work appears to be rare. Pottery fragments are usually thin, very dark or almost black in color, thickly tempered with fine sand, and bear simple incisions across the lip. Vessel forms are unknown. There is little resemblance to other defined wares of the region. Great quantities of weathered and slivered animal bone occur on some of the sites along the Dismal, and the general impression is one of an unsettled people living in impermanent shelters largely from the fruits of the chase. In the Sandhills horticulture would have been difficult, but in other localities it was at least feasible. Possibly some of the stations are protohistoric, since some copper and glass beads have been picked up. However, since the bulk of the remains are from the surface and from "blow-outs" among the sand dunes it has so far been impossible to reach definite conclusions concerning the associations.

Differing somewhat from Dismal River sherds and still unassigned are others found on the Snake River in northern Nebraska. These occur on small patches of hard ground, and sometimes appear to be associated with small shallow depressions (tipi rings?). Sherds are almost always very small, thin (under 5 mm.), dark gray to red in color, tempered with sand, and the lip characteristically bears closely

⁸ Since preparation of this paragraph additional relevant evidence has been gathered at Dismal River village sites by the U. S. National Museum in Scott County, Kans., and by the Nebraska State Historical Society and W. P. A. near Wauneta, Nebr. These researches apparently confirm the general protohistoric position of the Dismal River complex and its heavy emphasis on hunting; corn and apparently squashes or gourds were present but no evidence of the horse. Other noteworthy items include small triangular and notched arrowpoints, end scrapers, knives, and other chipped implements; a well-developed industry in bone, including notched fleshers, hoes, awls, etc.; tubular clay pipes of apparent southwestern type; and bell-shaped roasting pits. House types remain uncertain. An Apache or Comanche provenience has been tentatively suggested, but evaluation of the complex generally and its origin must await analysis of the findings. (Wedel, 1940.)

spaced diagonal incisions. Rims are thickened very slightly or not at all, and below the lip are incised parallel lines evidently encircling the vessel. Body sherds frequently show parallel lines which seemingly occur in blocks bordered by, or alternating with, other sets of parallels. From the tiny fragments available it is impossible to state with assurance just how this decoration was placed on the vessels, or what shapes the latter took. Small, usually unnotched triangular arrow-points, and scrapers are associated. Apparently similar sherds have been described from the southern Black Hills area (Buker, *Amer. Antiq.*, vol. 3, No. 1, p. 80, 1937) and others are known from Sundance Creek, in Crook County, northeastern Wyoming. There are hints, but no conclusive evidence, that this pottery may be protohistoric or historic, in which event one might suspect from its distribution a Siouan provenience. Decorative treatment vaguely suggests that found on certain protohistoric (Oneota and Pawnee) wares farther east, but the resemblance is insufficient to permit valid inferences.

THE PROTOHISTORIC AND HISTORIC PEOPLES

Penetration of the central Plains by Europeans began shortly before the middle of the sixteenth century, but exploring expeditions were few and far between prior to acquisition of the Louisiana Purchase by the United States. Even so, during their exploitation of the New Mexican region, several of the early Spaniards left documents that shed invaluable light on the early post-Hispanic history of the Plains. Thus, we are informed that in 1541 two distinct subsistence economies were in vogue, both clearly recognizable when projected against the background of later narratives and discoveries (Winship, 1896). In an easterly or northeasterly direction from Pecos, Coronado's party, after 18 days' march, began to encounter roaming bands of people "who lived like Arabs," and whose sustenance "comes entirely from the cows, because they neither sow nor reap corn." One of the camps seen is said to have had 200 tents. These people used the skins of the bison for clothing, ropes, and tent covers, the sinews for thread, and the wool in cord making. For transporting their baggage they used large dogs, of which they had many. There is unmistakable mention of the conical tipi, dog traction, the breechcloth, skin clothing, the bow and arrow, pemmican, face painting (or possibly tattooing ?), and sign language. Pottery was absent. In winter these people brought hides and robes to the pueblos, especially Pecos, in exchange for corn. Two "tribes" are noted: the Querechos, supposedly Plains Apache, and the Teyas. Beyond and northeast of these nomads, where

the country was more broken and fertile, near some large rivers, were found settlements of quite another character. Here the people lived in fixed round straw houses, supporting themselves partly by the chase and partly by cultivation of maize, beans, and melons. Corn was traded to the Querechos for cloaks. There was no cotton. One chief had a small piece of copper and also some other metal. Not more than 25 villages of straw houses were seen, though some are credited with as many as 200 lodges. This thickly settled province they named Quivira, and north of it lay Harahey. Quivira figured again and again in subsequent years, having been visited and its inhabitants briefly described by Oñate and others who followed the northeastward trails first felt out by Coronado. Its inhabitants have been generally identified with the Wichita.

Other sources of later date bear out these remarks relative to the distribution of hunting as compared to horticultural peoples. In the latter part of the seventeenth century, various "Apache" tribes seem to have held the High Plains north to the valley of the Platte. In southeastern Colorado and northeastern New Mexico they inhabited flat-roofed houses and cultivated maize and beans, but in the bison country the bands were migratory (Thomas, 1935). On at least two recorded occasions—about 1664 and again in 1696—pueblo Indians from Taos and Picuris fled northeast from the Spaniards and settled among the "Apache." Their destination is uncertain, but pueblo ruins in Scott County, Kans., evidently belong to this general period (Martin, 1909). So indeed do most of the identified painted sherds thus far found on nonpuebloan sites in central Kansas as well as incised clay pipes or "cloud-blowers" reported from southwestern Nebraska. The soldiers in pursuit of these fugitives found them apparently in eastern Colorado or western Kansas in possession of copper and tin said to have been obtained by journeys eastward to Quivira, from which it was inferred that this was "a kingdom very wealthy and civilized." Moreover, by way of Quivira "one goes to the Pawnees" residing in large rancherias on an important river somewhere to the north. Between the Pawnee with their French "allies" and the Apaches there was continual strife even before 1700. It is of passing interest to note references to Navaho war parties against the distant Pawnee, evidently made on foot before the eighteenth century. In 1706 the Comanche are first mentioned in Spanish records, then already allied with the Utes and notorious for their incessant harrying of the less combative Apache and other peoples.

Out of the welter of facts and rumors contained in the narratives from which the foregoing observations have been culled emerge

several points worthy of further comment. In the first place, the chroniclers of Coronado and Oñate have left us vivid if incomplete glimpses of a presumably widespread native Plains hunting economy utterly uninfluenced by the white man. Either directly or by implication there is mention of nearly every essential feature found in the material culture of the typical bison-hunting tribes in the eighteenth and nineteenth centuries, except of course the horse complex, firearms, and metals. This "Querecho-Texas" type of life evidently dominated the High Plains, and it is undoubtedly significant that large fixed settlements of horticultural peoples were not found by the Spaniards until they reached the richer and more inviting land beyond the true bison plains. It is still uncertain whether the provinces of Quivira and Harahey were in Kansas or Nebraska or elsewhere, but the implication throughout is that they were east of the High Plains along or near some large streams. This dovetails with the earliest French records for the Nebraska region, according to which the village tribes dwelt mostly in the eastern Plains with roving hunters to the west.

Archeology has as yet been able to contribute little to our knowledge of the prehistoric hunting cultures of the Plains, with the few exceptions noted previously. For one thing, the implements and utensils used in the daily activities of these hunters were of necessity limited to essentials that could be easily carried from place to place. The camps were of highly transitory nature and must very often have been of small size. Thus there would be little depth or quantity to the cultural debris left behind. Certain favored localities may have been used year after year as winter quarters or because of unusual adaptability to native hunting methods. Such spots may well repay excavation, as some already have, but the great majority of non-ceramic sites in the western Plains have not so far intrigued the worker into making a prolonged study. For precontact sites the problems of relative chronology and of correlation with other remains appear formidable indeed. It is a demonstrated fact, however, that very ancient hunting economies did once exist here, and there is no reason to believe that such an abundant and readily available food source as the herds was ever completely ignored. Neither is it likely that subsistence economies based thereon would of themselves change greatly from time to time. It is of course impossible to say from present evidence whether the High Plains were occupied continuously or only intermittently by nomadic hunters throughout the long period of their culture history as now recognized by archeologists. Likewise there is no way of knowing at what date such specific items as the tipi, the travois, and sign language were first used, nor can it be said

how nearly the prehistoric people at any given time resembled their predecessors and successors in matters of physical type or language. It does seem possible, though, that the "Querecho-Texas" type of life in 1541 was already rather old, and furthermore that it was very similar to, if not a direct continuation of, cultural habits deduced by the prehistorian from remains at the few geologically old sites which have thus far been intensively worked in western Nebraska and northern Colorado. Acquisition of the horse in the seventeenth and early eighteenth centuries thus gave a last colorful fillip to a mode of life old when the first Conquistadores set foot on the Great Plains.

The turmoil and strife on the High Plains and in the Colorado Piedmont in the seventeenth century were but a prelude to the general disquiet attendant on the coming of the whites. The direct and indirect effects of this latter event need not be detailed here but it is abundantly clear that in the sixteenth, seventeenth, and early eighteenth centuries extensive tribal dislocations and cultural readjustments took place. Probably the most important and far-reaching changes were those attending the introduction of the horse, which between 1650 and 1750 was adopted by every tribe in or near the Great Plains (Haines, 1938). For such tribes as the Plains Apache, already subsisting very largely on the bison herds as early as 1541, this meant little or no disturbance of the cultural set-up, since the essential functions of the dog as a beast of burden were easily transferred, with additions, to the horse. During the late seventeenth or early eighteenth century the Comanche and Kiowa moved out of the West and Northwest into the region between the upper reaches of the Canadian and the Niobrara to prey on the bison, their more sedentary Indian contemporaries, and the white settlements. As the use of the horse spread northward, the more or less independent life it offered affected even those peoples whose habits were originally founded on horticulture. Some, like the Pawnee, compromised between the two different pursuits. Others gave up the old customs and wholeheartedly embraced the new. Thus, the Cheyenne and Arapaho abandoned their earth-lodge villages, pottery making, and horticulture in Minnesota and North Dakota, and sometime after 1700 pushed southwestward across the Missouri to become hunters of the bison. Behind them, and evidently in great part responsible for their movement, came the Dakota, in turn egged on by the Chippewa provided with firearms from the French (Swanton, 1930). Most of the tribes usually thought of as typifying Plains culture were thus newcomers in the region, pouring into it from a general northerly direction since the Conquest. Their relative geographic placement in later times

from the Apache and Comanche in the South to the Dakota in the North is probably a rough index to their respective time of arrival. From the standpoint of north and south ethnic and populational movements, the western High Plains and especially the better-watered Colorado Piedmont must have been an important route, as they were for the north-bound Spanish exploring and punitive expeditions and for fugitive puebloan groups in early historic times. Prehistoric man likewise may have made use of this "Old North Trail" (McClintock, 1910, p. 434) along the eastern front of the Rockies.

The documented distribution of hunting and farming peoples in the sixteenth century has direct bearing on certain archeological findings in the western Great Plains. Archeology has disclosed up to the present no evidence of historic earth-lodge or other relatively permanent villages west of the 100th meridian. It is entirely conceivable that such remains will yet come to light, but their seeming rarity in contrast to the relative abundance of precontact earth-lodge settlements would imply a much less secure tenure than that suggested by the Upper Republican remains. Settlements ascribed to the latter archeological horizon abound throughout western Nebraska and north-western Kansas for at least 150 miles beyond the stated meridian. Tentatively, therefore, we may suggest that in late precontact days groups with a primarily horticultural bent and residing in fixed earth-lodge villages for some reason found the western portions of their habitat untenable. It is improbable that they were exterminated en masse, especially in view of the fact that tribes following substantially the same mode of life were met in considerable numbers by early European travelers in the eastern Plains. It will be recalled further that certain Upper Republican sites in northeastern Nebraska exhibit late, probably protohistoric, cultural elements. All of this suggests that abandonment of the western Plains was followed by an eastward shift of population. Direct connection between the Upper Republican peoples and the very early protohistoric village tribes in the eastern Plains cannot now be empirically demonstrated, but there are grounds for at least postulating some such tie-up. In keeping with this possibility it is interesting to note that unlike the small rambling settlements of former days the early historic earth-lodge towns, as revealed by archeology, were large, compactly arranged, and often defensively situated. Here is a hint that the old peaceful days were over, perhaps because of the increasing activity of foot-loose hunters who found the granaries of the farming communities a tempting prize. One is led to suspect that such historic groups as the Pawnee represented in part a readjustment, historically and perhaps also environmentally

conditioned, from a formerly far more widespread and probably simpler horticultural society like that of the Upper Republican peoples.

The environmental factors hinted at in the foregoing remarks are worthy of further note. There are no valid grounds for postulating any marked desiccation of the region in question during the period involved. However, the western portion of the known Upper Republican range has a low uncertain rainfall and lies beyond the maize optimum. Where livelihood depended primarily on small-scale garden cultivation, the margin between bountiful crops and failure may never have been a wide one. As recent phenomena have abundantly proved, a few days of hot parching winds during the critical period in maturing of corn can do irreparable damage. There is no reason to doubt that primitive man was subject in a measure to such disastrous whims of nature as have afflicted the Great Plains during the past decade. Their recurrence, with a resultant exhaustion of stored vegetable food supplies, can readily be envisaged as in part at least responsible for a migration to more reliable lands farther east. Alternatively, adoption of a migratory mode of life based on raiding and the chase could have ensued.

A combination of the climatic factor with the indicated increasing pressure from hostile nomadic groups would have been an even stronger incentive to migration. As already pointed out, the prehistoric communities were small—from a half dozen to two or three dozen earth lodges scattered loosely along the creek valleys. For such small bands, the produce from the garden plots could easily be supplemented by the taking of deer and other smaller game along the thinly wooded valleys. Along the "breaks" and on the nearby uplands even bison and antelope could be stalked, decoyed, surrounded, or driven over steep bluffs. In other words, we may assume that the prehorse peoples of the small communities had struck a balance between subsistence requirements and devices on the one hand and resources on the other. But when, through necessity or otherwise, settlements grew larger, this balance would have been disturbed and the natural food supplies must have been sorely taxed. One wonders whether in prehorse days a sedentary type of life in close-knit towns many times larger than those disclosed by archeology would have been practicable in the semiarid High Plains with their unstable rainfall and limited human food resources. In any event, the struggle for subsistence would certainly have been far more trying than in the broad river valleys of the Loess Plains farther east.

It is perfectly clear from early historical records that in the Plains, as elsewhere, hunters quarreled often with each other and with their

more sedentary farming neighbors. In some measure this was probably true long before the horse reached the area. If its adoption made more acute the harassments of the nomads, it was nevertheless an asset as well to the village dwellers. Around their fixed settlements whose inhabitants were very likely numbered in the thousands, the local game supplies must have been depleted to the vanishing point in a short time even under favorable environmental conditions. Mounted, the Indians could then with ease tap the more distant but well-nigh limitless reserves of food represented by the herds. Whether seasonal bison hunts on a communal basis were customary among the corn-growing village peoples in prehorse days is not known. Probably the necessity for such large-scale collective endeavors was much less pressing. If they were carried on, the territory exploited and the take in game must have been much more narrowly circumscribed than in the eighteenth and nineteenth centuries.

In east-central Nebraska, on the banks of the Loup and Platte Rivers within 30 miles of their confluence, is a group of about 12 large village sites apparently occupied into and during an early period of white contact. The sites each cover from 15 to 100 acres or more, and not infrequently they are situated on the river bluffs or otherwise with apparent regard to defensibility. All are in or very near the large stream valleys in marked contrast to the preference of the prehistoric peoples for the smaller creeks. These remains are especially numerous on the north bank of the Loup, where they occur almost continuously for a distance of 8 or 10 miles from Looking Glass Creek westward beyond Genoa. Prior to breaking of the sod, innumerable house rings, middens, and artifacts here covered an area aggregating many hundreds of acres. Excavations at five or six of these sites have yielded results which in certain respects square rather nicely with the records in early historic documents (Strong, 1935, pp. 62-68; Dunlevy, 1936, pp. 147-247; Wedel, 1936, pp. 38-42, 71-74). The villages consisted of numerous medium to large communal earth lodges, each circular in ground plan with four (rarely six or eight) central supports. Many of those uncovered have a small raised clay altar at the rear opposite the doorway, and on this occasionally may still be found a bison skull. This is reminiscent of the traditional Pawnee house shrine. Some of the villages still show faint traces of defensive works such as earth walls and ditches. Refuse mounds, although seldom large, are often abundant, arguing for fairly prolonged occupancy. The accounts of early settlers generally agree that before intensive farming began, these middens were much larger and deeper than today. Subsistence must have been primarily by horticulture, with

such items as maize, beans, and squash directly evidenced. Gardens in the river bottoms were cultivated with hoes made from the shoulder blade of the bison, and presumably the planting stick was also used. Surplus crops were stored in large narrow-mouthed underground pits sometimes as much as 10 feet in depth and even more in diameter. Inside the houses were smaller caches. There is no evidence of the metate and mano or other corn-grinding device. Small, shaped "anvil stones" occur, but these were presumably used for crushing berries, seeds, and perhaps dried meat with a hammer, as similar stones are, or recently have been, used among the Dakota and other tribes. Of fishing there is no indication, but hunting with the bow and flint- or bone-tipped arrow must have been extensively carried on. Bone projectile points include both stemmed and socketed forms, the former possibly used with cane foreshafts. Other weapons included the grooved hammer or maul and probably the lance. Dogs were plentiful. For skin working there were such implements as the toothed grainer or fleshing tool, large elliptical quartzite hide-scrapers, small end or snub-nose scrapers, possibly adzlike elk-horn scrapers, awls, drills, bodkins, and wedge-shaped pieces of cancellous bone for painting designs on robes. Beamers of split leg bone type have not been reported in this or subsequent historic manifestations in Nebraska. The only direct evidence of textiles is for coarse twined bags of vegetal material apparently used for storage of corn and doubtless for other purposes also. Catlinite and other polished stone was used for ornaments, incised tablets, and pipes. The latter included elbow, platform disk, and various other types. Work in shell was rare, limited apparently to simple ornaments. Other elements in the archeological inventory include hammerstones, elongated arrowshaft-smoothers used in pairs, worked and perforated gypsum crystals, shaft-straighteners and "tallies" of bison rib, antler-tip flakers, bone combs, bracelets, tubes, and beads. The cemeteries for these great villages have never been found, but a number of flexed primary burials without artifacts have come to light in the excavation of cache pits. Of ceremonial life little is known, though the bison-skull shrine is undoubtedly indicative. From one site came a badger skeleton heavily coated with purplish red pigment which may also have been in some way ritually significant. Pottery occurs in great profusion on all the sites, and in certain respects the ware represented is the equal, artistically and otherwise, of any other pottery yet described from the central Plains. Grit tempering greatly predominates, but shell was also used. Decoration usually consists of incised rectilinear designs on the upper body and rim. Vessel surfaces otherwise were characteristically tooled or, less

probably, gone over with a ridged paddle, in this respect differing sharply from the earlier cord-roughened and smooth wares of the region. This particular technique may have been introduced from the north, perhaps from tribes on the upper Missouri. Handles, frequently ornamented, are common, in some cases being repeated about the vessel to give a cloistered effect suggestive of certain wares of the middle Mississippi drainage. Moderately large full-bodied jars are the rule, and little of the ware gives the impression of being other than utilitarian. Other noteworthy products in clay are small centrally perforated disks and, of more significance, curious well-made figurines up to an inch and a half long, bifurcate at one end, pointed at the other, and variously incised. The function of the latter objects is wholly unknown, but they have been found otherwise only at documented nineteenth century Pawnee sites. Lastly, because they establish the early contact or protohistoric age of these remains, mention should be made of the glass beads, copper, and iron which occur sparingly in most or all of the sites.

The picture in general is one of a numerous and powerful people living in large, fixed, defensively situated villages primarily by horticulture and secondarily by hunting. How long a period in terms of years is represented by the sites is not known but probably only a few were inhabited simultaneously. Compared with those of other known archeological manifestations in the central Plains, the profusion, variety, and quality of the remains suggest that these sites represent the high point of aboriginal cultural development in the area. They indicate a level of material culture only slightly lower than that reported for the protohistoric Mandan on the upper Missouri, and there are a number of interesting but unexplained similarities between the two. It seems evident that the protohistoric period saw a remarkable florescence of culture among the horticultural pottery-making village peoples in the eastern Plains and on the Missouri, but for the present a discussion of the possible reasons will be deferred. As to the probable identity of the early historic people whose village remains on the lower Loup have just been noted, there is every evidence that they were directly ancestral to the Pawnee of the nineteenth century (Strong, 1935, pp. 68, 273; Wedel, 1938b).

Probably approximately coexistent with the villages just reviewed were a number of large sites some 200 miles to the south in central Kansas. These have never been subjected to thorough-going and systematic study, despite the fact that they apparently form one of the most characteristic archeological manifestations in the State. The characterization that follows is based primarily on the results of

excavations at one of the largest of these sites, on Paint Creek in McPherson County, supplemented with cursory observations at, and outline reports on, several others (Udden, 1900; Jones, 1929; Wedel, 1935, pp. 239-250). The sites generally seem to be rather large, some covering well over 100 acres of ground. They occur on prairie terraces on such secondary streams as Cow Creek, Little River, and the Walnut. Low mounds may be noted on some, and there is reason to believe these occurred rather commonly before the plow broke the prairie. Early investigators held them to be the ruins of earth lodges, but reexamination has established their identity as refuse heaps. There is no evidence now, and apparently never has been any, of house rings, and persistent search on the Paint Creek site has uncovered no trace of earth-lodge floors. From this it is inferred that the structures were of more perishable nature with floors not sufficiently depressed to escape destruction by modern cultivation. Large cache pits used secondarily for deposition of rubbish are present, and from them have been taken charred corncobs and beans, as well as the bones of bison, antelope, and other animals. Metates and manos are, or at least formerly were, common, as is also the bone hoe. Small triangular unnotched arrowpoints, snub-nose scrapers, ovate, diamond-shaped and amorphous knives, bone gouges, drills, perforators, awls, and the like are abundant, suggesting heavy reliance on hunting and a well-developed skin industry. There is no direct evidence of textiles or basketry. There are numerous coarse chipped tools possibly used for various purposes—horticulture, skinning, as tomahawks, etc. Grooved mauls, small discoidals, paired sandstone shaft-polishers, arrowshaft-straighteners of rib, "tallies," flakers, and bone beads are present in considerable numbers. Shell was used but little, though some clamshell spoons have been found. Trade activities in several directions are indicated by obsidian, by flint of various kinds and sources, and catlinite. The latter was used for ornaments and for simple though well-turned L-shaped pipes. From several sites on Cow Creek have come painted sherds, tentatively identified with some of the late seventeenth and early eighteenth century wares produced in the Rio Grande region. This recalls to mind the recorded flight of puebloan groups into eastern Colorado and western Kansas during that period, and their trading expeditions eastward to Quivira. No burial grounds have been found at any of these sites, but this may be due to the lack of systematic work. On the other hand, it is possible that scaffold burial perhaps without subsequent interment of the bones was practiced.

Pottery is plentiful, but qualitatively suffers by comparison with the protohistoric wares made on the Loup River. The shapes are

simpler, comprising mostly medium-sized jars with a somewhat sub-conical underbody and flattened base. Decoration, other than notches or other simple elements on the lip, is usually absent. In rare instances, the body has been worked over with a tool, as in the protohistoric vessels of the lower Loup region. Commonly, two oppositely placed vertical handles occur. The ware is almost exclusively utilitarian; much of it is imperfectly shaped and shoddily finished, and the whole ceramic tradition leaves one with a decided impression of decadence. At Paint Creek has been found one incomplete vessel with incised decoration and cloistered rim showing direct contacts with the protohistoric Pawnee villages to the north. In many respects the archeological complex as a whole is rather strongly reminiscent of that on the Loup, but it distinctly lacks the richness and variety found there. The apparent absence of the earth lodge, the markedly inferior nature of the ceramics and other remains, and the proportionately greater share of material remains representing implements of the chase, all lead one to suspect a somewhat less complex civilization here and one perhaps less closely wedded to a horticultural economy. At the same time, conditions suggest either large settlements or long occupancy, or both. From the scanty evidence at hand, it appears that the sites have been found mainly between the Smoky Hill and Arkansas Rivers, east of the great bend of the latter and downstream at least as far as Walnut River. There are hints of similar remains yet farther down the Arkansas.

It is tempting to identify these sites with the grass-house villages of Quivira, whose inhabitants followed a mode of life quite in keeping with the archeological remains under consideration. The validity of this suggested connection remains to be thoroughly tested, as it certainly should be, by serious study of historic documents and by further excavations.

Within recent years there have been recognized west of the Missouri River traces of a third major protohistoric archeological complex elsewhere widely distributed in the upper Mississippi drainage. This is the so-called Oneota culture (or aspect). The remains so designated vary somewhat from locality to locality but are in general remarkably uniform and readily recognizable from southern Wisconsin and perhaps northern Illinois to eastern Nebraska and Kansas, and from southern Minnesota to the Missouri River where it courses eastward across the State of Missouri. Additional sites with closely similar artifacts have been reported from Cowskin (Elk ?) and White Rivers in extreme southwestern Missouri, where typical specimens overlie the Bluff Dweller horizon. As here delimited the area covered is roughly

600 miles from north to south by 500, but unpublished records and further field work may modify these outlines and distances in some degree. Detailed analyses are all but lacking, and for most of this great area the extant literature includes little more than passing notes or preliminary and semipopular summaries (Keyes, 1927, 1929; see also Mott, 1938).⁹

It appears that the sites are as a rule large, from 10 to 100 acres or more, and situated on flat stream terraces or the broad tops of river bluffs. At sites in eastern Nebraska and northeastern Kansas¹⁰ remains of earth lodges have been found, but elsewhere and particularly east of the Missouri River it is believed that perishable pole-and-bark structures were the prevailing type. Low refuse heaps are sometimes present, as are innumerable subterranean cache pits secondarily used for disposal of refuse. From the amount of debris on many of the sites it is probable that occupancy was fairly prolonged, and that they were villages of some permanence rather than mere hunting camps. There is abundant evidence of the cultivation of maize, beans, and other crops, and also that the shoulder-blade hoe was in common use. Of the metate there is no indication, but the "anvil stone" is abundant. Hunting was extensively practiced, weapons including the bow and arrow, grooved hammer, occasional crude grooved axes, and probably the lance. Flint projectile points were small, triangular, and unnotched, besides which socketed conical points of antler were used. For skin working there were innumerable small to medium end scrapers, chipped knives of various shapes, polished celts, awls, bodkins, and eyed needles. Curved bone fishhooks and beaming tools occur in the eastern sites; fishhooks are also reported for the Ozark Oneota sites, but neither of these types has yet been recorded west of the Missouri. Large flat needles probably used in weaving of mats are also present. Among the remaining artifact types may be mentioned chipped flint drills, fish gorges(?), and graving tools; bun-shaped hand mullers and gaming stones, paired sandstone shaft-smoothers, and at least occasional use of pumice fragments as abrasives; "Siouan," some effigy, and typically platform disk pipes of polished stone; incised catlinite tablets; bone whistles, tubes, beads, and arrowshaft-straighteners; cylindrical tapping tools, flakers, and miscellaneous objects of antler; limited work in shell including spoons,

⁹ The present summary of Oneota traits is based largely though not exclusively on researches west of the Missouri River.

¹⁰ Hill and Wedel, 1936, and unpublished field notes; see also *Amer. Antiq.*, vol. 4, No. 4, p. 356, 1938.

a few gorgets, and beads; native copper objects such as tubular beads, bracelets, and ornaments. Burials were characteristically extended and supine, in open cemeteries and under mounds, and, at least in Iowa, were usually accompanied by small pots or other artifacts. East of the Missouri, various types of circular, oval, and rectangular enclosures of earth have also been assigned to this culture. Pottery is as a rule readily distinguished from other wares in the region. It is characteristically tempered with crushed shell, and the upper body usually bears rectilinear incised or trailed and punctate designs. Very commonly the lip is tastefully notched, finger-impressed, or otherwise relieved. Surfaces where not incised are left smooth; there is apparently no cord-roughening or treatment with the grooved paddle. Vessels vary in size up to several gallons capacity but are generally full-bodied with round base, straight or recurved rims, and two or four handles set in the angle between rim and body.

All the evidence points toward a relatively late date for the Oneota culture. Some of the sites in Iowa, Missouri, and Kansas yield greater or lesser amounts of European glass and metal, indicating occupancy into the time of the early French traders. There is reason to suspect some slight Oneota influence on a few apparently prehistoric sites along the Missouri in eastern and northeastern Nebraska. There exists no doubt whatever of its partial contemporaneity with the proto-historic Pawnee sites on the Loup River; mutual cross finds of sherds and other items are conclusive on this score. By some it is believed that Oneota sherds and in somewhat lesser measure such other traits as platform disk pipes, incised catlinite tablets, and possibly certain other concomitant features may prove to be fairly reliable time indicators in the culture history of the Great Plains, where they seemingly do not appear until about the beginning of the historic or contact period.

There is a growing conviction among midwestern archeologists that the Oneota archeological materials are to be identified with the early Chiwere Sioux, whose migration legends carry them through many of the localities where such remains occur (Griffin, 1937). Actual wanderings of a number of closely related peoples offer about as satisfactory an explanation as any for the observed facts of distribution and the remarkable uniformity of material. Local variants or "foci" have been tentatively identified with one or another of the Chiweran tribes. Such linkages have been suggested for the Winnebago in Wisconsin (McKern, 1931), the Ioway and Oto in Iowa (Keyes, *op. cit.*; Mott, *op. cit.*), the Oto in Nebraska, and the Missouris in Missouri.

It may not be inappropriate here to question the propriety of restricting these remains to the Chiwere peoples. There is no record that tribes of this division ever wandered south of the Missouri, yet what appear to be typical Oneota traits do occur in the southern portions of the Ozark Plateau. Closely related sites have also been recorded as far west as White Rock Creek in northern Kansas, with further suggestions in the Elkhorn Valley and elsewhere in eastern Nebraska. All this points the question of whether such Dhegihan tribes as Omaha, Ponca, Osage, Kansa, and possibly others may not have had a hand in the wide dispersal of the Oneota culture. Accurate and full information on historic Siouan archeology and a clarification through systematic analysis of the nature and content of Oneota remains would seem to be among the most pressing needs in the Missouri Valley field today. In addition to the Chiwere area, where the ground has already been partly cleared, it is essential that such localities as the Osage River, the Omaha and Ponca habitat in eastern and northern Nebraska, and the Big Sioux-Split Rock area of South Dakota (see *Explorations and Field-work of the Smithsonian Institution in 1912*, pp. 117-125), to mention only a few, be subjected to serious study.

The archeological inventory for protohistoric and historic sites in the Pawnee area includes certain noteworthy artifact types that have not been generally reported from the older prehistoric sites so far excavated in Nebraska and Kansas. These are the large grooved maul or "pemmican-pounder," the notched flesher or graining tool, the adz-shaped elk-horn scraper, the large elliptical quartzite scraper, and the bone paint "brush." Possibly the scored rib or musical rasp could be included. All were widely used among the historic Plains tribes, hunters as well as village peoples, and are in no sense diagnostic of any single group. The maul, notched flesher, and rasp have been reported from excavations in the High Plains region only at the seventeenth century (or later) pueblo ruin in Scott County, Kans. From the standpoint of chronology, it is interesting, too, that mauls, fleshers, rasps, and bone paint brushes were found at Pecos in levels dating not earlier than the latter half of the seventeenth century.¹¹

These occurrences are significant because they suggest temporal correlations of a sort between widely separated ethnic groups in the central Plains and in the eastern dated pueblo area. Also, they have implications of wider import. In the first place, they indicate that in the sixteenth and seventeenth centuries the eastern pueblos were being

¹¹ Kidder, A. V. Letter of Nov. 14, 1935.

subjected to direct influences from the Plains.¹² Secondly, they seem to foreshadow the remarkable reversal of cultural values that attended the diffusion of the horse complex over the entire Plains. There is little to guide us in characterizing prehistoric skin-working methods, but small end scrapers, larger chipped tools and knives, etc., would seem to have been typical accessories. The split metapodial beamer occurs occasionally east of the High Plains. These facts suggest techniques somewhat different from the later methods and perhaps more closely resembling those widely used elsewhere in North America where smaller animals, such as the deer, furnished the hides.

The items under consideration were concomitant in protohistoric and historic times with the extensive development of heavy skin working and with such nonarcheological traits as the tipi, travois, pemmican, and others. As a complex, they seem to have been linked usually with the horse and with primary reliance on the bison. From this it may be surmised that they were taken over by the horticultural village tribes from their hunting contemporaries, but it cannot now be proved that they were actually older among the latter. If not locally developed, their ultimate origin and the route or routes by which they reached the Plains is uncertain. At any rate, one is led to conclude that a highly specialized western Plains hunting and heavy-skin-working industry probably linked with dog (later horse) transport, the tipi, etc., was incorporated in protohistoric times in the eastern Plains into an older and very different economy based on horticulture, the earth lodge, pottery, and other items that give every evidence of having considerable historic depth west of the Missouri. It is perhaps significant in this connection that the earlier (i.e., protohistoric) Oneota peoples of eastern Nebraska seem to have lacked five of the traits considered—all, that is, but the grooved maul. This is probably the oldest and least distinctive of those composing the complex. This set of absences looks like further indication that the bearers of Oneota culture were relatively late comers whose earliest representatives in protohistoric times had not yet adopted an all but universal Plains hunting complex. One would suspect, however, that later Oneota sites, particularly those of the historic period, might yield evidence of more of these items.

From what has been said it may be possible now to suggest some of the factors responsible for the cultural florescence that took place on the lower Loup in protohistoric times. The concentration of peoples

¹² ". . . it would seem . . . that the Plains influence shown by eastern specimens at Pecos began to be exercised about 1550 . . . and became stronger during the next hundred years."—Kidder, *op. cit.*

in a few large towns within comparatively short distance of one another must have been an important stimulus. Of the sociopolitical and other nonmaterial aspects of culture in the earlier prehistoric hamlets we know practically nothing, but from their small size, often straggling arrangement, and far-flung dispersal, it is difficult to visualize their inhabitants as having great tribal and intervillage ceremonies and institutions such as enriched Pawnee life during its heyday. Too, there would have been less incentive for such social controls as the innumerable societies which, with varied functions, procedures, and appurtenances, permeated the larger and more closely knit protohistoric and historic groups. Undoubtedly, the dual mode of life, combining most of the essential material traits of the hunting tribes with the old horticultural heritage, was another positive force. A third may have been outside contacts with newly arrived peoples such as left the Oneota remains. It seems reasonable at the moment to view the latter as responsible for introduction into the trans-Missouri plains of such elements as the platform disk pipe, incised stone and catlinite tablets, perhaps even the use of catlinite itself, bone and antler projectile points and various innovations in ceramic decoration, vessel shapes, and technology. In turn, they appear to have borrowed from resident tribes such traits as the earth lodge, and perhaps later, the typical Plains hunting and skin-working techniques. Where material traits were thus exchanged, ideas and techniques certainly must have passed back and forth also. There may also have been contacts with groups of "Middle Mississippi" affiliations. All these agencies, perhaps in combination with others not yet appreciated, must have operated to spur such sedentary groups as the Pawnee to the level of cultural achievement manifested in their remains of two to four centuries ago.

On the fully historic level, where written records make possible the identification of sites visited by white men, the Pawnee are easily the best known tribe, archeologically speaking (Strong, 1935, pp. 57-61; Wedel, 1936). These sites were for the most part inhabited into or after circa 1800, i.e., date after the beginnings of western exploration by Americans. As revealed by archeology, nineteenth century Pawnee material culture parallels that exhibited by the protohistoric villages on the lower Loup, but is generally much inferior to it. The mode of life, inferentially, must have been essentially identical. Villages were, if anything, even larger in the nineteenth century, some of them estimated by contemporary travelers to contain as many as 200 earth lodges and from 2,000 to 3,000 inhabitants. They were situated chiefly on terraces or second bottoms on the immediate banks of the

Loup and Platte Rivers, with a few other towns on the Republican and Blue. Where not protected by the river banks they were commonly bounded by earth walls and ditches. Subsistence was about equally divided between horticulture and the chase. The women, using bone or iron hoes, cultivated small plots of maize, beans, pumpkins, and probably sunflowers, some of them traveling several miles from the villages to find suitable ground. Surplus crops were laid away in cache pits, for future use. There is direct archeological as well as documentary evidence for the upright wooden mortar. Flat mealing slabs are rare or absent, although the anvil stone for pounding pemmican, berries, etc., is common. Deer jawbones were used for scraping corn off the cob. Bison were taken by regular summer and winter hunts in which entire villages participated for months at a time. During these excursions, which were usually to the west or southwest, the people lived in tipis and followed in every respect the manner of life practiced by the true nomadic tribes. Large herds of horses were to be seen near every village and camp; the dog was the only other domestic animal. Weapons included firearms, the bow and arrow, lance, war club, tomahawk, and knife. For skin working, they had the identical dressing and decorating devices already discussed for the protohistoric period. Hooks and other accessories for fishing were uniformly absent. Clothing was of skins, besides which bison hair cloth and cordage were extensively made. Bone plume-holders and roach-spreaders occur archeologically. Fragments of twined rush mats have been found in some of the houses. Spoons were made of bison horn and, rarely, of mussel shell. Pipes were of polished stone and varied in type, including such forms as the equal-armed, "Micmac," "Siouan," and pebble. The platform disk pipe has not been reported, but large well-made catlinite "calumets" are present. Imported glass beads and shell hair pipes for personal adornment predominated over native products. Ceramics show a strong fundamental relationship to those of the protohistoric sites, but differ strikingly in being more formalized and lacking entirely the pleasing variety and freedom of expression previously manifested. Potsherds are far less plentiful on sites postdating 1800, and it is clear that the native industry was succumbing to the imported metal utensils of the white traders. The dead were flexed and buried singly in dug graves on hilltops, sometimes accompanied by artifacts. Among the latter may be enumerated quartz crystals, pottery, stone balls, and catlinite pipes, all rare; and glass beads, lead rings, knives, peace medals, elongate well-shaped pebbles, and sundry other odds and ends. A wild-cat skull with copper eye insets from a grave calls to mind the veneration

tion in which that animal was held by the Pawnee. Of the ceremonial life for which the Pawnee were outstanding in the historic Plains there is little archeological evidence, but large raised circles on one or two sites are reminiscent of certain features described for the four-pole ceremony. Other elements found archeologically need only be mentioned: Discoidal hammerstones, rubbing and pecking stones, T-shaped and straight flint drills, paired sandstone shaft-polishers, incised catlinite and limestone tablets and blocks (usually small and irregularly shaped), awls, rib shaft-straighteners, bone picks, wooden vessels and cradleboards, and small "fishtail" pottery objects.

In general, the culture of the nineteenth century Pawnee as revealed by archeology, is a declining one. Fundamentally, it is so similar to that represented by the earlier and richer sites of the region that there can be scant doubt as to their common tribal authorship. Political and ceremonial survivals, myths, and much of the ideology in the historic period strike back into or beyond the protohistoric horizon. There are hints of a time of many villages, some of which allegedly stood on the Elkhorn and other streams apparently long abandoned by the tribe in contact days. It cannot be demonstrated now that the small Upper Republican villages of east-central Nebraska were inhabited by peoples directly ancestral to the Pawnee of history, but it is abundantly clear that between the two there was much that was basically related. It remains for the future to disclose whether archeology, following out the clues offered by tradition and cultural survival and appraising its findings with due regard for temporal variation, can any more precisely elucidate the indicated connections between the prehistoric and the historic manifestations.

Aside from the Pawnee, historic archeology in the central Plains still awaits development of its possibilities. The problem of the Siouan peoples is to all intents and purposes an unknown, or at best, little-known aspect of Plains prehistory. Space limitations preclude a discussion here of the early historic movements of the various groups. Inquiries into Kansa archeology have so far been discouraging, and results in the Omaha-Ponca region where a historico-archeological connection with Oneota remains looms as a tantalizing possibility are unpublished. This dearth of reliable information is the more regrettable since there is reason to believe that much of what puzzles the prehistorian here today may have been due to extensive interplay and cultural exchange between Caddoan and Siouan peoples in very early historic, or possibly late precontact times. This involves not only the Chiwere and Dhegiha groups whose supposed remains and activities have already been touched on, but also the predocu-

mentary background of the Mandan and Hidatsa on the upper Missouri. To date, so far as written archeology is concerned there is not even an inkling as to the events that transpired in their habitat synchronously with the long cultural history outlined for the central Plains. It is to be hoped the extensive literature on the historic tribes in the northern Plains will soon be supplemented by equally enlightening archeological data.

By 1865 the native peoples of the central Plains were left in possession of little more than tattered remnants of the old ways of life. Particularly hard hit were the village dwellers for whom existence had become largely a matter of continual armed watchfulness against the predatory tribes from the west. Hunters and farmers alike were undergoing a steady process of cultural attrition due to increasing white contacts, new diseases, trans-Plains wagon trails and railroad construction, extinction of the herds, and finally reservation life. The latter half of the nineteenth century witnessed the removal of tribe after tribe to restricted lands along the Missouri or else in the Dakotas and Indian Territory, and by 1900 the story of native activities in the central Plains was closed.

SUMMARY AND COMMENTS

As matters stand today, the history of native peoples in the central Plains may be thought of as comprising roughly three main periods. These periods are not so many discrete entities; rather, they represent convenient if somewhat arbitrary divisions based on shifting emphases and cultural values throughout a very long period of human activity. The factors making for these observed changes are as yet very imperfectly known. Natural environment alone is not an adequate explanation, since widely divergent subsistence economies and modes of life were possible if not always easy throughout most of the area involved. In their original grassland condition, swarming with gregarious and other game animals, the trans-Missouri plains were preeminently a hunting area, and from the archeological evidence it seems very probable that migratory hunters and gatherers dominated the region over a much longer span of time than did the farming peoples. At the same time, because of their proximity to the great river valleys of the central and eastern United States the Plains were readily accessible to the various horticultural groups there resident. In consequence, representatives of the latter pushed westward in a thinning wedge nearly or quite across the Great Plains (fig. 21). For the most part, the remains of these semisedentary horticultural groups, who for a time seem to have dominated and then finally yielded the

Plains, show many resemblances to archeological manifestations more or less widespread throughout the eastern United States. During this time, when horticulture rather than hunting oriented the economic interests of the peoples, the Plains shared in noticeable degree the complexity of prehistoric remains that Dixon long ago pointed out as one of the striking features of archeology east of the Cordillera. For the complicated history of primitive man in the Great Plains it seems probable that cultural and ethnic movements from and in various directions, ecological factors, sociopolitical and economic readjust-

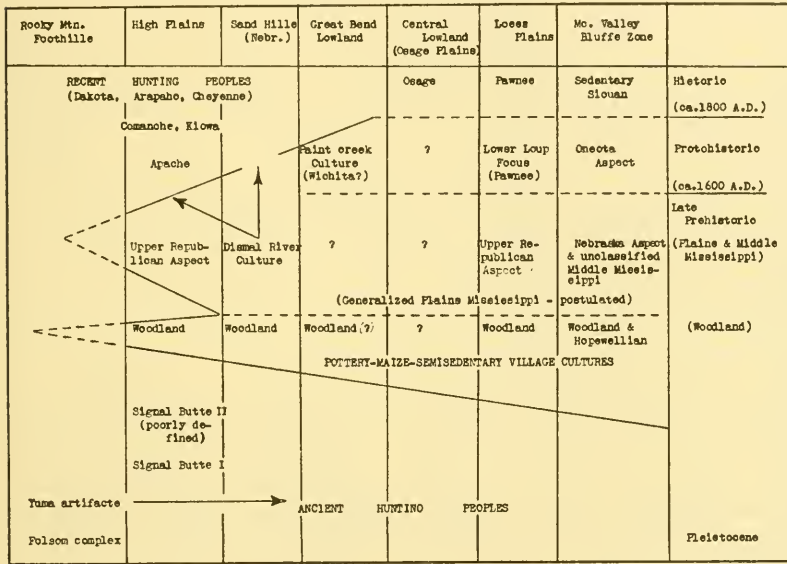


FIG. 21.—Suggested sequence of cultures in the central Great Plains.

ments, to mention only the more evident points, were all in varying degree responsible.

Briefly summarized, the first of our periods was marked by the presence of purely hunting and gathering peoples whose earliest representatives came while the mammoth and now extinct species of bison still roamed the country. Their origin and physical appearance can only be guessed at. Their mode of life must have been, at least in the beginning, quite rudimentary and simple. Remains ascribed to them have been found principally on, and immediately east of, the High Plains, but it is impossible to believe that occupancy was withheld from the attractive valleys and hunting grounds of the eastern Plains. It is quite likely, though not now demonstrable, that small nomadic bands of hunters inhabited the region with relatively slight changes

in material culture or in mode of life for several thousand years. Hunting methods, skin working, and related activities may have paralleled closely those observed by the first Spaniards to venture among the nomad tribes of the Plains in the sixteenth century. From the archeological record, it is not possible to judge whether the skin tipi, travois, dog traction, pemmican, and concomitant traits were known to the early Folsom and Signal Butte I peoples, but from their wide occurrence in 1541 a considerable antiquity can be inferred.

The second period began very much later but still prior to the European Conquest.¹³ Small groups of pottery-making peoples, some if not all practicing horticulture, filtered into the Plains from a general easterly direction. Moving up the great river valleys, they fanned out along the smaller tributaries to penetrate eventually at least as far as eastern Colorado in the heart of the High Plains. The first of these to reach the Plains proper show strong Woodland affinities, and their apparently small and secluded sites suggest a thin if widespread occupancy. Contemporaneously, but giving evidence of firmer occupation, groups with a Hopewellian-like cultural inventory dwelt on the Missouri, extending their influence up the Kansas River at least a hundred miles farther west. Here there is indisputable proof of cultivation of maize and beans. Subsequently came different groups, also definitely horticultural, who introduced the earth lodge, a divergent pottery tradition, and other hitherto unknown elements. There is at present no indication of direct contacts between Hopewellian and any of these later arrivals, whose material culture shows stronger basic affinities with some phase or phases of the so-called Mississippi pattern. Two regional variants now recognized by name as the Upper Republican and the Nebraska aspects still await placement within a wider scheme of relationships, but there is reason to believe that they may be allocated to a Plains Mississippi phase (fig. 22) rather than to the Upper Mississippi. We may infer that there was a direct Middle Mississippi thrust westward up the Missouri at least as far as the great bend near Kansas City, whence feebler impulses may be discerned in Nebraska aspect sites to and beyond the mouth of the Platte of Nebraska.

It is not known whether any of these pottery-making peoples found the western Plains uninhabited. The small size and scattered occurrence of their settlements suggest a period of peace, and proximity to

¹³ The writer would call attention to the enormous time gap that remains to be accounted for between the early hunting complexes (Folsom and Signal Butte I) as dated by geologists, and the later prehistoric horizons beginning with the Woodland manifestations.

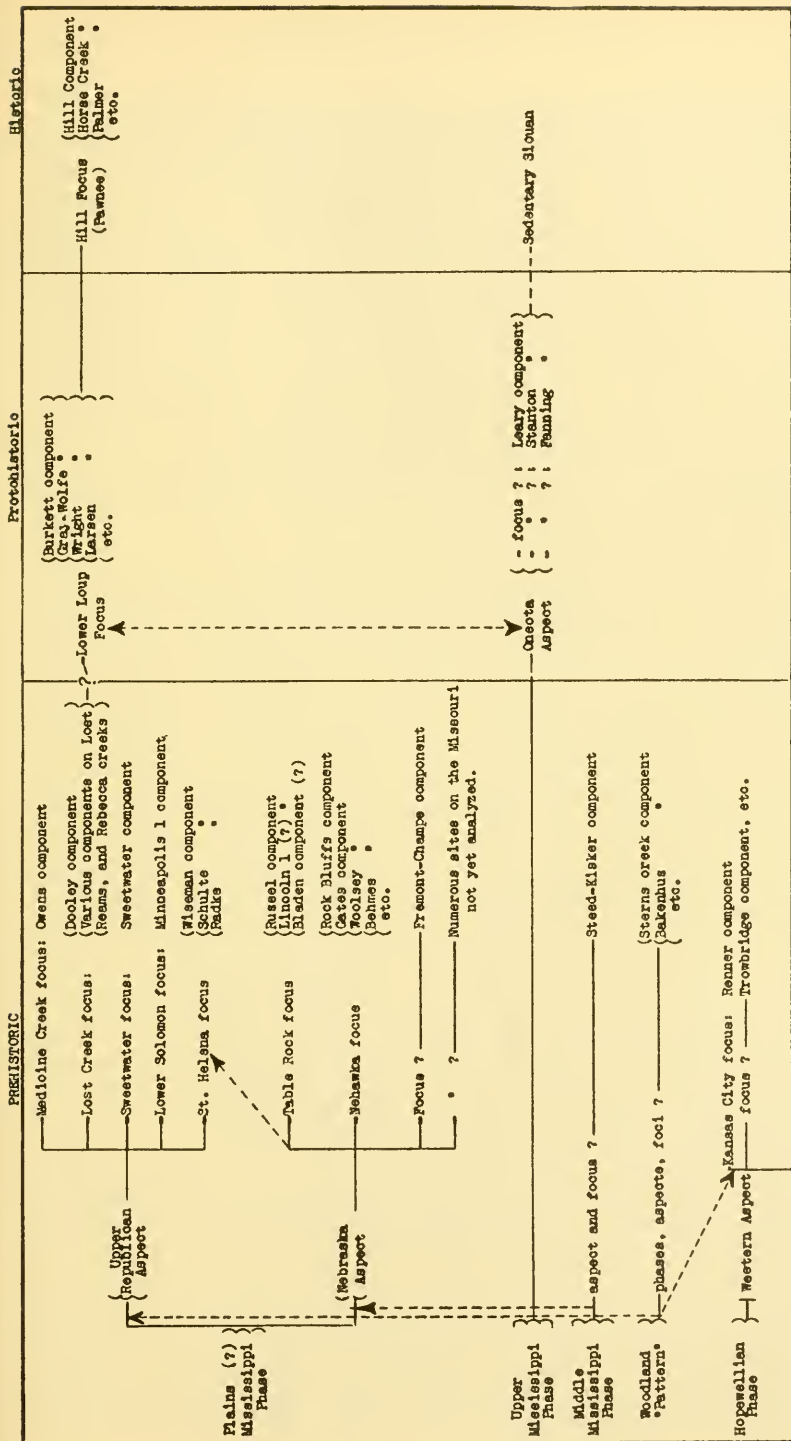


FIG. 22.—Suggested classification and relationships of some recently worked sites in the central Great Plains.

arable bottomlands rather than defensive needs apparently controlled the selection of sites. If contemporary hunting and nonhorticultural peoples were present the two groups were for a time at least presumably on amicable terms. The exact relations of the two or more postulated incursions from the east, especially as between Woodland and Upper Republican peoples, are still obscure, though the general temporal sequence seems fairly well established from the banks of the Missouri to the High Plains of western Nebraska and Kansas. Certain ceramic and perhaps other traits in the Upper Republican inventory appear to be of Woodland derivation, and a direct contact between peoples bearing the respective cultural complexes may be suspected. It is evident that the earth-covered pit house, maize cultivation and the hoe, pottery, and a large number of other traits, once introduced and integrated into a cultural whole, thereafter remained to be transmitted to later peoples.

The third period was ushered in by the Conquest. It is at once one of the most intriguing yet puzzling phases of the entire story. To all appearances, the widely scattered little communities in the western Plains were for some reason or reasons abandoned before direct or indirect contacts with white traders had been established. An eastward retreat of peoples is implied, since in very early protohistoric times tribes of basically similar culture status such as the Pawnee were found by European explorers in large fortified villages much farther to the east and nearer the Missouri. A somewhat parallel situation seems to have obtained to the south in Kansas. Ecological and culture historical factors both may have been involved, although it is impossible to appraise their respective significance at this time. At roughly the same time, or perhaps somewhat later, there appeared on the west side of the Missouri a different cultural group with decided easterly or Upper Mississippi affiliations—the Oneota aspect. This is believed to have been ancestral to certain Siouan tribes, which view would tally with ethnographic opinion that the Dhegiha and Chiwere divisions were comparatively late arrivals on the middle Missouri.

So far as archeology is any indication this early contact period represented the era of highest cultural attainment by the village tribes in the central Plains, i.e., north of the Arkansas River. It was also a time of widespread unrest. Aside from the insidious influences and increasing pressure from white men, there was the ever present menace of the nomads. First seen by the Spanish in 1541, these were destined to play a larger and larger role in the gradual submergence of the native horticultural economies. Whatever their part in the prehistoric territorial readjustments from time to time, the horse,

firearms, and primary reliance on the herds, finally made them virtually undisputed masters of the western Plains. The region once more became peopled in large part by roving and highly mobile bison hunters, with the village tribes being forced steadily back until they formed only small islands in a narrow fringe along the eastern border. Native arts and industries degenerated swiftly, and with reservation life came complete collapse in the nineteenth century. In the colorful finale to the long story, the village peoples played only an inconsequential role, and it was the wandering predator tribes who were again in the ascendency.

The foregoing survey has essentially a two-fold objective. In the first place, it is a stock-taking of the present status of research in Plains prehistory. Secondly, it is an effort to extract from the known facts their possible meaning in relation to culture history insofar as archeologists have felt justified in drawing inferences therefrom. The data, needless to say, present innumerable ramifications which at best can be little more than hinted at in such an outline as this. It need scarcely be emphasized that Plains archeology, as is to be expected from its comparatively recent beginnings, is still preeminently in the fact-gathering stage, and that there are enormous lacunae in our knowledge. Large districts are known either not at all or else solely through surface collections and the reports of local enthusiasts. Temporal distinctions are practical only on comparatively broad bases, and it is well-nigh impossible as yet to judge objectively the exact significance of such very important phenomena as cultural and time lags throughout the region. Further work may show that the apparent intervals between successive occupations have only local rather than regional meaning.

In short, research to date has shown the complicated nature of culture contacts and interplay in the aboriginal Plains, but has given little more than hints as to the solution of the problems. From this it might be argued that attempts at historical syntheses on a regional basis are premature and even unwarranted. Certainly they make inevitable the free use of qualifying words and phrases. It is quite reasonable to expect that some of the tentative reconstructions and correlations, and probably even more the personal views that may have obtruded themselves here and there, will prove untenable in course of time. As more evidence accumulates the story may stand in need of revision in some of its more fundamental aspects as well. At the same time it seems abundantly clear that the facts so far adduced can be arrayed in logical fashion so as to give at least a provisional outline of the general sequence of events in the area. The

postulated sequence, whatever its ultimate fate, may serve to crystallize the more significant results of past work and thereby point out more clearly some of the present serious deficiencies in our information.

Attention has already been directed to a few of the more pressing problems awaiting further investigation, including such matters as historic Siouan archeology, the nature of the Woodland and related remains, the status of nomadic as well as certain little-known horticultural populations in the prehistoric and protohistoric High Plains, the nature and extent of puebloan influences in the same locality, the exact interrelationship and provenience of prehistoric horticultural peoples in the eastern Plains, and the relations at various periods of central Plains cultures to such northern groups as the Mandan, Hidatsa, and early Cheyenne. A few other gaps may be pointed out. There is grave need for thoroughgoing statistical analyses of the very considerable amount of unpublished data already on hand from key districts. The wide dissimilarity, in terms of archeology, between Pawnee-Arikara, on one hand, and the southern Caddo peoples on the other, urgently needs study, both through field investigations in the little-known intervening districts and through analysis of early documentary sources. A point of the utmost importance which has so far received almost no attention concerns the physical types of the various periods. There are hints that the cultural changes from time to time were linked with the arrival of new human types, whose sundry relations to the so-called "Plains type" of the nineteenth century are still obscure. The data at present are decidedly top-heavy on the side of material culture. For the fullest understanding of the problems of the protohistoric era, obviously one of far-reaching changes, it seems clear that careful study of ethnographic and historic documents in conjunction with archeology will prove most fruitful. Within the area, conditions are seen to be so complex that the student of human prehistory can most profitably join hands with his colleagues in geography, geology, paleontology, ecology, and climatology. Since many of the cultural elements that played important roles in the early Plains are unquestionably rooted in areas to the east, it is important that further results on the southeastern and perhaps also the southwestern margins be made available. Lastly, it would seem that the harmonizing of Plains data with empirically classified facts for the upper Mississippi Valley and eastern United States, all interpreted in accord with the factor of time sequence, are fundamental desiderata in the ultimate reconstruction of the lengthy and involved story of human habitation in the Great Plains.

LITERATURE CITED

- BARBOUR, E. H., and SCHULTZ, C. B.
1936a. Paleontologic and geologic consideration of early man in Nebraska. Bull. Nebraska State Mus., vol. 1, Bull. 45, pp. 444-447.
1936b. Did glacial man inhabit Nebraska? Nebraska Alumnus, May.
- BELL, E. H., and CAPE, R. E.
1936. The rockshelters of western Nebraska in the vicinity of Dalton. Chapters in Nebraska Arch., vol. 1, No. 5. Lincoln.
- BELL, E. H., and GILMORE, G. H.
1936. The Nehawka and Table Rock foci of the Nebraska aspect. Chapters in Nebraska Arch., vol. 1, No. 4. Lincoln.
- BELL, E. H., and VAN ROYEN, W.
1934. An evaluation of recent Nebraska finds sometimes attributed to the Pleistocene. Wisconsin Archeologist, vol. 13, No. 3.
1936. Some considerations regarding the possible age of an ancient site in western Nebraska. Chapters in Nebraska Arch., vol. 1, No. 6, pp. 401-419. Lincoln.
- BROWER, J. V.
1898-1899. Memoirs of explorations in the basin of the Mississippi, vols. 1 and 2.
- CHAMPE, JOHN L.
1936. The Sweetwater culture complex. Chapters in Nebraska Arch., vol. 1, No. 3, pp. 249-299. Lincoln.
- COOK, H. J.
1927. New geological and paleontological evidence bearing on the antiquity of mankind. Nat. Hist., Journ. Amer. Mus. Nat. Hist., vol. 27, No. 3, pp. 240-247.
- COOPER, PAUL
1936. Archeology of certain sites in Cedar County, Nebraska. Chapters in Nebraska Arch., vol. 1, No. 1, pp. 11-145. Lincoln.
- COTTER, J. L.
1937. The occurrence of flints and extinct animals in pluvial deposits near Clovis, New Mexico. Pt. 4. Proc. Acad. Nat. Sci. Philadelphia, vol. 89, pp. 1-16.
- DUNLEVY, M. L.
1936. Comparison of cultural manifestations of the Burkett and the Gray-Wolfe sites. Chapters in Nebraska Arch., vol. 1, No. 2. Lincoln.
- EISELEY, LOREN C.
1937. Index Mollusca and their bearing on certain problems of prehistory: A critique. Publ. Philadelphia Anthrop. Soc., vol. 1, 25th Ann. Stud., pp. 77-93.
- FIGGINS, J. D.
1927. Antiquity of man in America. Nat. Hist., Journ. Amer. Mus. Nat. Hist., vol. 27, No. 3, pp. 229-239.
1933. A further contribution to the antiquity of man in America. Proc. Colorado Mus. Nat. Hist., vol. 12, No. 2.
1934. Folsom and Yuma artifacts. Proc. Colorado Mus. Nat. Hist., vol. 13, No. 2.
- GILDER, R. F.
1926. The Nebraska culture man. Omaha.

GRIFFIN, J. B.

1937. Archeological remains of the Chiwere Sioux. *Amer. Antiquity*, vol. 2, No. 3, pp. 180-181.

HAINES, F.

1938. The northward spread of horses among the Plains Indians. *Amer. Anthropol.*, n.s., vol. 40, No. 3, pp. 429-437.

HARRINGTON, M. R.

1920. Certain Caddo sites in Arkansas. *Indian Notes and Monogr.*, Misc. Pap. No. 10, Mus. Amer. Indian, Heye Found.

1924. The Ozark Bluff-dwellers. *Amer. Anthropol.*, n.s., vol. 26, No. 1, pp. 1-21.

HAURY, E. W.

1936. The Mogollon culture of southwestern New Mexico. *Medallion Pap.*, No. 20. Gila Pueblo, Globe, Ariz.

HAYDEN, F. V.

1876. *Ann. Rep. U. S. Geol. and Geogr. Surv. Territories for 1874.*

HILL, A. T., and COOPER, P.

1937. *Papers in Nebraska Hist. Mag.*, vol. 17, No. 4, pp. 222-292.

1938. *Papers in Nebraska Hist. Mag.*, vol. 18, No. 4.

HILL, A. T., and WEDEL, W. R.

1936. Excavations at the Leary Indian village and burial site, Richardson County, Nebraska. *Nebraska Hist. Mag.*, vol. 17, No. 1, pp. 2-73.

HOWARD, E. B.

1935. Evidence of early man in North America. *Mus. Journ.*, vol. 24, Nos. 2-3. Univ. Pennsylvania.

1936. An outline of the problem of man's antiquity in North America. *Amer. Anthropol.*, n.s., vol. 38, No. 3 (pt. 1), pp. 394-413.

HRDLIČKA, A.

1907. Skeletal remains suggesting or attributed to early man in North America. *Bur. Amer. Ethnol. Bull.* 33.

JONES, P. A.

1929. Quivira. Wichita, Kans.

KEYES, C. R.

1927. Prehistoric man in Iowa. *Palimpsest*, vol. 8, No. 6.

1929. Some methods and results of the Iowa archeological survey. *Wisconsin Archeologist*, n.s., vol. 8, No. 4, pp. 135-143.

KIDDER, A. V.

1932. Artifacts of Pecos. *Pap. Southwest Exped.* No. 6, Dep. Arch., Phillips Acad. New Haven.

LINTON, R.

1924. Origin of the plains earthlodge. *Amer. Anthropol.*, n.s., vol. 26, No. 2, pp. 247-257.

MARTIN, H. T.

1909. Further notes on the pueblo ruins of Scott County, Kansas. *Univ. Sci. Bull.*, vol. 5, No. 2. Kansas Univ.

MCCCLINTOCK, WALTER

1910. *The old north trail.* London.

MCCOY, I.

1840. *History of Baptist Indian Missions.*

MCKERN, W. C.

1931. Wisconsin pottery. *Amer. Anthropol.*, n.s., vol. 33, No. 3, pp. 383-389

MERA, H. P.

1938. Some aspects of the Largo cultural phase, northern New Mexico. *Amer. Antiquity*, vol. 3, No. 3, pp. 236-243.

MOOREHEAD, W. K.

1931. *Archeology of the Arkansas Valley*. Yale Univ. Press.

MOTT, M.

1938. Relation of historic Indian tribes to archeological manifestations in Iowa. *Iowa Journ. Hist. and Politics*, vol. 36, No. 3, pp. 227-314.

MUDGE, B. F.

1896. Traces of the Moundbuilders in Kansas. *Trans. Kansas Acad. Sci.* for 1873, vol. 2, pp. 69-71.

OVER, W. H.

1936. Archeology of Ludlow Cave and its significance. *Amer. Antiquity*, vol. 2, No. 2, pp. 126-129.

RENAUD, E. B.

1930. Prehistoric cultures of the Cimarron Valley, northeastern New Mexico and western Oklahoma. *Colorado Sci. Soc. Proc.*, vol. 12, No. 5, pp. 113-150. Denver.

1934a. The first thousand Yuma-Folsom artifacts. Denver.

1934b. Archeological survey of western Nebraska, 1933. Denver.

ROBERTS, F. H. H., JR.

1935. A Folsom complex: Preliminary report on investigations at the Lindenmeier site in northern Colorado. *Smithsonian Misc. Coll.*, vol. 94, No. 4.

1936. Additional information on the Folsom complex. *Smithsonian Misc. Coll.*, vol. 95, No. 10.

1939. On the trail of ancient hunters in the western United States and Canada. *Expl. and Field-work Smithsonian Inst.* in 1938, pp. 103-110.

SCHULTZ, C. B., and EISELEY, L.

1935. Paleontological evidence for the antiquity of the Scottsbluff bison quarry and its associated artifacts. *Amer. Anthrop.*, n.s., vol. 37, No. 2, pp. 306-319.

STERNS, F. H.

1915a. The archeology of eastern Nebraska, with special reference to the culture of the rectangular earthlodges. 2 vols. (Unpublished Ph. D. thesis, Harvard Univ.).

1915b. A stratification of cultures in eastern Nebraska. *Amer. Anthrop.*, n.s., vol. 17, No. 1, pp. 121-127.

STIRLING, M. W.

1935. Smithsonian archeological projects conducted under the Federal Emergency Relief Administration, 1933-34. *Ann. Rep. Smithsonian Inst.* for 1934, pp. 371-400.

STRONG, W. D.

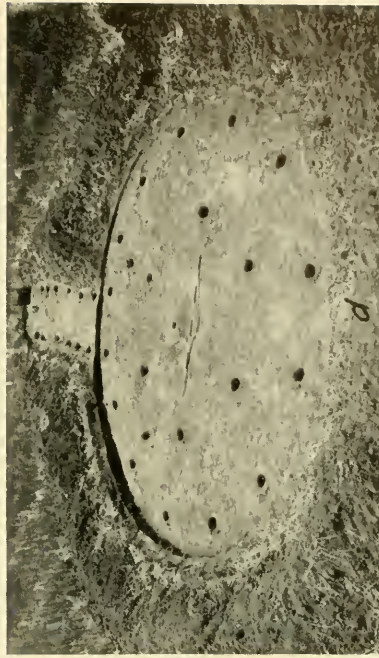
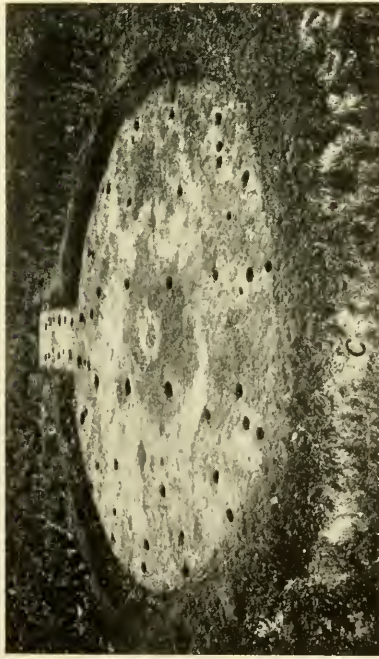
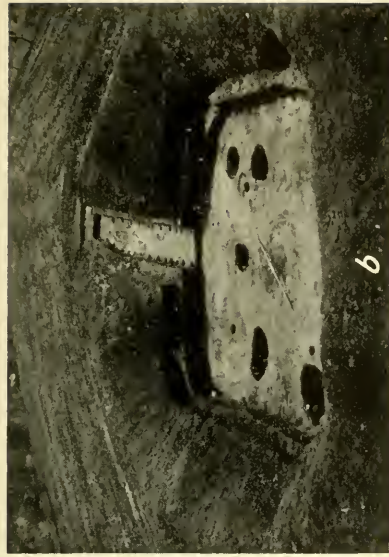
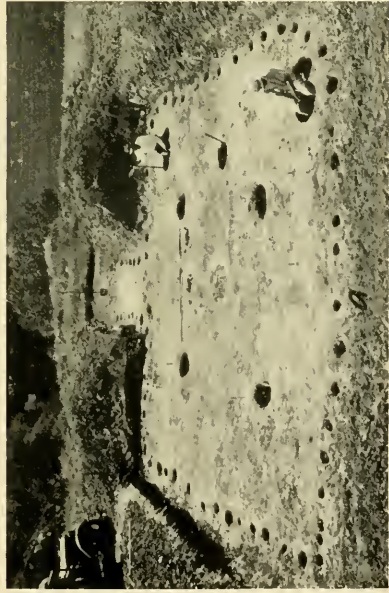
1933. Plains culture area in the light of archeology. *Amer. Anthrop.*, n.s., vol. 35, No. 2, pp. 271-287.

1935. An introduction to Nebraska archeology. *Smithsonian Misc. Coll.*, vol. 93, No. 10.

SWANTON, J. R.

1930. Some neglected data bearing on Cheyenne, Chippewa, and Dakota history. *Amer. Anthrop.*, n.s., vol. 32, No. 1, pp. 156-160.

- THOMAS, A. B.
1935. After Coronado: Spanish exploration northeast of New Mexico, 1696-1727. Univ. Oklahoma.
- THWAITES, R. G. (Editor)
1904. Original journals of the Lewis and Clark Expedition, 1804-6, vol. 1.
- UDDEN, J. A.
1900. An old Indian village. Rock Island.
- VAN ROYEN, W.
1937. Prehistoric droughts in the central Great Plains. *Geogr. Rev.*, vol. 27, No. 4, pp. 637-650.
- WEBB, W. S.
1938. An archeological survey of the Norris Basin in eastern Tennessee. *Bur. Amer. Ethnol. Bull.* 118.
- WEDEL, W. R.
1935. Papers in Nebraska Hist. Mag., vol. 15, No. 3, pp. 132-255.
1936. An introduction to Pawnee archeology. *Bur. Amer. Ethnol. Bull.* 112.
1938a. Hopewellian remains near Kansas City, Missouri. *Proc. U. S. Nat. Mus.*, vol. 86, No. 3045.
1938b. The direct-historical approach in Pawnee archeology. *Smithsonian Misc. Coll.*, vol. 97, No. 7.
1939. Excavations in Platte County, Missouri. *Expl. and Field-work Smithsonian Inst. in 1938*, pp. 95-98.
1940. Archeological explorations in western Kansas. *Expl. and Field-work Smithsonian Inst. in 1939*, pp. 83-86.
- WILL, G. F.
1924. Indian agriculture at its northern limits in the Great Plains region of North America. *Ann. 20th Congr. Internac. Americanistas, Rio de Janeiro, Brazil*, vol. 1, pp. 203-205.
- WILL, G. F., and SPINDEN, H. J.
1906. The Mandans. *Peabody Mus. Amer. Arch. and Ethnol.*, Harvard Univ., Pap., vol. 3, No. 4.
- WINSHIP, G. P.
1896. The Coronado Expedition. *14th Ann. Rep. Bur. Amer. Ethnol.*, pt. 1, pp. 339-598.
- WISSLER, C.
1914. Influence of the horse in the development of Plains culture. *Amer. Anthrop.*, n.s., vol. 16, No. 1, pp. 1-25.
1922. *The American Indian*. 2d ed. New York.
1938. *Idem*, 3d ed.



CENTRAL PLAINS EARTH LODGE TYPES FROM NEBRASKA

a, Upper Republican, on Medicine Creek; *b*, Nebraska Culture, Ross site; *c*, protohistoric Pawnee, Larsen site; *d*, historic Pawnee, Leshara site. Courtesy Nebraska State Historical Society.



CENTRAL PLAINS POTTERY

a, Woodland type, near Rulo, Nebr.; *b*, Hopewellian type, near Kansas City, Mo.; *c*, Upper Republican, near Franklin, Nebr.; *d*, Nebraska culture, near Meadows, Nebr.; *e*, Middle Mississippi type, near Farley, Mo.; *f*, from Paint Creek site, McPherson County, Kans.; *g*, Oneota, near Rulo, Nebr.; *h*, proto-historic Pawnee, near Bellwood, Nebr.; *i*, historic Pawnee type, near Archer, Nebr. *a*, *c*, *d*, *f*, *g*, *h*, *i*, by courtesy of Nebraska State Historical Society.

FROM HISTORY TO PREHISTORY IN THE NORTHERN GREAT PLAINS

BY WM. DUNCAN STRONG¹

Columbia University. (Formerly of the Bureau of American Ethnology)

(WITH PLATES 5 TO 10)

In 1907 Wissler stated that "the peopling of the Plains' proper was a recent phenomenon due in part to the introduction of the horse and the displacement of tribes by white settlements." He continues: "The solution of this problem must depend in part upon research following the methods of archaeology." In 1908 he reemphasized this point, stressing the fact that practically all the peoples occupying the Great Plains in historic times could be traced beyond its borders, and pointing out the need for archeological research in the central part of the area to establish the links between history and prehistory. Despite the great ethnological activity in the region following this pronouncement, active historical archeology in the central Plains did not actually begin for some 20 years. The soundness of Wissler's early prediction may be judged by examining another article in the present volume wherein Wedel summarizes the results already attained by recent objective and historical archeology in the central and southern Great Plains.

Strange to say, in the northern Great Plains accomplishment preceded theorizing. In 1906, stimulated by Dixon, two of his then students, Will and Spinden, produced the first anthropological study in the area coordinating all that was then known concerning the history, ethnology, linguistics, physical anthropology, and archeology of a

¹The author wishes to acknowledge his indebtedness to the following graduate students in the Department of Anthropology at Columbia University, New York City, for the use of their field or laboratory studies: Carlyle S. Smith (Mandan); Preston Holder and Robert A. Elder, Jr. (Arikara); Sigmund Sameth and John Landgraf (Hidatsa); Joseph Jablow (Cheyenne); Albert C. Spaulding, Dorothy E. Fraser, and Joan Howson (South Dakota archeology). The present condensed account incorporates portions of these special studies based on materials obtained in South Dakota in 1932 for the Bureau of American Ethnology, and in North and South Dakota in 1938 and 1939 for Columbia University. The first two expeditions were led by the author, the third by Albert C. Spaulding. This last expedition cooperated with Mr. Over, the University of South Dakota, and the W.P.A. The 1938 expedition was in cooperation with the North Dakota Historical Society.

single tribe. This monograph, "The Mandans, a Study of their Culture, Archeology and Language," still stands unique. It has not, as yet, been followed up by fuller and more intensive coordinated studies of a similar nature despite the fact that the importance of the method employed must be manifest to all. Not only has archeology been ignored by most of our large research institutions working in the Great Plains, but the ethnology of the broken but culturally important sedentary tribes seems likewise to have been slighted. This has produced a markedly distorted picture of one of the most interesting culture areas in the New World. It is here suggested that this state of affairs may be corrected by a return to the coordinated or creatively historical method originally advocated by both Dixon and Wissler.

The present brief essay aims at no more than suggestion and, perhaps, provocation. Despite the fact that little archeological material from the northern Plains has been published since Will and Spinden, considerable work has been accomplished. The North Dakota Historical Society, the University of South Dakota Museum, the South Dakota Historical Society, Logan Museum of Beloit College, the Bureau of American Ethnology and, in the last 2 years, Columbia University, have all accomplished archeological research in the area, of which very little has as yet appeared in print. In addition to the intensive ethnological attack on the area, sponsored by the American Museum of Natural History, there has also been a vast amount of scattered ethnological and linguistic research accomplished by other institutions. Only physical anthropology seems recently to have been completely neglected. With increasing amounts of historic and prehistoric skeletal material becoming available, this neglect of a rich field becomes more and more inexcusable. To attempt to sum up even the published material on the northern Plains is beyond the scope of this essay. Rather, using as a basis the results of three seasons' archeological and ethnological research in North and South Dakota in cooperation with George E. Will, Russell Reid, and W. H. Over, I wish to make a tentative "work in progress" report. Despite the intensive archeological research recently accomplished in portions of this area, is it becoming more and more apparent that the problem is vast and that the establishment of any really adequate chronological sequences of northern Plains cultures is for the future.

Following the creatively historical method outlined above, we have been working, archeologically, from the historic into the prehistoric. The establishment of historic criteria for the material culture complexes of the Mandan, Arikara, Cheyenne, and Hidatsa has in part been accomplished. These will be outlined here. However, when it

comes to excavating the tremendous number of great protohistoric and prehistoric village sites of sedentary, farming peoples in the northern Plains, only a bare beginning has yet been made. Behind the ceramic horizons, in the sense of time, are undoubtedly remains of simpler and more ancient hunting cultures, and in regard to these

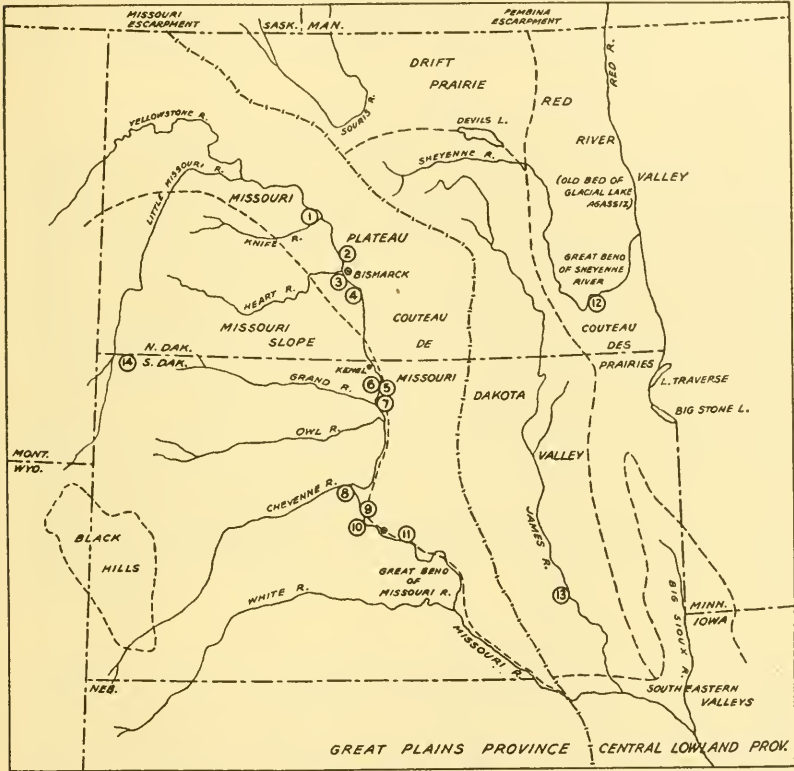


FIG. 23.—Sketch map of the Dakotas indicating physiographic regions and selected sites. Numbers indicate the following sites: 1, Hidatsa sites, mouth of Knife River; 2, Double Ditch, Mandan site; 3, Old Fort Abraham Lincoln, Mandan site; 4, Huff site; 5, Rygh site; 6, Leavenworth, Arikara site; 7, Mo-bridge site; 8, Lower Cheyenne River site; 9, Fort Sully site; 10, Buffalo Pasture site; 11, Arzberger site; 12, Sheyenne-Cheyenne site; 13, Mitchell site; 14, Ludlow Cave.

we have as yet only a few suggestive finds on the southern and eastern borders of our area.

For present purposes we will confine our attention primarily to that considerable portion of the northern Great Plains now included within the States of North and South Dakota (see map, fig. 23). Against a very brief outline of the environmental background of the Dakotas, I will attempt a thumbnail sketch of ethnic distributions in

historic and protohistoric times, but only touching upon the as yet dimly apperceived prehistoric period. The preliminary and exploratory nature of the present essay will, I trust, help to excuse inadequate documentation and the impressionistic treatment of complex cultural phenomena. The western portion of our area, northern Wyoming and all of Montana, as well as the adjacent provinces in Canada, can only be mentioned, owing to the present lack of archeological data from most of this region.

ENVIRONMENTAL BACKGROUND

The Dakotas alone comprise an area of some 150,000 square miles. As indicated on the map (fig. 23) the eastern portion of this region is included in the Central Lowlands physiographic province, the western in the Great Plains province. The entire region is fairly uniform, but elevation increases from east to west, the Southeastern Valleys averaging 1,100 feet, the Black Hills 5,000 feet. The largest rivers are the Missouri, which flows to the south, and the Red River flowing north (map, fig. 23). It is in these great valleys, especially along the Missouri, that the bulk of archeological work has so far been accomplished. The greater portion of both States consists of open prairie, plains, or steppe. There are less than 600 square miles of wooded area in North Dakota, and in South Dakota, aside from the pine-covered Black Hills, large groves of deciduous trees occur only along the eastern border or on the flood plains of the Missouri and other permanent streams.

These groves, especially on the eastern borders of the region, are made up of a wide variety of deciduous trees. Animal life, notably the bison, antelope, white-tailed deer (in the east), mule deer and big-horn sheep (in the west), was formerly abundant and furnished food for the native hunters. Smaller mammals, especially rabbits and prairie dogs, are still numerous, and waterfowl abound wherever surface water occurs during the warmer seasons. As in all regions of continental climate the Dakotas have cold winters and hot summers.

From the standpoint of primitive horticulturists most of the area offered a severe challenge, just as it does to the modern agriculturist today. According to Will (1924b), the aboriginal limit of agriculture at the time of white contact probably extended north to the Knife River in North Dakota. In southern North Dakota annual precipitation averages range from 14 inches in the west to 22 inches in the east; in South Dakota from 14 inches in the northwest to 30 inches in the Southeastern Valleys. Most of the rain comes in the spring and summer months, and the days are long during the growing season.

However, occasional early frosts, low precipitation to the north and west, and periodic droughts combine to make horticultural activities hazardous. Will and Hyde (1917) have convincingly shown how well adapted were the maize varieties grown by the sedentary Indian tribes of the upper Missouri. This was obviously due to careful selection on the part of the native horticulturists, combined with a relatively long period of adaptation. As will be seen in sequel the archeological evidence will probably be conclusive on this last point.

From the standpoint of discovering and dating evidences of early man the northern Plains have as yet hardly lived up to their geologic possibilities. All but the southwestern corner of North Dakota was glaciated, and all of South Dakota to the east of the Missouri, with the exception of the Southeastern Valleys, was covered by the Dakota lobe of the Wisconsin glaciation. The line between the Couteau du Missouri and the Missouri Slope (see map, fig. 23) approximately marks the vague division between the glaciated region to the east and the unglaciated region to the west. Moreover, the melting of this last ice sheet formed glacial Lake Agassiz, which formerly covered an area of not less than 110,000 square miles. In Minnesota traces of ancient man have been found in the old beach lines of this receding lake and tentatively dated. Farther north and west in North Dakota the Souris glacial lake bed in the loop of the present Souris River has had a similar geologic history. There is, then, every reason to expect that with adequate exploration more of this type of evidence will come to light.

HISTORIC ETHNOLOGY

We turn now to a rapid survey of historic tribal movements in the northern Plains. The only tribe of proved long residence in this area is the sedentary, horticultural Mandan. As first residents they are comparable to the Pawnee in the central Great Plains. Verendrye, Lewis and Clark, Mackenzie, and Alexander Henry all mention from 6 to 13 major towns located in the vicinity of the Heart River, N. D. Mandan tradition testifies to this region as a place of long abode and, as we shall see, archeology confirms this. The nature of these great stockaded villages and their permanent earth-lodge dwellings, like the status of their advanced culture, has been outlined by Will and Spinden. If the Mandan had not spoken a variant Siouan language, which in itself suggests a not too ancient migration, there would be far fewer speculations concerning the manner in which they had reached their northern abode and more as to their possible ancient resi-

dence. Two related Siouan tribes, the Hidatsa and the Crow, have, according to linguistic evidence, split apart within relatively recent prehistoric times. The Hidatsa, if native tradition can be relied upon, joined the Mandan on the Missouri River, having moved in from the east, perhaps from the vicinity of Devil's Lake. They later moved upstream, establishing several villages around the mouth of Knife River, where they stayed until 1845. In that year they moved to Fort Berthold, later being joined by the Mandan and Arikara. No documentary evidence is extant to indicate when their kinsmen, the Crow, departed from the Missouri for their historic range on the Yellowstone River. Unlike the Hidatsa, who seem to have already been horticultural, or to have patterned themselves after the sedentary Mandan, the Crow when first encountered by the whites were living in skin tipis and leading a nonhorticultural, hunting and nomadic life. As will be indicated, we already have archeological hints that this had not always been the case.

Two other Siouan tribes remain to be considered, the Teton Dakota and the Assiniboine. The former, once resident in the woodlands of west-central Minnesota, moved, or were pushed, out onto the open Plains (Bushnell, 1922; Swanton, 1930). This westward movement was facilitated when they acquired the use of horses, sometime prior to 1742, and developed rapidly into Plains nomads with a strong militaristic bent. According to Hyde (1937), their westward expansion was blocked by the great fortified Arikara villages around the Great Bend of the Missouri until these people were reduced by three great smallpox epidemics between 1772 and 1780. However this may check with later work there is no doubt that the Teton Dakota, aided by smallpox and other epidemics that soon beset the settled tribes on the river trade routes, were largely influential in driving the sedentary peoples northward. Dakota military strength increased steadily, and they retained their newly acquired equestrian nomadism until late reservation days. The Assiniboine, who are closely related to the Dakota, occupied the region around Lake Winnipeg in 1670 and were still subdivided into a Woodland and a Plains group as late as 1737 (Lowie, 1909; Rodnick, 1938). Their movement southward and westward to the Missouri began about the opening of the nineteenth century. Prior to that time their closest relations were with the Cree, and their contacts with the Missouri tribes seem mainly to have involved trade. While a nomadic, hunting people within later historic times, they seem not to have developed the outstanding military characteristics of the western Dakota. The possibility that they formed the northernmost advance guard of the Siouan migration to the north and

west opens interesting archeological speculations. As will be seen, these are no more than speculations, but they will be mentioned in due course.

Reasons of linguistic distribution as well as the limited historical data available indicate with reasonable certainty the movement of the aforementioned Siouan tribes into the Great Plains within relatively recent times. In regard to the Algonquin-speaking peoples of the northern Plains, certain tribes like the Blackfoot may have been old residents. Sapir's Algonquin-Wakashan linkage suggests this possibility. The Arapaho, like the Cheyenne, were apparently relatively late comers. For most of these groups we have no meaningful archeological data; hence we can add little to the inferential linguistic and ethnographic evidence already extant. In regard to the Cheyenne, we are more fortunate since direct archeological research has recently verified and extended the legendary and scant historical data concerning their recent westward movement and former horticultural mode of life. From the valley of the Minnesota the Cheyenne are believed to have moved westward into the Red River valley, occupying at least one village on the Great Bend of the Sheyenne River (Will, 1914; Grinnell, 1918, 1923; Bushnell, 1922; Swanton, 1930). This village, which we recently excavated, yielded much new data on their basically sedentary life in the period circa 1750. Within the next 50 years the bulk of the tribe became fully equestrian, completely nomadic, had abandoned agriculture and were ranging far west and south of the Missouri River. The tangible evidence indicating this almost incredibly rapid acculturation to new patterns will be briefly summarized later.

Apparently equal in cultural importance to the Mandan in the northern Plains was the northernmost Caddoan-speaking tribe, namely, the Arikara. Arikara history is complex and will be treated fully in another place, but one thing stands out—that is, their constant northward movement up the Missouri or, as they call it, the "Holy River." Linguistic and legendary evidence indicates that they were once in close relationship, if not identical, with the ancestral Pawnee. From the neighborhood of the Nebraska-South Dakota line, where numerous Omaha legends place them (Fletcher and LaFlesche, 1911), the Arikara apparently moved up to the vicinity of Pierre, S. Dak., where they dominated the region, living in a large number of great fortified villages during the middle of the eighteenth century. Broken by small-pox epidemics, they moved upstream, concentrating for a short time on the Cheyenne River, where Trudeau visited them in 1795. From here, weakened by disease and incessant Dakota attacks, they went

far upriver, where for a few years they were in close contact with their cultural and, at times, military rivals, the Mandan. However, by the time of Lewis and Clark, their few villages had been moved downstream and they were located above the mouth of the Grand River. In 1823, as a result of the bombardment of their double village (here termed the Leavenworth site and also known as the Lewis and Clark site) by Colonel Leavenworth, they departed for the south on a long, desperate begira of which little is known. After a turbulent visit with their Skidi Pawnee kinsmen in Nebraska they came north again, following an uncertain interior route. Arriving in the vicinity of Fort Clark in 1838, they occupied a Mandan village which had just been decimated by smallpox. After a 30-year stay at this point they again moved upstream, eventually settling with the Mandan and Hidatsa on the Fort Berthold reservation, where they are today. Arikara history indicates that since 1795 they have periodically mingled with, or been in close contact with, the Mandan. It seemed likely, therefore, that the later Arikara villages would show a blending of these two cultures, whereas the older villages in south-central South Dakota might be more distinctive. As will be seen, archeology confirms this hypothesis.

HISTORIC ARCHEOLOGY

We turn now to a consideration of the archeological evidence, dealing first with excavations in historic (documented) sites, next, and more briefly, with protohistoric (European contact) sites and, finally, to the still relatively obscure prehistoric period. The schematic chart (table 1) purports to cover a period of from 10,000 to 18,000 years. However, on examination, it will be seen that the great bulk of the known evidence apparently falls within the last three to five centuries. The reasons for this unequal distribution should become apparent as we proceed.

On the historic level, Mandan material culture has been well presented by Will and Spinden (1906). The Double Ditch (or Burgois) site in which they excavated constitutes the largest, richest, and most impressive series of mounds and middens I have seen on the entire Missouri (see map, fig. 23, number 2; for other North Dakota sites see Will, 1924a). The documentation of this site is, however, inadequate, though there is a possibility that it is one of the villages visited by Verendrye in 1738. For this reason the combined Columbia University-North Dakota Historical Society expedition of 1938 selected the Old Fort Abraham Lincoln village (see map, fig. 23, number 3)

TABLE 1.—*Tentative diagram of historic and prehistoric relationships in the northern Great Plains.*
 (Numbers refer to sites, see map, fig. 23.)

Periods	Great Plains Province			West (to)	East	Central Lowlands			
Historic 1804	Crow	W. Dakota	Cheyenne	Hidatsa (1)	Arikara (6)	Mandan	Assiniboine	E. Dakota	Chippewa
1770					Arikara (8)	Mandan	(3)	Cheyenne	(12)
Proto- historic		W. Dakota ? (upper 14)			Arikara (9, 10)				
					Hidatsa? (7)				
Pre- historic						Mandan	(2, 5)		
		Yellowstone R. villages ?	Ludlow Cave (lower 14)		Upper Republican (11)			Mill Creek (13)	
								Dakota mounds	Arvilla "culture"
(circa 8000 B.C.)								Browns Valley man [Yuma-Folsom]	
								Sauk Valley man [?]	
(circa 16,000 B.C.)								Minnesota man [?]	

across the river from Bismarck since this site is referred to by Lewis and Clark, on the authority of an Arikara chief, as having been abandoned by the Mandan 40 years before (see Will, 1924a, p. 314). Our excavations yielded abundant white contact material, and the ceramics and other artifacts recovered check in all major details with those from the Double Ditch site (Will and Spinden, 1906). As indicated by lack of contact material and depth of deposit, the latter site is undoubtedly the older of the two. However, the two sites are in part contemporaneous and pertain to peoples of practically identical cultures. For this reason I believe that Will and Spinden are entirely correct in their conclusion that the Double Ditch (Burgois) site is Mandan and not Hidatsa as has been claimed (Libby, 1908, 1910). Both sites were protected by defensive ditches, though the Double Ditch site has two moats and is characterized by high refuse mounds that appear to have been in part of purposeful construction. Excavations at both sites have so far failed to demonstrate the nature of the stockade that in all probability was present. Similarly, the complex superimposition and overlapping of earth-lodge floors has so far prevented the clear delineation of floor plans. The Mandan earth lodge is well known historically and ethnologically, and excavations indicate the antiquity of this generalized structure at both sites. However, archeological details are not yet clear in this regard. Large, well-made cache pits, both inside and outside the houses, are abundant at both sites.

Excavations at the Old Fort Abraham Lincoln site introduce a puzzling factor in regard to Mandan burial customs. In historic times scaffolds were employed in conjunction with surface skull and sub-surface bundle burials. At the Double Ditch site one bundle burial and one flexed burial, as well as scattered human bones, were encountered in the limited excavations. However, at the Old Fort Abraham Lincoln site we found 11 burials; all were flexed, several in pits covered with slabs of wood, and several in the deepest and oldest cache pits. One of the latter contained a large, mature man who had met a violent death through a blow on the skull. He had his medicine bag alongside his head as well as his arrow-making tools on the other side. This was apparently a prehistoric burial but several of the other graves had limited white contact materials. There were no evidences of an intrusive culture, for example Arikara, and large numbers of similar burials around and beneath house floors were encountered here in a previous W.P.A. project. We were inclined to attribute these burials to emergency conditions created by the smallpox epidemic which caused the abandonment of the village about 1764, but

the apparent care manifested as well as the antiquity of certain burials makes this assumption dubious. Maxmilian stated: "If you ask a Mandan why they do not deposit their dead in the ground, he answers, 'The Lord of life has, indeed, told us that we come from the ground, and should return to it again; yet we have *lately begun* to lay the bodies of the dead on stages, because we love them and would weep at the sight of them.'" (Maxmilian, 1906, p. 361, italics mine.) Perhaps we have here another example of the rapid fluctuation of burial practices so often observed in other areas. In any event, further excavations at the Double Ditch site, as well as the numerous other Mandan villages in this vicinity, should throw more light on this problem.

Dr. Harry L. Shapiro has kindly measured the seven adult skulls from the Old Fort Abraham Lincoln site. The cephalic index of the three males averages 73.4, of the four females 75.5, and of the entire group 74.6. The one skull secured by Will and Spinden at Double Ditch site (1906, p. 185) has an index of 71.4. These crania, therefore, are markedly dolichocephalic which seems characteristic of the Mandan. Boas measured a mixed group of living Mandan and Hidatsa getting a cephalic index average of 79.6 (or deducting 2 for flesh, 77.6). Seriation of the measurements shows six individuals have indices of 70 and six more of 71, indicating a strong trend toward dolichocephaly. Two series of living Arikara obtained by Boas gave cephalic index averages of 81.5 (or 79.5 skeletal) and of 82 (80 skeletal). None of the few Arikara skulls reported on run as low as the Mandan; one gives 75.8 and four others 82 (cited by Will and Spinden, 1906). It is apparent that the Mandan are generally dolichocephalic whereas the Arikara tend to be mesocephalic. The limited skeletal material from the Old Fort Abraham Lincoln and Double Ditch sites so far reported on therefore appears to be Mandan despite the hitherto unrecorded method of burial. It is quite possible that utilization of the larger series from these documented sites now available in the North Dakota Historical Society Museum, South Dakota State Museum, and United States National Museum will demonstrate even more striking differences. In regard to measurements on the living it must be remembered that for the last century Mandan, Hidatsa, and Arikara have been in close contact, living together on one reservation for much of that period. The documentation of many sites and the linking of definite archeological horizons in this area opens a promising field for exact instead of speculative work in physical anthropology.

The general range of Mandan artifact types has been well presented by Will and Spinden (1906) and need not be discussed in any detail

here. However, a summary of Mandan ceramics from the Old Fort Abraham Lincoln site seems in order to facilitate comparison with other historic complexes in the area. The majority of these types are illustrated by Will and Spinden. The pottery from the Old Fort Abraham Lincoln site (pl. 5) is homogeneous, practically identical with that from Double Ditch site, and of a high grade. Vast amounts of sherds and a number of whole or restorable vessels were obtained. The pottery is rather granular and appears to have been made by the paddle-and-anvil method, no evidences of coiling being observed. It averages 6 mm. in neck thickness and is tempered with medium to fine grit obtained from granitic rocks broken down in the fires. Colors are predominantly dark but run from almost black, through brown and gray, to very rare buff or even orange tones. The surfaces are often superficially blackened with grease. Only two sherds show a red slip and one other has black vertical stripes on a lighter background. Red hematite in a powdery form occurs inside some sherds but appears to be accidental, probably as a result of use in mixing paint. The surface of most pottery is marked by vertical grooves and ridges, apparently the result of paddling with grooved or thong-wrapped paddles (pl. 5, *i*). One checker-stamped sherd was noted. The shoulders and necks of vessels show vertical scratches as though grass-rubbed. All have been smoothed down, and the small vessels often have a plain surface. Large jars of elongate-globular form, that is with rounded shoulders and semipointed bases, are most common. Smaller, often miniature, vessels are often hemispherical with angular shoulders. Rims and necks that are **S**-shaped are most common (72 percent) (pl. 5, *a, e*), flaring profiles with lips somewhat thickened next (21 percent) (pl. 5, *f*), and intermediate forms (7 percent). Castellations, lugs, spouts, and strap handles are rare and usually confined to the second type above mentioned. The **S**-shaped rims are usually decorated with horizontal or diagonal twisted single-cord impressions, closely spaced. A curvilinear design suggesting a rainbow is very common (pl. 5, *c*). One sherd shows a realistic, cord-impressed turtle design suggesting certain boulder effigies in Mandan country. Incised designs are common on the shoulders of vessels, usually consisting of opposed diagonals (pl. 5, *h*). About one-fourth of the rims are plain, and finger-pinched rims are common. As a type, Mandan pottery of the historic and late prehistoric period is very distinctive.

In addition to the other artifact types listed by Will and Spinden from Double Ditch (1906), excavations at the Old Fort Abraham Lincoln site yielded well-made shallow stone dishes or "palettes," shallow stone mortars, flat metate fragments, numerous pebbles and bone

or pottery disks decorated with geometric designs (apparently gaming pieces), grooved stone balls suggesting "bolas," bison- and wapiti-horn scoops, numerous bone and (rare) copper fishhooks; bird-headed bone objects (see Will and Spinden, 1906, p. 172), and several hafted knives (usually of bison rib with the blade set in a horizontal groove—chipped stone blades are usually ovoid, but several lanceolate forms occur, and one such hafted specimen showed that the corner of the butt—not the point—was used for cutting).

It is also of interest that bones of the horse and domesticated dog occurred at the Old Fort Abraham Lincoln site, though they have not been found at the Double Ditch site. Henry reported that the Mandan originally had no dogs (Will and Spinden, 1906, p. 182). Dog bones are rather numerous at the former site. Viewed as a whole, the material manifestations of Mandan culture apparently represent a climax for the northern Plains. In range and technique they excel those of the Arikara, who appear as the most distinctive and advanced cultural rival in the area. We pass on now to consider another tribe, the Hidatsa, who were strongly influenced by the Mandan.

Despite much speculation regarding the exact nature of Hidatsa sites, no historic village has yet been excavated. The historic sites are well known, however, some seven occurring on the Knife River near its mouth (see Will, 1924a, pp. 323-326). Of these, at least four are well documented (Bushnell, 1922; Will, 1924a). All are well worthy of excavation; one, the Big Hidatsa or Olds site, is particularly promising, for the ditch can still be traced and numerous round house-pits are open and deep, with many beams still showing. In many houses the entrance passages are also clearly outlined. There are numerous refuse mounds with abundant bone, though ceramics and artifacts seem relatively scarce. The 1938 expedition made test pits in the Olds, Amahami, and Upper and Lower Hidatsa sites, and obtained small sample collections. Although these villages are of slightly different ages, no significant differences could be observed through surface examination. The ceramic collections are too small to indicate site differences but do reveal the general characteristics of Hidatsa pottery during the first half of the nineteenth century (see pl. 6). In general, Hidatsa pottery most closely resembles Mandan pottery (Double Ditch and Fort Abraham Lincoln sites) but is thicker and not so well made or decorated. It shares a predominance of dark coloration, cord decoration on outer and inner rim, the S-shaped neck, the rainbow cord design (pl. 6, *a*), and the broad, surface paddle-marking characteristic of the Mandan. These and other correspondences can be observed by comparing plates 5 and 6. It is interesting

to note that Hidatsa potsherds collected at Fort Berthold in 1909-1911 by Gilbert Wilson and now in the American Museum of Natural History show marked decadence of form, design, and symmetry. The nonceramic artifacts from the Knife River sites resemble those from the Mandan villages (see Will and Spinden, 1906) but, as far as our small collection goes, are more limited in types and not so well made. Knife River flint from adjacent quarries predominates in all flaked stone work. It is obvious that the Hidatsa were under strong Mandan influence and that rich data on their culture may be obtained when these sites are scientifically excavated.

The Arikara, northernmost of all Caddoan peoples, were cultural rivals of the Mandan. A good beginning toward an understanding of their historic archeology has already been made, but published material is still scarce (Stirling, 1924; Strong, 1933, 1935). The best-known site is the Leavenworth (also called Lewis and Clark) village on the Missouri River in northern South Dakota, about 5 miles above the mouth of the Grand River (see map, fig. 23, number 6). This was excavated by the writer for the Bureau of American Ethnology in 1932. Stirling and Over excavated numerous burials here at earlier dates (Stirling, 1924). The site is documented by nearly all early travelers on the Missouri and was abandoned after the Leavenworth bombardment in 1823. We found his exploded and unexploded howitzer shells in one of the earth lodges (Strong, 1933). At the time of this occupation the Arikara had just been in very close contact with the Mandan as previously mentioned.

The Leavenworth site is a double village, split by a small creek, containing about 64 earth-lodge sites on the west side of the creek and 75 on the east side. Each village has an irregular open plaza near the center, the western village having a "grandfather" rock in the plaza. Originally a log stockade surrounded both villages, but there is no ditch and we were unable to trace its outline. Two houses in each village were excavated, and a typical dwelling-house floor plan (and probable reconstruction) is given here (figs. 24-27).³ Historic Arikara earth lodges are very similar to those of the Pawnee but retain the older four-post central foundation which was superseded by additional posts in late historic times among the Pawnee (compare Wedel, 1936). Both interior and exterior cache pits occur. Trenches had been dug around the outer walls of certain houses perhaps to add earth to the roof after rains, though this may have been a byproduct

³ Courtesy of Elmer Love, University of Illinois, and member of the 1932 expedition.

of the Leavenworth shelling. A ceremonial lodge, near the "grandfather" rock, was partially excavated. It was larger (55 feet in diameter) than the ordinary dwelling house, had very large posts, and contained very few artifacts. We found evidence suggesting an earth altar next to the west wall opposite the doorway. Behind the eastern

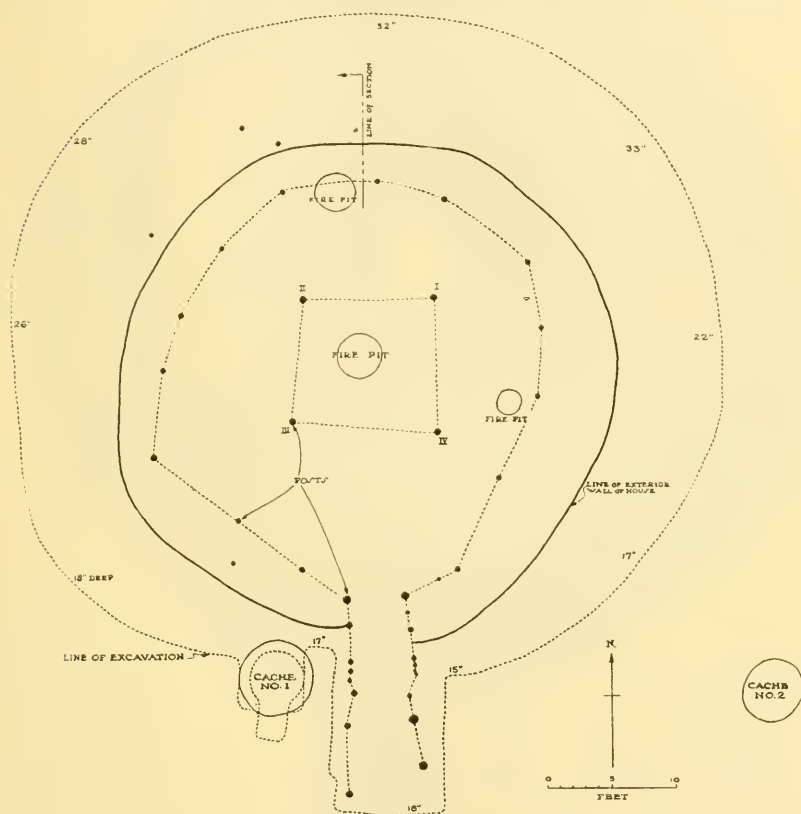


FIG. 24.—Ground plan of a historic Arikara earth lodge, Leavenworth site (circa 1800).

village is a hill used extensively for burial purposes. The burials of the Arikara in this period were deep, flexed inhumations. Boards had been laid over the bodies and abundant grave gifts included much white trade material, ornaments, horse gear, and in some cases medicine bags or ceremonial objects (see Stirling, 1924). Few burials were encountered near the houses, and none in cache pits as at the Old Fort Abraham Lincoln Mandan site. These specific tribal anthropometric data are very important but have not yet been made available.

Arikara ceramics of this period (circa 1800) show some Mandan influences but are generally distinctive (pl. 7). Sherds are very

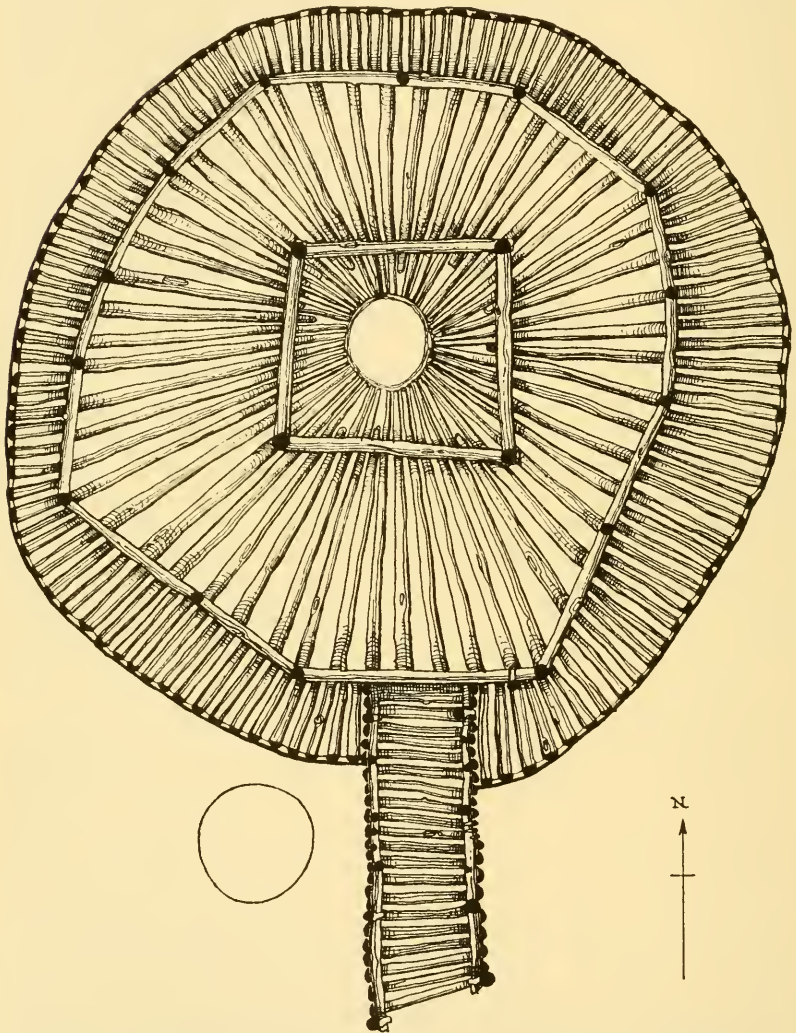


FIG. 25.—Reconstructed view of timber construction, same Arikara earth lodge, Leavenworth site.

abundant, but whole pots are lacking from our collection (save miniature vessels from graves, see Stirling, 1924), and we obtained no restorable vessels. Arikara pottery is predominantly of a light tone, tan to gray-brown, although about half the sherds have been darkened

by grease or smoke. Two sherds with black paint stripes on a lighter background were collected, and 150 sherds are painted, inside or out, with a red hematite slip. Crumbled granitic rocks have been used for temper. The necks have been grass-rubbed, usually vertically (pl. 7, *f*), and the bodies paddle-marked in a way similar to the Mandan but not so distinctly (pl. 7, *h*). Shapes are difficult to determine, but smaller, more rounded vessels are suggested than is the case with the Mandan. The thickness averages around 6.5 mm. No traces of coiling or of modeling pots inside baskets (as observed at this site by Bradbury in 1811) were noted in Leavenworth site pottery. The latter is slightly thicker than the Mandan. Rims of Leavenworth site pottery are predominately thickened or braced, and everted (pl. 7), suggesting a small collar. These are, for the most part, decorated by closely spaced, single cord impressions applied

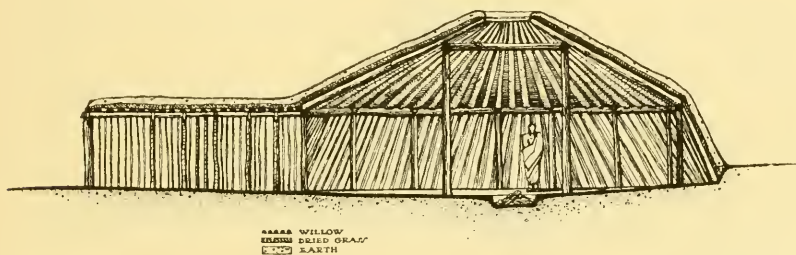


FIG. 26.—Section through same historic Arikara earth lodge (reconstruction), Leavenworth site.

diagonally or vertically (62 percent) (pl. 7, *a, b, d, h*). Some simple, geometric cord designs occur, including very rare examples of the rainbow design so characteristic of the Mandan. Rims without cord marking, both collared and narrow and everted, occur, and these are often decorated by heavy punctuation (pl. 7, *f, e*) or finger corrugations. About 13 percent of the sherds from this site have simple and linear incisions on rim and upper body. These are generally crude and obscure and do not compare with Mandan designs (pl. 5, *h*). One unique sherd shows well-made rectilinear designs on neck and upper body suggesting conventionalized cornstalks. Strap handles and overhanging lugs (pl. 7, *d, g, h*) occur but are rare. They usually have incised or cord decorations. The very characteristic S-shaped Mandan neck and rim is lacking, though three sherds suggest this type.

A brief inventory of other Arikara (Leavenworth site) material culture may have value for cultural comparisons: Shallow mortars and mullers, rare; grooved and ungrooved hammerstones; celts (one dubious specimen); shaft-polishers, common; end and side scrapers;

small, delicate, triangular chipped points; drills, rare; catlinite pipes, rare; elk-scapula hoes, common; bone "squash knives"; elk cannon bone notched fleshers, common; perforated rib arrow wrenches, common; rib "snow snakes," often incised, very common (a number with shallow, vertical notches suggest rasps); bone awls, rare; bone knife handles, rare; one antler powder measure; one grizzly-canine pendant; shell pins, beads, and pendants, rare; European trade goods, including metal hoes, axes, containers, arrowpoints, and knives, as well as cloth and glass beads, very common in all parts of both villages. The homogeneity and shallow nature of detritus at this site suggest a rather brief occupation estimated as from circa 1797 to 1823. Both quantitatively (as to types) and qualitatively Arikara material culture of this period is slightly inferior to that of the Mandan. How-

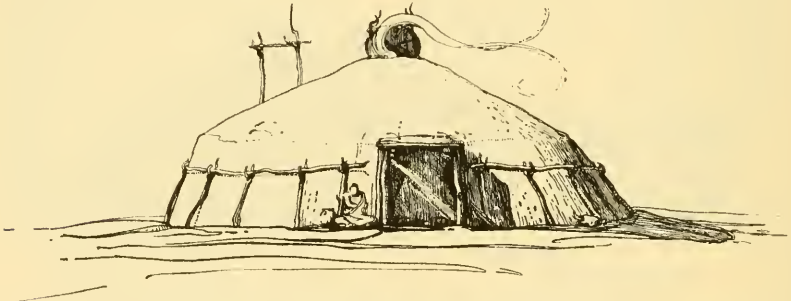


FIG. 27.—Exterior view of same historic Arikara earth lodge (reconstruction), Leavenworth site.

ever, the Mandan sites here considered are both older than the Leavenworth site. In the next section concerned with the protohistoric evidence we will make further comparisons.

The "fighting Cheyenne" have always claimed that they were formerly horticulturists living in settled villages (Grinnell, 1918, 1923). Yet, in history, they are famous as warlike, equestrian nomads. In 1938 the Columbia University-North Dakota Historical Society expedition conducted the first excavation in an early Cheyenne site. The evidence thus revealed amply testified to the truth of Cheyenne tradition and indicated how amazingly rapid and complete their cultural transformation into a "typical" Plains tribe had been. The Sheyenne-Cheyenne site is located in Ransom County, in east-central North Dakota, about 12 miles southeast of the town of Lisbon (map, fig. 23, number 12). It is inadequately documented in a technical sense since no white man is known to have visited it. However, a mass of corroborating evidence makes its identification and location almost a

certainty (see Will, 1914; Grinnell 1918, 1923). It is approximately located on Franquelin's early maps, and its destruction is referred to by Alexander Henry the younger (1897) and by David Thompson. Swanton (1930) has called attention to this last reference which tells of the burning of the village by the Chippewa and not the Assiniboine as was formerly believed. Thompson obtained his information in 1799, and the Chippewa chief concerned spoke of the attack as having occurred "lately." For this reason Swanton believes it could not have been much before 1790. However, Alexander Henry (1897, p. 144) refers to the same event as occurring about 1740. I have assumed 1770 as a median date. In addition to direct ethnological evidence, both Dakota and Cheyenne, identifying this site at Cheyenne, the internal evidence of abandonment through burning, and the amount and nature of white contact material, is also corroboratory.

The site is located on a river terrace with a steep bank on the north facing the former channel of the Sheyenne River (see map, Grinnell, 1918; also description, Will, 1914). There are the rings of about 70 houses surrounded by a deep ditch or moat which surrounds the village except along the steep river bank. Our excavations tested the ditch, seven houses, and numerous cache pits. The ditch proved to have had a width of almost 10 feet and a depth of almost 5 feet. There were no bastions. Extensive tests inside and outside of the ditch revealed no positive evidences of a stockade. A few irregular holes that may have been post molds were encountered, but there was no evidence of a regular palisade. It is probable that earth embankments or some sort of temporary walls were used. The houses excavated were all circular earth lodges with four central posts set in an almost exact square and a central fireplace (fig. 28). With one exception the four central posts were oriented to the cardinal points. No definite cache pits were found inside any of the lodges. The lodges, aside from the above uniformity, were divided into three types. Three had only the four central posts, the rafters in one case leaning on an elevated border around the lodge. Three, in addition to the four central posts, had a second row of posts that ran around the outer edge of the floor. One house, the largest and best preserved (fig. 28), had four central posts, a row of intermediate posts, and a ditch or series of post holes around the outer circumference. This lodge conforms perfectly to the generalized Pawnee, Arikara, Mandan, and Hidatsa earth-lodge pattern. From its location in the village, and from the nature of its artifacts, it may well have been a ceremonial center. In four of the houses covered entry passages were noted, in one no such evidence was found (this house suggested the

menstrual or old woman's hut described by the Cheyenne), and in two the excavations were incomplete. All entryways were to the southeast except the largest one (fig. 28) which opens southwest upon an open area or "plaza." Many of the post molds contained wood in

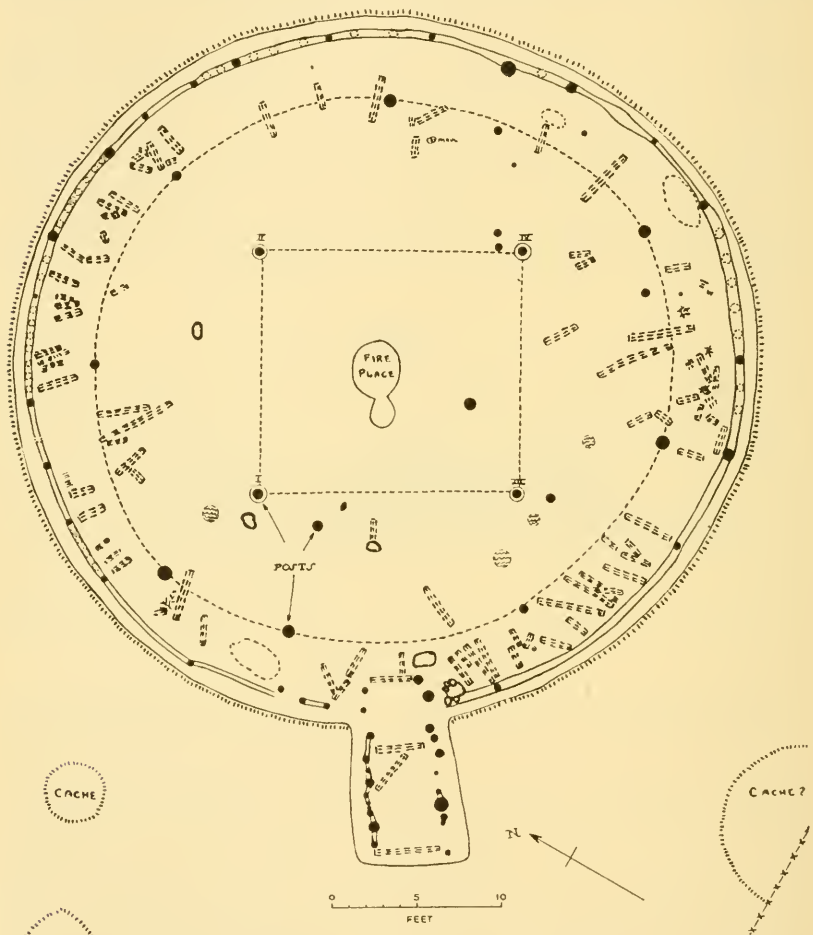


FIG. 28.—Ground plan of historic Cheyenne earth lodge, Sheyenne-Cheyenne site (circa 1770).

good condition and were tamped in place with bison or other large bones. Charred beams were particularly abundant in the largest house (fig. 28). Characteristic furnishings of all the houses were numerous large and small boulders some of which had well-used grinding surfaces. All houses that we excavated had been burned.

Many of the numerous external cache pits gave indication of having served as refuse pits rather than storage places. Owing to the

sandy nature of the soil, their outlines were usually irregular and, although some represented dug pits, others appeared to be refuse-filled hollows. The cache pits averaged about 4 feet in depth and contained ashes, animal bones (especially bison), large numbers of stones, and broken pottery and implements. No larger refuse heaps could be located, and much refuse was probably thrown over the river bank and washed away.

Contact materials from this site include a few glass beads (most of which were inset in pottery as a decoration!), one piece of glass, a trigger guard ornament from a British or French gun of early eighteenth century manufacture and 13 lance, arrow, and knife blades made of brass and iron. Horse bones were found in several parts of the site, confirming the Chippewa chief's statement that the Cheyenne at this time had horses (see Swanton, 1930). The one gun part, mentioned above, which was drilled to be worn as a decoration, and the finding of only one dubious gun flint, suggest that the Cheyenne were either without or were weak in regard to firearms at this time.

Pottery was fairly abundant at the site beneath the surface in houses and caches, 3,767 sherds being recovered. No complete or restorable vessels were found. Cheyenne pottery is predominantly of a light tone, passing through various shades of buff and tan to mottled gray-black and black (pl. 8). A red, probably hematite, slip appears on the inner surface of 295 sherds which show no evidence of use. The pottery averages about 8 mm. in thickness and is grit-tempered with quartz particles ranging from very fine to coarse. The majority of the tempering is medium fine. In structure the majority of sherds are flaky, and many tend to split into two layers. In about half the interior surface is coated with a charred layer from cooking. The body sherds indicate that the vessels were generally globular in shape; only the smaller ones and one large fragment have angular shoulders. Strap handles (36) and triangular, horizontal lugs (pl. 8, *a*) occur. One basal fragment was recovered, and this is flat. We have no evidence of the cylindrical and saucerlike forms postulated by Grinnell (1923, vol. 1, p. 238) on ethnological evidence.

The great majority of the sherds indicate vertical grass wiping of the necks and horizontal paddle markings on the body partially obliterated by subsequent smoothing (pl. 8, *a, b, f*). A small proportion of the body sherds apparently had no other surface treatment than rubbing or semipolishing to give them an even surface. The paddles used on the majority of the pottery were either grooved or wrapped with thongs (pl. 8, *g, h*). They show no sign of twisted cords. In

some cases punch stamps or plaited matting (6 sherds) seem to have been used in surface treatment. This combination of grass wiping and paddle marking is obviously a widespread historic and protohistoric trait in the Great Plains, occurring on this time level in Pawnee (Wedel, 1936), Arikara, Mandan, Hidatsa, and Cheyenne ceramics. Although the general technique occurs on the prehistoric level, the deep, broad groovings here indicated (pls. 5, *i*; 8, *g, h*) are not characteristic of such earlier cultures as the Nebraska or Upper Republican aspects (Strong, 1935) save at the Arzberger site discussed later.

Cheyenne rim sherds (pl. 8, *a, d, f*) are characterized by slightly thickened, protruding, and flat-topped lips directed outward and downward at an angle varying around 45 degrees. They appear to be slightly everted and to have both constricted and straight necks. The decorative treatment on the lips consists predominantly of vertical, horizontal, and diagonal lines arranged in parallels (pl. 8). These are made by cord-wrapped stick and single cord impressions, the diagonal lines appearing most extensively in the former and horizontal lines in the latter technique. Some sherds are decorated on the inner lip with cord-wrapped stick impressions, and a few others with plain cord, incision, and punctate markings. A minor proportion of rims had necks decorated with cord-wrapped stick and cord impressions in the form of horizontal parallel lines. A few sherds, generally from smaller pots, have shoulder decorations with variations of incised herringbone and opposed diagonal designs. A handful of others were decorated by roulette, incised, and punctate methods. The roulette technique appears to be almost identical with sherd samples from Mille Lac, Minn. Some seven sherds were decorated on the outer rim by inset small, white glass beads. In most cases the beads have fallen out, leaving their impress. Several sherds with overhanging collars seem exceptional and are probably intrusive. In surface treatment Cheyenne pottery resembles the later sedentary Plains types (pl. 8, *g, h*), but in decoration it seems more "Woodland." I suspect that it will eventually be linked up with one of the aspects, possibly Headwater Lakes, of the Lake Michigan phase in Minnesota since it has some resemblance to that of the Black Duck focus in the latter State (based on sherds and information kindly furnished by L. A. Wilford, of the University of Minnesota). As far as the Great Plains are concerned Cheyenne ceramics differ markedly from those of the Mandan and in a lesser degree from those of the Arikara. Their closer affiliations will undoubtedly be made clear when their earliest sites are located and excavated in Minnesota (see Grinnell, 1918, p. 377).

The other material remains from this site, although not particularly abundant or striking, indicate that at this period the general framework of Cheyenne culture was very similar to that of the Mandan, Arikara, and other sedentary Missouri River tribes. In addition there are traits that seem more distinctively Woodland as indicated by the pottery. In ground stone, elbow catlinite pipes occur but are rare; shaft-polishers, rare; grooved mauls (6); oval and discoidal hammerstones, abundant; rubbing stones, abundant; several flat grinding stones and mullers. In chipped stone, small triangular arrowpoints rather crudely chipped with either notched or expanding stems are fairly common; end and side scrapers, rare; five small subrectangular scrapers chipped on all four sides (this seems a rather rare type; it occurs at Pecos, Kidder, 1932, p. 35, fig. 17, *d*); and several triangular knife blades. Bone work is rather abundant, including numerous bison-scapula hoes; elk-metatarsus notched fleshers, abundant (several of these are flattened on top with square corners); rib knife handles with side grooves; perforated rib shaft wrenches; knappers; one delicate needle point; rib end-scraper handles; one cancellous bone hide-dressing tool; a bird-bone whistle; rare bone beads; rare pendants; one bone bracelet or bow guard with incised linear design and perforations; as well as numerous worked bone and antler fragments. In shell, a very common but hitherto unique artifact type is a crescentic knife or scraper worn down from a heavy fresh-water mussel shell that is very abundant at this site. Small triangular and rectangular forms are also present. These latter types seem rare in the Plains. Vegetal remains have not yet been identified but consist of what appears to be maize, numerous seeds, and a considerable amount of birchbark. A wide fauna, including bison, deer, bear, fish, and domestic dog is represented. The first of these is the most abundant. Permission to excavate a nearby field where burials were reported could not be obtained. However, a bundle burial and two skulls were found just outside one of the lodges.

In brief, the Cheyenne at this period were both agriculturists and hunters. They lived in fixed fortified villages, used a four-post earth lodge, and possessed a culture very similar to that of the semi-sedentary Caddoan and Siouan peoples of the eastern Plains. Their ceramics are of a northeastern type and, in their use of birchbark, shell knives or scrapers, stemmed arrowpoints, and a few other traits, they also differed from their sedentary Missouri River neighbors. However, their earth lodges and basic culture were so similar to the latter that contacts must have been close. It seems very probable, though unproved, that this Sheyenne-Cheyenne village was contem-

porary with other Cheyenne villages that had already moved west and located on the Missouri River (Grinnell, 1918). In 1938 we found a little pottery suggesting Cheyenne types in caches next to the old Manuel Lisa trading post near Kenel, S. Dak., and Grinnell (1918) and Will (1924) locate other Cheyenne sites along the Missouri near the North and South Dakota line. As yet, none of these transitional sites have been worked. The same is true of the early nineteenth century villages during their nomadic period to the west of the Missouri. In 1932 I casually inspected one of these long-used camps near Indian Springs in the vicinity of Scottsbluff, western Nebraska. The contrast with the Sheyenne-Cheyenne village was tremendous. There were no fortifications, no earth lodges, and but faintly marked tipi circles, no pottery, no evidence of agriculture, abundant glass beads and trade materials on the surface, and little else. Yet, if we assume that the Sheyenne-Cheyenne village was abandoned in about 1750 (which is probably too early), this complete transformation within the native framework had taken place by the time of Lewis and Clark, that is in about two generations or less than half a century! It furnishes an interesting example of the dynamics of culture change as revealed by archeology.

Leaving the Cheyenne, it would be logical to consider the various bands of the Dakota who likewise were forced, or were lured, out of the Minnesota woodlands to occupy and revolutionize a large portion of the northern Plains. Although we have considerable historical and traditional evidence regarding the earlier villages of the various Dakota bands, at Mille Lac and elsewhere in Minnesota (Bushnell, 1922), little archeological evidence is as yet available. The Mille Lac site is reported by Wilford as having Woodland type pottery (Report of the Indianapolis Archaeological Conference, Nat. Res. Council, Washington, D. C. pp. 8-9, 1936), but no adequate data on house or artifact types are extant (see Winchell, 1908). Swanton's comments (1930, p. 160) in this regard seem particularly timely: "Finally, it is evident that a careful historical study of the territory embraced in what is now central Minnesota would considerably illuminate our knowledge of the northern Plains tribes. It is evident that many of them took their departure into the Plains from this neighborhood." Important information and numerous arguments concerning early man have recently come from Minnesota, but of the historic period, which alone can connect the known with the unknown, we are still sadly in the dark. When this is available, and I believe there are many unpublished data, Minnesota will come into her own as one of the most important archeological areas in the northern United States.

PROTOHISTORIC ARCHEOLOGY

With the protohistoric period the need for a general methodology to supplement and extend the direct historic approach becomes acute. Once beyond the historic period specific tribal organization merges into the complex streams of culture history. The known tribal terminations of these streams are essential to link history and prehistory. They convert archeological sequence into historic reality and anchor archeology to social science. Yet, from the protohistoric to the earlier periods, all tribal and linguistic appellations become increasingly fallacious. The anthropologist can legitimately trace the history of a specific tribe or even linguistic stock down into the successive prehistoric archeological constellations of which it becomes a part, but the archeologist as a technician must eschew ethnic terminology for prehistoric horizons. The Arikara of today were probably the Pawnee of yesterday, and they in turn dissolve into the riddle of Caddoan origins in the Southeast. It is obvious that we must evolve a combined method incorporating the direct historic approach, the objectivity and taxonomic completeness of McKern (1934), and the equally basic geographic, typological, and evolutionary considerations of Gladwin (1934) and Ford (1936). Rouse (1939) has recently made a suggestive beginning in this regard. Ritchie (1938), Wedel (1934), and I (1935), among others, have attempted to combine certain of these classificatory and historical approaches, but the present compromises are not yet satisfactory.

The present cursory paper avoids the issue since it is primarily concerned with the preliminary or direct historic approach. However, I recognize the basic challenge and admit the growing need for adequate typological and distributional studies in Great Plains' archeology. So far we have been primarily concerned with establishing sequential and correlated cultural complexes in the area. This is the synthetic side of archeology which alone permits cultural comparisons in time and space. It must, however, be accompanied by analysis to demonstrate cultural evolution and diffusion, since an archeological trait of any group at any time is usually a composite of various traits derived from various sources. Both space (borrowing) and sequence (evolution) are here involved. The progress of dynamic archeological research inevitably necessitates a recurrent process of exploration, synthesis, analysis, and resynthesis. For the northern Great Plains we are still in the first two stages of the first cycle. We therefore continue with our preliminary and admittedly partial survey. As was the case in regard to the many known historic Mandan,

Hidatsa, and Arikara sites which have been ignored here, we will continue to select only those few protohistoric and prehistoric sites that, owing to partial excavation, seem to have significance at the present time. Since the material is complex and space is limited, I will from here on present comparisons rather than summaries. The material on the majority of the sites mentioned in this paper will later be published in full as opportunity offers.

In 1932 I made stratigraphic and exploratory excavations in a rich protohistoric site, designated as the Rygh (pronounced "Riggs") site, across the Missouri from the Leavenworth site (map, fig. 23, number 5). A 10-foot square, 7 feet deep, was isolated in the center of a large refuse mound and peeled by 1-foot levels. Only a brief comment on the rather involved sequence is possible here. A few fragments of metal, apparently of indirect white origin, occurred in the upper 3 feet, marking the site as protohistoric. There was no other contact material. Stone work decreased from bottom to top, pottery increased. The latter showed that decoration by incision decreased from bottom to top, cord decorating increased. However, in the top level there were still twice as many incised as corded sherds. Simple straight rims often with parallel, horizontal, incised decorations were characteristic of the lowest levels, decreasing later. The third level from the bottom showed an elaboration and multiplication of all types—with simpler forms below and above. The abundant rainbow cord decoration motif (Strong, 1933, fig. 78) the first of a considerable number of dully painted sherds (black stripes on a lighter background), the rare fabric marking, and equally rare cord-wrapped stick decoration all came in on this third level. Closely spaced cord decoration is highly conventionalized, advanced, and more or less static from top to bottom, whereas incised designs become more intricate. Collared and **S**-shaped rims were lacking in the earliest level. Collared rims appear first and increase gradually throughout. The **S**-shaped rims appear in great numbers in the third level and are much more numerous than the collared type ever was from then on. Both types persisted to the end. In bone and antler work new types appear in levels 3 and 4. These include fishhooks, beads, scapula hoe fragments, bison-scapula "hide wringers," cancellous bone skin-dressing implements; all these types continue into the higher levels. In level 5, bone fleshers, socketed bone projectile points, bird-bone whistles, and goose-headed ceremonial objects occurred. Several types of maize and squash seeds occur throughout. Further details from this rich stratigraphic section must await later presentation.

In addition to the stratigraphic square, other refuse heaps were sampled and house pits tested. The Rygh site is generally similar in surface appearance to Double Ditch and Old Fort Abraham Lincoln, having a ditch and scattered refuse heaps around the borders as well as inside the area. It differs markedly from the adjacent Leavenworth site. Cache pits are abundant, and these as well as post holes were found beneath the deepest midden (7 feet). However, our limited tests in grassy circles on the flat revealed cache pits but gave no positive evidence of house floors. In all internal cultural characteristics this site shows very close agreement with the two Mandan sites just mentioned. In tone, Rygh site pottery is lighter than Mandan (i.e., the two sites just mentioned) but is similar in other structural and surface characteristics (see Strong, 1933, fig. 78). It is often thinner (5.5 mm. average) and has more variety in rim forms and decorative designs. It possesses both collared and extreme S-shaped rims (Strong, 1933, fig. 78, *a*), whereas only the latter in a more modified form occur in historic Mandan sites. Incising, rare at Old Fort Abraham Lincoln, forms a minority at Double Ditch but is most frequent at Rygh. Cord-wrapped stick impressions occur rarely at the other two sites but are slightly more frequent and delicate at Rygh. Closely spaced cord impressions, especially the very frequent occurrence of a rainbow design on bosses, characterize all three sites. Both fine and coarse cording, with the former predominating, occur at Rygh. Both occur also at the two Mandan sites, whereas all cording at the Leavenworth Arikara site is coarse. The surface tooling or paddle marking on ceramics at Rygh and the Mandan sites is likewise identical in detail. The pottery forms appear to be similar as well, though the former site lacks lugs and castellations but has a wider range of rim shapes. The occurrence of collared rims and the prevalence of incising at Rygh is closely similar to prehistoric Upper Republican and protohistoric Pawnee horizons to the south. The major ceramic characteristics, however, accord far more specifically with the two early historic and protohistoric Mandan sites to the north.

The bone industry at the Rygh site is particularly rich (Strong, 1933, fig. 78). Beaming tools and edged, cancellous bone "paint brushes" are lacking, but practically all other common bone implements of the Plains region occur. Rygh fleshers are scarce and are unique, being made of flat ribs and spinal processes (Strong, 1933, fig. 78, *i*) carefully notched instead of metapodial bones. A heavy bone gouge is shared by Rygh and the two Mandan sites. Particularly significant are the unique goose-headed batons (see Strong, 1933,

fig. 78, *k*; also Will and Spinden, 1906, fig. 11), which are only known from these three sites. The goose has special ceremonial and symbolic importance among the Mandan (Will and Spinden, 1906, pp. 136, 144). In types of projectile points (variants of the delicate, notched triangular type) and in the narrow, parallel-sided knife blade with rounded ends, Rygh agrees most closely with the two Mandan sites. Other details must await full publication of the data which have been most carefully analyzed by Miss Dorothy E. Fraser.

The Rygh site owes its significance to its richness, its southern (downriver) location, and its very close relationship to two sites near Bismarck that have been demonstrated as Mandan in origin. Mandan migration myths concur in postulating an upstream migration and an eastern origin. At present I regard the Rygh site as the most southerly location that can be archeologically demonstrated, at least with any relatively high probability, as being culturally cognate with Mandan. It carries in its cultural inventory practically all historic Mandan traits and many others as well. These latter should eventually be highly significant in working out further cultural connections and derivations.

One other site of somewhat similar nature is located a little farther south near Mobridge, S. Dak. (see map, fig. 23, number 7). We made a detailed map and small sample excavations at this site in 1932. The occurrence of two brass-bladed, grooved rib knives alone indicated an early protohistoric date. It has no ditch and consists of a maze of refuse heaps and very deep house pits arranged in a most haphazard fashion. An ossuary was found near here by Stirling. The pottery suggests an extremely simplified Mandan type including a few sherds with fine cord and incised decoration. However, plain types are most abundant, whereas the **S**-shaped and collared rims are rare, as are the elaborate decorations and rim forms characteristic of Rygh and Double Ditch. The present sample is inadequate for classification but bears closest resemblance to the simpler Mandan types as well as to ceramic samples from the later Hidatsa sites on Knife River. I am inclined to regard this as an early Hidatsa site. One thing seems certain, and that is that it is not Cheyenne as Stirling thought probable (1924, p. 66). The ceramics are markedly different from both historic Cheyenne and Arikara. There are some 18 other sites in this immediate vicinity, most of which we examined and mapped, but these cannot be considered here.

In regard to the Arikara during the early historic and protohistoric periods, three sites excavated or sampled during the 1939 Columbia University expedition may be briefly mentioned. These are the Lower

Cheyenne River village (map, fig. 23, number 8) which was probably visited by Trudeau in 1795, and two protohistoric villages, the Fort Sully site (map, fig. 23, number 9) and the Buffalo Pasture site (map, fig. 23, number 10). All of these, judging from comparisons with the slightly later and well-documented Leavenworth site, are Arikara in origin. Both the Lower Cheyenne and the Buffalo Pasture site are on the steep river bank, have numerous deep house pits, and are surrounded by an irregular ditch. Excavation at the latter site revealed post molds of a stockade inside the moat. An earth lodge excavated at this site was round and similar to those at the Leavenworth site. The Fort Sully site resembles the other two but is larger and lacks a ditch. All these sites contain considerable amounts of contact material and are very similar to the Leavenworth Arikara site. This also applies to their artifact types and to their ceramics. The latter differ from that at the Leavenworth site only in having less cord marking on the rim and more incised and punctate decoration (pl. 9). As stated previously, this would be expectable since their historic contact with the predominantly cord-decorating Mandan had been less intimate than was the case at the Leavenworth site. The S-shaped rim is lacking, and the deeply collared rim is rare. However, the characteristic Arikara braced and everted rim is predominant (pl. 9, *a-d*) and suggests derivation from a collared type. Between Pierre and the Cheyenne River there are at least eight other major sites, many of which may be Arikara, as well as many more downstream. The three discussed are selected merely because data at hand indicate very strongly that they represent the late protohistoric Arikara occupation.

In general it can be said that proved and probable Mandan sites of the protohistoric and historic period run from the Rygh site (map, fig. 23, number 5) north into North Dakota, whereas Arikara sites of the later historic period extend from the Leavenworth site (map, fig. 23, number 6) and above south into South Dakota. There is, therefore, some overlapping but not on the same time level, since the downriver Mandan sites are very early protohistoric whereas the known upriver Arikara sites are post-1795 (see table 1). To make a beginning toward an understanding of certain earlier relationships suggested by the stratified Rygh site we must briefly consider the prehistoric period.

PREHISTORIC ARCHEOLOGY

There is much scattered evidence in print and in various museums that should be brought together as a start toward this study (see

Will, 1933, for a convenient summary). Here we can discuss only certain bits of selected evidence particularly germane to the problem at hand. In 1939 the Columbia University party excavated an exceptionally interesting site about 7 miles downstream from Pierre. This fortified, prehistoric village, called the Arzberger site (see map, fig. 23, number 11), contained about 40 shallow house pits completely surrounded by a ditch with bastions jutting out every 50 yards or so. Excavations within the ditch and around the bastions revealed post molds of an evenly spaced log stockade. Not a trace of European contact was discovered in the entire site. Four earth lodges were excavated, of which one was obscure as to type. The others had four-post central foundations, central fire pits, covered entryways to east or southeast, and large numbers of internal cache pits. External cache pits also occurred. However, although two of the houses were round, as in the late earth-lodge pattern, one was subrectangular and very similar in type to the prehistoric Upper Republican culture or aspect (see Strong, 1935). It should be mentioned in passing that recent investigations by the North Dakota Historical Society in the prehistoric and elaborately fortified Huff site near Bismarck (see map, fig. 23, number 4) have revealed rectangular earth lodges and a rather simplified ceramic type which is as yet unplaced. This extends the association between fortifications with bastions and rectangular lodges well to the north.

Continuing with the Arzberger site, ceramics are likewise very similar to those from Upper Republican sites (notably the St. Helena focus, see Cooper, *in* Bell, 1936) to the south. This pottery has marked collars, often with scalloped bases, exhibits *both* cord-wrapped and grooved paddle surface treatment, and emphasizes incising and occasionally punctation (pl. 10). In addition, it has many traits such as collars, handles, and intricate shoulder incising that tend to connect it with the Lower Loup or protohistoric Pawnee aspect in Nebraska. In the combined incised and punctate shoulder decoration, it suggests influence from the otherwise alien Oneota aspect (Hill and Wedel, 1936). Finally, it has a general resemblance to historic and protohistoric Arikara wares but has the fully developed collar instead of the thickened and everted Arikara rim (pls. 7, 9) and is more elaborately incised. I would suggest that the Arzberger site represents a late prehistoric horizon, basically Upper Republican, but in process of development into the more specialized and later protohistoric Pawnee (to the south) and Arikara (in the north). Strange to say, the trait resemblances to the protohistoric Pawnee (Lower Loup, see Dunlevy, *in* Bell, 1936, and Wedel, 1938) seem

much closer than they are to the adjacent protohistoric Arikara (pl. 9). However, this may be partially accounted for by a time interval, since the Buffalo Pasture site is apparently rather late (see table 1). Other material remains from the Arzberger site tend to confirm its late prehistoric and transitional position, for it has catlinite pipes, grooved stone mauls, large rough scrapers, and a great predominance of delicate, unnotched triangular points, all of which are usually protohistoric in Nebraska. In addition, it has practically all the chipped and ground stone, as well as bone, artifact types characteristic of the Upper Republican aspect. As already indicated, the house types likewise suggest transition, and the occurrence of elaborate fortifications is unique for an Upper Republican site.

Viewed broadly, it appears that the use of collars and the predominance of incised decoration at the nearby Rygh site, traits which disappear or fade in the upriver later Mandan sites, may well have been borrowed from the general southerly culture represented at the Arzberger site (see table 1). Whereas the upriver Mandan dropped the collared rim, emphasized the **S**-shaped rim and specialized in elaborate cord decoration on pottery, the protohistoric Arikara and Pawnee emphasized rim incising and developed either the collar or the everted, thickened rim. The diagonal single cord decoration in late protohistoric and historic Arikara pottery is probably due to later Mandan contacts. There is little resemblance between Arzberger and any Mandan ceramics, but close resemblances do exist between Arzberger and Pawnee and less striking but basic traits also link Arzberger and Arikara. Reverting to the general problem posited at the end of the last section, I would regard the Rygh Mandan site as an outpost of a northern or eastern culture that had incorporated certain southern and western traits found in purest form at the Arzberger site. After this period of contact between the prehistoric Mandan and the, perhaps, Caddoan bearers of the Upper Republican (Arzberger) culture, the Rygh site Mandan moved upstream. The exact steps by which the Arikara culture of historic times developed from some such generalized and late Upper Republican manifestation as that found at the Arzberger site remains to be traced in south-central South Dakota. All that we can do here is to point out the occurrence of this widespread western horizon so far to the north and ponder over the curiously close resemblance it bears to both the protohistoric and historic Pawnee in Nebraska.

In the summer of 1938 Montana newspapers reported the excavation of earth-lodge remains and ceramics on the Yellowstone River, notably near Glendive and Red Lodge. These locations are far west

of the recorded range of these traits. On a brief reconnaissance trip I visited the site near Glendive, but being unable to get in touch with the excavators, I learned relatively little. A large area on a terrace above the river had been stripped and apparently earth lodges of some sort uncovered but the details were obscure. Some pottery was examined, however, and it appeared to be of upper Missouri type resembling Hidatsa and simple Mandan ware. Since this area is in the heart of the historic territory of the Crow, these finds have particular interest. When made available they should extend the horticultural pattern far west of its present known range and, if the pottery actually links with the Hidatsa, will demonstrate that the Crow retained their horticultural life after they left the Missouri for the west. There is a great need here for scientific excavation and publication.

One other western site should be mentioned and that is the Ludlow Cave (see map, fig. 23, number 14). This site, described by Over has protohistoric material, presumably Dakota, in its upper level and more abundant materials including basketry, shell, stone, and some potsherds in a lower deposit (Over, 1936). On the basis of a brief examination in 1931 I wrote of this horizon as possibly Upper Republican (1935, p. 291). Recently Mr. Over kindly permitted us to examine and photograph these sherds, which prove not to be Upper Republican in type. They are dark in tone, with everted, sometimes thickened lips decorated with diagonal cord impressions. The body sherds show surface treatment with a grooved paddle and the upper body portions were often decorated with incised designs of the opposed diagonal type. The sample, some 285 sherds, is small, but large enough to indicate brief occupation by a pottery-making group rather than accidental intrusion. There is no resemblance here to Upper Republican ceramics but a rather close one to a generalized Mandan-Hidatsa type. Perhaps the closest resemblance is to the Old Fort Abraham Lincoln Mandan (see pl. 5). It may be noted (map, fig. 23) that the Ludlow Cave site (number 14) is directly on any route to the west following up the Grand River and also lies between the headwaters of the Heart and the Black Hills.

We now turn to certain eastern prehistoric horizons that are still hanging in space. One such manifestation is the Mill Creek culture or aspect of northwestern Iowa and southeastern South Dakota (see Strong, 1935, p. 286). It is to be hoped that excavations now in progress in Iowa sites of this culture conducted by Dr. Keyes will throw more light on its age and affiliations. In South Dakota recent excavations in a prehistoric or early protohistoric village site near Mitchell (see map, fig. 23, number 13) suggest the Mill Creek aspect (see

Meleen and Over, 1938). The Mitchell site is a village defended by a double ditch. The houses so far excavated are rectangular and, like those of the Huff site previously mentioned, seem somewhat anomalous. The pottery which is extremely abundant and quite complex is said to resemble Mill Creek ceramics (Meleen and Over, 1938, p. 26). Until more is available regarding the South Dakota and Iowa excavations little can be said of this still obscure but apparently advanced and important horizon. Theoretically, it could be ancestral to Mandan as Upper Republican seems to be to Arikara (table 1) but at present this is pure speculation. It is obvious that the Central Lowlands bordering on the Southeastern Valleys (see map, fig. 23) have been subject to varied eastern and southern cultural influences. Since this is one of the major gateways by which Mississippi cultures could have reached the northern Plains, interesting new discoveries can be expected here. Apparently we cannot hope to understand prehistoric culture change in the north until more detailed work has been done on the southern borders of our area.

Near the Mitchell village site are a number of rather striking burial mounds. It has been suggested that they pertain to this village site (Meleen and Over, 1938, p. 4). However, on the basis of this brief report I can find little specific evidence proving this hypothesis. On the contrary, I would surmise that they represented a distinct culture; though the published evidence is confusing.

In any event, this problem of the Dakota mounds (see table 1) is both intriguing and important. Similar mounds are found in the Central Lowland area in both South and North Dakota, in diminishing numbers from east to west but extending well into southern Canada (see Montgomery, 1906, and Will, 1933). Not only are impressive mounds (from 1 to 12 feet in height) found throughout this area but also extensive and sometimes complex alignments, fortifications, and other earthworks exist. The sites are apparently all prehistoric, but since a number of them contain birchbark (Montgomery, 1906, pl. 32, *c*) and wood they would not seem to be very ancient. The majority contain single or group burials in shallow pits just below the original ground surface. We opened one such mound near Lisbon, N. Dak., which contained few artifacts but had several painted buffalo skulls. Others have bundle burials. Pottery is relatively rare in such mounds but is unique and variable (see Montgomery, 1906, pl. 31). Spiral incisions from midbase to rim, unusual incised decorations, and perforated lugs or low castellations seem characteristic. Other artifacts include well-chipped flint blades and small delicate arrowpoints; tubular stone pipes; catlinite tablets with incised animal designs; nail

buffer shaft-polishers; sewed birchbark containers; antler-tip harpoons and handles; incised antler wristlets; and excellent shell work including many warm-water southeastern molluscan species (all these illustrated by Montgomery, 1906). In addition, I have seen incised shell gorgets, well-made effigy pipes, and some native copper work. Montgomery states that the measurements of many crania from these mounds show a mesocephalic index.

At present the distinctions within this western mound culture, as well as its wider affiliations, cannot be determined. However, it seems very probable that they will fit into the classification of Minnesota cultures resulting from the work of Wilford and others. There are resemblances in harpoons, shaft-polishers, and shell beads to the finds made in deep graves at the Arvilla gravel pit (Jenks, 1932) and Wilford has established an Arvilla focus within the Red River aspect (letter of March 15, 1939). In passing, it is of interest that the bone flesher from the Arvilla pit (Jenks, 1932, pl. 18) resembles fleshers from the Sheyenne-Cheyenne site which are flattened on top and have a considerable portion of the tubular shaft removed. The Arvilla specimen is more extreme in this regard. In regard to the Arvilla finds (table 1) I cannot see the Eskimo influence stressed by Jenks (1932), since the limited artifact types seem more characteristic of the Woodland-Plains border where they occur.

The theory that the majority of these mounds were made by Siouan peoples migrating from the Ohio region has been put forward many times. Certainly the depopulation of the Ohio mound area at the time of the first white exploration, the peripheral distribution to northwest and southeast of Siouan groups, and the many concurring migration legends of such tribes all favor the general hypothesis. Bushnell has stressed this probability and has tacitly assumed that the burial mounds at Mille Lac pertain to the Dakota who formerly lived there (1922, p. 16). In my brief investigation of North and South Dakota mounds and collections from them I also received a strong impression that here was an attenuated eastern "mound-building" culture decidedly exotic in the northern prairies. Viewed impressionistically, these earthworks suggest the gradually fading trail of a once advanced people moving northward to become either simpler river farmers or wandering hunters. Unfortunately, our present knowledge of northern mound culture, or cultures, does not yet permit any adequate comparison with better-known historic or prehistoric horizons. Much more specific information is needed before this vague impression of Siouan affiliation can emerge from the purely speculative stage.

None of the foregoing archeological horizons suggests any very great antiquity. Since they include nearly all known cultural manifestations in our area, they forcibly illustrate how brief is the present known time run (see table 1). Paleontologists from the American Museum of Natural History have recently found cord- or textile-marked pot sherds near Scenic in southwestern South Dakota. The deposits under which these sherds are found suggest considerable age, but more exact data are not yet available. These finds are particularly interesting owing to the occurrence elsewhere in the central Great Plains of Woodland horizons underlying what would appear to be Mississippi cultures (Strong, 1935, as well as more recent finds in Kansas and Nebraska). Whether this apparently early Woodland manifestation occurs in the central and eastern portions of the northern Great Plains is as yet unknown.

Nonceramic, and presumably preceramic horizons in the northern plains have so far only been distinguished on the extreme eastern border of the prairie in western Minnesota. Actually, the most convincing find consists of six chipped points or blades and two sandstone abraders found with a skeleton in Browns Valley, Traverse County, Minn. (Jenks, 1937). The skeletal remains and artifacts occurred in a burial in gravels of the Tintah beach stage of glacial Lake Agassiz. Although the gravels are estimated as having an age of from 8,000 to 12,000 years, the human remains were intrusive and cannot be dated in this manner. However, Jenks believes that the burial occurred very shortly after the gravel bed was exposed. The artifacts are classified by Jenks as Yuma-Folsom, indicating that they are intermediate between these two well-known early types. They also suggest certain large unstemmed points or knives occurring in the lowest level (I) at Signal Butte (see Strong, 1935, pl. 25). The Browns Valley points, however, have the horizontal ripple flaking particularly characteristic of the Yuma type and the general form of the Folsom type. They would certainly seem to pertain to a closely contemporaneous cultural horizon. In a later paper (Jenks and Wilford, 1938) Jenks states that the Browns Valley artifacts are culturally dated by their equivalence to the stemless points from the lowest level at Signal Butte (I). There are undoubtedly resemblances here, and the two cultural manifestations are probably upon a general early time level. However, I believe that the Browns Valley chipped artifacts are technically closer to the Yuman and Folsom artifacts in the west-central Great Plains and are therefore probably somewhat earlier than Signal Butte I. It seems highly probable that as scientific work proceeds on both the eastern and western borders of the northern Great

Plains, further evidence of the Browns Valley and related early hunting cultures will come to light.

The two remaining finds, Sauk Valley man and "Minnesota man" (table 1), also come from western Minnesota. The former lacks any cultural evidence, and the latter is extremely puzzling in this regard. Both finds were the result of accidental discoveries, and there has been considerable argument as to their exact provenience. Since the Sauk Valley skeleton comes from gravels that cannot as yet be dated, may have been buried, and is classified solely on grounds of relative primitiveness (Jenks and Wilford, 1938), we need only mention it here. Jenks and Wilford believe it is as old as, or older than, the Browns Valley skeleton as I have indicated on the chart (table 1). Until other remains of similar type are found with definite geological or cultural evidence as to relative age, these conclusions seem very tentative.

The "Minnesota man," actually an adolescent girl of about 15, has been the center of much geologic and anthropological controversy (see Hrdlička in MacCurdy, 1937, and Bryan and MacClintock, 1938). Jenks is convinced of the primitive characteristics of the find (1936), whereas Hrdlička is equally convinced it is a modern Sioux. Bryan believes the skeleton is contemporary with the silt beds antecedent to the formation of Lake Agassiz some 18,000 years ago, whereas Antevs is equally strong in his conviction that the remains are intrusive. Such a technical impasse can only be met by new discoveries, further analyses, and later general agreement among acknowledged authorities. Here, however, we are primarily interested in the cultural remains, which consist of an antler dagger or perforated, pointed tool; a conch-shell pendant with two perforations at the small upper end; and finally, fragmentary remains of various recent animal species. The latter Jenks believes may have been included in a "medicine" kit (1936, p. 169). Similar finds in recent Mandan and Arikara graves have been mentioned earlier in the present paper. The perforated antler implement is nondistinctive and might pertain to any horizon early or late. The conch-shell pendant, however, is a relatively late and common artifact type in the southeastern United States. The conch shell from which it is made is a Florida and Gulf Coast species. Jenks himself points out the resemblance of the Minnesota specimen to conch shells from the Cahokia mounds (1936, p. 164, fig. 85). Such shells and pendants are found to the north and are usually related to Mississippi cultures which are late prehistoric in time. While it is of course possible, as Jenks and Bryan suggest, that the Minnesota specimen is an extremely ancient

prototype of a common late type, I regard this as highly improbable. Viewed as a whole, the cultural evidence suggests a relatively late prehistoric burial. However, since the matter of age and provenience is still in dispute, I have indicated the find on the chart (table 1).

Surface finds of Folsom and Yuma points are fairly numerous in Minnesota (Jenks, 1937) but appear to be very rare in North and South Dakota proper (Will, 1933; Over, 1934; and Renaud, 1936, make no mention of these specific types). In my work along the Missouri River in these States I have never found these types nor seen them in local collections. This is not very surprising, since it is here that the vast number of sedentary villages attract primary attention. Moreover, the deep erosional fill of these central valleys is probably too recent to promise much in the way of ancient deposits *in situ*. Work on the borders of the area, as in the western Plains, will undoubtedly be more profitable in this regard. Large numbers of chipped stone artifact types not found in the large village sites do occur in both North and South Dakota (Will, 1933), and many of these show evidence of considerable antiquity. As yet little has been done to isolate or describe such early cultural complexes, but there seems no doubt that they are present. Some of these may be as old as, or older than, horizons at present stressed as most ancient. To the north, Howard (1939) and Bird (1939) have demonstrated that Folsom, Yuma, and other apparently early lithic types occur in Alberta and Saskatchewan under circumstances similar to those at sites in the High Plains to the south. Careful investigations in the regions where older soil deposits remain will undoubtedly establish a sequence of cultural manifestations relating the late ceramic horizons with the oldest lithic manifestations yet known in North America.

SUMMARY

Our brief and inadequate survey is at an end. It has indicated that the earliest cultural manifestations yet demonstrated in the New World impinge upon our area. Further it suggests the possibility that similar discoveries within the northern Great Plains are not only possible but probable. However, it must be obvious that, to the present, we have attacked both ends of our historical problem and neglected the vast intermediate portion. In large part this has been due to the very limited amount of archeological research. The area is vast, sites are extremely numerous, and scientific investigators have been very few. With limited forces, it is well to take one objective at a time rather than attack on too broad a front. My reason for calling particular attention to this hiatus is theoretical rather than

critical. Owing to their primary interest in geologically "ancient" man, certain geologists and archeologists have tended to emphasize this artificial gap between early and late finds as indicating a pre-Indian population and lithic industry for the New World. At present such a theory runs contrary to all other anthropological evidence. No skeletal remains have yet been found in the Americas which represent any ancient type radically different from portions of the variable modern Indian population. Further, the varied content of the Folsom horizon, aside from the much emphasized type of fluted point, is similar in practically all artifact types to slightly later horizons at Signal Butte and elsewhere, as well as others connecting it with cultural manifestations of the earlier historic period. The same is true in regard to the various early Minnesota and California finds. That the earliest American population consisted of somewhat varied physical types is very probable, but that the resulting American Indians were preceded by a distinct and more primitive race or culture is a theory as yet without any tangible support. Such discoveries are always possible but, as far as the present record is concerned, have not yet been made. For this reason I again emphasize the fact that the limited data yet available on these very important intermediate New World horizons are primarily due to inadequate excavation and overemphasis on whatever cultural remains are at the moment regarded as the most ancient.

Regarding ceramic and horticultural horizons, work in the northern Plains has likewise barely been begun. However, sampling excavations and surveys have already suggested interesting sequences (table 1). For each large village site tested, there are dozens more that are still unclassified. It is apparent that settled village life was not an extremely recent phenomenon on the upper Missouri. Moreover, there has as yet been little or no effort to locate smaller and presumably earlier settled villages on or along the tributaries of these larger rivers. Such sites are known to exist (Will, 1933), but none have been excavated. It will be interesting to learn whether such sites resemble those in the central Plains in lacking evidences of organized warfare. At present, judging from conditions at the Huff, Arzberger, and a few other presumably prehistoric sites on the upper Missouri, raiding on a scale large enough to merit extensive fortifications was already in vogue before the advent of the horse. Practically all the numerous protohistoric and historic village sites are also fortified, and it seems probable that the advent of the horse accelerated a process the germs of which were already present in

the area. In this regard there appears to have been a difference between the northern and central Great Plains.

Considering the great concentration of contemporary Mandan villages at the mouth of the Heart River and of Arikara villages around the Great Bend of the Missouri (see map, fig. 23), it would appear that the horticultural village tribes more than held their own until the white man's epidemics, plus his horses and firearms in the hands of raiders, mainly from the eastern Woodland border, broke their control of the river and forced their shattered remnants to amalgamate upstream. These later phases are already fairly clear. We can see how the Mandan, once dominant culturally in the area, were brought to practical extinction; how the formerly powerful Arikara in 1823 were driven from their villages to become at least temporarily a nomadic tribe, and how their eastern and settled neighbors the Cheyenne had already passed completely from a settled horticultural to a nomadic hunting life in less than half a century. These and similar dynamic cultural processes are already outlined. They should become clearer and deeper as correlated ethnological and archeological research proceeds in the Great Plains and adjacent regions.

LITERATURE CITED

- BELL, E. H. (Editor)
1936. Chapters in Nebraska Arch., vol. 1, Nos. 1-6. Lincoln, Nebr.
- BIRD, JUNIUS
1939. Artifacts in Canadian river terraces. *Science*, vol. 89, No. 2311, pp. 340-341, Apr. 14.
- BRYAN, KIRK, AND MACCLINTOCK, PAUL
1938. What is implied by "disturbance" at the site of Minnesota man. *Journ. Geol.*, vol. 46, No. 3, pt. 1, pp. 279-292.
- BUSHNELL, DAVID I., JR.
1922. Villages of the Algonquian, Siouan, and Caddoan tribes west of the Mississippi. *Bur. Amer. Ethnol. Bull.* 77.
- DELAND, CHARLES
1906. The aborigines of South Dakota. Pt. 1, The Arikara. *South Dakota Hist. Coll.*, vol. 3, pp. 271-586.
- FLETCHER, ALICE, AND LA FLESCH, FRANCIS
1911. The Omaha tribe. 27th Ann. Rep. *Bur. Amer. Ethnol.*, pp. 15-654.
- FORD, JAMES A.
1936. Analysis of Indian village site collections from Louisiana and Mississippi. State of Louisiana Dep. Conserv. *Anthrop. Study No. 2*, Louisiana Geol. Surv.
- GLADWIN, WINIFRED AND HAROLD S.
1934. A method for designation of cultures and their variations. *Medallion Pap.*, No. 15. Gila Pueblo, Globe, Ariz.

GRINNELL, GEORGE BIRD

1918. Early Cheyenne villages. *Amer. Anthrop.*, n.s., vol. 20, No. 4, pp. 359-380.

1923. *The Cheyenne Indians*, vols. 1 and 2. Yale Univ. Press.

HENRY, ALEXANDER

1897. *The journals of Henry and Thompson*. Coues ed., vol. 1. New York.

HILL, A. T., AND WEDEL, W. R.

1936. Excavations at the Leary Indian village and burial site, Richardson County, Nebraska. *Nebraska Hist. Mag.*, vol. 17, No. 1.

HOWARD, E. B.

1939. Folsom and Yuma points from Saskatchewan. *Amer. Antiquity*, vol. 4, No. 3, pp. 277-279.

HYDE, GEORGE E.

1937. *Red Cloud's folks; a history of the Oglala Sioux Indians*. Univ. Oklahoma Press, Norman Okla.

JENKS, ALBERT E.

1932. The problem of the culture from the Arvilla gravel pit. *Amer. Anthrop.*, n.s., vol. 34, No. 3, pp. 455-466.

1936. Pleistocene man in Minnesota, a fossil *Homo Sapiens* (with a chapter on the Pleistocene geography of the Prairie Lake region, by George A. Theil). Minneapolis.

1937. Minnesota's Browns Valley man and associated burial artifacts. *Mem. Amer. Anthrop. Assoc.*, No. 49.

JENKS, ALBERT E., AND WILFORD, LLOYD A.

1938. Discovery of Sauk Valley man of Minnesota, with an account of the geology (by Kirk Bryan, Henry Retzek, and Franklin T. McMann) and the Sauk Valley skeletons. *Bull. Texas Arch. and Paleont. Soc.*, vol. 10, pp. 114-168.

KIDDER, A. V.

1932. Artifacts of Pecos. *Pap. Southwest Exped.* No. 6, Dep. Arch., Phillips Acad. New Haven.

LIBBY, O. G.

1908. Typical villages of the Mandans. *Coll. State Hist. Soc. North Dakota*, vol. 2, pp. 498-508.

1910. The proper identification of Indian village sites in North Dakota: A reply to Dr. Dixon. *Amer. Anthrop.*, n.s., vol. 12, pp. 123-128.

LOWIE, ROBERT H.

1909. The Assiniboine. *Anthrop. Pap. Amer. Mus. Nat. Hist.*, vol. 4, pt. 1.

MACCURDY, GEORGE G. (Editor)

1937. *Early man*. Philadelphia and New York.

MAXMILIAN, PRINCE OF WIED

1906. *Travels in the interior of North America. Early western travels, 1748-1846.* (Reuben Gold Thwaites, editor.) Vol. 23. Cleveland.

MCKERN, W. C.

1934. Certain culture classification problems in middle western archaeology. Committee on State Archaeological Surveys, Division of Anthropology and Psychology, Nat. Res. Coun., Circ. Ser., No. 17, August.

MELEEN, E. E., and OVER, W. H.

1938. Part 1, Preliminary report of the Mitchell Indian village site and burial mounds. Part 2, Notes on the "Moundbuilders" of South Dakota. (Mimeographed.) Univ. South Dakota Mus.

MONTGOMERY, HENRY

1906. Remains of prehistoric man in the Dakotas. *Amer. Anthropol. n.s.*, vol. 8, No. 4, pp. 640-651.

OVER, W. H.

1934. *Archaeology in South Dakota*. (Mimeographed.) Univ. South Dakota, Vermillion.
1936. The archaeology of Ludlow Cave and its significance. *Amer. Antiquity*, vol. 2, No. 2, pp. 126-129.

RENAUD, E. B.

1936. Southern Wyoming and southwest South Dakota. The archeological survey of the high western plains. 7th Rep. Univ. Denver, Dep. Anthropol.

RITCHIE, WILLIAM A.

1938. A perspective of northeastern archaeology. *Amer. Antiquity*, vol. 4, No. 2, October.

RODNICK, DAVID

1938. *The Fort Belknap Assiniboine of Montana*. New Haven.

ROUSE, IRVING

1939. *Prehistory in Haiti. A study in method*. Yale Univ. Publ. Anthropol., No. 21. Yale Univ. Press.

STIRLING, M. W.

1924. Archaeological investigations in South Dakota. *Expl. and Field-work Smithsonian Inst.* in 1923, pp. 66-71.

STRONG, W. D.

1933. Studying the Arikara and their neighbors on the Upper Missouri. *Expl. and Field-work Smithsonian Inst.* in 1932, pp. 73-76.
1935. An introduction to Nebraska archeology. *Smithsonian Misc. Coll.*, vol. 93, No. 10.

SWANTON, J. R.

1930. Some neglected data bearing on Cheyenne, Chippewa, and Dakota history. *Amer. Anthropol., n.s.*, vol. 32, No. 1, pp. 156-160.

WEDEL, WALDO R.

1934. Reports on fieldwork by the Archaeological Survey of the Nebraska State Historical Society. *Nebraska Hist. Mag.*, vol. 15, No. 3.
1936. An introduction to Pawnee archeology. *Bur. Amer. Ethnol. Bull.* 112.
1938. The direct historical approach in Pawnee archeology. *Smithsonian Misc. Coll.*, vol. 97, No. 7.

WILL, GEORGE F.

1914. The Cheyenne Indians in North Dakota. *Mississippi Valley Hist. Assoc.*, vol. 7. Torch Press, Cedar Rapids, Iowa.
- 1924a. Archaeology of the Missouri Valley. *Anthropol. Pap. Amer. Mus. Nat. Hist.*, vol. 20, pt. 6.
- 1924b. Indian agriculture at its northern limits in the Great Plains region of North America. *Ann. 20th Congr. Int. Americanistas, Rio de Janeiro, Brazil*, vol. 1, pp. 203-205.
1933. A résumé of North Dakota archaeology. *North Dakota Hist. Quart.*, vol. 7, Nos. 2-3, pp. 150-161.

WILL, GEORGE F., and HYDE, GEORGE E.

1917. Corn among the Indians of the upper Missouri. *Little Histories of North American Indians*, No. 5. St. Louis.

WILL, GEORGE F., and SPINDEN, H. J.

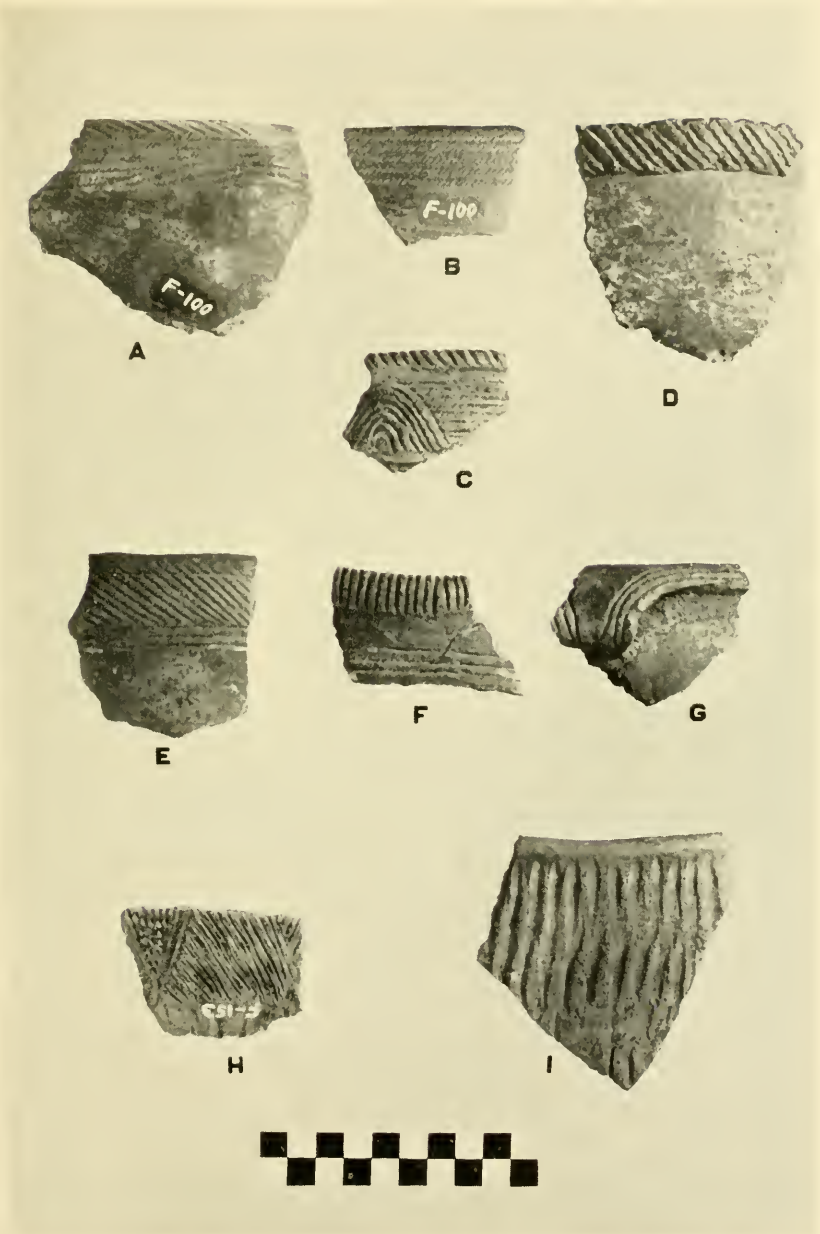
1906. The Mandans. Peabody Mus. Amer. Arch. and Ethnol., Harvard Univ., Pap., vol. 3, No. 4.

WINCHELL, NEWTON H.

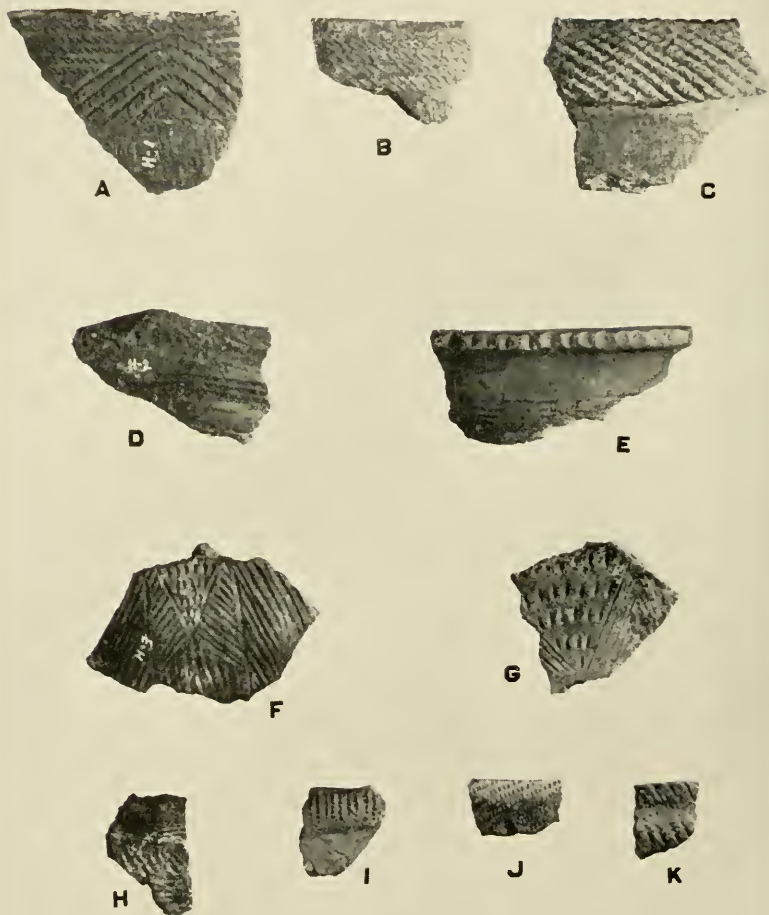
1908. Habitations of the Sioux in Minnesota. Wisconsin Archeologist, vol. 7, No. 4, pp. 155-164.

WISSLER, CLARK

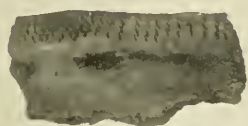
1907. Diffusion of culture in the Plains of North America. Congr. Int. Américanistes, 15th Sess., Quebec, 1906, pp. 39-52.
1908. Ethnographical problems of the Missouri Saskatchewan area. Amer. Anthropol., n.s., vol. 10, No. 2, pp. 197-207.



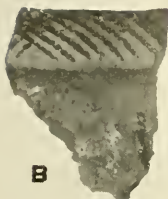
HISTORIC MANDAN POTTERY, OLD FORT ABRAHAM LINCOLN SITE
(CIRCA 1750)



HISTORIC HIDATSA POTTERY, OLDS, UPPER, AND LOWER HIDATSA SITES, KNIFE RIVER (CIRCA 1800)



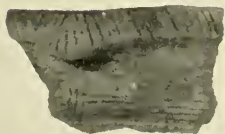
A



B



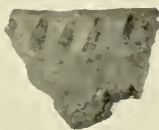
C



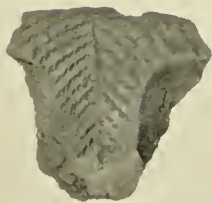
D



F



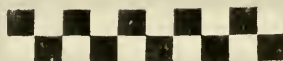
E



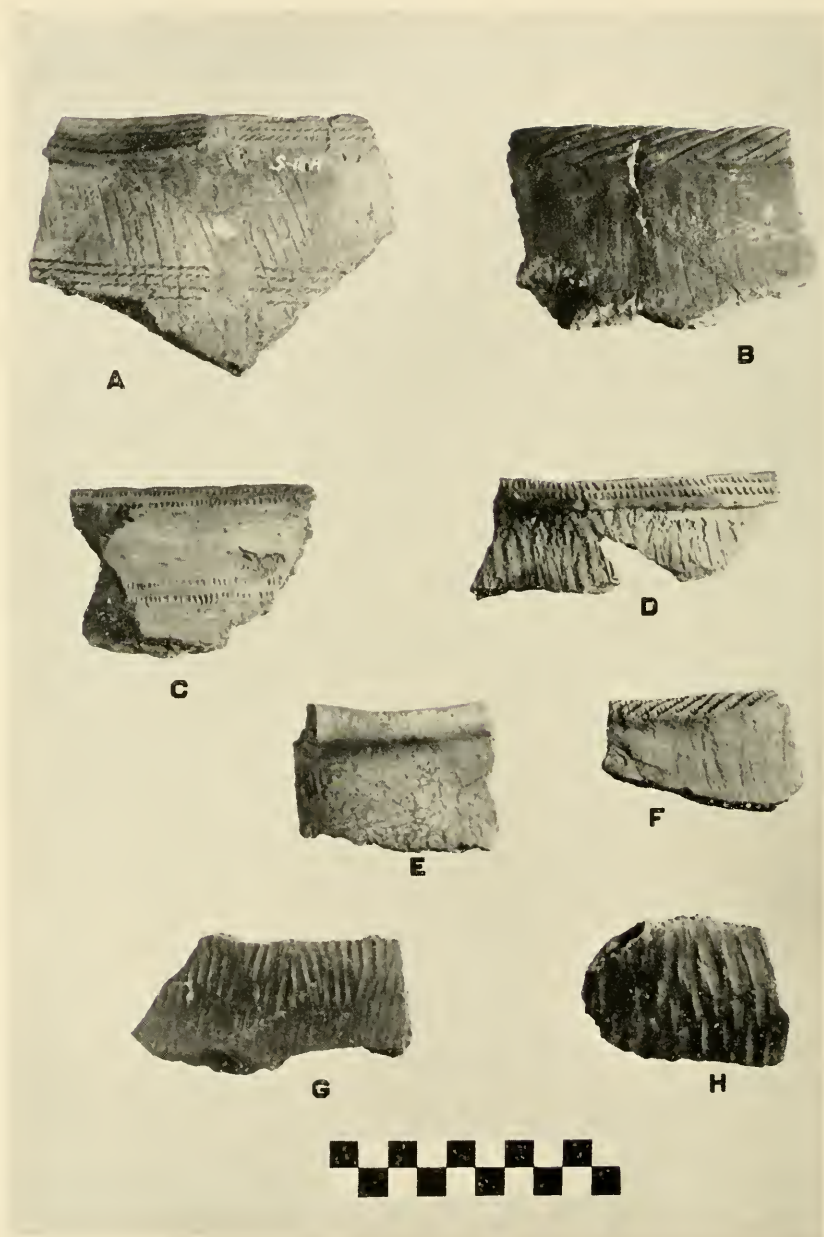
G



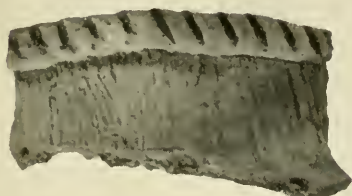
H



HISTORIC ARIKARA POTTERY, LEAVENWORTH SITE (CIRCA 1800)



HISTORIC CHEYENNE POTTERY, SHEYENNE-CHEYENNE SITE (CIRCA 1770)



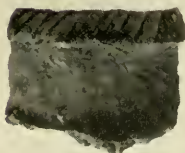
A



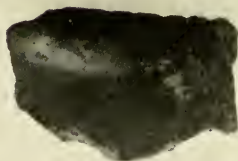
B



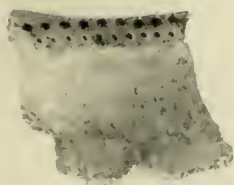
C



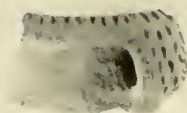
D



E



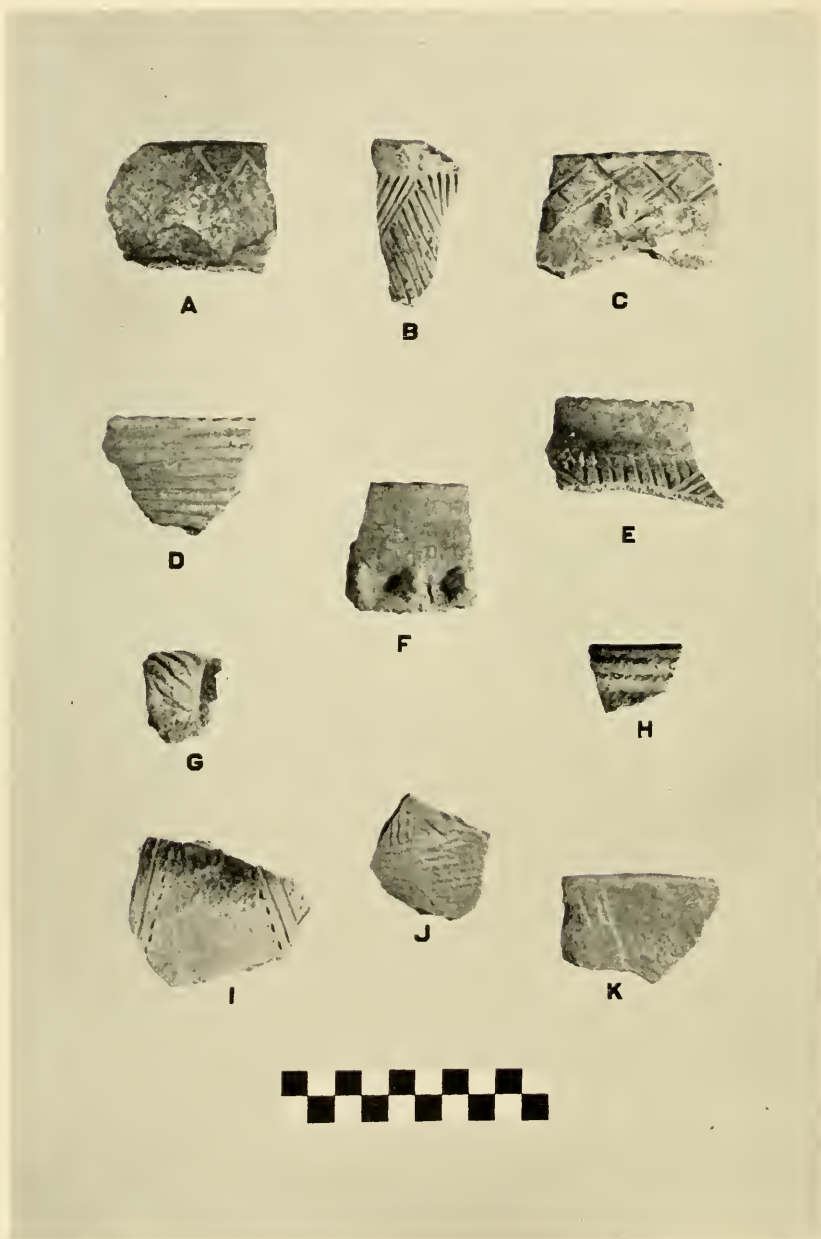
F



G



PROTOHISTORIC ARIKARA POTTERY, BUFFALO PASTURE SITE
(CIRCA 1790)



ARZBERGER SITE POTTERY (PREHISTORIC)

SOME NAVAHO CULTURE CHANGES DURING TWO
CENTURIES (WITH A TRANSLATION OF THE
EARLY EIGHTEENTH CENTURY RABAL
MANUSCRIPT)

By W. W. HILL
U. S. National Museum

PREFACE

In recent years there has been a renewed interest in the several aspects of Navaho culture. It is with the hope of providing further stimulation to the study of the history, ethnology, and archeology of the Navaho that the following translation and notes are presented.

The manuscript, "Original depositions sent to the Superior Government of The Most Excellent Count of Fuenclara, Viceroy, Governor, and Captain General of this New Spain; by Sergeant Major Don Joaquín Codallos y Rabal, Governor and Captain General of New Mexico, in conformity with the order of His Excellence in his dispatch of October 3, 1744"¹ covers the period in Navaho history from 1706 to 1743. References to the Navaho antedating this period, such as those by Zarate-Salmeron² (1538-1626) and Benavides³ (1630), only mention or give meager reference to the Navaho. With the exception of this manuscript, there was but brief mention and no full description of Navaho culture until about 1780. The manuscript, therefore, fills an important historic gap, besides giving an abundance of ethnographic data and presenting clues to the cultural transitions that the Navaho were undergoing at that time. It is also of value as a concomitant of recent and present-day archeological work.

I am greatly indebted to Dr. H. I. Priestley and to the Bancroft Library for permission to publish the manuscript. The translation was made by George Taes, of the University of California. At my request a free translation was made, certain repetitions were eliminated, and a portion not pertinent to the immediate subject was

¹ Manuscript No. 678. Pinart Collection of the Bancroft Library, Univ. California, Berkeley, Calif.

² Zarate-Salmeron, Fray Geronimo. *Relaciones de todas las cosas que en el Nuevo-Mexico se han visto y sabido, asi por mar como por tierra, desde el ano 1538 hasta el de 1626.* Translation by Charles F. Lummis in *Land of Sunshine*, vols. 11-12. Los Angeles, 1899-1900.

³ Benavides, Fray Alonso de. *The Memorial of Fray Alonso de Benavides, 1630.* Translated by Mrs. Edward E. Ayer. Chicago, 1916.

deleted. The translation was checked by Dr. L. B. Kiddle, of Princeton University, who assures me that "it is well done" and that "no important detail is left out." I wish to acknowledge my debt to these two gentlemen.

I am also indebted to Dr. D. D. Brand and Frank Hibben, of the University of New Mexico; to Dr. H. P. Mera, of the Laboratory of Anthropology at Santa Fe; and to Dr. J. P. Harrington, of the Bureau of American Ethnology, for criticism and help in preparing the manuscript for publication and especially for assistance in locating the various geographic sites mentioned in the manuscript.

INTRODUCTION

Rabal's depositions contain an unusual number of pertinent ethnologic observations. All the deponents mention farming and the type of crops raised, the making of basketry, weaving of cloth, and the type of habitation. All but one speak of the military activities. Less prevalently recurring references include those to horses, sheep, goats, cattle, the use of buckskin, storage bins, farming implements, dress type, and to population statistics. For purposes of convenience these items have been abstracted, and in the following paragraphs, on this basis, is presented a Navaho ethnology as of the first half of the eighteenth century. In the main the traits are confirmed by our present-day knowledge of the Navaho. However, in a few cases certain transitions are evident.

The area occupied by the Navaho during the period of 1706-1743 seems to have included the northern and eastern portions of their present range.⁴ References to the southern and western boundaries were vague and were based upon hearsay rather than upon actual visits. Inferentially, the southern boundary can be placed along the parallel 35°50' north; the western extension slightly west of the present Arizona-New Mexico State line. This compares substantially with Amsden's location of the Navaho in early historic times.⁵

The population estimates range from 2,000 to 4,000. Judging from the numbers that were reported from the districts actually visited, it would seem that the higher figure was the more nearly correct. This is also borne out by statements of Bancroft.⁶ It must be remembered

⁴ For purposes of estimating distances mentioned in the manuscript 2½ miles were assigned to a league. This compared closely when checked with cases of known distances as given in the testimonies.

⁵ Amsden, Charles A., *Navaho weaving: Its technic and history*, p. 126, Fine Arts Press, 1934; and *Navaho origins*, *New Mexico Hist. Rev.*, July 1932, p. 198.

⁶ Bancroft, H. H., *History of the Pacific States of North America*, vol. 12, *Arizona and New Mexico, 1530-1888*, p. 247, 1888.

that the Navaho population was substantially augmented from Pueblo sources shortly after the revolt of 1680 and during the period of the reconquest.

The period under discussion (1706-1743) was one of unusual military activity on the part of the Navaho. The earlier years were occupied in conflicts with the Spanish, reprisals resulting from Pueblo depredations which began in 1700.⁷ These did not terminate until 1716. From this time on, the Navaho were too taken up with defensive measures against the Ute and Comanche to be concerned with the Spanish. Later, a tentative alliance with Santa Fe was welcomed and lasted, except for intermittent raiding, until 1818.⁸ Hostilities with the Comanche and Ute continued until the Navaho returned from Fort Sumner in 1868.

It is evident from the Rabal accounts that this era was one of comparative economic prosperity for the Navaho. Agricultural activity was mentioned by all observers and was the basic economic pursuit. Fields were located in the lowlands. The principal crops were maize, beans, and pumpkins, which were grown in abundance. Watermelons were also mentioned, and we may judge that this introduced crop was already well established. No irrigation appears to have been practiced except in connection with the garden plots, and this was undoubtedly irrigation by hand. Water was stored by impounding, but this was for drinking purposes. Two droughts were mentioned during the period. Cultivation was by hand with the aid of wooden implements, undoubtedly the digging stick and the wooden hoe. Produce was stored in underground globular-shaped pits.

The beginnings of the Navaho livestock industry were clearly discernible at this time. Sheep and goats were the most important animals, horses being few in number. Only the tracks of cattle were mentioned, and as they have always been of minor importance to the Navaho, their paucity at this time is not surprising.

By implication hunting was an important economic pursuit both on the basis of present-day accounts and because of the recurring references to buckskin as a trade article.

The virtual cessation of Navaho-Spanish warfare had an important effect upon intertribal relations. It stimulated trading between the Navaho and the "Christianized" Pueblos as well as the Spanish. A number of the testimonies mention extensive commercial activities with the above peoples. The primary Navaho trade articles consisted of woven woolen blankets, baskets, and buckskins.

⁷ Bancroft, *ibid.*, pp. 222-223, 227-228, 230, 232.

⁸ Bancroft, *ibid.*, pp. 286-287.

For purposes of defense the houses were located away from the fields on the tops of adjacent mesas. Descriptions of the construction are identical with those given by present-day Navaho, and houses of the type described still exist in several areas, especially the Puer-tacito district. The walls were of stone; on these were placed a timber roof, undoubtedly cribwork, the latter being covered with earth.

Wearing apparel for women consisted of a black woolen dress of the type worn by the Pueblo women of that period. The men were described as dressed in buckskin; apparently a style derived from contacts with Plains tribes and one which continued to be common until after the sojourn at Fort Sumner. Woolen blankets were made and presumably worn by both sexes.

Manufactures are noted primarily in connection with trade activities. The woven wool blanket was apparently well known by 1706, the earliest reported date for Navaho weaving. Other important items were dressed buckskin and baskets.

The following transitions and changes in Navaho culture are discernible from the above material. There have been westward and southern expansions of the tribal territory. The first of these apparently terminated in 1785,⁹ the second about 1860.¹⁰ These territorial increases do not appear to have been accompanied by a corresponding increase in population. Although there are approximately 45,000 Navaho today, only 7,000-odd returned from Fort Sumner, the tremendous increase having taken place in the last 70 years. In a great part this has been due to Government protection and aid and the elimination of warfare.

Agriculture still occupies an important role economically as well as sentimentally and religiously among the Navaho. Modern implements and irrigation have facilitated the technique and introduced plants have added to the content, but little change in the basic patterns has occurred. Most of these additions diffused to the Navaho on the aboriginal level and were accommodated into the existing patterns. Sheep raising now bulks as a major economic pursuit. However, its prominent place today is due to its reestablishment following the return from Fort Sumner. Conversely, hunting has degenerated to a pastime. Trading continues to occupy a considerable amount of Navaho effort. The greatest single item of trade is still the woolen

⁹ Amsden, Charles A., Navaho origins, *New Mexico Hist. Rev.*, July 1932, p. 206.

¹⁰ Spier, Leslie, Havasupai ethnography, *Amer. Mus. Nat. Hist.*, *Anthrop. Pap.*, vol. 29, pt. 3, p. 95, 1921; and Hill, W. W., Navaho warfare, *Yale Univ. Publ. Anthrop.*, No. 5, p. 4, 1936.

blanket or rug, albeit a greatly inferior product compared to earlier forms.

House forms similar to those of 200 years ago still exist, and the increasing shortage of timber resources all but insures the continuity of this rock-walled type.

Changes in clothing and manufactures are more notable. In the former case modern garments or those of colonial Spanish type have superseded the home-made woolen garments, and buckskin clothes exist only as heirlooms. Modern blanket weaving is predominately commercial. Basketry techniques are now nearly extinct and the products replaced by modern containers. Baskets are used only ceremonially and are nearly all supplied by the Southern Ute or Strip Paiute. Likewise, dressed buckskin is primarily an imported article, predominately for ceremonial use.

We thus find the Navaho of today preserving their cultural integrity to a remarkable degree. Actual cultural losses are rare, the changes being rather those of emphasis on one part of the culture or other.

THE MANUSCRIPT

ORIGINAL DEPOSITIONS SENT TO THE SUPERIOR GOVERNMENT OF THE MOST EXCELLENT COUNT OF FUENCLARA, VICEROY, GOVERNOR, AND CAPTAIN GENERAL OF THIS NEW SPAIN; BY SERGEANT MAJOR DON JOACHÍN CODALLOS Y RABAL, GOVERNOR AND CAPTAIN GENERAL OF NEW MEXICO, IN CONFORMITY WITH THE ORDER OF HIS EXCELLENCE IN HIS DISPATCH OF OCTOBER 3, 1744.

UPON

THE CONVERSION OF THE PAGAN INDIANS OF THE PROVINCE OF NAVAJO TO THE BOSOM OF OUR HOLY MOTHER CHURCH.

DEPOSITION UNDER OATH OF WITNESS NO. 1 GIVEN BEFORE SERGEANT MAJOR JOACHÍN CODALLO Y RABAL, GOVERNOR AND CAPTAIN GENERAL OF THE SAID KINGDOM AND THE WITNESSES
JOSEPH ROMO DE VESA
PHILIFE JACOVO DE UNANUE

[FIRST WITNESS]:

At the town of Santa Fé, on February 27, 1745, testifying under oath Antonio Montoia, a Spaniard, resident of the port of Santa Rosa de Lima (1)¹¹ of this jurisdiction, farmer and herder of large and small stock, said:

He had entered the province of the Navajos on different times and occasions, twice from the Pueblo of Nemes [Jemez], which is composed of Christian Indians, distant about 30 leagues from the said province which lies to the west. All of which he knows from seeing it. He penetrated the country for 3 leagues and found a spring of fresh water not sufficient for irrigation but enough for the use of drinking by people and horses. That from that spring to the northern limits of the province it seemed to him a distance of 40 leagues, more or less. In it are found many mesas, mountains, and on them many rancherias populated by Navajos, who possess stocks and farms of corn of which much is planted, and beans and pumpkins, all seasonal crops, and that the natives occupy themselves in raising their stocks and cultivating their farms and they weave some textiles (2), and

¹¹ Numbers in parentheses refer to Appendix, p. 414-415.

[dress] some buckskin and [weave] baskets (3) from small shrubs and are called "lemitas" (4) with which they barter for other articles with the other Indians of this kingdom, and also with the Spaniards.

That at that time the Navajos had many horses and small stock [goats, sheep], and that the first time that the witness entered the province was in the time of Governor Marquis de la Peñuela [1707-1712] and said Indians were at war. And during the second expedition was in the time of Governor Don Juan Domingo de Bustamante [1722-1731] at which time they were peaceful, and that up to now they maintain themselves thus, and that it seems to him that this peace is forced upon them because they wish to shelter themselves behind the Spaniards because they are frequently attacked by the Yutas [Ute] and Comanches who are their enemies (5). That according to the limited knowledge that he has of said Indians it seems to him that they are very fickle. That during the second expedition he saw about 600 Indians with whom he spoke, and many women and children, of which he does not know the number. Nor does he know the latitude of the province at the place where he entered it. That the third time he entered it was in the year of [17]43 with the object that a Christian Apache Indian [Jicarilla ?] named Luis took the witness and many other persons and soldiers whom Governor Don Joaquín Codallos allowed them to take as escort for the safety of the people, who were going to discover some mines because the Indian Luis had offered them that they would find great treasures, all of which proved false. This expedition was made through a spot on a river called Chama (6) where some Spaniards live. And that from there to the province in an air line there is a distance of 30 leagues, more or less, all unsettled up to the border of the province. In this unsettled country there are three rivers (7) with little water and three small springs also fresh; and that it is very poor soil because it is mountainous and that having penetrated some 10 leagues into the province in a northerly direction he saw no rivers except some water seepages of running water and also of rain water and that 10 leagues distant there is a large valley long and wide with good soil where they do most of their seasonal planting. That from this valley to the Rio Grande [San Juan River] (8) outside of the province of Navajo there is a distance of 5 leagues more or less and that this water is of no use to them to irrigate their lands according to what the witness saw, he also says that among adult Indians, women, and children he must have seen 400 inhabitants, all of them in their rancherias and houses of stone and mud upon the mesas of the mountains, living upon the crops of corn, beans, all of which are raised seasonal. That

he also saw some horses, that there were not many, and a few small flocks of goats and sheep. And he says that he has heard tell that at the present time the province has between 3,000 and 4,000 Indians, old and young. That is all he knows and can say.

[SECOND WITNESS]:

Santa Fee, February 27, 1745, before the governor of the kingdom, Blas Martin, a Spaniard, resident of Santa Cruz del Ojo Caliente (9), farmer and herder of large and small stocks. He said:

That during the governorship of Don Juan Flores Mogollon [1712-1715] he entered the province of the Navajo through the town of Nemes [Jemez] which is at a distance of 25 leagues more or less. He saw a spring of water at the entrance of the province which runs about 50 paces, and that he penetrated about 15 leagues at which time the Indians were at war, that they retired far away, and that about 30 were captured, that all their cornfields were burned, and that he saw no more water than that of a seepage at a spot called "la peña tajada" [the sheer rock], and that said water is running and that from it some small vegetable farms are irrigated, that they plant much corn seasonally as well as pumpkins and watermelons and that they live on the tops of the mesas to guard themselves against the Comanches and the Yutas [Ute], and that they store their supplies underground in places called Cuescomates (10). That from the spring Jur Tardy, found at the entrance of the province through which the witness entered, to the Rio Grande [San Juan River] (8) there is a distance of some 30 leagues from west to south. And that they plant some corn and pumpkins along the banks of said river, that he saw it and that it seemed to him that there must be on the mesas more than 200 Christian Indians of this kingdom.

That the second time that he entered was also in the time of the same governor also in company by the place called "De la Piedra Alumbre" (11), lying between north and west and about 20 leagues from this town, from which place to the entrance of the province there is about 20 leagues more or less: in which district there is a small lake which seemed to him to be of rain water. That in some of the valleys they found holes with rain water, that was dammed by the Indians by sand dikes. And from the lake they returned to this town by way of Nemes [Jemez], which is at a distance of some 20 leagues from the mentioned lake, without seeing any rivers, nor other waters, and that the Indians had some sheep and goats. That the third time that he entered it was by way of the place called Chama (6), 11 leagues

distant from this town, where some Spanish families live. That some residents of the kingdom and a squadron of soldiers went along to guard them, which were furnished by the Governor Gaspar Domingo de Mondoza [1739-1743], owing to the fact that a Christian Apache Indian named Luis assured them that in the province there were many veins of virgin silver, which proved false.

That they traveled northward with Luis. That they crossed the Rio Grande [San Juan River] (8) 15 times from one bank to the other. That from that river they set out for the province of Navajo. That it was distant some 4 leagues in which district they only found rain water, with some valleys and mesas where they plant their corn, pumpkins, and watermelons. That the soil is very sterile and without any tree groves. And the witness says that is all he has seen of the province. That the Indians live on mesas on the highest parts of them to guard against the Comanches and Yutas [Ute] their enemies. That their small houses are of stones, clay, and mud. That they weave some cloth of wool (2), basketry (3), and some leather [buckskin] which they bring to sell (because they are at peace) to the Christian Indians of the realm. And that it is now many years since the Navajo Indians have done any harm to the Christians of the realm. That he has heard tell that their province has 4,000 Indians between old and young more or less. That he knows no more.

[THIRD WITNESS]:

At Santa Fee, February 27, 1745. Testimony of Antonio Martin, Spaniard, resident of Santa Cruz de Ojo Caliente (9), farmer and stockman, 50 years old. He said:

That he entered the Navajo province in the year [17]43, with the residents of the realm and a squad of soldiers furnished by Governor Gaspar Domingo Mendoza to protect them, because a Christian Apache Indian named Luis had begged them to go to that province assuring them that there was much virgin silver in a mountain, that the Indian Luis went with them and having reached the spot where the silver was supposed to be they found not even a trace of it. That the entrance to the province was made by way of the place called Chama (6) 12 leagues from this town where some Spanish families live. That from that place to the beginning of said province there is 40 leagues more or less, an unpopulated country wooded and with many mesas. That they found three rivers with little water in that district of 40 leagues, also a spring of running water, very bad and unfit for drink. That having penetrated the province for 15 leagues

more or less they found some pools of rain water which the Navajo Indians impounded with sand banks to store it in order to drink it, who plant much corn, beans, pumpkins, and watermelons, all seasonal, and that they live on the tops of the mesas where they have their little houses of stones and clay. That they are forced to live there by the Yutas [Ute] and Comanche nations who are their enemies.

That he entered through the said place into the province which is to the west and they arrived at the Rio Grande [San Juan River] (8), which is about 10 leagues from the province, so it seemed to him. That they do not irrigate the lands which were traveled over by the witness between the above province and the river, because it flows in a very deep box canyon. That he has heard tell that that province from north to south has a distance of 40 leagues between the inhabited houses and the uninhabited lands, without a single river by which to irrigate their lands. And that from east to west it may have been some 20 leagues. That it has seemed to him that the natives are untrustworthy in what they say, and that their being at peace with the Christians of the realm is because of its value to them because they are much persecuted by the Comanches and Yutas [Ute]. That he saw in the province about 50 head of small stock close to a small ranch, that they weave some cloth (2), basketry (3) with which they trade with the Christian Indians of this realm and they also bring some leather [buckskin] [to] sell for other goods. And that he saw about 300 Indians among men, women, and children. That he has heard it said that there may be about 2,000 Indians in the province, that he knows no more than what he has told.

[FOURTH WITNESS]:

Santa Fee, March 1, 1745, testimony of Juan Tofoia, resident of Santa Cruz (12), 8 leagues from this town, farmer and stock raiser of both large and small animals. He said:

That during the month of September of 1743 he entered the Navajo province with some residents of this realm and an escort of soldiers furnished for their protection by Lt. Col. Don Gaspar Domingo de Mendoza [1739-1743]. Because a Christian Apache Indian named Luis assured them that in said province there was a mountain of virgin silver, which was found untrue. And that there are 45 leagues from that spot to the valley where the witness lives, all uninhabited land with two medium-sized rivers and a small permanent lake of water, and also two small springs of fresh running water, which land is wooded with many mesas and valleys. That they penetrated about

5 leagues into the province in a westerly direction and from there northward in which distance of 5 leagues they found no river, but some ponds of rain water and valleys of farm land where seasonal crops of corn, beans, pumpkins, and watermelons are planted. And those pagan Indians cultivating the lands with wooden implements (13) and that they live on the tops of the mesas gathered in their little houses of stones and mud. Which retreats they are obliged to defend from the Comanche and Yutas [Ute] Indians who are the ones who make war on them.

And the witness says that the Navajo Indians gave the ones who entered a free passage and fine reception, and that he saw a group of about 140 men, women, and children more or less, and that he also saw a small flock of sheep of some 150 head more or less and some tracks of cattle which he did not see. And that the Navajo Indians make some cloth of wool (2) and basketry (3). That these along with some leather [buckskin] are used in their barter with the Christian Indians of the realm who give them other goods. And it has seemed to him that those Navajo Indians are very domestic [tame]. And that it is 20 years more or less since they have made war upon the Christians of this realm. And he also says that the river which is called Grande [San Juan River] (8) which is distant from that province about 4 leagues, and enters through that place, runs down, very boxed in, for which reason they are unable to irrigate the lands. And that in regard to the longitude and latitude of the province he is unable to tell because he did not travel over all of it. That he knows nothing else.

[FIFTH WITNESS]:

Santa Fee, March 2, 1745. Testimony of Pedro Sanches, Spaniard, resident of Santa Cruz (12), 7 leagues distant from Santa Fee. He said:

That he was a farmer 50 years old. That during the month of September 1743, he entered the Navajo province with some residents and soldiers, owing to the story of a Christian Apache Indian named Luis who said that there was a mountain of virgin silver, which proved false. That from Santa Cruz to the Navajo province there is a distance of 40 leagues all uninhabited country, wooded and with many canyons, and two medium-sized rivers, and three ponds of rain water. That he penetrated the province westward for 5 leagues. That there is a large river outside the province 4 leagues. That they do not irrigate the lands with this water in that place because the rivers run

in box canyons. And that those pagan Indians plant all their crops of beans, corn, pumpkins, and watermelons as seasonal. That they live on the tops of the mesas in little houses of stone. And that the reason for their living in those mountains is because the Yutas [Ute] and Comanches make war upon them. That he saw some small flocks of small stock and he also saw tracks of cattle although he saw none of the animals. That those Indians weave some cloth (2) and make basketry (3), which they bring to sell to the Christians of the realm. That he saw about 200 Indians old and young, that they seemed to him to be very friendly Indians, and that they have been at peace now for many years. That he has heard it said that the province extends some 50 leagues from north to south. That he knows no more.

[SIXTH WITNESS]:

Santa Fee, March 3, 1745. Testimony of Don Bernardo de Bustamante, native of Castile, resident of Santa Fee. He said:

That in the month of September 1743, he entered the Navajo province with an escort of soldiers with the consent of Lt. Col. Don Gaspar Domingo de Mendoza [1739-1743], governor of the realm. That it was at the instance of a Christian Apache Indian named Luis who told them about a mountain of virgin silver, but it proved false. That it was at a distance of 80 leagues from Santa Fee. That they penetrated it between north and west about 30 leagues up to the place told them by the above Indian. That from the district of Santa Fee to the borders of the province where they entered they encountered five rivers, three of them with considerable water, and the two of small size. And that in none of them could he see that any land was irrigated by them. That said land is wooded with some valleys and ponds of rain water. And that the said 30 leagues of the Navajo province are sandy and rough with many mesas and valleys, and that in the latter the pagan Indians plant their seasonal crops of corn, beans, pumpkins, and watermelons. And that the largest of the five rivers is about 12 leagues distant from the province, and that the others are much farther away. That these Indians live in ranches on the tops of the mesas in huts made of timber, stone, and mud. That they are forced to those retreats by the war made on them by the Yutas [Ute] and Comanche pagans. That he saw about 500 Indians between men, women, and children, who seemed to him very docile, and that it is now about 20 years more or less that they have been at peace with the Christians of the realm, but that it seems to him it is for their own convenience and to free themselves from the said Comanches and Yutas [Ute]. That the province beginning at the Castillejos

which are to the west are 12 leagues distant from the town of Nemes [Jemez] up to 20 leagues from the town of Zufii between north and west. That he has heard tell that the province has a length of about 70 leagues. And that they do not have river water to till their lands. And that he has heard that in the province there may be about 4,000 Indians, men, women, and children, that it has a length of 40 leagues from north to south. That those Indians have some small stock and they weave woolen cloth (2) and basketry (3) which they trade to the Indians of the realm. They also bring some leather [buckskin] which is all that he can say.

[SEVENTH WITNESS]:

Santa Fee, March 3, 1745. Testimony of Don Manuel Saens de Garbisu, lieutenant of the company of the royal palace and presidio and native of the kingdom of Castile, resident of this town. He said:

That at the beginning of September of the year 1743 he left the town with a squad of soldiers and some residents of the realm with consent of Governor Mendoza [1739-1743] owing to the pleadings of a Christian Apache Indian named Luis who told that in the Navajo province there was a mountain of virgin silver, which proved false. That on leaving the town for the land of the pagan Indians they reached the Rio Grande [San Juan River] (8), thus called by the Navajos. That in that province after entering some 6 leagues more or less from that spot they sent a friendly Indian from the town of Santa Clara [Pueblo] of this realm, who was along with the Spaniards, to enter the province of the Navajos with the purpose of getting supplies for all of us, and who returned after 3 days after leaving with 40 Navajo Indians with some supplies of tortillas and pumpkins, and that the following day in the afternoon they left the said place for the province which they entered from the north to the west about 30 leagues more or less, in which district they found no rivers but some little springs of not much water and ponds of rain water. He said that the land of these 30 leagues is one of many mesas and valleys up to the borders of the province. In which valleys they plant their seasonal crops of corn, beans, pumpkins, and watermelons. And the witness having climbed to the top of one of the mesas he saw that those Indians have built their little houses in stories [courses] of stone, timber, and mud, and they dress in the same kind of clothes as the Christian Indians of the realm. That he saw some small stock which are maintained on the mesas. That it seemed to him that he saw about 700 head of sheep. And that the reason for their living

on the tops of the mesas is to protect themselves from the Yutas [Ute] and pagan Taguaganas (14) who live close to them. That since he has been in the realm some 9 years he has seen them at peace with the Christians. That they weave woolen cloth (2) and make much basketry (3) which they come to trade to the Christian Indians. That he saw about 400 of those Navajo Indians large and small and that he has heard tell that there are from 3,000 to 4,000 of these Indians in the province. That it also seemed to him that those he saw were very gentle that they greeted the Spaniards well. That is all he knows.

[EIGHTH WITNESS]:

Santa Fee, March 4, 1745. Testimony of Antonio de Vlibani, resident of this town Alcalde, mayor and captain of war in it. He said:

That in the year 1706 while Don Francisco Cuerdo y Valdes [1705-1707] was governor of this kingdom the witness entered the Navajo province with some civilians and soldiers to subdue said Indians who were at war. That the expedition was made by the Pueblo of San Lorenzo de los Pecuries [Picuris] of said realm which is at a distance from Santa Fee of 18 leagues. That they penetrated to a spot in the province called "Los Peñoles" which seemed to him to be in the center of it and at a distance of some 40 leagues from the pueblo where they entered from east to west. In which district there are no inhabitants and the land is all full of mesas and gullies of sandy and loose ground and that they found no rivers but some springs of running water and pools of rain water. That clear to the spot of "Los Peñoles" he saw about 200 Indians and that he does not doubt that on the tops of the mesas where they have their houses of stone, timber, and mud there might be many more. That he also saw some small flocks of sheep of which they were able to obtain about 50 head and then continued their journey through the province. They left it through the Pueblo of Cia [Zia], which is to the west, and that it seemed that the province had a length from east to west of about 70 leagues and a width of 30 leagues from north to south. That said province has no river that can irrigate the lands which they plant in seasonal crops. The witness says that in the month of October 1716, he entered a second time with the captain of the presidial company, Christobal de la Arna, with 40 soldiers and some civilians through the town of Nemes [Jemez] of this realm, 20 leagues distant from this town owing to the many raids made by said Indians upon the Christian Indians with whom they were at war. That from the Pueblo of Nemes [Jemez] to the border of the province where they entered

there must be about 15 leagues of uninhabited land with many mesas and canyons, without rivers, with some small springs of running water and pools of fresh running water. And though during this occasion more than 400 men entered they never lacked water to drink. That they penetrated into the province about 20 leagues to a spot called "Los Peñolitos" where they had a battle with the pagan Indians, that they killed six and took from them about 200 head of sheep. That he saw some Indians in flight over the mesas and that he returned through the same spot which they had entered. That in all the country of the province they raise much corn, beans, pumpkins, and watermelons, all seasonal. And that since he has known them at peace which is 29 years they have done no harm to this realm. That they are very tame Indians and peaceful, that they make much woolen cloth (2) of black wool, and basketry (3), with which they trade with the Christian Indians of the realm. And he says that in the time of 43 years since he settled in this kingdom they have not lacked food except during 2 years because it did not rain as it happened all over the realm (15). That is all he knows.

[NINTH WITNESS]:

Santa Fee, March 4, 1745. Testimony of Juan Jose Moreno, native of the kingdom of Castile, resident of this town. He said:

That in the month of September 1743, he set out from this town with some citizens and an escort of soldiers by permission of Governor Mendoza at the pleading of a Christian Apache Indian named Luis who told them stories of a mountain of virgin silver which existed in the Navajo province, but which proved untrue. From this town they went to a place called Aviqui [Abiquiu] inhabited by Spaniards of this kingdom and 15 leagues from this town. From that place they went on a straight line due west to that province. That it took them 10 days to reach its borders. In which district they found six middle-sized rivers and some without fords because of their very boxed-in nature by numerous mesas, and they also found a tank of fresh rain water and all the country was uninhabited. That they penetrated the province about 25 leagues to the south more or less. In which country they found some small springs of running water with ponds of rain water and many valleys, in which the Indians plant corn, beans, pumpkins, and watermelons as seasonal crops. The said Indians live on the tops of the mesas to protect themselves against the pagan Yutas [Ute] who make war on them, and their houses are of stone, wood, and mud. That they saw about 250 Indians among men, women, and children. That they went out to meet said Spaniards. That they gave

them a warm welcome. That he knows them to be very peaceful Indians and domestic [tame]. That they took them [the Spaniards] to the rancherias and fed them with much affection. That in conversation with the Indians the Spaniards were asked by the former why they had gone to those places because they had never seen similar people. To which the reply was made that the Indian Luis was taking them to show them a mountain of virgin silver that he said was in that province or its vicinity. To which the pagan Indians replied that there was no such silver nor did they have any information that there was any. As in truth all that Luis had told them turned out false. And the witness says that according to the little knowledge he has of mines, in all the country that he traveled in that province he saw no trace of minerals. That he left the province with the other people and two Navajo Indians who volunteered to show them the way out. That he also saw some small flocks of sheep in the province, also some horses that they have. That it is some 22 years that he knows that they have been at peace with those in this kingdom during which time they have made no raids. That they weave woolen cloth (2) and some of cotton [probably traded] (16) and make baskets (3) from small shrubs all of which they use to trade with the Spaniards and Indians of this realm for other articles which are given to them. That he has heard it said that the province has a length of 60 leagues from north to west and a width of 25 leagues more or less. That he has also heard it said that there must be about 3,000 Indians in that province among men, women, and children, more or less. That is all he knows.

[TENTH WITNESS] :

Santa Fee. Testimony of Alfonzo Rael de Aguilar, resident of this town. He said :

That on three different occasions he has entered the Navajo province. The first was at the time of Governor Don Juan Flores [1712-1715]. That they set out from this town with about 500 men between soldiers, civilians, and Indians. That they made the expedition into the province through the Pueblo of Nemes [Jemez] in this kingdom about 24 leagues distant from this town. From which place all those people entered the Navajo province because those Indians were making war on those of this kingdom. That they penetrated said province about 30 leagues, in which territory he saw no rivers, only some seepages of rain water. That said country is all mesas and valleys in which the Indians plant their seasonal crops of corn, beans, pumpkins, and watermelons. He said that they raise large crops of those products.

That he saw about 150 Indians more or less. That they killed and captured some of them and that they took from them about 300 head of sheep. And that their ranches are composed of this kind of stock. That said Indians live in the valleys when the Yutas [Ute] do not make war on them, and that when they are hard pressed in these places they live on the tops of the mesas where they have their dwellings. That he left the country with the rest of the expedition through the place named "La Piedra Alumbre" (11) some 18 leagues from this town. And that in the country he traversed in that province he saw no rivers, but he has only heard tell of a river, which they call Grande [San Juan River] (8), near it. That said province must have a length from west to north some 70 leagues and width from east to south of some 40 leagues. And that it seems to him that the last two expeditions he made in the time of the same Governor Don Juan Flores Mogollon [1712-1715]. That from that time to this he has known those Indians to be at peace. And that they have made no raids on the realm. On the other hand he has known them to be very docile and tame Indians and who have much affection for the Spaniards. That to the latter and to the Indians of the realm they sell them woolen cloth (2) and basketry (3) which they make in their province, they also bring some buckskins that they barter all those for other things that are given them. That he knows no more.

[ELEVENTH WITNESS]:

Santa Fee, March 4, 1745. Testimony of Juan Bigil, Spaniard, resident of this town. He said:

That at the time of the governorships of Don Juan Flores and Don Phelis [Feliz] Martinex [1712-1717] he entered the province of the Navajos with some citizens, soldiers, and Indians of the realm owing to the Navajos being at war. The first expedition being made through the place called "La Piedra Alumbre" (11), that is 18 leagues from this town, from which place to the province there are 15 leagues of uninhabited country without a river but some water holes of rain water. That he penetrated that province almost 30 leagues to the westward. Wooded country with many gullies without any rivers but with some pools of running water in which valleys the Indians plant corn, beans, pumpkins, and watermelons as seasonal crops, and that in most of the mesas there were many Indians dwelling. And that he saw some small flocks of sheep. That said Indians live in the tops of the mesas in their small houses of timber, stone, and mud because the Yutas [Ute] make war on them. That they came out through the same place that they entered. That he does not know or heard

tell of that there is any river in said province except one called Rio Grande [San Juan River] (8) at some distance from it. That from west to east it may be some 40 leagues and from north to south about 15. And that in all the province there may be some 4,000 Indians more or less among men, women, and children. That the second time he entered was through the town of Nemes [Jemez] which is to the west and that on this occasion they penetrated the province about 40 leagues. Which country is wooded and with many canyons where they plant as has been told above. And that they killed and captured some Indians and sheep. And that the Navajos have some horses although only a few that they are unable to feed them because of the war made upon [them] by the pagan Yutas [Ute]. And that he and the rest left the province through the place which they had entered. He knows because he has seen it that since the year 1722 they have been at peace with the inhabitants of the kingdom, and he holds them to be docile and domestic. That the men dress in buckskins and the women in cloth of wool (2) which they make in their country, and also basketry (3) which are brought to trade with the Christians of this realm. That all he has said is public and well known in this kingdom. He said he is 54 years old.

[TWELFTH WITNESS]:

Santa Fee, March 6, 1745. Testimony of Antonio Tafoia, resident of this town and ensign of the royal presidio. He said:

That owing to the fact that the Navajo Indians were at war, he and some civilians, soldiers, and Indians to the number of 400 had entered on this expedition through the mountain called "De los Grullas" [the sandhill cranes] (17) to the north distant from this town some 30 leagues. That they penetrated it some 18 leagues more or less. In which distance they found a medium-sized river, and some small springs of running water and some pools. That it is all a land of mesas and canyons in which the Indians plant their corn, beans, pumpkins, and watermelons. That it seemed to him to be dry soil and sterile. That they encountered some small ranches on the tops of the mesas. That at different times he saw on the tops about 500 Indians between men, women, and children. That the Christian Indians of those of the expedition from this realm killed an Indian. And that said Navajos fled to the mountains. Whereupon all the members of the expedition returned to this town through the place known as "el cerro de los pedernales" (18) [the mountain of the flints] near the town of Aviquiu [Abiquiu], which is a Spanish town

of this realm about 2 leagues distant from the former place. That the second time he entered the province was in the time of Governor Chacon [1707-1712] because the Indians were also at war. And on said occasion there were about 500 men among civilians, soldiers, and Indians, which expedition was made through the place called "La Piedra Alumbre" (11), 18 leagues from this town. Where they saw some 25 Navajos and following them they killed about 10 or 12 and the rest got away fleeing to the mountains. That they encountered two medium-sized rivers before reaching the province. That they penetrated it about 25 leagues. That they have their habitations on the tops of the mountains to protect themselves from the pagan Yutas [Ute] Indians who war against them. That he saw a small flock of sheep having heard it said that they have such stock in many parts of the province, that there may be in it some 4,000 Indians between men, women, and children. That its length is about 70 leagues west to north and about 30 from east to south. That it is about 30 years that he knows the Navajo to be at peace during which time they have not made a raid into this realm. That they are tame and quiet. That they came out of the province through the same spot they entered it. That those Indians and their women dress the same as those of this realm, and that they weave cloth of black wool (2) and basketry (3), with which they come to trade with the Christian Indians for other things that the latter give them. And that the above is what he knows.

APPENDIX

1. Santa Rosa de Lima is located 2 miles below Abiquiu, N. Mex., on the right bank of the Chama River. (See Hibben, Frank C., Excavation of the Riana ruin and Chama Valley survey. Univ. New Mexico Bull., Anthropol. Ser., vol. 2, No. 1, p. 11, 1937.)

2. As far as I am aware, this is the earliest (1706-1743) group of references to weaving among the Navaho. Charles Amsden (Navaho weaving, p. 130, Fine Arts Press, Santa Ana, Calif., 1934) gave 1780 as the earliest historic reference which was available at the time he wrote. However, he was aware of the existence of the present manuscript (Amsden, *ibid.*, p. 130, note 11) and correctly infers that it contains an earlier dating.

3. The word "jicaxa" or "jicara" (translated "basket" in this paper) has had several different connotations at different periods during the Spanish occupation of the New World; for example, "basket," "gourd," or "pottery." Dr. L. B. Kiddle, of Princeton University, who has done considerable research on Spanish provincialisms in New Mexico, has carefully checked the literature for the meaning of this word during the period under discussion. He assures me that the correct translation is "basket." This is further substantiated by the fact that the Pueblos have always been superior potters and agriculturists and would not find it necessary to augment their supply of pots or gourds through trade.

4. The word "lemitas" in the manuscript probably refers to *Rhus trilobata* or possibly *Schmaltzia bakeri*. Both were known by this name and both were utilized by the Navaho in the manufacture of baskets. This is added substantiation for the translation of jicara as "basket" rather than "gourd" or "pottery."

5. This corrects a statement made by me as to the warfare between the Navaho and the Utes, Comanche, and Mexicans. (See Hill, W. W., Navaho warfare, Yale Univ. Publ. Anthropol., No. 5, 1936.)

6. This is not the present Chama but a village of that name, now in ruins, located on the north side of the Chama River, a little downstream from the point where El Rito Creek joins the Chama.

7. These three streams form the headwaters of the Chama, Nutrias Creek from the north, Gallinas Creek from the northwest, and Coyote Creek from the west.

8. The San Juan River was known during this period as the Rio Grande de Navajo. Manuscript references to the Rio Grande refer to the San Juan River, not the Rio Grande to the east and south.

9. The Santa Cruz del Ojo Caliente referred to in the manuscript is probably the present town of Ojo Caliente, located on Ojo Caliente Creek.

10. The word "cuescomates" is from the Aztec cuexcomates, "corn bins." For a description of this type of storage pit among the Navaho, see Hill, W. W., *The agricultural and hunting methods of the Navaho Indians*, Yale Univ. Publ. Anthropol., No. 18, pp. 43-45, 1938.

11. The Piedra Alumbre Grant lies on either side of the Chama River beginning about 10 miles northwest of the town of Abiquiu, N. Mex. The Piedra Alumbre proper is at the point where the Rio Puerco enters the Chama River.

12. The present town of Santa Cruz, N. Mex., is located about 20 miles north of Santa Fe.

13. For a description of wooden farming implements of the Navaho, see Hill, *op. cit.*, pp. 32, 35-36.

14. This probably refers to the Comanche, but it may refer to one of the Ute bands.

15. The droughts referred to are probably those that were general to the Southwest between the years 1727-1737. (See Douglass, A. E., *Dating Pueblo Bonito and other ruins in the Southwest*, Nat. Geogr. Soc., Contr. Techn. Pap., Pueblo Bonito Ser. No. 1, p. 49, 1935.)

16. The reference to cotton textiles in the manuscript undoubtedly refers to trade articles from the Pueblos. The Navaho do not raise cotton, were not importing cotton from the Spaniards at this time, and have always depended on outside sources for this product.

17. The De los Grullas referred to is probably the district of La Grullas in Rio Arriba County, N. Mex. (or else a part of the San Juan Mountains in Archuleta and Conejos Counties, southwestern Colorado).

18. This is the district lying about 10 miles west of the town of Abiquiu, N. Mex.

PROGRESS IN THE SOUTHWEST

BY NEIL M. JUDD

U. S. National Museum

When I joined the National Museum staff twenty-odd years ago, I was early urged to transfer my chief archeological interest from the Southwest to some more promising field. The Southwest was a closed book; one could expect to discover nothing new there; future observations would only duplicate what was already known.

The relatively short span since that advice was received has, contrary to my preceptor's prophecy, actually witnessed greater advances in Southwestern anthropology than all the years preceding. It has brought at least partial analyses of native art, society, and the ritualism which is the very hub of that society. It has seen archeological romancing replaced by methods that produce tangible facts—facts that can, so to speak, be picked up in the hand for dissection. The Basket Makers, although previously identified (and generally doubted at the time), have become real; Pueblo cultures have been traced back to their rude beginnings and the diagnostic traits of each successive stage clearly and precisely cataloged; the mystery of the Middle Gila has been partially solved, and a tree-ring calendar established that already extends backward 19 centuries, revealing not only the age of some 200 ruins but throughout that lengthy period climatic variations that undeniably influenced the prehistoric population. More, the subject of ancient man (considered elsewhere in this volume) has again come to the fore and this time under circumstances that command the respectful attention of geologists, biologists, and anthropologists alike. This recital by no means includes all important contributions of the past two decades, but one searches the earlier Southwestern literature in vain for a comparable array.

In his classic "Introduction to the Study of Southwestern Archeology," Kidder in 1924 divided the Southwest into nine prehistoric culture areas, summarized and synthesized what was then known of each, and named certain districts from which more data were needed. Four years later, reviewing the same field as a cultural anthropologist, Kroeber (1928, p. 376) suggested several problems ethnologists were best prepared to solve. To what extent have the lacunae indicated by these two leaders since been filled?

Dr. Kroeber reminds us that ethnologists and archeologists do not always mean the same thing when they use the term "Southwest"; that elements of "Southwestern" culture are to be found in California and far south in Mexico. "Southwest" is an elastic term that can be stretched four ways and often is stretched beyond its customary connotation to meet the momentary needs of the user. Political writers and economists frequently mean the entire southwestern quarter of the United States; geographically, Texans and Oklahomans like to consider their respective States as belonging. Ethnologists may have in mind the range of certain tribes, past or present, but when an archeologist refers to the Southwest, he pictures Arizona and New Mexico, most of Utah, eastern Nevada, and the southwestern corner of Colorado, northern Chihuahua and Sonora—a varied region whose boundaries are not sharply drawn but within which maize-cultivation gradually led diverse prehistoric peoples to a more or less sedentary life, to pottery manufacture, to substantial dwellings and a communal society directed by priests functioning under an elaborate set of rituals.

It has long been the custom to divide this archeological Southwest into two parts, the Plateau and the Desert. The former, spreading broadly from northeastern Nevada southeastwardly across Utah, northern Arizona, most of New Mexico, and on into Chihuahua, was the home of the prehistoric Basket Makers and Pueblos—otherwise nameless cave and mesa dwellers for whose composite culture Kidder has proposed the name "Anasazi." (Kidder, 1936, p. 590.)¹ In the middle of that vast region, occupying a constricted zone between the Rio Grande of New Mexico and the Hopi mesas in Arizona, lie twenty-odd villages housing the surviving remnant of the once considerable Pueblo population. The desert area, on the other hand, is limited to southern Arizona and adjoining portions of California and Sonora. Here dwell the modern Pima, Papago, and Yuman tribes—heirs, in part, to Kroeber's "Gila-Sonora" culture. (Kroeber, 1928, p. 379.) The ancient ruins and irrigation systems of the Gila-Salt drainage, we learn from Pima tradition, were constructed by those who departed long ago, the "Hohokam" (Russell, 1908, p. 24), a term now employed by all archeologists engaged with problems of the desert domain.

It is not our present purpose to analyze the distinctive civilizations of the Hohokam and the Anasazi or to consider all those recent investigations that have so largely increased our detailed knowledge of

¹"Anasazi" does not appear in the Franciscan Fathers' "Vocabulary of the Navaho Language," 1912, but is familiar to all who have worked in the Navaho country among remains of "the ancient ones."

the two. This has already been done, and most ably, by Roberts (1936, 1937). Rather is it our desire to look at each area from a greater distance; to ascertain, if possible, the extent to which each has been broadened and basically enriched during the past 12 or 15 years. When an archeologist thinks of these areas either as "the desert domain" or "the Hohokam province," "the plateau region" or "the Pueblo country," he has in mind both their prevailing geographical features and the dominant prehistoric culture each produced. Actually, there are desert regions in the plateau area, and vice versa. So, too, many cultural elements or traits are common to both. Nevertheless, the two remain fundamentally distinct and will be so regarded as we turn now casually to consider the progress made in each.

THE PUEBLO COUNTRY DENDROCHRONOLOGY

Few will deny that the outstanding contribution of the past decade and a half in the Southwest is dendrochronology. The "tree-ring calendar" developed by Dr. A. E. Douglass is directly applicable only in the coniferous belt of the Pueblo country, but its extension to bordering districts is frequently possible through dated pottery types distributed in trade. Annual growth rings from living forests of pines, firs, and pinyon have been combined with like rings in timbers from historic and prehistoric pueblos to form a year-by-year sequence that now reaches back to A.D. 11 and thus permits the absolute dating of any ruin the available ceiling beams of which were cut subsequently.

Compilation of the tree-ring calendar affords an excellent example of the progress that may result from cooperative effort. Half a dozen institutions and a dozen or more individuals have contributed to it. The fascinating story of how search for evidence of sunspot influence on climate eventually led to the dating of Pueblo ruins has been told by Dr. Douglass himself and often repeated by others.² But, in the rapidity with which additional ruins and additional dates have since been joined to the list, enthusiasm has tended to forget that it was the National Geographic Society which had sufficient confidence in the Douglass method to support its application to Southwestern history—from 1923 when the Society enlisted Dr. Douglass and his tree rings as a likely means of ascertaining the age of Pueblo Bonito to that joyful hour on June 22, 1929, at Showlow, Ariz., when charred beam HH-39 united the prehistoric ring series with

² Douglass, 1935. For a full bibliography, see Soc. Amer. Arch. Notebook, pp. 36-41. Ann Arbor, May 1939.

the historic and thus gave an unbroken record from 1929 back to A.D. 700. We are apt to forget, also, that one man, Earl H. Morris, has collected a majority of those ancient timbers that have since carried the tree-ring calendar to the first decade of the Christian era; that there is every reason to believe Douglass and his students will be able to extend this remarkable sequence still further as additional material is supplied.

Nowhere else in the world does archeology have at its disposal a chronology equal in accuracy to that which Douglass has created. Nowhere else will one find a record that reaches backward, year by year, through 19 centuries. Construction dates for nearly 200 Pueblo ruins have already been determined;³ cultural material from structures widely separated both in time and space may now be compared with greater assurance than heretofore. And that is not all: the 1,900 annual growth rings comprising that calendar provide an incomparable record of fluctuating rainfall. Rainfall is an index to climate; climate affects environment; fauna and flora and human beings are subject to environment. Thus the tree-ring chronology affords an unparalleled clue to natural factors influencing native society in the plateau area from Basket Maker times onward.

Pressure of nomadic groups has long been accepted as an important reason for Pueblo dispersal in pre-Spanish times, but a contributory cause may well have been environmental. It requires but little imagination to picture the disastrous effects of the great drought of 1276 to 1299 which left its mark indelibly upon forest growth throughout the Pueblo country. But lesser droughts preceded and followed the great drought. Douglass' "Estimated Ring Chronology"⁴ shows a surprising number of deficient rainfall periods between A.D. 150 and 1934. Even though its maximum effect were limited in range, each such period proved disturbing to affected native communities dependent for subsistence chiefly upon their cultivated fields and, in even greater degree, to those less settled groups who lived off the country. Climatological data made available through the tree-ring record provide a matchless approach to plateau ecology at least and to certain problems of the area that have long resisted solution. As Kroeber (1928, p. 376) pointed out 12 years ago, a fuller understanding of human ecology in the Southwest remains one of our fundamental needs. And now, with a 1,900-year rainfall record as an index to

³ Tree-Ring Bull., vols. 4-5. Tucson, 1937-1938.

⁴ Tree-Ring Bull., vol. 1, No. 4, April 1935, to vol. 5, No. 3, January 1939.

climate, it may be anticipated that environment throughout the Pueblo country henceforth will receive less speculative consideration than heretofore.

THE RISE OF ETHNOBIOLOGY

If one may judge correctly from two recent publications (Brand, 1937, pp. 1-74; Brand et al., 1937, pp. 39-65), ecology is definitely on the research program of the lusty young department of anthropology at the University of New Mexico. In addition, the University's department of biology has inaugurated a series of ethnobiological studies planned to cover all approachable tribes heretofore neglected in New Mexico and Arizona. (Casterter, 1935; Casterter et al., 1935, 1936, 1937, 1938; Bell and Casterter, 1937.) Although a lengthy bibliography on southwestern ethnobotany has accumulated with the years, in most instances the observations reported have been limited to a single species or to a restricted tribal group. The studies now under way promise to be more comprehensive, to include animals as well as plants, with comparative data drawn from neighboring peoples. So conceived, the studies should fill a long-felt need, but anthropologists will wish the authors of the bulletins already issued had gone just a trifle farther and given more details on methods of preparation, the tools and utensils employed.

In less degree this same mild criticism may be offered of Whiting's "Ethnobotany of the Hopi," recently published by the Museum of Northern Arizona. (Whiting, 1939.)⁵ Here the data are first presented under various categories—wild plants used as food, Hopi medicinal plants, plant symbols in social and ceremonial life, etc.—followed by an annotated list with Hopi names and uses, if known, an arrangement that makes for ready reference. The evaluation of previously collected data, notes on acquisition of foreign seeds, ceremonial and clan associations, etc., are particularly illuminating, but again the assemblage falls just short of completeness. A single example will illustrate: Tansy mustard, *Sophia pinnata* (Walt.) Howell (Whiting, 1939, p. 77) is used "in the preparation of pottery paint" and is "eaten as greens in the spring." A few additional words would have told us the time of year the plant was gathered for paint and the manner of preparation, preservation, and use. Greens are generally boiled, but do the Hopi utilize the leaves only or the young stalks also?

Perhaps we are asking too much. Botanists will contend that it is enough to identify the flora; that it is the ethnologist's task to ob-

⁵ For additional Hopi recipes and notes on wild foods no longer served, see Beaglehole, 1937, pp. 60-72.

tain information on collection, preparation, and usage. To be sure, an ethnologist will think of innumerable questions to ask his informant—questions that might not occur to a plant specialist. Therefore, when we find combined in one individual an interest in both ethnology and botany, we must conspire to keep that individual working overtime.

The present writer is not alone in his conviction that medicine and horticulture, no less than anthropology, can still profit from more intimate knowledge of Indian plants and plant products. We scarcely need to remind ourselves that cocaine, quinine, tobacco, and rubber are now prized far beyond the borders of the Western Hemisphere; that certain native American foods—maize, potatoes, tomatoes, pumpkins, peanuts, and beans of several varieties—have become staples the world over. All these and more have been adopted from the American Indian, and possibilities are not exhausted by any means. A dozen tribes could name instantly local greens that would prove a fitting substitute for broccoli.

Many ethnologists have given at least passing thought to this subject. Scattered through the literature are numerous references to native foods, present and past—data that, if brought together, doubtless would form a very respectable body of information. But most such references are plainly casual gleanings quite incidental to researches in which the recorder was more interested at the time. American Indian foods and their preparation offers a theme on which a dozen investigators could find employment. And here, as in the case of so many other phases of native life, opportunity is rapidly escaping with passing of the older generation.

The Bureau of Chemistry and Soils, United States Department of Agriculture, in connection with an investigation of carbohydrates, listed 1,112 species of plants used for food by Indians of Canada and the United States. (Yanovsky, 1936, p. 2.) Ethnobotanists have given less attention to medicinal plants, but it is not beyond reason to believe that among all those known and employed by native medicine men more than one genus can be found, the curative properties of which warrant a place in our pharmacopoeias.

Several years ago when I was engaged with researches for the National Geographic Society at Pueblo Bonito, one of our Zuni workmen passed my tent door with a conqueror's grin on his face and a bunch of small yellow flowers in his hand. It was Sunday afternoon, and in response to my inquiry the Zuni said he was going down canyon a few miles to a Navaho camp where a roasting-ear party was scheduled; that the yellow flowers, sprinkled over the corn, would enable him to consume all he wanted to eat without getting sick. By next

day I had quite forgotten my intention to climb the north cliff with him for a herbarium specimen—and thereby lost a priceless boon to all peoples who have learned the epicurean delights of that peculiarly American Indian dish, roasting ears.

To my personal knowledge at least three beginnings have been made in the past 20 years to catalog Navaho economic plants. In each case failure was due to individual or institutional unpreparedness, or a combination of both. Nevertheless, the possible commercial benefits to be reaped from knowledge of Navaho medicinal herbs alone, to say nothing of those known to other tribes, seem sufficiently promising to warrant inauguration of a definite and prolonged ethnobotanical program in the Southwest. Approached by an institution whose personnel is competent to organize and further such a program, one of our manufacturing pharmacists or medical associations might conceivably support such a program. Because attempts to awaken the necessary interest in Washington have proved unavailing, it is especially gratifying to this writer to learn that progress actually is being made elsewhere.

NEW DATA ON THE ANASAZI

Getting back to archeology, we note that at least a modicum of light has been turned on that obscure chapter, Pueblo II, since Kidder called attention to the deficiency 15 years ago. (Kidder, 1924, p. 124.) Most of the new data come from the San Francisco Mountains district and are contributed by the Museum of Northern Arizona. (Harrington, 1930, 1933; Colton, 1933; Bartlett, 1934.) Others derive from the work of Harrington and Hayden in southeastern Nevada (Harrington, 1927; Hayden, 1930); of Martin in southwestern Colorado (Martin, et al., 1938); of Morss in the Navaho Mountain section of Arizona and, possibly, in the Fremont River drainage, Utah (Morss, 1931a, 1931b). But the range of this culture phase, and its local variations, are not yet under the thumb.

While these researches were in progress, ruins both earlier and later than Pueblo II received additional attention, each contributing to our rapidly pyramiding knowledge of the Anasazi. There is no need to cite all the informative reports resulting from these studies and space is lacking herein to comment upon them individually. However, students interested in the earlier phases will do well to consult Morris (1927) on the beginnings of pottery manufacture in the San Juan area; Martin (1939) on Late Basket Maker sites in southwestern Colorado; Guernsey (1931) on Basket Maker and Pueblo cultures of the Kayenta district, northeastern Arizona; Roberts (1929,

1930, 1931, 1939) on Late Basket Maker and Early Pueblo remains in New Mexico, Colorado, and Arizona. Ruins of the Pueblo III horizon have been considered by Bradfield (1929), the Cosgroves (1932), Martin (1936), Morris (1924, 1928), Roberts (1931, 1932, 1939), and others. Small-house Pueblo III ruins in Chaco Canyon have been studied by Brand (1937) and Dutton (1938). Pueblo IV sites and those of the early historic period likewise have been under investigation. Kidder (1931, 1932, 1936) has continued his monumental report on the excavations at Pecos; Haury (1934) has described what was probably the last cliff dwelling built (1326-1348) in the Sierra Anchas of eastern Arizona; Brew (1937) has summarized the results of his first two seasons at Awatovi, a Hopi village abandoned in 1700; Reiter (1938) has reported upon work done at the Jemez pueblo of Unshagi.

Out of this veritable avalanche of new data, covering the whole range of Basket Maker-Pueblo history, a number of interesting and most illuminating factors emerge. And none is more illuminating, more interesting, than this: once fairly under way, Pueblo culture advanced with astounding rapidity but without geographic uniformity. There was a forward rush in some quarters, retardation in others. Progress was not as smooth and regular as it seemed when the Pecos conference of 1927 (Kidder, 1927) sought to delimit the successive stages of Pueblo civilization and mark the distinguishing characteristics of each.

In southwestern Colorado Roberts has excavated three kinds of Pueblo I dwellings, the earliest of which developed directly out of the Basket Maker pit house and the latest of which was the immediate precursor of the Pueblo II unit-type surface dwelling. (Roberts, 1930, p. 165.) His findings are closely paralleled by those of Martin, who postulates construction dates between A.D. 800 and 1000 for the Pueblo I and Pueblo II structures he cleared in the Ackmen-Lowry area. (Martin et al., 1938, pp. 293-295.)⁶ In the Whitewater district, south of Allantown in east-central Arizona, Roberts laid bare 20 Pueblo I pit houses and 3 Pueblo II ruins with their associated kivas. These he combines in a single division, the Developmental

⁶ Just as this volume is going to press there appears that long-awaited report on "Archaeological Studies in the La Plata District," by Earl H. Morris, with an appendix on the "Technology of La Plata Pottery," by Anna O. Shepard, Publ. No. 519, Carnegie Inst. Washington, 1939. In his introduction, a masterly review of the archeology of the San Juan area, Morris expresses doubt as to the existence there of the Pueblo II phase; the body of his report covers researches of 1915-1930 in Basket Maker and Pueblo ruins representing various periods.

Pueblo, which locally lasted about 200 years. Charred timbers gave building dates of A.D. 814 for one of the pit houses; 1014 for one of the unit-type structures. "During the span of two centuries the domicile changed completely from a simple pit dwelling and associated granaries to an above-ground house and associated ceremonial chamber." (Roberts, 1939, pp. 258-259.)

In reviewing his data, Roberts (*ibid.*, p. 263) draws comparisons with dated ruins in two other areas. He finds both Pueblo I and Pueblo III cultures of the Whitewater region lagging a generation or more behind those of Chaco Canyon, less than 100 miles to the northeast. "In the Chaco Canyon both architecture and ceramics were much farther along by 921 than they were in this [Whitewater] district. Pueblo Bonito had been started and types of pottery had appeared that were still unknown in the vicinity of Allantown." He sees a southward flow of Chaco influence, slow at first; more rapid in Pueblo III times.

Evidence of cultural retardation such as Roberts pictures has been accumulating in recent years. It bothers some students, seems perfectly understandable to others. On the basis of their extensive observations, Colton and Hargrave (1937, p. xiii) believe the Pueblo peoples of northern Arizona lagged a full hundred years behind those of northern New Mexico prior to A.D. 1200. But what shall we do when two peoples, culturally unequal, occupy the same village contemporaneously? As I study the data we gathered at Pueblo Bonito a decade ago—data that, to my constant embarrassment, are not yet quite ready for publication—it becomes increasingly manifest that here we have a Pueblo II group living in juxtaposition with, and only slightly influenced by, that more advanced people who elevated Pueblo Bonito to the very pinnacle of Pueblo III achievement.

Just as a single swallow leaves something wanting in a summer, so one or two traits do not comprise a culture. We speak readily enough of "Pueblo II," for example, and most of our coworkers know in general what we mean. But some of us may have in mind a given bracket of years, while others are thinking solely of pottery ornamentation, houses of a certain architectural style, sandals, basketry, or a number of other items by which Pueblo evolution is commonly measured. And now, just as everything seemed so well ordered, we learn with dismay that our yardstick and our time chart may not be used quite so finally as we had thought when they were first devised; that a given Pueblo complex in one district may be considerably earlier, or later, than the same cultural stage only a few days' foot journey distant.

THE NORTHERN PERIPHERY

And then there is the persistent problem of the Northern Periphery! Steward, who has lately given more attention to this field than any other student, sees infiltration from the east and south. "Cultures chronologically distinct in the San Juan have here become blended. This indicates that, as the Basket Maker cultures of the San Juan diffused into western Utah, they were overtaken by Pueblo traits with which they blended to form the complexes typical of the regions herein described." (Steward, 1936, p. 58.)

Both Basket Maker and Pueblo groups actually resided north and west of the Rio Colorado. But whether these two peoples were sole inhabitants of the region in their day and whether they entered only from the southeast are, I believe, moot questions still. Several of the traits Steward advances in support of his theory might, with equal logic, indicate emigration or diffusion of ideas from the north. Cave du Pont, near Kanab, sheltered an uncontaminated Basket Maker II culture apparently contemporaneous with that of the classic Grand Gulch and Marsh Pass districts. (Nusbaum, 1922, pp. 19, 65.) Basket Maker artifacts in association with culturally later material have been reported from various sites between Mount Trumbull and the Fremont. (Judd, 1926; Morss, 1931b.) But only in that limited area from the Grand Canyon north to the Utah line, or shortly beyond, do known Basket Maker and Pueblo remains generally agree with San Juan standards. So far as I am aware, nothing distinctly and peculiarly Basket Maker has been noted outside the Colorado drainage except, perhaps, the painted zoomorphs in Cave 1, on Promontory Point. (Steward, 1937, p. 87.)

In western Utah prehistoric habitations become progressively less Puebloan as one journeys north and west from the Rio Colorado. At Willard, on the northeastern shore of Great Salt Lake, the present writer in 1915 laid bare most of the floor of a circular earth lodge; at the same site in 1932 Steward partially exposed a square lodge superimposed by a rectangular, adobe-walled house, northernmost known example of its kind. From Willard to Payson, in Utah Valley, all primitive dwellings thus far reported appear to be identical with the two cited above—square or circular earth-covered lodges with floor slightly below ground level. Comparable structures occur infrequently south of Payson in direct association with the rectangular adobe-walled houses prevailing there. Squarish and circular adobe buildings, presumably ceremonial, exist at Kanosh, Beaver, and Paragonah; nearer the Arizona border, where sandstone becomes avail-

able for construction purposes, there is a closer approach to the San Juan type of kiva. (Judd, 1926; Steward, 1933a, 1933b, 1936.)

So, too, with pottery. It improves in paste, workmanship, and ornamentation as one travels south from Great Salt Lake. Steward's strange "Promontory ware" is unlike that from the northern earth lodges and is thought to be later, although it was present in the Benson mound at Provo. (Steward, 1933a, p. 17; 1937, p. 43. But see Steward, herein, pp. 445-502.) In the lodges, wide-mouthed, flaring-rimmed, semipolished, plain-ware pots predominate; external use of "fugitive red" is common, but other decoration, if any, occurs chiefly on pitchers or handled jars and is limited to "punched" or "stick impressed" scorings, bosses, and applique "coffee bean" bands and fillets at neck base or on shoulder. These elements appear also, but with decreasing frequency, in adobe-walled houses as far south as Paragonah. Bowls are rare in the earth lodges around Great Salt Lake but south therefrom increase in proportion directly with distance. Most of them are painted inside. Their paint and slip are best described as "black-on-gray," but the slip becomes whiter and the black, blacker as one nears the Arizona line. (Judd, 1926, p. 143-145; Steward, 1936, pp. 5-18.) Slipped and painted ollas have been reported only from the extreme southern part of the area.

During the writer's reconnaissance of western Utah, 1915-1920, fragments of banded-neck cook pots were not found north of the Arizona border; no fragment of Pueblo II "exuberant" coiling was seen anywhere in the region. Nusbaum recovered a few sherds of unfired, Basket Maker II pseudo-pottery from Cave du Pont.⁷ The circular, slab-lined, pole-and-mud structures of neighboring Cottonwood Canyon have a marked Pueblo I appearance, although their associated artifacts seem identical with those from the overlying masonry houses. Some of the pottery gathered near St. George by Palmer and figured by Holmes (1886) likewise bears the earmarks of Pueblo I, whereas the remainder would be placed by most archeologists in the next following phase. Here, too, overlooking the Grand Canyon and at least as far north as Nine Mile Canyon, one finds occasional sherds of Proto-Kayenta black-on-white and polychrome—wares which on the opposite side of the Colorado are Pueblo III products. (Judd, 1926, pp. 135, 145; Morss, 1931a, pp. 5-10; 1931b, p. 32.)

Corrugated vessels of exceptionally fine quality are common in the Beaver-Paragonah district, but their numbers decrease rapidly with

⁷ Kidder and Guernsey in Nusbaum, 1922, p. 138.

distance north from this center. Considered alone, these pots might properly be classed as Pueblo III, but their accompanying painted ware is largely limited to bowls—bowls ornamented, if at all, with typical Pueblo II designs. Although a few bowls and fragments and still fewer sherds of corrugated pots have been found in the northern earth lodges, a larger representation of wares characteristic of those lodges has been recovered from adobe-walled dwellings in Utah Valley as far south as Paragonah. (Judd, 1926, pp. 143-145; Steward, 1936, pp. 5-17.) Paragonah is also the approximate southern limit of the so-called "Utah type" metate which occurs most frequently around Great Salt Lake and which Steward, I think erroneously, derives from the unshaped Basket Maker mill. (Steward, 1936, p. 59.)⁸

The Northern Periphery is by no means a closed book. Its several anomalies invite further, more intensive study. On the basis of culture traits, Steward (1933b) divides the area into four parts and presents his data in a clear, persuasive manner. There are those, however, who will remain unconvinced by his analyses that all Basket Maker and Pueblo influences noted beyond the Colorado were drawn from the San Juan. For one thing, the theory of northwestward diffusion does not account for the general absence throughout the Northern Periphery of those economically desirable and easily transportable traits that partially identify Pueblo I-II in the San Juan area—sandals, cotton cloth, domesticated turkeys, grooved axes, banded-neck pots, scoop ladles, canteens, etc.

Occupants of the Great Salt Lake earth lodges practiced farming (witness their dressed, specialized metate), although they had little else to connect them directly with the orthodox Pueblos. Although an affinity is indicated between these lodge dwellers and those of the Uintah Basin pit houses (Steward, 1933a, 1936), kinship with builders of the clustered adobe dwellings throughout west-central Utah is undeniable. There are obviously close cultural and time relationships between the Beaver-Paragonah villages and those of Moapa Valley, southeastern Nevada (Harrington, 1927; Hayden, 1930), and the Beaver-Paragonah civilization seems more or less contemporaneous with the distinctive, houseless Fremont culture even though the latter

⁸ San Juan Basket Maker metates are casual stone slabs, thick or thin, and sometimes with a projecting "platform" at the upper end of the troughed, open-end grinding surface. The three Utah type metates in the National Museum are purposely shaped; only one is troughed and that shallowly. Of those seen at Willard in 1915, 75 percent were of this type (Judd, 1926, p. 145), but we have no note as to what proportion was troughed or what the other 25 percent looked like. Kidder's Moab specimen was slightly troughed; it was deeply worn except at the lower edge.

“remained at the Basket-maker III level” (Morss, 1931b, p. 77). This strange situation involves something besides diffusion.

Utah is bisected by the Wasatch Mountains; the eastern half, by the Colorado and Green Rivers. These rather formidable barriers doubtless proved to be factors in the migration of primitive peoples; they might account, at least in part, for local developments and cultural lags. Steward's researches suggest essentially different trait complexes east and west of the Wasatch; future studies should show whether these differences are real. It remains to be seen whether trait complexes do not extend north-south between mountain ranges rather than east-west across them. Ideas may be borrowed and artifacts traded, but Pueblo migrations, according to their own legends as recorded, always tended toward the south or east; never in the opposite direction for any appreciable distance. Skeletal remains from the Northern Periphery are notably few. A majority of known skulls are occipitally deformed, but undeformed longheads are reported from the Great Salt Lake earth lodges as well as from the southern Basket Maker zone. (Judd, 1926, p. 150; Steward, 1933b, p. 15; 1936, p. 55.)

THE EASTERN PERIPHERY

The Eastern Periphery likewise has been under the microscope. In 1924 Kidder called attention to the almost complete lack of information regarding Pueblo remains east of the Rio Grande. (Kidder, 1924, p. 87.) Since then the Laboratory of Anthropology at Santa Fe has extended its sherd survey into southeastern New Mexico; interested individuals and organizations of western Texas have undertaken investigations on their side of the border. Although the published results in several instances exhibit unfamiliarity with the distinguishing characteristics of Pueblo culture and chronology and an unwarranted use of western terms in describing eastern traits, they nevertheless show that a few venturesome New Mexican aborigines crossed into Texas in pre-Spanish times.

Three districts only are of interest in connection with this review: The Big Bend region, El Paso, and the Panhandle. In summarizing his own work and that of other investigators in the same field, Setzler (1935, p. 110) concluded that the Big Bend harbored an isolated group whose culture probably stemmed from northern Mexico and, despite certain parallels, was only remotely related to the classic Basket Maker of the San Juan country. Subsequently, the finding of El Paso and other pottery types in caves of southwestern Texas and southeastern New Mexico provided more precise time criteria by establishing the

period of occupancy at from some time prior to A.D. 1300 to about 1600. (Jackson, 1937; Mera, 1938b.) Racial intermixture is also indicated. The El Paso district was occupied by an agricultural people, living in one-story adobe houses, directly related to those Pueblo immigrants who followed the Rio Grande south as far as northern Chihuahua in late protohistoric times.

Along the Canadian River, in the Texas Panhandle, are numerous house remains formerly thought to mark an eastward extension of Pueblo civilization. However, recent studies by Holden and others have identified these as Plains Indian dwellings inhabited during the fourteenth and fifteenth centuries, the interval being determined by the presence of trade wares from dated ruins in New Mexico. Pueblo Indians probably frequented the same localities on periodic buffalo hunts. (Holden, 1931, 1933.) Holden's conclusions find confirmation in Sayles' survey of Texas prehistory and in Jackson's analysis of Indian pictographs and paintings throughout the State. (Sayles, 1935, p. 119; Jackson, 1938, p. 463.) Researches will doubtless continue in this area and more data will be accumulated, but it now appears the Pueblo ghosts of the Eastern Periphery have finally been laid to rest.

THE TERMINOLOGY PROBLEM

There are those who may feel I should have included herein as a milestone of progress the efforts of Colton, Hargrave, Gladwin, and others to bring order into our study of Southwestern pottery through a classification based on the biological system. But it seems to me those efforts have actually added to, rather than lessened, the taxonomic confusion that has been gathering about us of late. Despite craft conservatism, Pueblo potters are individualists; personal habits and preferences appear in their methods of shaping, decorating, and firing pottery. Their paste and paint are not always exactly the same; they measure with cupped hands, judge consistency by taste or feel—as competent students of modern Pueblo art have repeatedly observed. (Guthe, 1925; Bunzel, 1929; Chapman, 1936; Mera, 1937, and others.) Form, finish, and, most of all, decoration are the diagnostic criteria that really distinguish the wares of one district or period from those of another. By magnifying minor variations in a few small fragments gleaned from the surface at one site we risk elevating the products of a single potter, or even parts of a single vessel, into one or more "types." We must not lose sight of the pot for the potsherds!

Between the casual terminology of a half century ago and the present tendency to emphasize minutiae in description there must be

a happy medium. The materials employed in pottery manufacture are significant, and now that we know that these materials were not always derived from local sources the problem of classification becomes larger and more complex. Miss Shepard's technological studies on Pecos pottery have proved that ingredients as well as completed vessels were transported greater distances than has heretofore been suspected. (Shepard, 1936.) Her methods of analysis are unparalleled examples of precision and thoroughness, but, unfortunately, they require such special training and equipment that they will not be available to all those interested. Nevertheless, any method less precise than hers requires too much faith in the infallibility of the human eye.

THE DESERT PROVINCE

THE HOHOKAM

When Kidder published his "Introduction" in 1924, southern Arizona, domain of the prehistoric Hohokam, was the least known major archeological area in the Southwest. Three years later Mr. and Mrs. Harold S. Gladwin adopted this area as their own and undertook to solve its many perplexing problems; in 1928 they founded Gila Pueblo, at Globe, as a research laboratory and base for operations. Since then the incredibly energetic directors and staff of Gila Pueblo have collected and studied sherd samples from approximately 10,000 sites and have published the results of their investigations in 25 Medallion Papers. Latest of the series, "Excavations at Snake-town," (Harold S. Gladwin et al., 1937) although primarily concerned with a single village, nevertheless embodies all the data previously assembled. Hohokam civilization is traced through 4 periods, divided into 10 phases of which 7 are represented at Snaketown. The beginnings of that civilization are still veiled in uncertainty, and nothing is positively known of it after A.D. 1400. The modern Pima, occupants of the Hohokam country since 1530, may be, in part at least, descendants of the old people.

With this latter deduction ethnologists are not in complete accord. But Gladwin and his associates display for examination all the tangible Hohokam traits, from the earliest phase of the Pioneer Period to the close of the Classic. Data are drawn from the entire Hohokam area, and comparisons are made with other culture complexes. If emphasis is placed upon architecture and ceramics, it is because these two have elsewhere proved to be dependable gages. Sequential variations in house type and the sherds found with house remains are admirably illustrated and described. Since datable timbers are lacking in the

Gila Valley, its ruins have been correlated with those of the Anasazi Province by means of pottery. Thus when fragments of foreign vessels found in certain levels at Snaketown prove to be comparable with sherds from Pueblo I and II ruins of the Flagstaff area, charred beams of which gave tree-ring dates between A.D. 700 and 1100, the period of those intrusive fragments is clearly indicated. Most ably presented, the evidence for the seven Snaketown phases seems indisputable, but all archeologists will not readily acquiesce in the authors' deduced early settlement of the site nor its postulated life span of 1,400 years.

A conspicuous feature at Snaketown was an oval ball court enclosed by sloping walls. A second court, smaller than the first, lay on the other side of the village. Haury (*in* Harold S. Gladwin et al., 1937, pp. 36-49) describes the excavation of these two gaming fields, their individual features, the manner in which each was correlated with local history by means of potsherds, and then discusses their relationship to ball courts of Mexico and Middle America. That the game was introduced from the south there can be no doubt; that it proved extremely popular among the Hohokam is evident from the fact "several score" courts have since been recognized throughout southern Arizona.

A game in which a rubber ball is employed, and unquestionably descended from the Maya and Aztec ball game, still survives among Indian tribes of northern Mexico. F. E. Lloyd (1911, p. 5) notes that Capt. W. H. Stayton, U.S.N., ashore off the Gulf of California, observed Yaqui Indians "playing a game with a ball about twice the diameter of a baseball. The game consisted in throwing the ball from hip to hip." South of the Yaqui country James H. Kempton and party on September 28, 1923, witnessed an impromptu game in the village of Mocerito, Sinaloa. A long, narrow field divided transversely was marked off in the plaza; there were four players on each side; the solid rubber ball, about 3 inches in diameter, was struck sometimes by the hip but usually by the bandanna-bound upper arm. Hit in this latter manner, the ball frequently was propelled 40 or 50 yards. To preserve its symmetry between games, the ball was kept in a two-piece wooden mold.⁹

Seven ball courts corresponding to the second and later type exposed at Snaketown are reported from the Flagstaff region. Two have been excavated by the Museum of Northern Arizona, and of these

⁹ Personal communication from Mr. Kempton, U. S. Department of Agriculture, October 10, 1939.

one was associated with a large pit-house village occupied in the early twelfth century and culturally on the border line between Pueblo II and III. (McGregor, 1937; McGregor and Wetherill, 1939.) Now it is interesting to learn that four distinct civilizations are intermingled at this particular site: Pueblo, Hohokam, Mogollon, and Patayan. The latter is a newly designated western Arizona complex, one of the three recognized branches of which was briefly reported upon by Hargrave in 1938. The Mogollon appears to be an illegitimate whose paternity is still under scrutiny.

THE MOGOLLON

On the basis of its own explorations, the staff of Gila Pueblo believes the Mogollon pit-house culture to be one of considerable antiquity, perhaps ancestral both to the Hohokam and the earliest known pottery-making people of Chihuahua. (Haury, 1936; Sayles, 1936, p. 94; Harold S. Gladwin et al., 1937, pp. 86, 217-220, 251.) With this belief, admittedly based upon incomplete and often confusing evidence, the Museum of Northern Arizona appears to concur. (Colton and Hargrave, 1937, p. 44; McGregor, 1937, p. 50.) Nesbitt (1938, pp. 133-136), on the other hand, while in general agreement with Gladwin and Haury, concludes that the Mogollon complex had its New Mexico beginnings not earlier than A.D. 700, that it drew more inspiration from the Anasazi than from the Hohokam, and that certain Mogollon red wares together with similar wares intrusive at Snaketown probably derived from some outside, as yet unidentified source. Kidder (1939) supports the Nesbitt point of view regarding time and origins. Before Nesbitt's report appeared, the Mogollon complex as interpreted by Haury (1936) was ably summarized by Roberts (1937) in his analysis of Southwestern archeology. While these paragraphs are being written, Nesbitt is again in the field, expanding upon his 1935-1936 researches; Paul Martin is engaged with a nearby site; the Museum of Northern Arizona is continuing its excavations at Winona. Thus with the Mogollon problem under observation by three able investigators, we may anticipate its early solution.

DESERT AREAS INVITING STUDY

Other districts peripheral to the Hohokam province beckon the investigator. North, west, and south are inhospitable areas regarding which very little is known archeologically. In its survey of Chihuahua, Gila Pueblo found evidence of diffusion from the north after A.D. 1100 but no direct connection with the Hohokam. (Sayles, 1936.) To

the west, bordering the Rio Colorado, are remains of a culture the Gladwins (Winifred and Harold S. Gladwin, 1930) call "Yuman" and to which Hargrave applies the Hualapai term "Patayan" (Hargrave, 1938).¹⁰ Although this region has long been inhabited by Yuman and Mohave groups, it is still terra incognita to archeologists.

Northeast, the Mogollon Rim stretches across Arizona to fence the Anasazi province from the Hohokam. The two cultures overlap on either side but below the Rim, from Verde River to the New Mexico line, lies rugged country—an Apache hide-away during the third quarter of the nineteenth century. Here are countless diverse ruins—man-made caves, cliff dwellings, valley pueblos—some few of which were visited and partially described by Mearns, Mindeleff, and Fewkes between 1890 and 1906. But it is only within the past 10 years that place has been found for these ruins in Southwestern prehistory. In their relentless pursuit of the Hohokam, the Gladwins collected sherds from 185 sites in Verde Valley—sherds that indicated the former presence of four unrelated peoples who arrived at different times from north, east, south, and possibly west. (Winifred and Harold S. Gladwin, 1930.) Years must pass before the tangle is completely unraveled, but a beginning has already been made.

Caywood and Spicer (1934, 1935) have reported upon the excavation and repair of a fourteenth century ruin near Clarkdale that provided a name for the Tuzigoot National Monument, established by Presidential proclamation July 25, 1939. Cliff dwellings in the Sierra Ancha, both earlier and later than Tuzigoot, and a Colonial Hohokam site on the shore of Roosevelt Lake have been described by Haury (1932, 1934); farther east, in the Whiteriver Apache Reservation, Dr. Byron Cummings has been engaged since 1931 with the excavation and repair of Kinishba, the Brown House. (Jones, 1935; Mott, 1936; Baldwin, 1937, 1938, 1939; Cummings, 1938.) Here, overlying earlier pit houses, is a ruined village consisting of eight house groups whose combined population is estimated at more than 1,500. Announced tree-ring dates range from A.D. 1150 to 1320; the dominant culture, as represented by pottery, comes from the Little Colorado drainage, but there is evidence of limited contact with Gila Valley peoples. Further research below the Rim doubtless will help answer some of the questions that still linger regarding both the Hohokam and the postulated Mogollon culture.

¹⁰ Since these lines were written, Hargrave's three branches of the Patayan have been considered more fully by Colton in *Mus. North. Arizona, Bull. No. 17*, October 1939.

SUMMARY

As we look back across the past 15 years we see evidence of gratifying progress in Southwestern anthropology: Further light on architecture and ceramics of the Basket Maker III, Pueblo I and II phases; virtual solution of the Eastern Periphery problem, at least insofar as it pertains to Pueblo penetration eastward; establishment of the Hohokam culture in its several phases as distinct from that of the Anasazi; dendrochronology and new techniques for analyzing paints and the physical properties of pottery; a thorough analysis of Pueblo religion; awakened interest in several tribal groups heretofore neglected; and the rise of ethnobotany.

For a generation and more, students of Southwestern anthropology have speculated as to what helpful facts might be gleaned from the mountains and desert valleys of northern Mexico. On the basis of his survey, Sayles (1936, p. 88) concludes that the archeological remains in northern Chihuahua are comparatively recent and probably the outgrowth of contact between the Hohokam and a people remotely Caddoan. According to Zingg, "The archeology of southern Chihuahua is of general Basketmaker character," and the living Tarahumara, cave dwellers until recently, appear culturally closer to the Southwest than to the Mexican highlands. (Zingg, 1938.) The trait lists on which Zingg and Sayles base their deductions will seem pretty flimsy to most students, and yet none will deny that adobe dwellings and cliff ruins in and bordering the Chihuahua Basin bear superficial likenesses to similar structures north of the international line. What lies beneath and behind the architectural surface and what the relationship between cliff ruins and valley dwellings are questions to be answered when data are available from stratified deposits and from intensive study of house remains and cultural material other than pottery.

Ten years ago Kroeber (1928, p. 380) suggested that Yuman tribes of the Lower Colorado probably had served as filters through which southern culture elements reached the Lower Gila and southern California. Ethnologically, the Sonoran tribes were then practically unknown; of those on the Arizona side, only the Pima had received fairly comprehensive consideration. (Russell, 1908.) Now, at long last, there is growing promise that this situation eventually will be corrected. Noteworthy ethnographic studies of the Yuma already have appeared (Spier, 1928, 1933, 1936; Forde, 1931); neighboring tribes have come in for lesser attention. Chiefly under the seal of the University of California's Ibero-Americana, we have a healthy be-

ginning for anthropological research in Sonora and Sinaloa (Beals, 1932; Sauer, 1934; Kelly, 1938), but as yet no one tribe has been subjected to thorough cultural analysis. With the newly established National Institute of Anthropology and History at Mexico City inviting cooperation from outside research organizations, the next decade should provide a very substantial fund of information for this particular field.

It is refreshing, also, to note the enthusiasm with which ethnologists are now setting forth upon the trail of the Southern Athapaskan tribes; a surprisingly numerous band of investigators has finally caught the scent. (Reichard, 1928; Hill, 1936, 1937, 1938; Opler, 1936, 1937, 1938; Wyman, 1936a, 1936b, 1938; Goodwin, 1937, 1938a; Haile, 1938a, 1938b; Hoijer, 1938; Kluckhohn, 1938, 1939.) Although the always fascinating Navaho will doubtless be worried most, Goodwin, Hoijer, and Opler appear to be concentrating on the Apache. Amsden's monumental study of Navaho weaving (Amsden, 1934) is a classic that will stand for all time; Woodward's (1938) history of the origin and evolution of Navaho silversmithing brings this popular craft up to date.

In consequence of all this we shall doubtless soon learn who the Navaho really are and when they arrived upon the Southwestern scene. Their raiding parties were harassing Pueblo villages when the Spaniards first reached the Upper Rio Grande; numerous parallels in ritualism, mythology, etc., indicate long contact between the Pueblos and Navaho. (Parsons, 1939, pp. 1039-1055.) The latter point to the east as their early home, and here, on both sides of the Continental Divide in north-central New Mexico, are rude pit structures and surface dwellings in which conical-bottomed cooking pots form the most conspicuous ware. These non-Pueblo vessels not only have a marked resemblance to those made by the Navaho a half century ago, but according to Mera (1935, pp. 8, 34; 1938a) were found in association with painted pottery of early Chaco affinity. (See also Hibben, 1938.) In this connection, it is pertinent to note that fragments of a like utility ware have been found in late rooms at Pueblo Bonito.¹¹ Now these conical-bottomed pots may be Navaho and they may be Apache or Ute—two tribes whose early history remains a total blank. Additional archeological research, combined with those ethnographic studies now under way, should shortly solve this interesting point. In any case, Mera's investigation demonstrates twelfth to fourteenth century contact between Pueblo and non-Pueblo groups in that very region which the Navaho claim as their ancestral home.

¹¹ Present writer's unpublished data.

Navaho families living there were joined by Pueblo refugees during the Spanish reconquest of New Mexico at the close of the seventeenth century. (Amsden, 1934, p. 129.) Thus association in historic times supports the presumption of earlier contact, and the total period involved would readily account for the many traits the two peoples have in common.

Concluding her penetrating and most welcome interpretation of Pueblo religion, Dr. Parsons (1939) devotes three pages to a list of studies still desired in connection with the Pueblos and their neighbors. The number could easily have been doubled by including lesser, local inquiries all contributory to the main Southwestern problems. Among the list of desiderata we note a "comparative study of Pueblo handicrafts and arts . . . of material culture in general." It is astonishing that this subject has been so consistently neglected by American ethnologists, irrespective of the tribe under investigation. With remarkably few exceptions, attention always has been directed to linguistics, ceremonialism, various aspects of social organization, etc., when the tribe's material traits would seem equally important as cultural indices, if nothing more. How a people lives from day to day, how it gathers and prepares its food, how it meets the physical problems of its environment, are factors that directly or indirectly shape its philosophy, its ritualism, and the individual's attitude toward the group. And the opportunity for gathering these data is rapidly passing with passing of the older generation.

Intensive ethnographic and archeologic investigations in Chihuahua and Sonora are even more essential now than 15 years ago. Among other desirable researches we might add extension of ethnobotanical studies to include both the medicinal and food plants known to every tribe in and bordering the Southwest; archeological work in northeastern Utah and the adjacent portion of Colorado, in southern Idaho, and westward across the length of Nevada into California. We are promised ethnographic studies of the Apache, Navaho, and Paiute but need similar knowledge regarding the Ute Indians.

No end of comparative studies might also be suggested: The architecture and accompanying culture manifestations of pit houses, from Great Salt Lake southward through central and southern Arizona to the Sierra Madre; pottery of the several Yuman groups in relation to that of the Pima and the ancient Hohokam; microchemical analyses of Pueblo pottery from various culture centers and from diverse horizons; kiva architecture, including the origin and distribution of the square kiva; excavation of two or three Piro sites on the lower

Rio Grande; comparison of cave cultures in the Guadalupe Mountains and the Big Bend district with those in Chihuahua.

And when all this has been said and done, we shall be better prepared to undertake solution of those pertinent questions Kroeber (1928, p. 376) once raised regarding Southwestern anthropology: "What is the common element in all the tribal cultures of the area? What the substratum from which they have developed divergently, and what the interrelations between the developments?"

LITERATURE CITED

- AMSDEN, CHARLES A.
1934. Navaho weaving. Fine Arts Press, Santa Ana, Calif.
- BALDWIN, GORDON C.
1937. The pottery of Kinishba. *Arizona Arch. and Hist. Soc., Kiva*, vol. 3, No. 1.
1938. Excavations at Kinishba pueblo, Arizona. *Amer. Antiquity*, vol. 4, No. 1, pp. 11-21.
1939. The material culture of Kinishba. *Amer. Antiquity*, vol. 4, No. 4, pp. 314-327.
- BARTLETT, KATHARINE
1934. The material culture of Pueblo II in the San Francisco Mountains, Arizona. *Mus. North. Arizona, Bull.* 7.
- BEAGLEHOLE, ERNEST
1937. Notes on Hopi economic life. *Yale Univ. Publ. Anthropol.*, No. 15.
- BEALS, RALPH L.
1932. The comparative ethnology of northern Mexico before 1750. *Univ. California, Ibero-Americana*, No. 2.
- BELL, WILLIS H., and CASTETTER, EDWARD F.
1937. The utilization of mesquite and screwbean by the aborigines in the American Southwest. *Univ. New Mexico Bull., Biol. Ser.*, vol. 5, No. 2.
- BRADFIELD, WESLEY
1929. Cameron Creek Village. *School Amer. Res.*, Santa Fe, N. Mex.
- BRAND, DONALD D.
1937. The natural landscape of northwestern Chihuahua. *Univ. New Mexico Bull., Geol. Ser.*, vol. 5, No. 2.
- BRAND, DONALD D., HAWLEY, FLORENCE M., HIBBEN, FRANK C., et al.
1937. Tseh So, a small house ruin. Chaco Canyon, New Mexico. *Univ. New Mexico Bull., Anthropol. Ser.*, vol. 2, No. 2.
- BREW, J. O.
1937. The first two seasons at Awatovi. *Amer. Antiquity*, vol. 3, No. 2, pp. 122-137.
- BUNZEL, RUTH L.
1929. The Pueblo potter: A study of creative imagination in primitive art. *Columbia Univ. Contr. Anthropol.*, No. 8.
- CASTETTER, EDWARD F.
1935. Uncultivated native plants used as sources of food. *Univ. New Mexico Bull., Biol. Ser.*, vol. 4, No. 1.

- CASTETTER, EDWARD F., and BELL, WILLIS H.
1937. The aboriginal utilization of the tall cacti in the American Southwest. Univ. New Mexico Bull., Biol. Ser., vol. 5, No. 1.
- CASTETTER, EDWARD F., BELL, WILLIS H., and GROVE, ALVIN R.
1938. The early utilization and the distribution of agave in the American Southwest. Univ. New Mexico Bull., Biol. Ser., vol. 5, No. 4.
- CASTETTER, EDWARD F., and OPLER, M. E.
1936. The ethnobiology of the Chiricahua and Mescalero Apache. *A*, The use of plants for foods, beverages and narcotics. Univ. New Mexico Bull., Biol. Ser., vol. 4, No. 5.
- CASTETTER, EDWARD F., and UNDERHILL, RUTH M.
1935. The ethnobiology of the Papago Indians. Univ. New Mexico Bull., Biol. Ser., vol. 4, No. 3.
- CAYWOOD, LOUIS R., and SPICER, EDWARD H.
1934. Tuzigoot, a prehistoric pueblo of the Upper Verde. Mus. North. Arizona, Mus. Notes, vol. 6, No. 9, pp. 43-46.
1935. Tuzigoot: The excavation and repair of a ruin on the Verde River near Clarkdale, Arizona. National Park Serv., Field Div. Education. Berkeley.
- CHAPMAN, KENNETH M.
1936. The pottery of Santo Domingo pueblo. Mem. Lab. Anthropol., vol. 1. Santa Fe.
- COLTON, HAROLD S.
1933. Pueblo II in the San Francisco Mountains, Arizona. Mus. North. Arizona, Bull. 4.
- COLTON, HAROLD S., and HARGRAVE, L. L.
1937. Handbook of Northern Arizona pottery types. Mus. North. Arizona, Bull. 11.
- COSGROVE, H. S. and C. B.
1932. The Swartz ruin: A typical Mimbres site in southwestern New Mexico. Peabody Mus. Amer. Arch. and Ethnol., Harvard Univ., Pap., vol. 15, No. 1.
- CUMMINGS, BYRON
1938. Kinishba—The Brown House. Arizona Arch. and Hist. Soc., Kiva, vol. 4, No. 1.
- DOUGLASS, A. E.
1935. Dating Pueblo Bonito and other ruins of the Southwest. Nat. Geogr. Soc., Contr. Techn. Pap., Pueblo Bonito Ser., No. 1.
- DUTTON, BERTHA P.
1938. Leyit Kin, a small house ruin, Chaco Canyon, New Mexico. Univ. New Mexico Bull., Monogr. Ser., vol. 1, No. 5.
- FORDE, C. DARYLL
1931. Ethnography of the Yuma Indians. Univ. California Publ. Amer. Arch. and Ethnol., vol. 28, No. 4, pp. 83-278.
- GLADWIN, HAROLD S., HAURY, EMIL W., SAYLES, E. B., and GLADWIN, NORA
1937. Excavations at Snaketown. Material culture. Medallion Pap., No. 25. Gila Pueblo, Globe, Ariz.
- GLADWIN, WINIFRED and HAROLD S.
1930. An archaeological survey of Verde Valley. Medallion Pap., No. 6. Gila Pueblo, Globe, Ariz.
1935. The eastern range of the red-on-buff culture. Medallion Pap., No. 16. Gila Pueblo, Globe, Ariz.

GOODWIN, GRENVILLE

1937. The characteristics and function of clan in a Southern Athapaskan culture. *Amer. Anthrop.*, vol. 39, No. 3, pt. 1, pp. 394-407.
- 1938a. White Mountain Apache religion. *Amer. Anthrop.*, vol. 40, No. 1, pp. 24-37.
- 1938b. The Southern Athapaskans. *Arizona Arch. and Hist. Soc., Kiva*, vol. 4, No. 2.

GUERNSEY, SAMUEL JAMES

1931. Explorations in northeastern Arizona; report on the archaeological fieldwork of 1920-1923. *Peabody Mus. Amer. Arch. and Ethnol., Harvard Univ., Pap.*, vol. 12, No. 1.

GUTHE, CARL E.

1925. Pueblo pottery making: A study at the village of San Ildefonso. *Pap. Southwest. Exped. No. 2. Dep. Arch., Phillips Acad. New Haven.*

HAILE, FATHER BERARD

- 1938a. Origin legend of the Navaho Enemy Way. *Yale Univ. Publ. Anthrop.*, No. 17.
- 1938b. Navaho chantways and ceremonials. *Amer. Anthrop.*, vol. 40, No. 4, pt. 1.

HARGRAVE, LYNDON L.

1930. Prehistoric earth lodges of the San Francisco Mountains. *Mus. North. Arizona, Mus. Notes*, vol. 3, No. 5.
1933. Pueblo II houses in the San Francisco Mountains, Arizona. *Mus. North. Arizona, Bull.* 4.
1938. Results of a study of the Cohonina branch of the Patayan culture in 1938. *Mus. North. Arizona, Mus. Notes*, vol. 11, No. 6.

HARRINGTON, M. R.

1927. A primitive Pueblo city in Nevada. *Amer. Anthrop.*, vol. 29, No. 3, pp. 262-277.

HAURY, EMIL W.

1932. Roosevelt 9:6—A Hohokam site of the Colonial period. *Medallion Pap.*, No. 11. Gila Pueblo, Globe, Ariz.
1934. The Canyon Creek ruin and the cliff dwellings of the Sierra Ancha. *Medallion Pap.*, No. 14. Gila Pueblo, Globe, Ariz.
1936. The Mogollon culture of southwestern New Mexico. *Medallion Pap.*, No. 20. Gila Pueblo, Globe, Ariz.

HAYDEN, IRWIN

1930. Mesa House. *Southwest Mus. Pap.*, No. 4, pp. 27-92.

HIBBEN, FRANK C.

1938. The Gallina phase. *Amer. Antiquity*, vol. 4, No. 2, pp. 131-136.

HILL, W. W.

1936. Navaho warfare. *Yale Univ. Publ. Anthrop.*, No. 5.
1937. Navajo pottery manufacture. *Univ. New Mexico Bull. No. 317, Anthrop. Ser.*, vol. 2, No. 3.
1938. The agricultural and hunting methods of the Navaho. *Yale Univ. Publ. Anthrop.*, No. 18.

HOIJER, HARRY

1938. The Southern Athapaskan languages. *Amer. Anthrop.*, vol. 40, No. 1, pp. 75-87.

HOLDEN, W. C.

1931. Texas Tech archeological expedition, summer 1930. Texas Arch. and Paleont. Soc. Bull., vol. 3, pp. 43-52.

1933. Excavation of Saddle-back ruin. Texas Arch. and Paleont. Soc. Bull., vol. 5, pp. 39-52.

HOLMES, WILLIAM H.

1886. Pottery of the ancient Pueblos. 4th Ann. Rep. Bur. Amer. Ethnol.

JACKSON, A. T.

1937. Exploration of certain sites in Culberson County, Texas. Texas Arch. and Paleont. Soc. Bull., vol. 9, pp. 146-192.

1938. Picture-writing of Texas Indians. Univ. of Texas Publ. No. 3809.

JONES, DAVID

1935. Progress of the excavations at Kinishba. Arizona Arch. and Hist. Soc., Kiva, vol. 1, No. 3.

JUDD, NEIL M.

1926. Archeological observations north of the Rio Colorado. Bur. Amer. Ethnol. Bull. 82.

KELLY, ISABEL T.

1938. Excavations at Chametla, Sinaloa. Univ. California, Ibero-Americana, No. 14.

KIDDER, ALFRED V.

1924. An introduction to the study of Southwestern archaeology, with a preliminary account of the excavations at Pecos. Pap. Southwest. Exped. No. 1. Dep. Arch., Phillips Acad. New Haven.

1927. Southwestern archeological conference. Science, vol. 66, pp. 489-491.

1931. The pottery of Pecos. Volume I. Pap. Southwest. Exped. No. 5. Dep. Arch., Phillips Acad. New Haven.

1932. The artifacts of Pecos. Pap. Southwest. Exped. No. 6. Dep. Arch., Phillips Acad. New Haven.

1936. The pottery of Pecos. Volume 2. Pap. Southwest. Exped. No. 7. Dep. Arch., Phillips Acad. New Haven.

1939. Review of Nesbitt: Starkweather ruin, etc. Amer. Anthrop., vol. 41, No. 2, pp. 314-316.

KLUCKHOHN, CLYDE

1938. Participation in ceremonials in a Navaho community. Amer. Anthrop., vol. 40, No. 3, pp. 359-369.

1939. Some personal and social aspects of Navaho ceremonial practice. Harvard Theol. Rev., vol. 32, No. 1, pp. 57-82.

KROEBER, A. L.

1928. Native culture of the Southwest. Univ. California Publ. Amer. Arch. and Ethnol., vol. 23, No. 9, pp. 375-398.

LLOYD, FRANCIS E.

1911. Guayule: A rubber-plant of the Chihuahuan Desert. Carnegie Inst. Washington, Publ. No. 139.

MARTIN, PAUL S., LLOYD, CARL, and SPOEHR, ALEXANDER

1938. Archaeological work in the Ackmen-Lowry area, southwestern Colorado, 1937. Field Mus. Nat. Hist., Anthropol. Ser., vol. 23, No. 2.

MARTIN, PAUL S., and RINALDO, JOHN

1939. Modified Basket Maker sites, Ackmen-Lowry area, southwestern Colorado, 1938. Field Mus. Nat. Hist., Anthropol. Ser., vol. 23, No. 3.

MARTIN, PAUL S., ROYS, LAWRENCE, and VON BONIN, G.

1936. Lowry ruin in southwestern Colorado. *Field Mus. Nat. Hist., Anthropol. Ser.*, vol. 23, No. 1.

McGREGOR, J. C.

1937. Winona Village: A XIIth century settlement with a ball court near Flagstaff, Arizona. *Mus. North. Arizona, Bull.* 12.

McGREGOR, J. C. and WETHERILL, MILTON A.

1939. Winona Village—1938. (A report of progress.) *Mus. North. Arizona, Mus. Notes*, vol. 11, No. 7.

MERA, H. P.

1935. Ceramic clues to the prehistory of north central New Mexico. *Lab. Anthropol., Techn. Ser., Bull. No. 8.* Santa Fe.

1937. The "Rain Bird": A Study in Pueblo design. *Mem. Lab. Anthropol.*, vol. 2. Santa Fe.

- 1938a. Some aspects of the Largo cultural phase, northern New Mexico. *Amer. Antiquity*, vol. 3, No. 3, pp. 236-243.

- 1938b. Reconnaissance and excavation in southeastern New Mexico. *Mem. Amer. Anthropol. Assoc.*, No. 51.

MORRIS, EARL H.

1924. Burials in the Aztec ruin; the Aztec ruin annex. *Anthropol. Pap. Amer. Mus. Nat. Hist.*, vol. 26, pts. 3-4.

1927. The beginnings of pottery making in the San Juan area; unfired prototypes and the wares of the earliest ceramic period. *Anthropol. Pap. Amer. Mus. Nat. Hist.*, vol. 28, pt. 2, pp. 123-198.

1928. Notes on excavations in the Aztec ruin. *Anthropol. Pap. Amer. Mus. Nat. Hist.*, vol. 26, pt. 5.

MORSS, NOEL

- 1931a. Notes on the archaeology of the Kaibito and Rainbow Plateaus in Arizona. *Peabody Mus. Amer. Arch. and Ethnol., Harvard Univ., Pap.*, vol. 12, No. 2.

- 1931b. The ancient culture of the Fremont River in Utah. *Peabody Mus. Amer. Arch. and Ethnol., Harvard Univ., Pap.*, vol. 12, No. 3.

MOTT, DOROTHY CHALLIS

1936. Progress of the excavations at Kinishba. *Arizona Arch. and Hist. Soc., Kiva*, vol. 2, No. 1.

NESBITT, PAUL H.

1938. Starkweather ruin: A Mogollon-Pueblo site in the Upper Gila area of New Mexico, and affiliative aspects of the Mogollon culture. *Logan Mus. Publ. Anthropol., Bull.* No. 6.

NUSBAUM, JESSE L.

1922. A Basket-maker cave in Kane County, Utah. With notes on the artifacts by A. V. Kidder and S. J. Guernsey. *Indian Notes and Monogr.*, No. 29, *Mus. Amer. Indian, Heye Found.*

OPLER, M. E.

1936. The kinship systems of the Southern Athabaskan-speaking tribes. *Amer. Anthropol.*, vol. 38, No. 4, pp. 620-633.

1937. Apache data concerning the relation of kinship terminology to social classification. *Amer. Anthropol.*, vol. 39, No. 2, pp. 201-212.

1938. Dirty Boy: A Jicarilla tale of raid and war. *Mem. Amer. Anthropol. Assoc.*, No. 52.

PARSONS, ELSIE CLEWS

1939. Pueblo Indian religion. Univ. Chicago Publ. Anthropol., Ethnol. Ser. 2 vol.

REICHARD, GLADYS A.

1928. Social life of the Navajo Indians. Columbia Univ. Contr. Anthropol., vol. 7.

REITER, PAUL

1938. The Jemez pueblo of Unshagi, New Mexico. Univ. New Mexico Bull., Monogr. Ser., vol. 1, Nos. 4-5.

ROBERTS, FRANK H. H., JR.

1929. Shabik'eshchee village: A Late Basket Maker site in the Chaco Canyon, New Mexico. Bur. Amer. Ethnol. Bull. 92.
1930. Early Pueblo ruins in the Piedra district, southwestern Colorado. Bur. Amer. Ethnol. Bull. 96.
1931. The ruins at Kiatuthlanna, eastern Arizona. Bur. Amer. Ethnol. Bull. 100.
1932. The village of the great kivas on the Zuñi reservation, New Mexico. Bur. Amer. Ethnol. Bull. 111.
1936. A survey of Southwestern archeology. Ann. Rep. Smithsonian Inst. for 1935, pp. 507-533.
1937. Archeology in the Southwest. Amer. Antiquity, vol. 3, No. 1, pp. 3-33.
1939. Archeological remains in the Whitewater district, eastern Arizona. Bur. Amer. Ethnol. Bull. 121.

RUSSEL, FRANK

1908. The Pima Indians. 26th Ann. Rep. Bur. Amer. Ethnol.

SAUER, CARL

1934. The distribution of aboriginal tribes and languages in northwestern Mexico. Univ. California, Ibero-Americana, No. 5.

SAYLES, E. B.

1935. An archaeological survey of Texas. Medallion Pap., No. 17. Gila Pueblo, Globe, Ariz.
1936. An archaeological survey of Chihuahua, Mexico. Medallion Pap., No. 22. Gila Pueblo, Globe, Ariz.

SETZLER, FRANK M.

1935. A prehistoric cave culture in southwestern Texas. Amer. Anthropol., vol. 37, No. 1, pt. 1, pp. 104-110.

SHEPARD, ANNA O.

1936. The technology of Pecos pottery. The Pottery of Pecos. Volume 2. Pap. Southwest. Exped., No. 7, pt. 2, pp. 389-576. Dep. Arch., Phillips Acad. New Haven.

SPIER, LESLIE

1928. Havasupai ethnography. Anthropol. Pap. Amer. Mus. Nat. Hist., vol. 29, No. 3.
1933. Yuman tribes of the Gila River. Univ. Chicago Press.
1936. Cultural relations of the Gila River and Lower Colorado tribes. Yale Univ. Publ. Anthropol., No. 3.

STEWART, JULIAN H.

- 1933a. Early inhabitants of western Utah. Part I. Mounds and house types. Univ. Utah Bull., vol. 23, No. 7.
- 1933b. Archaeological problems of the Northern Periphery of the Southwest. Mus. North. Arizona, Bull. 5.

1936. Pueblo material culture in western Utah. Univ. New Mexico Bull. 287, Anthropol. Ser., vol. 1, no. 3.
1937. Ancient caves of the Great Salt Lake region. Bur. Amer. Ethnol. Bull. 116.
- WHITING, ALFRED F.
1939. Ethnobotany of the Hopi. Mus. North. Arizona, Bull. 15.
- WOODWARD, ARTHUR
1938. A brief history of Navajo silversmithing. Mus. North. Arizona, Bull. 14.
- WYMAN, LELAND C.
1936a. Navaho diagnosticians. Amer. Anthropol., vol. 38, no. 2, pp. 236-246.
1936b. The Female Shooting Chant: A minor Navaho ceremony. Amer. Anthropol., vol. 38, No. 4, pp. 634-653.
- WYMAN, LELAND C., and KLUCKHOHN, CLYDE
1938. Navaho classification of their song ceremonials. Mem. Amer. Anthrop. Assoc. No. 50.
- YANOVSKY, ELIAS
1936. Food plants of the North American Indians. U. S. Dep. Agr., Misc. Publ. No. 237.
- ZINGG, ROBERT M.
1938. The Southwestern affiliation of Tarahumara culture. Southwest. Lore, vol. 4, No. 1, pp. 6-9.

NATIVE CULTURES OF THE INTERMONTANE (GREAT BASIN) AREA¹

BY JULIAN H. STEWARD
Bureau of American Ethnology

INTRODUCTION

The Intermontane area comprises most of that vast and sparsely populated territory between the Rocky Mountains on the east and the Sierra Nevada and Cascade Ranges on the west. It includes not only the Great Basin,² an area of internal drainage which occupies Nevada, eastern California, southeastern Oregon, and western Utah, but also adjoining portions of the Columbia Plateau in Idaho and of the Colorado Plateau in eastern and southern Utah, western Colorado, and southern Nevada. To the north of it lies a comparatively more fertile portion of the Columbia Plateau with ampler flora and fishing resources, to the east the High Plains which had great bison herds, to the south portions of the Colorado Plateau and low valleys of Arizona and New Mexico with a similar environment but with horticultural people, and to the west the great valleys and coast of California.

The Intermontane area is a high, semidesert, distinguished by the limited resources it offered a native population. As large parts were zones of frequent famine and as all parts presented serious subsistence problems, human activities were environmentally conditioned to a marked degree. To interpret the area's cultural history and cultural adaptations it is necessary to examine this environment in terms of problems and patterns of human ecology.

¹In addition to the literature cited, this paper is based upon ethnographic surveys of Western Shoshoni and Northern Paiute in 20 localities ranging from Death Valley and Owens Valley in California through central Nevada to southern Idaho, of Northern Shoshoni in 3 localities in Idaho and northern Utah, of Gosiute Shoshoni in 2 localities in western Utah, and of Bannock in Idaho. These will be published by the University of California. Data upon sociopolitical groups of the same localities has been published by the writer, 1938.

²It is unfortunate that the term Basin is rapidly becoming fixed in the literature, for both the natural and cultural areas extended far beyond this physiographic province.

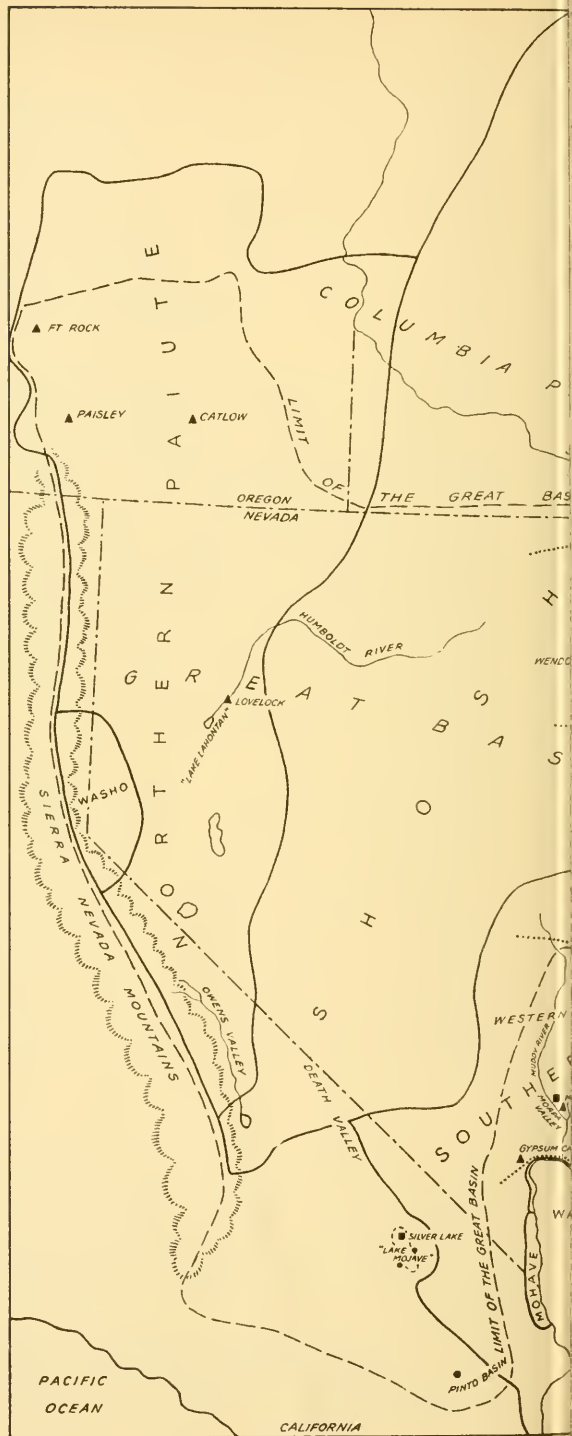
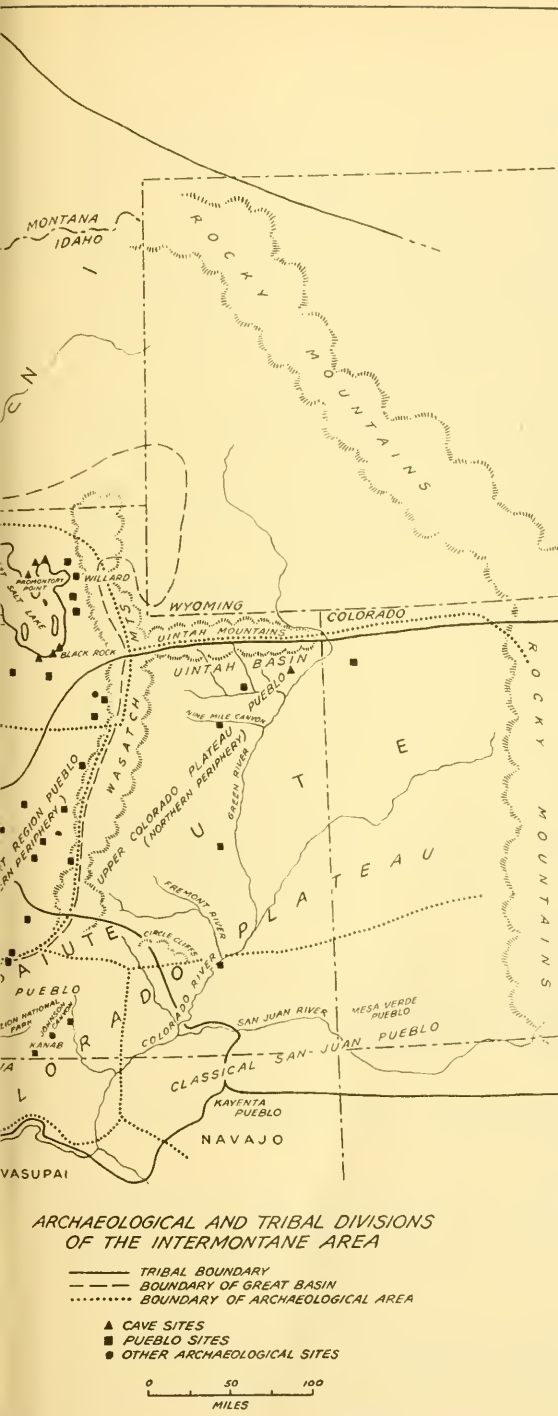


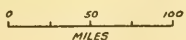
FIG. 20.—T



ARCHAEOLOGICAL AND TRIBAL DIVISIONS OF THE INTERMONTANE AREA

- TRIBAL BOUNDARY
- - - BOUNDARY OF GREAT BASIN
- BOUNDARY OF ARCHAEOLOGICAL AREA

- ▲ CAVE SITES
- PUEBLO SITES
- OTHER ARCHAEOLOGICAL SITES



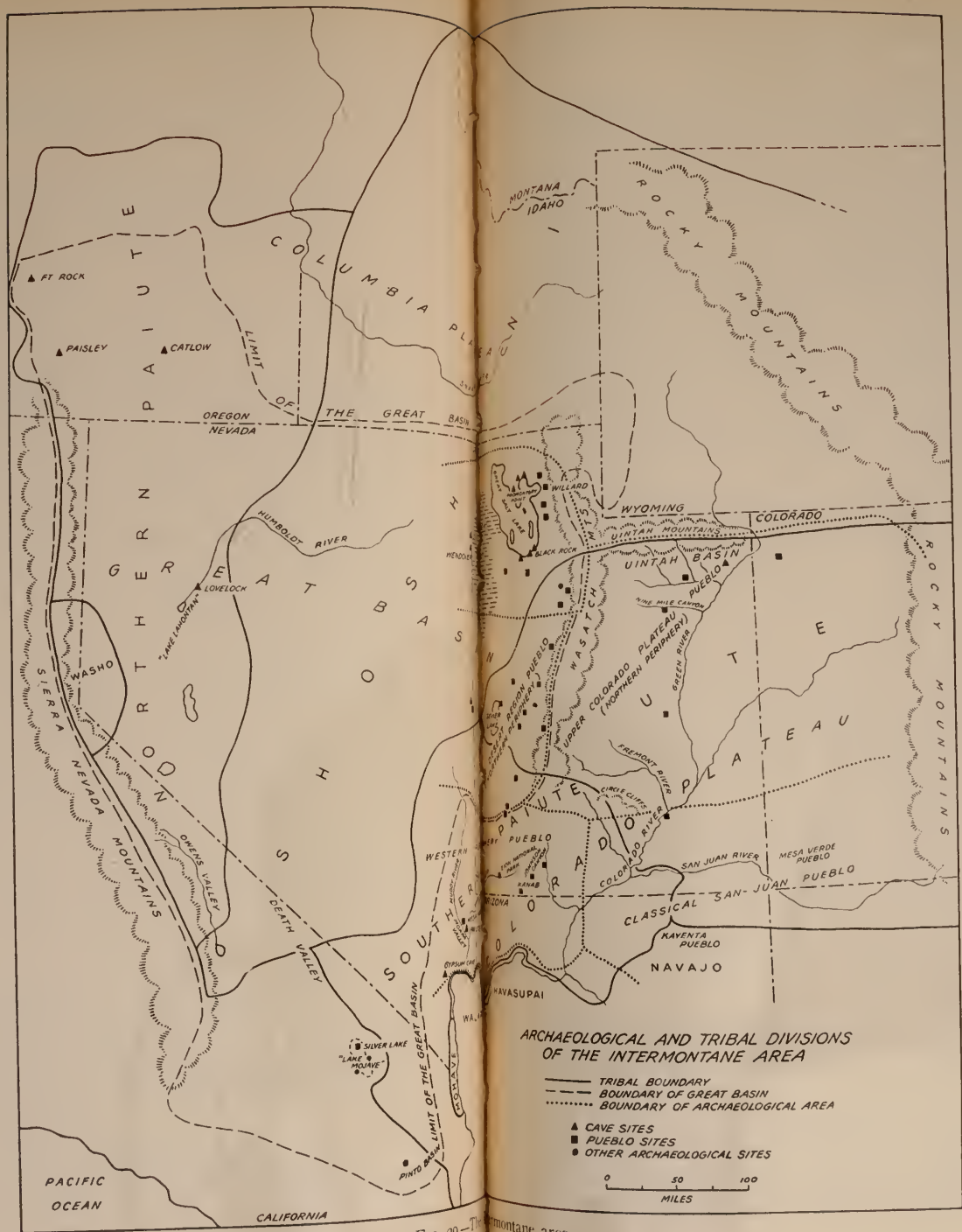


FIG. 29.—The Intermontane area.

THE NATURAL ENVIRONMENT

The natural environment is characterized by a generally high terrene, marked aridity, restricted quantities of edible plant and animal species, and limited possibilities for horticulture.

Most of the area lies between 3,000 and 5,000 feet above sea level, some being even higher. Throughout the Great Basin, aggraded valleys alternate with mountain ranges. Many of the valleys have huge alkaline deserts which, devoid of water and virtually without vegetation, like the Great Salt Desert of western Utah and the Black Rock Desert of western Nevada, preclude human occupation. Most of the mountains are so rugged and so intensely cold in winter that they discouraged permanent settlement. Most of the Colorado Plateau was either too high or, as in eastern and southern Utah, too dissected with narrow and often impassible canyons and gorges to have favored human occupation. Inhabitable areas were extremely limited.

In spite of the considerable altitude of the area, precipitation is so low (usually 5 to 10 inches annually in the valleys, somewhat more in the mountains) that xerophytic plant associations—sagebrush, creosote bush, shadscale, or greasewood—dominate vast valley and plateau expanses, the few herbaceous plants being limited largely to the mountains. With the exception of the pinyon nut (*Pinus monophylla* in the west, *P. edulis* in the east) which occurs only in the southern half of the area, and of certain roots and berries, vegetable foods consisted predominantly of small, hard-shelled seeds which grow widely scattered and are difficult to gather and to prepare. The Shoshonean Indians utilized these seeds by means of a highly specialized basketry-metate complex.

Herds of large game animals were restricted by this scant vegetation; grasslands though more common before the recent introduction of cattle and sheep, never were extensive. Some antelope occurred in the valleys; mountain sheep and deer were more numerous in the mountains. Various rodents, especially rabbits, however, were the main animal foods. Special techniques were necessary to take them in important numbers.

Possibilities for horticulture and for fishing were limited by the scarcity of water courses, there being few large, perennial streams. Mountain ranges in the Great Basin intercept only sufficient moisture to feed a few small streams, most of which either sink into the valley sands or flow but a few miles into saline lakes and playas, where they evaporate. The Humboldt River in central Nevada, the Snake River and its tributaries in Idaho and Oregon, the rivers flowing eastward from the Sierra Nevada Range, streams flowing

westward from the Wasatch Mountains, and the Colorado River and its tributaries are exceptions. These afforded many fish, but horticulture never extended far beyond the Colorado River drainage and the Wasatch Piedmont.

The limited resources of this environment have restricted the density of even the modern white population, despite its varied means of exploiting nature and of utilizing materials unknown to the Indians, and its partial dependence through commerce on other areas. Nevada, with extensive mining and herding, has today but one person per square mile. The native hunting and gathering economy, utilizing the same environment, supported an average of only one person to 30 or 35 square miles and imposed conditions of living that prevented growth of large centers of population. It was only in such unusually fertile localities as the piedmonts of the Wasatch and Sierra Nevada Ranges, the country along the Humboldt River, and some parts of western Nevada that denser populations were maintained.

In native times, the vast deserts and rugged topography not only rendered subsistence difficult, but, serving somewhat to reduce communication with neighboring culture areas, inhibited cultural infiltration.

CULTURAL POSITION OF THE AREA

Although the Intermontane area extends eastward to the Continental Divide, its cultural affiliations have always been predominantly with the West Coast and the Southwest. Somewhat distinctive cultural trends, in fact, are suggested even for early, postglacial times. Folsom points occur in considerable numbers at early sites east of the Rocky Mountains. West of the Divide, although reported from all States, they are comparatively scarce,³ a variety of other types, which may or may not be as old as the Folsom types, being found instead.

During the Basket Maker and Pueblo periods, vigorous impulses from the Southwest implanted certain important traits and trait complexes west of the Continental Divide, some of which persisted among the recent peoples. But this culture almost completely failed to cross the Divide to the Plains except in the extreme south. Likewise, Plains influence, except during the very recent period when the horse com-

³ The Folsom find at Borax Lake in central California is the most impressive to date, but its significance and local chronology are not yet clear. (Harrington, 1938a, 1938b.) Mr. and Mrs. Campbell (1940) have reported a Great Basin site with points somewhat related to Folsom points.

plex was introduced to the Northern Shoshoni and Ute, has been largely negligible in the Intermontane area.

In addition to Southwestern influence, there has been a slow infiltration of elements from the Columbia Plateau and from the West Coast. The Intermontane area not only shared with these areas many important material items but was, as Lowie has shown (1923), basically "ultramontane" with respect to the West Coast in various social and religious practices.

To recognize, however, that the area was in a broad sense "western" and that it had drawn heavily upon neighboring culture centers does not justify either classifying it with any of these areas or splitting it between them.⁴ The elements that link it with neighboring areas occur predominantly along its margins, rapidly disappearing—inhibited no doubt by the slender local resources—toward its center. An ethnographic inventory of all the recent tribes has a meager content; that of the Gosiute Shoshoni, occupying the very heart of the area, was probably the most impoverished of any American Indians. But much of the culture was unlike that of neighboring areas. The ecology entailed in the adaptation of subsistence activities to the local environment produced certain unique features in the basic social and political patterns (Steward, 1938). Shamanism (Park, 1938), mythology (Cooke, thesis; Gayton, 1935), and to a certain extent music (Herzog, 1935) possessed characteristics distinctive of the area. And even the elements that occurred also in the Southwest and on the West Coast occurred in the Intermontane area in a local context, the very looseness, simplicity, and poverty of which gave most of them a distinctive orientation.

The question of Intermontane cultural distinctiveness is, however, a matter of degree. I shall show in the second portion of this paper that some features of the culture were peculiar to the area whereas others resembled in varying degrees those of neighboring areas.

Finally, it must be stressed that the culture of the recent Intermontane peoples cannot be regarded as the surviving substratum of an ultramontane, a Basket Maker, or any other early and widespread culture. Some practices were no doubt similar to antecedents of certain more complex developments in California and the Southwest.

⁴ Wissler (1938, pp. 220-244, figs. 58 and 59) splits it between the Plateau, California, the Southwest, and Plains. Kroeber (1939, pp. 49-53) recognizes the area's distinctiveness, including it as one of three subdivisions of his "Intermediate and Intermountain Areas," the other two being California and the Columbia-Fraser Plateau. He considers the Klamath Lakes and Pit River tribes to be marginal to the Great Basin and points out that such sub-Pueblo Southwestern tribes as the Havasupai and Walapai have strong Basin affiliations.

But the total Intermontane culture was the product of diverse borrowing from different sources at different periods and of a certain measure of internal development. It was not the survival of what once prevailed elsewhere.

THE HISTORICAL PROBLEM

The historical problem undertaken here is twofold. The first task is to place elements in their spatial and temporal associations and, when possible, to trace their history and assign them to physical, linguistic, or political groups. The second task is to interpret historic change in terms of cultural process. Treating these in sharp distinction, it might appear, would segregate fact from interpretation. It is questionable, however, whether this is often possible, except when archeology provides indisputable culture sequences or when one limits his efforts to a mere recitation of the inventory of archeologic sites or ethnic groups. Assumptions concerning process actually underlie most historical reconstructions, while elucidation of process requires a maximum knowledge of history. The two are treated here as largely inseparable and complementary to one another. Their interdependence is underlined in the problem of the relationship of the modern tribes to the Anasazi peoples.

ARCHEOLOGICAL EVIDENCE

Prehistoric cultures of the Intermontane region seem to cover a considerable span of time, ranging from the period of the Gypsum Cave sloth remains and of several ancient lake and stream shore finds in southern California, through Basket Maker and Pueblo cultures to the recent Shoshonean peoples.

The scant attention so far accorded the archeology of most of this area permits only a most tentative historical reconstruction. The hypothesis advanced here is not an attempt at finality but rather a synthesis of present data which will indicate lines of needed research. Part of the history of the Basket Maker and Pueblo cultures is supported by a considerable body of fact. The sketch of pre-Basket Maker cultures and of the relationship of Basket Maker to recent Shoshonean peoples is decidedly more tentative. The place of the Promontory culture in the Intermontane picture is very largely obscure.

The present thesis may be summarized in the following broad outline, supporting evidence being subsequently detailed.

During the glacial age, the Intermontane area was probably considerably more fertile than at present, being both moister and

colder. It is possible that people with only simple equipment could have existed there in some numbers. There is, however, no certain evidence of glacial age man in the area, except possibly in the south. Search for ancient cultures in the Great Basin has been mainly in wave-cut caves along the shore lines of now shrunken lakes. Many of the highest caves were under water only during the glacial maximum; others remained covered with water until the lakes had receded to various lower levels. The more probable location of Pleistocene camp sites would have been along ancient stream banks and lake shores. Such sites have received little attention except in southern California and, recently, in western Nevada. Various finds in southern California and Nevada appear to have considerable antiquity, though their relationship to one another and to glacial chronology and their extension into the Basin and Plateau areas remain undetermined.

When the passing of the glacial age brought the present climate and a semidesert environment, the subsistence problem became vastly more difficult. The important change was not in food species but in their abundance. The main recent foods were seeds, rodents, and, in some localities, fish; large game was comparatively scarce. The possession of a basketry complex and the metate for utilizing the seeds, of certain traps, snares, nets, and the bow and arrow for hunting and fishing, and of some means of transporting water would seem to be crucial to the most efficient exploitation of these food resources. A people lacking these and equipped merely with the atlatl and dart for hunting and with skin containers for gathering and preparing seeds could scarcely have lived in any great numbers except in the few fertile localities. We should not, therefore, expect to find abundant evidence of a people lacking baskets, bows, traps, nets, and snares, and, in fact, do not find it. The greater part of the cave cultures have not only basketry but apparently most of the basket types essential for seed gathering. They likewise seem to have had most of the hunting devices, though some lacked the bow and arrow. Similarly, in the Southwest where the environment and subsistence problem are essentially the same, evidence of prebasketry people is extremely scant. And in southern California, most prebasketry cultures seem to date from the pluvial period, not from the subsequent arid period.

The greater abundance of remains with basketry requires the assumption that subsistence techniques, especially for utilizing seeds, which were introduced along with basketry, permitted more efficient exploitation of the semideserts and entailed population expansion and probably migration.

The date of the introduction of basketry and perhaps also of many hunting techniques throughout both the Intermontane area and the Southwest seems clearly to have been the Classical Basket Maker period. Basketry has been found neither in pre-Basket Maker cultures in the Southwest nor in Intermontane sites that do not have also sufficient Basket Maker elements to leave no doubt of their approximate contemporaneity and historical connection with the Southwestern Basket Maker.

The source of the basketry complex, however, remains in doubt. Distributional evidence from North America has generally been interpreted to indicate a West Coast origin first for coiled and later for twined basketry. On this hypothesis, the Basket Maker acquired coiled ware (they lacked twine) from the West, the ware being transmitted across the Intermontane area or extreme southern California to the Southwest. The absence of either Basket Maker or pre-Basket Maker basketry from the Northern Periphery of Utah and eastern Nevada fits this hypothesis. There is, however, no present evidence that basketry is older in Nevada than in the Southwest. To the contrary, in Nevada it first occurs in association with traits of almost certain Southwestern origin. Moreover, recent evidence of coiled basketry in Middle America (Lothrop, 1937, p. 112), Colombia (Wasén, 1935, pp. 81-82), Peru, and northwestern Argentina (Nordenkiöld, 1931, pp. 92-3; Lothrop, 1937, p. 112) and Tierra del Fuego (Thompson, 1936, pp. 83, 92) seems to require a reinterpretation of its history. A Middle American or Mexican source for Basket Maker basketry is not impossible. (Twined basketry also has a considerable South American occurrence. Métraux, 1930.)

Several other elements seem also to have reached the Intermontane area from the Southwest. The Basket Makers were peripheral to Middle America with respect to maize, the metate, curved wooden clubs, sandals, and perhaps even woven skin blankets, if the last be construed as a local adaptation or early stage of weaving on a primitive loom. All of these except the first were passed on to the western part of the Intermontane area. Maize, which became the foundation of subsequent Pueblo development in the Southwest, and certain elaborations or aesthetic developments of many Basket Maker techniques, as of sandals, woven bags, and others, never widely diffused.

On the other hand, such hunting devices as traps, nets, snares, the atlatl, and later the bow, may have reached both the Intermontane area and the Basket Maker from the North. At least, they do not appear to be diagnostic, except as details are considered, of any special area.

Whatever the direction of cultural diffusion, there is little doubt that the peoples of the semideserts first acquired most of those basketry and other subsistence techniques, which became the basis of Shoshonean hunting and gathering, soon after the Basket Maker culture was established in the Southwest. Traits of this economic complex were not, however, at first universal in early Intermontane sites. They were absent in the Northern Periphery of Utah and the eastern Great Basin, where they did not appear until the Pueblo period. It is postulated, therefore, that the ancestors of the recent Intermontane Shoshoneans were formerly in the western Great Basin and in southern Nevada where, through contact with a Basket Maker or Derived Basket Maker culture, they acquired these traits, and that subsequently they spread throughout the Intermontane area.

Before the Shoshoneans spread to the east, however, a Developmental Pueblo culture disseminated traits over a considerable area. Somewhere in western Colorado, these traits overtook and blended with, but did not entirely supplant, an earlier Basket Maker complex. This newly formed culture then spread through northern Utah and eastern Nevada in an area that has yielded little trace of previous inhabitants and no certain evidence of pure Basket Maker of either the Classical or Derived phases. Toward the end of the brief duration of this culture, the Promontory people—hunters with a distinctive pottery and a far-northern style of moccasins—appeared in the Salt Lake Basin. Soon both peoples vanished. Neither was related to the recent Shoshoneans.

Meanwhile, Pueblo influence had introduced ceremonial traits to southern California (Strong, 1929), some influence apparently even reaching central California (Kroeber, 1928).

After the Pueblo peoples disappeared in the Northern Periphery and retracted throughout the Southwest, Shoshoneans, who are presumed to have been in western and southwestern Nevada, perhaps already differentiated into their present linguistic divisions, expanded throughout their recent territory. Some Shoshoni even crossed the Continental Divide into Montana and Wyoming. The Comanche subsequently split off from the Wyoming Shoshoni and moved down to the southern Plains. Meanwhile, Yuman tribes had pushed up the Colorado River, probably at about the beginning of the Great Pueblo period, and severed connections between the Pueblo area and southern California.

Mainly after their expansion, the Shoshoneans began to borrow a few traits from neighboring areas: Fishing techniques, especially for salmon, from the north; twined basketry perhaps from the west;

pottery perhaps from different sources; Plains type garments and moccasins and, after the introduction of the horse, a considerable Plains complex, from the east.

This hypothetical reconstruction of Intermontane cultures is summarized in the table, figure 30.

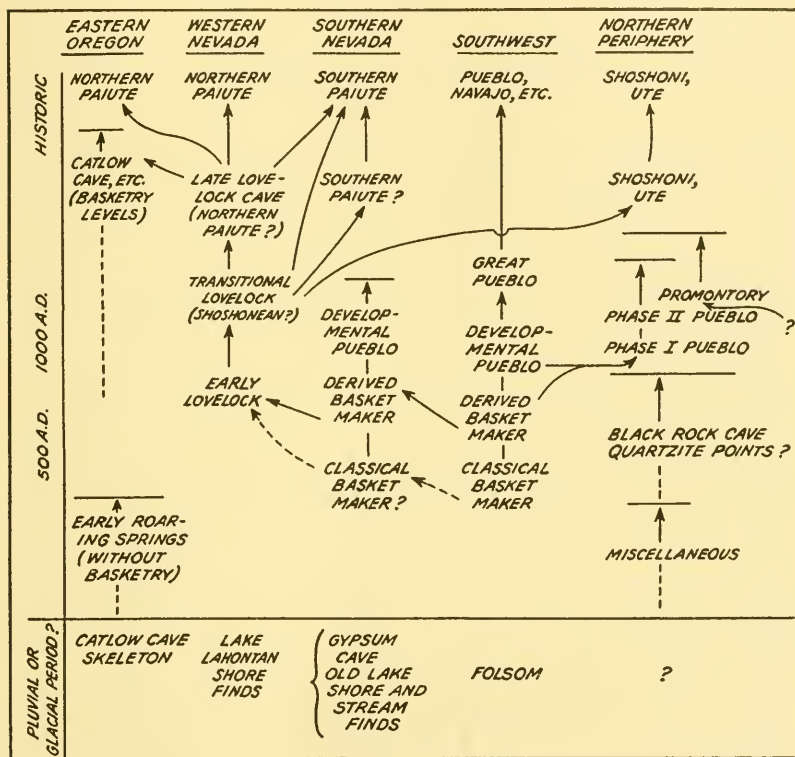


FIG. 30.—Postulated culture development in the Intermontane area. Horizontal lines indicate probable breaks in developmental continuity.

PRE-BASKET MAKER CULTURES

The Intermontane area has peculiar importance in the search for ancient man in America. It is a southern extension of the great corridor of western Canada, a possible early migrational route; its great aridity and large number of caves are unusually favorable for the preservation of materials; and it affords extraordinarily varied means of dating archeological materials. Recognizing its importance and following the early lead of M. R. Harrington, the Universities of

Oregon, Utah, and California, the Southwest Museum, the San Diego Museum, and the Carnegie Institution of Washington have in recent years energetically conducted investigations in this field.

Evidence of antiquity in this area is mainly of five kinds: Association with extinct fauna, stratigraphy, correlation with pluvial (glacial) and postpluvial physiographic events, association and typology, weathering and patination. These vary from site to site. Dendrochronology has not yet yielded results.

Sites having remains of presumed great antiquity are, with few exceptions, of two kinds: Caves cut into shores of now shrunken lakes by waves that formerly beat against hills and mountains, and open-air sites along ancient stream terraces and lake shores. Physiography is extremely important in dating both kinds of sites. In the case of caves, it indicates a maximum antiquity; caves that were covered with water at the pluvial maximum were not inhabitable until some postpluvial time when the water had shrunk below them. The desiccation began some time after 30,000 to 35,000 years ago in the northern part of the area, perhaps 20,000 to 25,000 years ago in the southern portion (Antevs, 1925, 1936, and *in* Campbell et al., 1937). Most of the caves were doubtless free of water by 10,000 years ago at least and have remained so until today. The slightly humid period which began about 1000 B.C. was insufficient to fill the lake basins (*idem*); only the lowest caves could have been inundated at this time. Although the date of the recession of the water provides an approximate maximum antiquity for deposits in each cave, the minimum age is less certain. It can only be guessed that when little or no sterile debris intervenes between lacustrine deposits and human refuse, no great time elapsed between the recession of the lake from the cave and man's occupation of it, a guess that necessarily has a considerable margin of error.

The evidence of antiquity for remains found along pluvial period stream channels and lake shores is based on the assumption that recent aridity precluded human occupation of most of such localities; people camped at these places only when the lakes were full and the streams running, which was during the pluvial or glacial period. In general, this assumption is probably correct; some cultures at these sites will doubtless stand as truly Pleistocene. There are, however, several difficulties in establishing chronology merely by physiography. First, there is often reasonable doubt whether such sites have a single culture or a mixture of successive complexes. A general lack of stratigraphy has prevented chronological segregation of artifacts that are sometimes quite dissimilar and has occasionally injected a considerable subjective element into unscrambling cultures. Relative weathering,

patination, and even assumed evolution of types have sometimes been used as decisive criteria of chronology. Second, although the Great Basin lakes did not regain their pluvial maximum size during the recent period, the moist period of about 1000 B.C. must have permitted occupation of at least some localities that are arid today. Finally, even the assumed uninhabitability of now arid localities is thrown into doubt when recent potsherds and metates (the latter may be fairly ancient, though it is doubtful whether they are much if at all older than Basket Maker) are found in association with the presumably older remains at certain sites.

Of the many sites in southern Nevada and southern California, Gypsum Cave (Harrington, 1933) is most certainly pre-Basket Maker. Its earliest artifacts (including a well-defined, stemmed projectile point, a type that has also been found in surface sites in southern California) were not only associated with the ground sloth and several other now extinct species of animals, but lay stratigraphically below Basket Maker remains under conditions indicating greater local humidity than at present. We do not know when the "Pleistocene animals" became extinct, except that they did not survive into the Basket Maker period. Nor can the humid period be dated definitely, though it is believed to have been the pluvial age. (The cave is not in a lake basin.) Stratigraphy, however, shows it to have been pre-Basket Maker, and the depth of refuse adds support to its appearance of antiquity.⁵

Lake shore finds are inferentially old. Possibly some exceed the antiquity of Gypsum Cave. The most thoroughly studied is Lake Mohave, Calif., a "fossil lake." Scarpers, gravers, and somewhat distinctive, slightly stemmed projectile points of the Lake Mohave and Silver Lake types (unlike Gypsum Cave points), consistently occur on the highest shore line of this ancient lake, which Antevs estimates to have existed 15,000 years ago (Campbell et al., 1937). Distinctly modern artifacts, with the possible exception of the mano and metate, are absent. A very similar flint industry, judged to be perhaps slightly less old than Lake Mohave, was found along the extinct and possibly pluvial age Pinto River (Campbell et al., 1935). At this site, however, it may be questioned whether a humid phase of the recent period did not encourage its occupation. Manos, metates, a pestle, and recent

⁵ Also near Las Vegas, Harrington (1934) found evidence of man associated with camel remains, but no culture was definable. Near Boulder Dam (1937a) he found a stratified site with probably Paiute on the surface, Early Pueblo or Basket Maker below, and at the bottom, flints including points similar to Classical Basket Maker.

potsherds show that it was, in fact, occupied very recently during arid times.

Southern California is somewhat differently interpreted by Rogers (1939). He assumes the oldest culture, a Malpais flake industry without projectile points, to date from only 2000 B.C. This was followed by the Playa-San Dieguito culture, which was very similar to the Lake Mohave culture and occupied margins of streams and lakes then containing water. After this came the Pinto-Gypsum complex, during the first millennium B.C. Pinto and Gypsum are combined on the basis of frequent association of these types of points. It is difficult to accept the Malpais culture. Rogers' interpretation of the other finds differs from the conclusions reached by the Campbells and their colleagues mainly in dating and in the combination of Gypsum and Pinto Basin artifacts into a single complex.

Although these finds represent important progress in the quest for early man and although there is no great reason to doubt that many, especially the Lake Mohave finds, are truly pluvial in age, the outstanding problem of the moment is to establish the genuine complexes and their sequences. When Folsom and Yuman type points occur at Lake Mohave, when Gypsum and Pinto points are frequently found together, and when various other types are intermixed, it is apparent that the desperate need is stratigraphy, which will clarify these complexes and their relative chronology. Meanwhile, it would be helpful if reports on these finds gave more detailed evidence on specimen provenience with respect to one another and to sites so that the reader might draw his own conclusions about associations where contradictory opinions are held. Detailed physiographic studies of more sites would also be helpful.

Recently, Mr. and Mrs. Campbell (1940) have reported a Folsom site "in a desolate part of the Great Basin." The site is described as having only Folsom type artifacts which, judging by the illustrations, are definitely related to, though not identical with, standard Folsom types. The evidence of this site, together with the occasional finds of Folsomoid points west of the Rocky Mountains, suggests that while the true Folsom culture existed in the bison country east of the Rocky Mountains, a related culture may have occupied the more arid region to the west. Its sequential relation to the ancient lake finds in southern California, however, remains undetermined.

The case for antiquity of artifacts in caves of the Great Basin rests on their occasional occurrence on or near lacustrine clays and gravels. For the caves above the Provo level in the Bonneville Basin, an antiquity of 10,000 or 20,000 years is entirely possible. Perhaps

high caves in the Lahontan Basin and in southeastern Oregon have been inhabitable for this long, though in these regions lake terraces have not been as well correlated with pluvial and postpluvial stages as in the Bonneville Basin. Certainly, however, most caves could have been occupied long before the Basket Maker period, and many were dry in the early postpluvial period.

The early postpluvial date of certain cave remains is, however, a possibility rather than an established fact. Other considerations argue greater recency for even the oldest materials. First, there is no case of association with extinct fauna. Second, the main diagnostic element of the deepest cave strata is usually the projectile point. In all cases notched forms are among the earliest. These may, of course, prove to be as old as unnotched forms in America, but the latter seem at present to have the best case for antiquity. Folsom and so-called Yuman types east of the Rocky Mountains and the various types in southern Nevada and southern California are all unnotched, though some of the latter are stemmed and occasionally have a suggestion of notching. Some cave points are, to be sure, vaguely Yuman but this is a very general class whose horizontal and vertical distribution is too great to give it any precise chronological significance. There are also a few cave types slightly like those in the south, but unless there are enough points to establish a type beyond question, these should be considered as possible variants of other forms. Third, the bulk of cave materials contain basketry and other evidence of Basket Maker influence. Earlier materials are extremely scant.

Although the cave remains are extraordinarily well stratified, attempts to correlate prebasketry horizons with old finds in other areas have failed. This is partly because the main diagnostic element is the projectile point, which rarely is sufficiently numerous at a given level to allow definition of a type and hence legitimate comparisons with other areas. It may also be because there are few finds elsewhere that bridge the enormous gap between the pluvial and Basket Maker periods. The caves, however, offer the best hope of filling this gap.

The Bonneville Basin, occupying the northwestern portion of Utah, has a vast number of caves only a small percentage of which have been excavated. In most of these caves, the uppermost aboriginal remains are of the Promontory culture (described below), traces of other cultures lying below it. I had guessed (Stewart, 1937a) that the Promontory culture was post-Anasazi and pre-Shoshoni, but could offer no stratigraphy to prove it because Puebloan remains had not been found in these caves. Recently, however, Elmer Smith, of the

University of Utah, informs me that he has found the distinctive Promontory and Pueblo pottery associated in two caves on the southern shore of Great Salt Lake and in two caves in the Desert Mountains on the western edge of the Great Salt Desert. In one cave they were associated through 6 to 18 inches of deposits, the Puebloan ware extending a little deeper. In another, four divisions were recognizable. Puebloan pottery was deepest; above this, Puebloan and Promontory were associated; next higher was only Promontory pottery; on top were traces of recent Shoshonean culture. These important finds fix the relative chronology of Pueblo and Promontory cultures and establish the pre-Promontory strata in most caves as therefore also pre-Puebloan or pre-Anasazi.

Pre-Anasazi artifacts are known mainly from two caves in the Salt Lake basin (Steward, 1937a).⁶ These caves are in ancient Lake Bonneville terraces which are sufficiently elevated above the present lake level to have been dry and inhabitable several thousand years ago. In each, the Promontory culture is the latest. Below it, artifacts mainly of flint and bone extend down to undisturbed lacustrine deposits on which the lowest cultural strata rest. As projectile points of the pre-Promontory strata are definitely not Puebloan, they are almost certain pre-Puebloan; but it is impossible definitely to fix their age. None were associated with extinct fauna. None are positively comparable to points in other areas. A large, broad, corner-notched quartzite projectile point is standard in the deposits immediately underlying the Promontory horizon in Black Rock Cave, but it is difficult to know whether it is historically connected with other notched forms in the Salt Lake Basin, southeastern Oregon, and the Southwest, which differ from it slightly in proportions and in position of the notch. My present guess is that it is the Salt Lake Basin contemporary of Basket Maker. If so, the several but as yet undefinable types below it must be pre-Basket Maker and perhaps cover a considerable period. A larger series of artifacts from these deeper cultures is needed.

The pre-Anasazi cultures appear to have been extremely impoverished. Unfortunately, however, present data on them come only from Black Rock Cave and Promontory Cave No. 2 in which only stone and bone artifacts endured. In view, however, of the excellent preservation of vegetable fibers, hide, and fur in Promontory Cave No. 1 during the 800 years since they were deposited, like materials from earlier cultures should have persisted in this same cave below

⁶ Important information on the early cultures will be forthcoming when Smith's recent excavations have been correlated and published.

the levels of the Promontory culture. Without attaching undue weight to negative evidence, I get the impression that these early cultures lacked the richness of the Promontory and Pueblo cultures.

It should be stressed that although some of the pre-Promontory levels may have been contemporary with the Southwestern Basket Maker, no true culture of either Classical or Derived Basket Maker has been found in either the Salt Lake Basin or any other part of the Northern Periphery. Nor do any finds there throw light on the origin of the Basket Maker. Basket Maker traits always occur there in association with Puebloan traits.

The Lahontan Basin, covering much of western Nevada, has thrown little light on pre-Basket Maker cultures. The Lovelock Cave remains (below) all date from a Basket Maker and post-Basket Maker time. A few finds on the extinct lake shores suggest important possibilities for pluvial age materials, but this field has been little investigated and no culture complexes have been determined.

Caves in the shore lines of ancient lakes in that part of the Great Basin lying in southeastern Oregon have been investigated by Dr. L. S. Cressman, of the University of Oregon, and his former associate, Alex Krieger.⁷ Like other caves in the Great Basin, these were inhabitable many thousand years ago. As yet, however, well-defined complexes of demonstrable antiquity are difficult to recognize. The bulk of the materials include basketry and other traits (below) which mark them as no earlier than Southwestern Basket Maker. There are only a few artifacts from the prebasketry levels.

A skeleton of a generalized western dolichocephalic type from Catlow Cave No. 1 may date from the pluvial period, but as only two bone artifacts were associated with it, the culture is not definable.

Seemingly the oldest definable culture is that represented in the lower levels of Roaring Spring Cave, which, on geological evidence, may have considerable antiquity. These levels are of outstanding importance in representing a truly prebasketry period. Assumptions of prebasketry horizons in other parts of the Intermontane area rest upon evidence from caves where objects of vegetable materials might have decayed. In this cave, Dr. Cressman states, the lack of basketry is not a matter of adverse conditions, for "besides scraps of matting, bits of bark and grass in good condition were frequently seen."

⁷As this material has not yet been fully correlated or published, I am indebted to Dr. Cressman for placing manuscripts at my disposal. The present summary is my own, with which Dr. Cressman and Mr. Krieger, who were kind enough to read and critically comment on it, do not wholly agree. Dr. Cressman's published and unpublished papers are listed in the bibliography.

Basketry occurs only in the upper part of this cave and is associated with artifacts which I believe relate it chronologically to Lovelock Cave remains. Thus, these caves seem to strengthen the assumption that basketry was unknown in the Intermontane area prior to the Basket Maker period of the Southwest.

The content of the early culture of Roaring Springs Cave appears to have been small, consisting only of matting, knives, scrapers, drills, both triangular and notched projectile points, and probably the atlatl. It is premature to attempt to correlate this culture with any levels in the Salt Lake Basin, though possibly its notched projectile points may be related to the quartzite points of Black Rock Cave.

ANASAZI (BASKET MAKER AND PUEBLO) CULTURES

The Basket Maker culture appears, on the basis of present evidence, to have sprung full blown in the Southwest. In the southern portion of the Intermontane area, there is a great hiatus between the presumably pluvial lake shore cultures and Basket Maker. In the northern portion, the uncertain age and scant remains of prebasketry cultures give little reason for postulating continuity between periods showing Basket Maker influence and earlier periods.

The extent of Basket Maker and later of Pueblo influence in the different parts of the Intermontane area provides a basis for subdividing the area. The Western Periphery, covering the plateaus and tributary valleys of the Colorado River in southern Utah, northwestern Arizona, and southern Nevada, was marginal to, and closely followed, the orthodox sequence of the Kayenta region of the San Juan area: Classical Basket Maker, Derived Basket Maker, and several phases of Developmental Pueblo. Some influence from the Western Periphery was even implanted in southern California. Western Nevada did not receive true Basket Maker or Pueblo cultures, but the lowest stratum of Lovelock Cave shows strong Basket Maker influence. Some Southwestern influence was even transmitted to southeastern Oregon via western Nevada, but with diminished effect. The Northern Periphery, occupying northern Utah and adjoining parts of Colorado and Nevada, never received either Classical or Derived Basket Maker cultures but has abundant evidence of mixed Basket Maker-Pueblo culture. These areas will be described in turn.

THE WESTERN PERIPHERY

Evidence of culture sequence in the Western Periphery is provided partly by typological comparison with the known sequence of the

Southwest, partly by stratigraphy. Gypsum Cave stratigraphy gives: Sloth period, Basket Maker, Pueblo, Paiute (Harrington, 1933). Paiute Cave, also in southern Nevada, contained Paiute remains overlying the Pueblo materials and appearing to have some antiquity (Harrington, 1930a).

Classical Basket Maker culture is present, especially in southern Utah (Nusbaum, 1922; Judd, 1926). Farther west, it seems less well developed and may exhibit some cultural lag.

Sites with a Derived Basket Maker style of black-on-gray and gray pottery occur throughout the Western Periphery. Near Kanab, these are out-of-door clusters of rectangular and round slab structures, probably houses, which had associated slab cists.⁸ Certain circular pit lodges described by Judd may belong to the same period. Slab houses, often with pits of some depth, also occur in the Zion National Park region (Smith, 1934) and in southern Nevada (Harrington, 1930b, pp. 19-20).

There is no clear-cut Early Pueblo (Pueblo I), jacal lodges and neck-banded pottery being absent. A transition to Developmental Pueblo is represented, however, first by the addition of free-standing adobe walls to circular, slab-lined pits, next by the inclusion of some masonry in the adobe walls (Judd, 1926, pp. 92-98),⁹ and finally by construction of pitless, rectangular houses made entirely of masonry. In Johnson Canyon, near Kanab, these masonry houses, though not joined to one another, are grouped around circular depressions which may be kivas. They always contain black-on-red, polychrome, corrugated and black-on-white pottery which is very similar to the Tusayan wares. Possibly the latest phase of Pueblo development here is the actual joining of masonry rooms into small house units, which Judd has reported to be common near Kanab (Judd, 1926). Southern Nevada seems to have passed through a similar sequence, the culmination of Pueblo development being Mesa House, a large structure of many rooms in the Moapa Valley (Hayden, 1930).

It is possible that these Western Periphery cultures survived until the beginning of the Great Pueblo (Pueblo III) period of the San Juan Valley. A multistoried stone house with Mesa Verde pottery occurs on the Colorado River just below the Fremont River and another such house with Tusayan or Kayenta polychrome pottery is located on the northeastern side of the Circle Cliffs near the Fremont

⁸ The writer's reconnaissance of 1932.

⁹ Such houses found by the writer had both late and transitional styles of pottery.

River in Utah. No other multistoried houses have been reported, but pottery showing Pueblo III features is claimed for Mesa House, Nevada. The Western Periphery did not, however, have any true Great Pueblo culture complex.

It is important to note that during the Basket Maker phases, the Western Periphery possessed certain Southwestern elements that the Northern Periphery lacked and thus were in a position to pass them on to western Nevada, where the early Shoshoneans are presumed to have been at this time. But the complete Anasazi complexes were not diffused to the west. Beyond the Muddy River these complexes thin out, horticulture and such dependent or partially dependent traits as developed house types, large metates, elaborated ceramics, cotton, the turkey, and others, disappearing. The elements which were diffused westward were nets, generalized metates, fur and feather weaving, sandals, double-curved clubs, basketry forms, and perhaps others suitable to the local, nonhorticultural people. The first three of these traits also reached the Northern Periphery. Some even spread into California. Wherever these traits occur west of the Western Periphery, however, they are parts of local complexes, not of Anasazi cultures.

With the passing of the Anasazi cultures in the Western Periphery, two peoples appear to have entered the territory, where they remained into the historic period. The Southern Paiute occupied the greater part of it; the Yumans pushed up the Colorado River.¹⁰

WESTERN NEVADA

The most important site in this region is Lovelock Cave which lies in an ancient shore terrace of Lake Lahontan (Loud and Harrington, 1929). This cave, according to the stratigraphy established by Harrington, seems to provide the crucial links between Basket Maker and recent Shoshonean culture.

Although the deepest Lovelock artifacts occur close to Lahontan clays, there is nothing about them to suggest great antiquity. To the contrary, Harrington's chronology shows three periods, the earliest of which is sufficiently similar to Southwestern Basket Maker to leave no doubt of historical connection and approximate contemporaneity (Harrington, *in* Loud and Harrington, 1929, pp. 1-28).

The early period culture is directly related to Basket Maker in the subsistence complex (lacking mainly horticulture) and in several other features. It shares with Basket Maker the atlatl, darts with bone

¹⁰ Colton (1938) suggests that the prehistoric Yuman be called Patayan.

and bunt points, double-curved wooden clubs, rabbit nets, 3- and 4-rod coiled baskets, with conical, tray, bowl-shaped, and jug-shaped forms, storage and burial cists, mountain sheep horn "sickles," and woven fur cloth. As several of these elements may have reached the Basket Maker from Mexico—clubs, nets, and weaving—and as they have not yet been found in sites demonstrably earlier than Basket Maker, it is possible that diffusion was predominantly from the Southwest to western Nevada rather than the reverse. New evidence may, of course, require reversal of judgment of the history of any of these elements.

Because of the many Basket Maker traits of Lovelock Cave, it has been suggested by several writers that the early period be called Basket Maker I. This view is untenable for several reasons: First, the distinctive Basket Maker skeletal type does not occur at Lovelock; second, if Lovelock acquired its Basket Maker traits from the southwest, it must be later than, or marginal to, it; third, it lacked horticulture, the Basket Maker style metate, and finely woven bags and sandals; and fourth, it possessed such non-Basket Maker traits as fish(?) nets, possibly fishhooks, feather ornamentation on coiled basketry, soft twined baskets, L-shaped awls, and probably others that cannot at present be placed in the chronological scheme. In short, it was a local adaptation of some Basket Maker and some central California and probably other features. Although with reference to the Southwest it was, as Harrington suggested, "sub-Basket Maker" (Harrington, *in* Loud and Harrington, 1929, p. 121), it was definitely not Basket Maker I in the sense of ancestral Basket Maker and should not, in the writer's opinion, be called Basket Maker of any kind.

During Developmental Pueblo in the Southwest, Anasazi traits were spread throughout a wide territory. Transitional Lovelock seems to correspond with this period. Snares, cloth of both bird skin and bird feathers wrapped on cords, and tubular pipes were probably derived from the Southwest. Stone balls perhaps came from the Northern Periphery, which, by this time, had an Anasazi culture with this element. The bow and arrow was introduced, perhaps from the north, and used in addition to the atlatl. Fur cloth, rabbit nets, and coiled baskets continued, but stiff twining, which was later the predominant weave of the Shoshonean utility baskets, made its first appearance. Duck decoys, which were recently used by Nevada Northern Paiute, were also introduced. Twined bags, curved clubs, and sheep-horn "sickles" were abandoned.

The Lovelock late period, whether representing the culture of the Pit River Indians, as some have supposed, or of the Northern Paiute,

is not radically different either from the culture of the latter or of the transitional period. It contains the main elements which modern Shoshoneans share with the Basket Makers. The atlatl is abandoned, but the bow and arrow continue in use. There are snares, rabbit nets, coiled baskets, fur cloth, and bird-skin cloth. Sandals, which were no doubt derived from the Southwest, are added. Duck decoys, fish-hooks, and fish nets are retained. The main losses are flexible twined baskets, stone balls, and the atlatl.

The recent work of Robert Heizer, of the University of California, and Alex Krieger will probably supplement and correct some details of the Lovelock sequence. The general implications of Lovelock Cave will, however, doubtless stand. It provides the essential links, during a long period of development, between the Basket Maker and recent Shoshonean culture. The Shoshoneans could not have acquired their Basket Maker traits in the Northern Periphery for Basket Maker is not represented there. The Western Periphery is ruled out not only because the Shoshonean physical type is too unlike the Pueblo to postulate direct descent but also because the Shoshonean culture is like the Pueblo only in a small degree. If the Shoshoneans were not in the Northern or Western Peripheries, they must have been in western Nevada, where, through contact with Basket Maker cultures, they acquired some but not all of its elements. The picture provided by Lovelock Cave fills the bill perfectly.

SOUTHEASTERN OREGON

A late period culture is represented in the upper Roaring Spring Cave levels, in Catlow Cave No. 1, Paisley Cave, and Fort Rock Cave. Large mammalian bones associated with the artifacts indicate that the fauna of the region was like that of today. The culture was based on hunting and gathering and used both the atlatl and the bow. Its 1-, 2-, and 3-rod coiled basketry and L-shaped bone awls relate it to Lovelock Cave, and its soft twine basketry relate it to both Lovelock Cave¹⁴ and to modern Klamath. Some elements, such as knives, drills, scrapers, matting, twined mat bags, fire drills, bone awls, and digging sticks, and possibly the types of projectile points, have an undetermined diagnostic value. But two crucial traits are probably of Southwestern origin, coming to this region via western Nevada—sandals and metates. As sandals do not occur in the Northern Periphery and are found only in the late Lovelock period, this

¹⁴ Mr. Krieger informs me that the flexible overlay twine, which is similar to that of the Klamath, enters Lovelock Cave only in the late period.

Oregon culture is fairly recent. Its pottery permits the same inference.¹² This ware is definitely not Anasazi and almost certainly not Promontory. It resembles Shoshoni pottery in its general, non-descript character. If it is Shoshoni, it must date from after Shoshoni expansion to the north and northeast.¹³ But the caves lack most Shoshoni traits and appear rather to contain a desert phase of a culture which is similar in some respects to the modern Klamath but which also received influence from the south.

Modern Shoshoneans, that is, probably Northern Paiute, are evidently represented only by a cache dug from the surface of Roaring Springs Cave. This cache contained coiled basketry, a wicker seed-beater (?), a sinew-backed bow, and one-piece, split-toe moccasins of a general northwestern style.

THE NORTHERN PERIPHERY

This area extends from approximately the Fremont River northward on the Colorado Plateau to the Uintah Mountains and eastward into Colorado. To the west it is found in the Sevier Lake and Great Salt Lake Basins but thins out rapidly in the deserts of eastern Nevada. It probably does not penetrate either Wyoming or Idaho.

Anasazi sites are fairly numerous in the Northern Periphery, comprising the bulk of archeological remains. On the upper Colorado Plateau, these consist of pit lodges, masonry houses, and granaries of pit, slab, and masonry construction. In western Utah there are pit lodges and adobe-wall houses. Though the area has been comparatively well sampled by scientific investigators, published information is extremely spotty for eastern Utah; the northwestern quarter of Colorado is virtually unknown. It is particularly unfortunate for both the problem of the origin of these cultures and of their relationships to modern Shoshonean culture that cave sites of the upper Colorado Plateau, which contain a wealth of perishable materials,

¹² Dr. Cressman kindly permitted me to examine this pottery.

¹³ All Shoshoni made pottery. Among the Northern Paiute, it did not extend north of the Owens Valley region. It is possible that Shoshoni pottery was learned from the Promontory people in northern Utah. In this case, it might ultimately have come from a Woodland pottery of the Northern Plains and have passed through Owens Valley to the Western Mono and Yokuts of central California. This hypothesis would account for the fact that although a simple coiled pottery was made by both Pueblo and Shoshoneans, its distribution is interrupted by the paddle-and-anvil ware of the Yumans, and that archeology has not connected the Shoshonean-Yokuts ware with any Anasazi-ware.

have been consistently despoiled by pothunters. The only scientific monograph which has adequately described such materials is Morss's report on the Fremont River in central Utah (Morss, 1931).¹⁴

The essential core of the culture of the Northern Periphery was clearly derived from the Southwest, but it does not correspond exactly to any of the cultural periods of the latter. A strong Basket Maker complex is present in many sites, but it is always accompanied by some Pueblo elements. Two phases of development, however, are evident: Phase I, a culture consisting of a blend of Derived Basket Maker and Early Pueblo elements, which persisted with little change in the north, especially in the Great Salt Lake region; and phase II, the addition of later, Developmental Pueblo (Pueblo II) elements from the Southwest. A penetration of Great Pueblo is barely suggested in the extreme south.

The outstanding problem of the Anasazi culture history in the Northern Periphery is to ascertain the region from which the phase I complex was derived. This region should, on theoretical grounds, have had first a Derived Basket Maker culture, later influenced by Early Pueblo which added to but did not entirely displace its original elements. On the basis of present information, no part of the Northern Periphery fulfills these conditions. A true Derived Basket Maker culture is absent throughout. It is present in the Western Periphery but this area lacks the distinctive Northern Periphery traits and, despite geographical contiguity to it, seems to have had little cultural contact with it. By elimination, therefore, the blend must be assumed to have occurred on the northern fringe of the San Juan area in western Colorado from which it spread northward and westward.

There are three cultural subareas in the Northern Periphery, each occupying a distinctive geographical province. The first is the upper Colorado Plateau, which extends from the Fremont River to the Uintah Mountains in northeastern Utah. Most of this region is either too high and arid or too cut with chasms to have been inhabitable, but the Uintah Basin, Fremont River valley, and certain other tributaries of the Colorado River, where valley bottoms and river banks permitted horticulture, have yielded rich remains.

The great, central upland block, consisting of the Wasatch Mountains in the north and lava plateaus in the south, lies between the Colorado Plateau and the basins of western Utah. It is too high and too cold for horticulture, but, supporting considerable game, roots,

¹⁴ Material dug by Reagan in northeastern Utah has not yet been described in detail. We eagerly await publication of the results of the Peabody Museum's explorations in eastern Utah.

and seeds, was a rich hinterland for the occupants of the Sevier River valley and of the piedmonts along its western face. To some extent, however, it was a cultural barrier, the complexes to the east and west of it being slightly unlike.

The Great Basin extends westward from these uplands to the Sierra Nevada Mountains of California and into southeastern Oregon. Its deserts and semideserts and low rainfall restricted horticulture to oases where streams flow out from mountains. Anasazi sites are consequently concentrated at streams which are comparatively numerous along the Wasatch Piedmont and the western border of the Hurricane Fault. They become rare in the semideserts and true deserts bordering the Great Salt Lake and Sevier Lake basins on the west and disappear in central Nevada, where there are few permanent water courses of any size.

Western Utah has two cultural provinces: The Great Salt Lake Basin, where phase I is most strongly represented but where refuse deposits are very scarce, suggesting either brief occupation or sparse settlement; and the Sevier Desert region, where phase II cultures predominate and where a longer occupation is suggested.

The nucleus of phase I of the Northern Periphery Anasazi¹⁶ is clearly of Southwestern origin. It consisted of horticulture (maize, beans, squash) and several traits that were functionally dependent on it. At least a semisedentary life connected with farming warranted construction of a comparatively permanent lodge. The shallow pit lodge of both western Utah and the Uintah Basin is very similar to the jacal lodges of the Early Pueblo period in southwestern Colorado (Roberts, 1930), but slab houses in Nine Mile Canyon (Gillin, 1938), south of the Uintah Basin, appear to have a close relationship to Basket Maker slab houses of southern Utah.¹⁸ In the Northern Periphery, these lodges were scattered without special arrangement in groups of 10 to 20 along streams. Fixed adobes in turn permitted the use of a large, heavy, nonportable metate, similar in general style to, though differing in detail from, that of the Basket Maker.¹⁷ Horticulture may also partly have conditioned the use of storage cists,

¹⁶ The western Utah cultures have been described by Judd, 1926, and Steward, 1933, 1936a. Those in eastern Utah and Colorado have been described by Jeançon, 1927; Morss, 1931; Woodbury, 1932; Reagan in a long series of papers; Leh, 1936; and Gillin, 1938.

¹⁷ Near Kanab, recorded by the writer in unpublished notes.

¹⁸ In western Utah, the "Utah type" (Judd, 1926, plate 48). In eastern Utah, a thick, nonhollowed metate.

which were slab-lined on the Colorado Plateau, and in western Utah, where slabs are not available, were merely excavated.

Horticulture, however, was not the sole means of subsistence. Like the Basket Maker, phase I people relied extensively upon hunting. This is attested by the relatively great number of arrowpoints and grooved arrowshaft-smoothers in the northern sites. How much of the hunting complex was shared with the southern Utah Anasazi cannot be known until specimens from eastern Utah are more fully described. It is known, however, that both had the bow and arrow (even the hornbow), grooved stone arrowshaft-smoothers, perforated horn arrow wrench, nooses on pegs, and the short net which pulls up into a bag when entered by a rabbit. The long net, used by modern Shoshoneans and presumably also by the Basket Maker for rabbit drives, has not been reported in the Northern Periphery, where double-curved clubs, curved rabbit clubs, the atlatl, and mountain sheep horn "sickles" are also lacking.

Utilization of wild seeds was no doubt also important in phase I of the Northern Periphery, but little is known of the implements involved. The pitch-coated basketry olla, used by modern tribes to carry water through the deserts, was known to both the Uintah Basin people and to the Classical Basket Maker. Coiled basketry bowls, and flat, circular baskets which could have been used for winnowing and parching seeds, and basketry sifters are common to both. Conical seed baskets, like those of the Basket Maker, have been reported only from the Fremont River. The people of the latter area, like the Basket Maker, wove coiled baskets on a rod-and-bundle or 2-rod-and-bundle foundation. But in the Salt Lake region, a 1-rod, 3-rod, and simple-bundle foundation were also used.

Certain other traits were also unquestionably acquired from the Basket Maker but have little dependence on horticulture. Phase I pottery, although sometimes associated with black-on-gray and corrugated pottery, has unmistakable Basket Maker ancestry.¹⁸ Anthropomorphic petroglyphs and stylistically similar figurines of unbaked clay, though elaborated beyond anything made by the Basket Maker, clearly developed from prototypes of the latter. Tubular stone pipes, probably twined fur and feather cloth, and perhaps twined rod cradles came also from the Southwest.

¹⁸ Especially at slab houses in northeastern Utah (Gillin, 1938) and at pit lodges near Great Salt Lake.

The lack of dependence of pottery on horticulture is shown by its occurrence far beyond the limits of horticulture among the Shoshoni of Nevada and Idaho and similarly among hunters of southern South America.

Several other traits were shared by the Northern Periphery and the Basket Maker but are not evidence of specific historic connection between the two as they occur also in neighboring areas and evidently are very old: Twined bags, mats, and blankets of coarse bark or of tule, fiber or skin skirts, tubular bone beads, stone and bone pendants, fire drills, hafted flint knives, and the bow and arrow.

Several other Basket Maker traits which failed to become part of the Northern Periphery culture seem partly or completely independent of the horticultural complex. Notable among these are certain shapes and designs on pottery and a highly developed weaving complex which includes ornamented twined string bags and sandals. A preference for hide over vegetable fiber in the Northern Periphery is indicated by the enormous number of bone awls in western Utah and by the occurrence of the "Fremont moccasin" instead of sandals throughout.¹⁹ As there is no reason to postulate greater numbers of game animals in the north or presence of essential plants only in the south, this difference is evidently a purely cultural preference, not an environmentally determined trait.

Skeletal evidence of the physical type of phase I people is virtually nil. A single skeleton from a Grantsville pit lodge appears to be neither Puebloan nor Shoshonean.²⁰ Phase II of the Northern Periphery, however, brought the migration of a few people, at least, with posteriorly flattened, broad heads.

Phase II villages in the upper Colorado Plateau and in the Sevier Basin became larger, evidently more dependent upon horticulture, and more settled. On the plateau, houses of rectangular masonry rooms were built in clusters and had associated masonry granaries; but slab and jacal lodges also continued in use. Sevier Basin people

¹⁹ This had been reported from the Fremont River and Uintah Basin. Recently, Wheeler (1938) has found it in eastern Nevada.

²⁰ Dr. T. D. Stewart has kindly examined the skull from Grantsville (University of Utah, 11301) and another, supposed to be Ute, found in lava beds west of Kanosh, Utah (10861). The latter he describes as "round-headed, with a low vault, medium broad face, high orbits, somewhat narrow nose and broad alveolar arch," and the former as having "a very thin wall, which, together with other indications, suggests a younger individual than 10861. The physical type, so far as can be judged from the shape of vault, is the same as the latter. The Ute type of skull . . . by measurements given in the Catalogue of Crania of the United States National Museum (1927) . . . exhibits mesocrany to dolichocrany with a moderately low vault. The skulls under examination are both extremely round-headed (brachycranial) and low-headed; in these respects they do not accord with the Shoshonean type. Round low skulls are generally believed to be Athapascan."

and, to a very slight extent, Salt Lake Basin people, built similar houses of clustered, rectangular rooms, but, lacking suitable stone, they made the walls of adobe. They also built square, semisubterranean kivas. Corrugated vessels and a black-on-gray ware having a generalized resemblance to Pueblo II black-on-white pottery in the San Juan area, were added to the Basket Maker ceramic styles.

But other Pueblo traits, though known in the Western Periphery, were not accepted in the Northern Periphery. Absence of domesticated cotton, the loom, twilled baskets, sandals, and probably of the domesticated turkey may represent a continuation of the local preference for articles of hide. It is more difficult to explain the failure of grooved stone axes and mauls and thin metates placed in bins to spread northward.

Not entirely dependent on the Southwest, the Northern Periphery developed some distinctive traits: The "Fremont moccasin," hide shields, pecked stone balls, small, rectangular gaming(?) bones, a remarkable elaboration of anthropomorphic petroglyphs, pictographs, and unbaked clay figurines, the "Utah metate," and such ceramic traits as stuck-on and punched (false corrugated) decoration.

As no traits peculiar to the Northern Periphery have been found in Great Pueblo sites, nor vice versa, it is doubtful whether the Anasazi cultures lasted in the Northern Periphery beyond the end of the Developmental Pueblo period. A general retraction of the Pueblo area seems to have begun toward the end of the Developmental period, and it is probable that the northern sites were among the first to be abandoned. If so, they were not occupied long after A.D. 1000. It is hoped that dendrochronology may some day establish definite dates for this area.

While the Pueblo horticulturalists were still occupying villages along streams and rivers, a group of hunters entered the region and took up residence mainly in caves. These were the Promontory people whose pottery Smith has found associated with Pueblo pottery in several caves. The culture is at present known only from caves in the Salt Lake Basin and from a mound near Provo, Utah.²¹ It is named from a large cave on Promontory Point on the northern shore of Great Salt Lake where it is abundantly represented.

Promontory specimens show not a trace of horticulture but great reliance on hunting. Promontory Cave is full of bison remains (bison occurred in some number in the area until about 1832) and caves near Wendover have many deer remains.

²¹ Steward, 1936a, 1937a. Also, recent communications from Elmer Smith, of the University of Utah.

The culture appears to have been abruptly intrusive in the area, and one gets the impression that it is of northern origin. It has four-piece skin moccasins (nearly 200 specimens were found) of a type known only in extreme northeastern and northwestern Canada, fur mittens, a peculiar pottery which is totally unlike that of the Anasazi but remotely similar to some northern Plains types and may belong to the general Woodland class of ceramics, hand-game bones(?) somewhat like those of the Plains, beaver-teeth dice like those of the Northwest, and the sinew-back bow which came originally, at least, from the north.

The Promontory people shared a number of elements, however, with the local Pueblo. Some traits, like twined mats, twined tule bags, cane arrows, grooved arrowshaft-smoothers, side-notched triangular arrowpoints, hafted flint knives, scrapers, digging sticks, straight bone awls, compound fire drills, skin and fur bags, and the hoop-and-dart game, were too widespread to be evidence of specific connection between these two peoples. Other Promontory traits were less widely distributed and may well have been borrowed from the local Pueblo: Fur and bird-skin twined cloth, single-rod and rod-and-bundle coiled basketry, tubular stone pipes, cedar-bark rings, pottery disks, and possibly such gaming implements as cane dice and wooden tubes for the hidden-ball game. But these traits did not, so far as we know, alter the fundamental subsistence and dwelling patterns of the Promontory people. There is no evidence that they borrowed Puebloan horticulture, metates, or house types. Even their pottery seems largely devoid of Pueblo influence.

The only unique element of Promontory culture is the item of small stone (sometimes bone) tablets finely etched or painted with geometric designs.²²

The Promontory hunters seem to have arrived in the Salt Lake region while it was still occupied by Pueblo farmers and to have remained there an undetermined length of time after the latter had disappeared. These data cannot now be interpreted conclusively but tempt speculation.

The Pueblo villages throughout the Northern Periphery no doubt existed precariously because of the uncertainties of maize farming in that region (Kroeber, 1939, pp. 46-47). Internecine warfare or in-

²² These do not resemble any recorded petroglyphs. They are remotely like slabs found in Burnt Rock middens in central Texas, where, however, the culture is very unlike the Promontory culture. (Jackson, 1938, figs. 269-276, especially fig. 273.) Dr. Cressman informs me that etched slabs have also been found near Klamath Lake.

vasion, however, was certainly an important cause of their abandonment. Data from the Salt Lake region and a recent find of pottery very similar to the Promontory ware near Cisco, in southeastern Utah,²³ suggest the possibility that the Promontory people were Athapaskans who first appeared in the Salt Lake region and ultimately reached the Southwest, where, as some persons have thought, they were partly responsible for the desertion of the Great Pueblo villages of the San Juan area. Verification or rejection of this hypothesis is an outstanding research need. It will hinge upon tracing the distribution of the Promontory culture from one end and following the prehistory of the Navaho from the other end.

It is unlikely that the Promontory people were ancestors of the Shoshoneans, because their cultures are too dissimilar (Steward, 1937a, pp. 84-85).

ETHNOGRAPHIC DATA ²⁴

The greater part of the Intermontane area was occupied in recent times by three divisions of the Uto-Aztecan linguistic stock who are collectively known as Shoshoneans: The Northern Paiute or Mono-Bannock, the Shoshoni, and the Ute-Chemehuevi or Ute and Southern Paiute. Although the Nez Perce, Flathead, and others in the more fertile country of northern Idaho are literally Intermontane, they are omitted from this survey as their culture is very different from that of the Shoshoneans. The non-Shoshonean Washo of western Nevada are, however, included.

The Shoshonean culture was simple in structure and meager in content. Although it was not uniform throughout the area a survey with a list of about 2,500 elements demonstrates a striking absence of culture centers or climaxes. Differences between adjoining localities were slight. Over wide areas differences were cumulative. Statistical measurement of similarities²⁵ gives a 0.7 to 0.9 correlation

²³ I am indebted to Miss Marie Wormington of the Colorado Museum of Natural History for permitting me to examine samples of this pottery which she excavated during 1939.

²⁴ As Steward, 1938, contains a bibliography of most of the principal ethnographic sources for this area, only more recent publications are cited. Much ethnographic research of the past few years is unpublished. How far it will modify the present picture remains to be seen.

²⁵ Using the formula developed by Klimek (1935). Correlations for the entire area, based on element lists made by E. W. Gifford, O. C. Stewart, and by the writer, are being made by the University of California.

between neighboring localities but only a 0.5 correlation between such distant localities as Death Valley, Calif., and northern Nevada or western Idaho. But there were no cultural frontiers. This accords with the absence of dialectic and political boundaries (Steward, 1938, 1939). With the exception of the Northern Shoshoni and Ute, who developed band organization after acquiring the horse, and of some Northern Paiute of the extreme west, social and political groups never exceeded village organization. Society was a continuous series of related villages, which were at peace with, and intermarried into, one another.

The low numerical element content of Shoshonean culture and its lack of climaxes also harmonized with its marginal position relative to neighboring areas. A large number of its elements, especially those that produced local differences between Shoshoneans, were imported. Ethnography supplements archeology in tracing the source of most of these. It shows that opposite sides of the Intermontane area were unlike mainly to the extent that they resembled adjoining areas. Thus, Idaho Shoshoni and some Northern Paiute were distinguished by fishing techniques derived from the northwest; Northern Shoshoni and Ute of the eastern part of the area by elements of hunting, warfare, and political organization from the Plains; Southern Paiute by horticulture and pottery from the Southwest; Northern Paiute of Owens Valley and extreme western Nevada by house types, mortars, basketry traits, and others from California.

Despite these local variations, however, Western Shoshoni, Northern Paiute, and Southern Paiute, were uniform in certain fundamental features. Their culture was essentially practical, being oriented toward physical survival in an area of extreme insecurity and frequent starvation. It centered around a set of hunting and gathering devices adapted to the exigencies of the environment. It was based on a human ecology that largely delimited several features of the culture. There was not, however, any master pattern that neatly integrated the cultural whole. Many elements, especially those that were imported from neighboring areas, cut across the Intermontane area with dissimilar distributions. These were unequally integrated in each local context.

An analysis of the history and functional interrelationship of these elements and complexes will show their varying roles in Shoshonean culture. It will indicate that some features had remained relatively fixed in time and space whereas others had varied enormously.

ORIGINS OF SHOSHONEAN CULTURE

Attempts to place the recent Shoshonean culture in historical perspective tend to assume that it is a surviving fossil of some archaic substratum of culture that has vanished in most other localities. Attention is focused on the obvious fact that Shoshoneans had many Basket Maker features. Some schemes, therefore, postulate that Shoshoneans are modern Basket Makers in culture if not in physical type. Zingg's (1938)²⁶ more ambitious reconstruction assumes that Shoshoneans have retained the essential patterns of the ancient substratum of a Proto-Aztecan-Tanoan culture. The evidence of both physical anthropology and culture, however, lend no support to the hypothesis that Shoshonean culture was a surviving substratum of any ancient culture. I shall here discuss its origins in terms of western developments, returning in a subsequent section to its relationship to cultures of the western hemisphere.

Postulation of physical descent of Shoshoneans from Basket Makers is untenable. Although both are long-heads, the correlation of cranial measurements of the former (based on Ute, Bannock, Gosiute, and Paiute) with the latter made by Von Bonin and Morant (1938) is approximately 36, a figure too great to indicate genetic connection.

Language throws no direct light on this problem because the Basket Maker language is, of course, not known. It is highly probable, however, that the Shoshoneans had differentiated into their present linguistic divisions or at least that they were differentiated from other Uto-Aztecs before they acquired those traits that link them with the Basket Maker. Their language seems to have a remarkable stability as witnessed by the near identity of Comanche with Shoshoni, even with Death Valley Shoshoni, after no less than, and probably much more than, three centuries of separation.²⁷ Had the Shoshoneans not been differentiated from other Uto-Aztecs in the Basket Maker period, we should expect to find far more Basket Maker features in the culture of other divisions of the latter than have been reported.

²⁶ I know of no evidence to support Zingg's apparent contention (p. 13), that Shoshoneans used the spear-thrower, curved throwing stick, and coil-without-foundation basketry.

²⁷ It may be suggested that in addition to inherent stability, Shoshonean languages did not diverge more rapidly because a seminomadic life kept local groups in constant contact with one another. A similar situation seems to prevail in areas like the Arctic, Canada, and Patagonia. By contrast, peoples who traveled only within a restricted orbit, like the relatively sedentary peoples of the Pacific coast, have enormous linguistic diversity.

A cultural approach to this problem requires a comparison of Shoshonean culture with archeological materials of the Intermontane area. Shoshonean archeology unfortunately has not, with the possible exception of Paiute Cave (mentioned above), and Ute archeology (Huscher, 1939) produced remains earlier than A.D. 1800. A comparison, moreover, can use only the cultures of the Northern and Southern Paiute and Western Shoshoni. Northern Shoshoni and Ute customs appear to have been so completely revamped after the acquisition of the horse that it is doubtful whether their prehorse cultures will ever be known. There is much reason to believe that these people formerly resembled their western kin, but full proof of this is lacking. Contrary evidence would require alteration of their assumed place in the historical scheme advanced here.

The outstanding Basket Maker features in Shoshonean culture were those economic traits that enabled them to exploit their semideserts. These include the basketry complex for seed gathering—the conical gathering basket, winnowing tray, and pitch-coated olla or jug. That most modern utility baskets are twined (except among some Southern Paiute, who coiled them; Ute and Northern Shoshoni used coiled jugs) whereas those of the Basket Maker were coiled is explainable by the post-Basket Maker introduction of twining. Once learned, twining is equally serviceable and easier to do. Both Basket Maker and Shoshoneans used metates, but the latter made them small, very thin, and portable. Both used certain snares, net traps, and long nets; Shoshoneans used the last for communal rabbit drives. Both wove bags, blankets, and even garments of bark, the Basket Maker preferring juniper bark, the Shoshoneans using sage bark. Skins of rabbits, which Shoshoneans took in rabbit drives, were made into twined blankets like those of the Basket Maker. Twined rod cradles, which the modern people find extremely useful for their long desert treks, are similar to Basket Maker specimens. Other features of weaving and dress may have come from the Basket Maker, though sandals, limited to the Northern Paiute and appearing late in Lovelock Cave, are more probably of Pueblo origin. The modern tribes also shared with Basket Makers grooved stone arrowshaft- (or spearshaft-) smoothers, perforated horn arrow wrenches, fiber skirts, tubular pipes, whistles of bone, fire drills, and other elements.

It is possible, of course, that some traits, especially the last-mentioned group, which are distributed widely beyond the Intermontane area, were transmitted not directly from the Basket Maker but through some third group to the Shoshoneans. As, however, there are more

Basket Maker traits among Shoshoneans than among other tribes, presumptive evidence favors direct transmission.

But many Basket Maker and later Anasazi elements never were acquired by the Shoshoneans. Horticulture was unknown to all Shoshoneans, except Southern Paiute who seem to have borrowed it recently from the Pueblo. Shoshoneans also lacked Pueblo house types, elaborations of weaving, and such ritual traits as anthropomorphic figures and petroglyphs. (Shoshonean figurines are crude, unlike those of the Basket Maker.) In short, Anasazi elements were filtered through the preexisting Shoshonean patterns which accepted only elements serviceable or congruent to their mode of life.

I have suggested that the contact between Shoshoneans and Basket Makers occurred in southern or western Nevada. The Northern Periphery is ruled out for three reasons: 1, it lacks a true Basket Maker culture; 2, it lacks any suggestion of an early Shoshonean culture (Promontory remains are generally uppermost in cave stratigraphy); and 3, it is impossible to assume actual descent of Shoshoneans from the Puebloans because in addition to differences in physical type an enormous degree of deculturation would have to be postulated. Even if horticulture had failed and the Puebloans had reverted to hunting and gathering, it is difficult to see why traits that did not conflict with the new mode of life, such as pottery styles, figurine and petroglyph styles, the Fremont moccasin, and others should have been abandoned. Similarly, the Western Periphery is ruled out for the second and third reasons. This leaves the western Great Basin as the only conceivable place where this contact could have occurred. And here Lovelock Cave supplies the crucial links. Its earliest period shows strong Basket Maker influence. Although some California traits are also present, the culture becomes increasingly like that of the modern Shoshoneans without, however, losing those essential features in which Shoshoneans resemble Basket Makers.

It is not certain, of course, that the Lovelock remains were actually left by Shoshoneans. In fact, local tradition assigns them to a tribe which was recently driven west. The important point is that Basket Maker influence sufficient to account for these features of Shoshonean culture was present in the western Great Basin. The 1,200 or more years since the first diffusion of Basket Maker traits is sufficient to account for the expansion of Shoshoneans who, equipped by this time with more effective means of exploiting the deserts, spread northward and eastward. The lack of sandals among Shoshoni and Ute suggests that these groups were already somewhere east of the Lovelock region when sandals, used by the recent Northern Paiute of

western Nevada, appeared in the late Lovelock Cave period. The Ute and some Southern Paiute, using only coiled basketry in recent times, may even have lacked contact with the influence that introduced twined basketry in the western Great Basin. Their spread, however, seems to have been up the Colorado River, where they evidently acquired paddle-and-anvil-made pottery from the Yumans who later pushed up the river.²⁸ They were probably in northwestern New Mexico and Colorado by 1540 (Opler, 1939b). The Shoshoni meanwhile spread to the Northeast through Idaho into Wyoming. Possibly a later southern drift carried them to the Death Valley region in California.

Whatever may have been the detailed tribal movements, the 800 years since the Northern Periphery cultures vanished allows time for the disappearance of the Promontory hunters and the expansion of Shoshoneans throughout the Intermontane region.²⁹ Probably both during and after their expansion, the Shoshoneans borrowed many elements from neighboring areas. Also, they have some features of apparent great antiquity, older, perhaps, than Basket Maker.

Archeology has shown the history of many culture elements, often providing a fairly accurate relative chronology. Ethnology indicates the history of many others in terms of source and direction of spread but rarely of sequence. Historical inferences from ethnology are included in the following section.

INTEGRATION AND VARIABILITY IN SHOSHONEAN CULTURE

Though present data lack much detail, they show in broad perspective that some Intermontane features had considerable antiquity and stability whereas others changed greatly, and that some had universal distributions but others occurred in limited regions. This section undertakes to describe both universals and variables in terms of their occurrence and also in terms of some orderly and understandable processes of culture growth or dynamics.

²⁸ Gifford (1928, p. 365) quoting from Barber (1876, p. 452) who received his information from an eye-witness, describes paddle-made Ute pottery. Opler (1939a), from informant information, does not mention use of paddles. As there is not adequate proof that Northern Ute made pottery, the Southern Ute ware mentioned by Gifford may be very recent.

²⁹ When results of recent field work among Southern Paiute and Ute are published, speculation about tribal movements in recent centuries will be less hypothetical. For tribal distributions in historical times, see Steward, 1938, 1939, and the corrections by Park et al., 1938, and Ray et al., 1938. The accompanying map is based on all these sources.

Orderliness involves the assumption that culture change, whether through local development or borrowing, is not random but selective and somewhat directional. It implies, therefore, some measure of determinism. This means that a culture is not an entirely fortuitous assemblage of unrelated elements but consists of parts which in some degree predetermine, condition, or delimit one another.³⁰ The problem, then, is to ascertain the nature and degree of this interrelationship. This can be accomplished by a systematic study of those features that were fixed and of those that were variable in time and space and of the extent to which additions, subtractions, or alterations in each did or did not necessarily affect others. This will show how far any general patterns operated to integrate the various elements. It should also provide some explanation of how both borrowing and internal growth produced the recent culture and should even afford some basis for predicting what changes are likely to occur under given conditions.

Three sets of data bear upon this problem: History, distributions, and functional analysis. History frequently shows that certain changes in a culture followed the introduction or alteration of some element or complex. History is least useful with respect to nonmaterial traits, where a precise sequence is seldom ascertainable. Distributions indicate trait correlation and thus provide some measure, if not explanation, of their interrelationship. It may fairly be suspected, for example, that elements of like distribution are more closely related than those of unlike distribution and that universals play a more vital role in a culture than variables; in other words, that changes in elements of general distribution will be unlikely to affect those of partial distribution and vice versa. But neither history in the narrow sense of sequences nor distributions per se provide explanations of change or element interrelationship. This must depend upon a func-

³⁰ Some interrelationship of the parts of a culture is, of course, generally recognized. It has been shown in various specific instances to underlie element adhesion, selective borrowing, directional growth, and other phenomena. A closer interrelationship is assumed in theories of organic unity and pattern in culture. Such theories, although predominantly sociological and nonhistorical, imply a degree of process. An extreme is Oswald Spengler's "Decline of the West," which assumes such organic unity that change in any part of a culture necessarily affects all other parts. The so-called functional school, though avowedly nonhistorical and restricting its interest largely to social structure, likewise tends to assume an organic unity which implies that a change in any part will be felt throughout the structure. Discussions of patterning phenomena seem also generally to assume a more or less complete integration of elements through the master pattern.

tional analysis of the role of each part of the culture, which offers reasons for trait stability or variability and corrects and supplements deductions that may have been made from history and from distributions.

The following analysis³¹ does not pretend to offer the last word on this problem or to extend interpretations outside the Intermontane area. Hypotheses of this kind will, like historical deductions, continually be modified as long as research advances. But it is no longer justifiable to defer tentative conclusions on the grounds of inadequate data. It is particularly important to develop a methodology to cope with these problems.

In the following analysis of Intermontane culture, it will be seen that two cultural subareas are distinguished by a large number of features. The eastern subarea embraces the Ute and Northern Shoshoni and is distinguished by a predominantly bison-hunting economy. The western subarea includes Northern Paiute, Washo, Western Shoshoni and Southern Paiute, who were basically gatherers of wild seeds. A problem of particular interest is to what extent these sharply differing ecologies predetermined or conditioned other cultural features. This will be treated in the course of the analysis of culture variations throughout the area.

The economic complex of the western subarea was remarkably uniform and evidently well adapted to the local habitat. Archeology, in fact, shows that most of the crucial economic elements had remained stable during a long period. The most important subsistence activity was gathering wild seeds and roots, a task falling almost entirely to women. In all localities the gathering complex included: Basketry ollas for carrying water during desert travel, conical baskets for gathering and transporting seeds, basketry beaters for knocking seeds into the baskets, knives for cutting plants and seed heads, basketry trays for winnowing and parching seeds with live coals, digging sticks for roots, hooked poles for harvesting pine nuts (the pine nut, however, does not occur north of the Humboldt River or in Idaho), and storage pits. Many of these gathering devices were also used in similar environments in the Southwest and in California. Most of them were probably derived from the Basket Makers and therefore had persisted more than 1,000 years.

³¹ A detailed study of element variability and stability in this area, together with element lists, is now in press at the University of California. Very incomplete data available for the Ute seriously handicap this analysis. In fact, to a great extent, statements about the eastern subarea refer mainly to Northern Shoshoni.

Greatest variation in traits of the gathering complex was in details irrelevant to their main functions, such as the weave and precise shape of baskets. In Nevada, nearly all utility baskets were twined and in northeastern Nevada coiling seems to have been entirely abandoned, but in Utah coiling remained the predominant weave. These differences are probably explainable by the purely historical factor of diffusion; the new technique of twining could be adopted without interfering with the utility of the baskets. Similarly, seed knives were made of wood, stone, or bone in different localities. Carrying baskets, though conical in the Intermontane area, were also round, cylindrical, square, or rectangular in neighboring areas. Women's basketry hats, though useful for protecting the hair from piñon pitch or from the carrying strap, had not reached Idaho or northern Utah.

Variants toward a fundamentally different plant economy, such as irrigation of wild seeds in Owens Valley, sowing of wild seeds in central Nevada, and even cultivation of domesticated plants by Southern Paiute, had made little headway. It would perhaps not be rash to suggest that as long as this environment had to be exploited only with devices known to native America, a wild-seed economy was most likely to be permanently successful. Pueblo horticulture had had but a very brief success.

Among Northern Shoshoni and Ute, however, bison hunting had made seed gathering relatively unimportant and had obviated the need for many of its techniques. Conical seed baskets, parching trays, and seed knives were unknown. Possibly in prehorse days these people had possessed a more complete gathering complex. In historic times, they often substituted articles of rawhide for articles of basketry and were concerned with processes for utilizing meat rather than seeds.

The hunting complex was remarkably uniform in the western sub-area. Many of its traits have Basket Maker antiquity. Although large game was not abundant, it was taken by several means: Drives, often communal, for antelope and deer; stalking; ambushing; shooting with poisoned arrows; and corralling. Small game, of relatively great importance, was taken by the following methods: Communal rabbit drives employing long nets; net traps for rabbits; deadfalls; nooses; spring-pole traps; bird nets, especially for sage hens; rodent skewers for pulling rodents from their holes; shooting from blinds; and smoking or flooding rodents from their holes. The first three, at least, were also known to the Basket Maker. The western peoples ate considerable quantities of insects and larvae. Hunting ritual and food taboos were, however, scarce; practical hunting devices may obviously be borrowed without their ritual concomitants.

Variation in hunting techniques was greatest in traits that were either dispensable to the main activity, environmentally conditioned, or historically recent. The more or less dispensable traits that showed variation were: Sinew backing on the bow, which was used everywhere but not on all bows; constructional details of bows and arrows; material and shape of arrow points; magical ingredients of arrow poison, which generally included decayed heart, liver, or gall, with the local addition of obsidian, red ants, or other ineffectual substances; shape of rabbit clubs; and a few ritual details of antelope and deer hunting. Variation in environmentally conditioned traits is illustrated by: Fishing, which, in the little-watered deserts, employed only seed baskets as scoops and involved occasional stream poisoning but, on the Humboldt and Snake Rivers, with abundant fish, employed nets, weirs, dams, hooks, and harpoons; bow and arrow materials, including perhaps the cane arrow of the west, which was straightened on a grooved stone, and the hardwood arrow of the east which was polished with a pair of grooved stones; the greater development of communal antelope hunts and of antelope shamans in the north, where antelope are more abundant; and the occurrence of the reptile hook only in the south in the habitat of the chukwalla. Historical recency was probably the main factor that restricted some elements to the north: Pit blinds; pitfalls; taking eagles from pits instead of climbing to their nests; animal masks and disguises, especially the antelope mask for driving sage hens to nets (but some disguises were used in the Southwest); and planting poisoned stakes in game trails.

Northern Shoshoni and Ute hunting differed greatly from that of the western subarea. Using the horse and relying largely on bison, for which they made trips to the Plains, they had dispensed with many devices for taking small game or for hunting on foot. Nets, snares, ambushes, nooses, and decoys were either absent or of secondary importance. Pursuit of game on horseback was correspondingly emphasized. Seasonally, however, they visited western Idaho to obtain salmon. The horse-bison economy had spread little west of the comparatively abundant grasslands of northern Utah, eastern Idaho, Wyoming, and Colorado.

Methods of preparing foods were comparatively uniform throughout the Intermontane area. Meat of large game was either broiled or boiled and eaten at once or dried, pounded, and stored. Small game, being unfit for preservation, was promptly eaten. Seeds were threshed and winnowed. Roots were cooked in an earth oven of pit form.

Some outstanding variations in methods of preparing foods were either environmentally conditioned or historically determined. Al-

though small, hard-shelled seeds were everywhere ground on metates, mesquite beans and acorns in the south were pounded in mortars. The mortar, of West Coast origin, is more suitable for large seeds and nuts. It was once used in western Nevada but abandoned in favor of the metate. In parts of southern Idaho, where roots were the main food, an elaborate, communal earth-oven was developed. In the western subarea, small, hard-shelled seeds were parched with live coals in basketry trays. This is an efficient means of cooking such seeds, especially when, lacking pots, prolonged boiling is difficult. Pottery was known to all Shoshoni, Southern Ute, Southern Paiute and Owens Valley Paiute. This limited distribution is mainly the result of historical recency of pottery. It was not of great importance, however. Most Shoshoni seem to have used it only to melt snow. Northern Paiute, and probably many groups making pottery, boiled with hot stones in baskets.

Some technological traits were universal in the Intermontane area but did not depend specifically upon the local culture. As they are widespread elsewhere, their presence here is obviously explainable by their utility in filling certain needs common to many peoples. The only local limitations on these practices was that they could not require processes or materials that were too elaborate or involve objects that surpassed in size and number what could be transported by a nomadic people. Among these traits were: The fire drill (though constructed in three different ways); chipped flint blades and unretouched flint flakes for cutting; skin dressing (including scraping, fleshing, and tanning; but fleshers and scrapers varied in type, the tanning process varied in many details, and smoking, though useful, was introduced recently from the north and attained only a limited distribution); the balsa raft, where there was enough water to use it; snowshoes (which varied in details of shape and meshing); and carrying cradles (which also varied in details) for infants.

Carrying devices were of great importance throughout the area, but varied considerably. In the western subarea, women naturally and conveniently transported goods on their backs in their large, conical seed baskets. Men sometimes used these baskets, but preferred other devices: Nets, that were specially constructed in the south but made from old rabbit nets in the north; buckskins; and ropes. That women commonly used the tumpline and men the chest strap appears to have been more a question of historical tradition than of necessity.

Northern Shoshoni and Ute used the pack horse and travois, the latter, at least, of Plains origin. The tremendous advantage these devices afforded people of the eastern subarea was an important factor

in their use of a greater variety of material objects—house types, weapons, rawhide bags, etc.—and their ability to transport foods great distances.

Dwellings, sweat houses, and garments were strongly affected but not wholly predetermined by local conditions. None of these is peculiar to the Intermontane area. All are widespread and in general spring not from any specific cultural or environmental situation but from fundamental human needs or desires. The special forms in which they appear in the Intermontane area, however, is the result of strongly selective borrowing.

Despite the apparent advantages of dwellings, the Gosiute are reported to have used little or nothing but windbreaks. All other Shoshoneans used houses which, however, were affected by three factors: 1, difficulty in procuring timbers, only burning being used to fell trees; 2, use of houses by small, individual families; and 3, the temporary abandonment of houses during food expeditions and their permanent abandonment at the death of an occupant. In the western subarea, the conical pole lodge, covered with materials locally available, fulfilled these conditions and was universal. The only exception is Owens Valley, where the more permanent Paiute settlements consisted of gabled, earth-covered lodges. This type had been borrowed from California tribes. Tipis were restricted to Northern Shoshoni and Ute, where their use depended upon availability of elk skins for their construction and of horses for their transportation.

Sweat houses had spread throughout the Intermontane area as their use did not conflict with local activities. The type of sweat house used, however, depended upon the permanence of communities. The large, semisubterranean sweat house that was used for a clubhouse and men's dormitory as well as for sweating presupposed comparatively large and permanent villages, a condition fulfilled only in Owens Valley. Elsewhere, the unsettled life precluded such a sweat house. A small, temporary structure accommodating but three or four persons and used only for sweating was used instead. And, whereas the semisubterranean sweat house had to be heated by a fire inside, the small house could be heated with hot stones.

Although the occurrence of these two main types of sweat house depended upon local conditions, various secondary details were less closely linked to the main function of sweating and varied locally. The conical form of the temporary sweat house in the south and the domed form in the north may be local development. Historical recency, however, may account for the greater elaboration of sweating practices in the north, e. g., pouring or splashing water on the hot

rocks, arrangement of the rocks, and special uses of the sweat house, such as shamanistic curing.

Garments, though largely dispensable as shown by the fact that many individuals possessed only robes, afforded some extra comfort in cold weather and permitted a slight display of vanity. Many types of garments were known: Fiber and skin skirts for women and breachcloths for men, which perhaps originated in Basket Maker times and spread also to the Pacific coast; tailored skin skirts, dresses, and leggings of Plains styles; woven sage bark garments; and moccasins. The choice of any of these, however, depended upon individual circumstances. In the eastern subarea, comparatively abundant skins enabled most people to wear complete garments and moccasins. In the west, only successful hunters could afford such clothing. Other persons either went naked, wore fiber skirts, or wove garments of twined sage bark. Everyone, however, had a twined rabbit skin robe for use in cold weather. Among Northern Shoshoni, such robes were rare, partly because of the aboriginal scarcity of rabbits in the north, partly because buffalo robes were usually to be had. Throughout most of the area, use of skin moccasins also depended upon availability of skins to make them. Many Western Shoshoni and Southern Paiute went barefoot; some Nevada Shoshoni wove sage bark moccasins when skin could not be had. Northern Paiute of western Nevada and some Southern Paiute, however, used vegetable fiber sandals, a practice which they, but not the Shoshoni, had acquired indirectly from the Southwest.

Though love of personal adornment appears to be basic and ancient among human beings, specific ornaments vary enormously. Not stabilized in this area by connection with social groups, status, or other reinforcing factors, ornaments varied not only with locality but with individual taste. Tattooing was general but was used sparingly. The nasal septum was bored only in the extreme south. Ears were often pierced for earrings, but only in the north was this done customarily at the time of birth. Depilation of the eyebrows and beard were general. Hairnets, hairpins, and men's peaked caps were used only in the south and men's visor caps in the north. The hair was worn in two braids, following the Plains custom, throughout most of the area except in the extreme west and possibly south.

In the realm of social and political culture, several fundamental features are directly traceable to ecological causes. Political patterns, no less than the ecological activities to which they were related, distinguished the eastern and western subareas.

Among Shoshoneans of the western subarea, where the horse was lacking, a low population density coupled with transportational difficulties made it impossible for more than 40 to 50 persons to maintain any sort of even semipermanent social and political solidarity. The main bond between members of these small groups was their winter residence in the same village; during the remainder of the year they dispersed in family groups. Because the location and abundance of wild seed species, especially the pine nut, varied greatly from year to year, subsistence areas of these villages overlapped. This caused different associations each year between members of different villages and prevented two or more villages from achieving true and permanent political solidarity. Behavior was controlled more by economic and kinship factors than by any purely political concepts.

But special localities, such as the fertile and densely populated Owens Valley, had land-owning bands of 200 or more persons. A similar tendency is apparent among some Northern Paiute of western Nevada.³²

Among the Northern Shoshoni and Ute, horses permitted not only a high degree of nomadism in the food quest but facilitated transportation of foods to a central point. This in turn permitted latitude in the size and nature of sociopolitical groups. The people could have lived in many small, scattered groups or in a few large, centralized groups. To a certain extent they did both. Their bands continually changed size and composition, not only seasonally in accordance with the nature of the food quest, but from year to year as different leaders commanded followings of different sizes. Usually, however, the bands ranged from 100 to more than 1,000 persons. The advantages of communal over individual bison hunting made for consolidation. In addition to this, warfare with Plains tribes was an important reason for banding together. The bonds thus induced were likely to persist throughout the year, people wintering together in large encampments.

Property concepts were also directly affected by local ecology. These concepts developed from the use-ownership principle. Property in real estate was, with a few exceptions, limited to Owens Valley

³² This subject among Western Shoshoni and Northern Shoshoni has been treated fully by Steward, 1938. Further data on various Shoshonean groups are given by Park et al., 1938, Ray et al., 1938, and O. C. Stewart, 1939. These data in general imply fairly definite band grouping among Northern Paiute and among most Shoshoni and Southern Paiute, a matter further discussed by Steward, 1938. Washo (Siskin, *in* Park et al., 1938, pp. 626-627, and Lowie, 1939, p. 303) seem not to have had any rigid band organization or band territory. O. C. Stewart's data on Northern Paiute seem to represent largely the historic period, but suggest aboriginal bands in the extreme west.

Paiute, where band ownership of territory meant exclusive rights to hunting, fishing, and seed resources. In Owens Valley, these essential resources were available within comparatively small areas and were dependable from year to year. In most of the remainder of the western subarea, however, subsistence areas necessarily overlapped to a degree that precluded claims to exclusive territorial rights. The areas exploited by the mounted Ute and Northern Shoshoni overlapped to an even greater extent than those in the west. Land ownership by bands seems clearly to have been lacking among Washo, Northern Paiute outside of Owens Valley (Park et al., 1938; Stewart, 1938), Northern Shoshoni, Southern Paiute, and Ute.

In a few localities, however, families claimed certain pine nut groves: some Shoshoni and Southern Paiute near Death Valley (Steward, 1938), Washo (Lowie, 1939, p. 303), and possibly some northern Paiute and Shoshoni of Reese River valley in Nevada. Such family ownership is denied among other Northern Paiute (Park et al., 1938, especially p. 623; Stewart, 1939).

Kaibab Southern Paiute seem to have been unique in claiming privately owned springs (Kelly, *in* Park et al., 1938, p. 634).

Of more strictly social customs, some seem to have rested partly on local conditions, though a certain amount of latitude or variability within the culture is evident. Everywhere the family was bilateral with approximate sex equality that probably resulted from substantially equal economic importance of both sexes. If bison hunting and warfare tended to give Northern Shoshoni and Ute men an advantage, no formal customs had developed to indicate it. This evenly balanced sex relationship coupled with the great importance of kinship bonds, especially in the western subarea, was probably the main factor that made possible not only sororal polygyny correlated with the sororate but, in many localities, fraternal polyandry correlated with the levirate. Emphasis on kinship bonds may also have facilitated, but certainly did not inevitably produce, the practice of pseudo-cross-cousin marriage (marriage with the mother's brother's or father's sister's stepchild) among Nevada and some Idaho Shoshoni, and of true cross-cousin marriage in a few Nevada Shoshoni groups. That some Idaho and Nevada Shoshoni and Southern Paiute, commonly acquired wives by abducting a woman also did not arise wholly from peculiar local conditions. These various types of marriage, moreover, have a very incomplete correlation with kinship terminologies appropriate to them.³³ Finally, some kinship usages had no dependence on the social

³³ Analyses of kinship terminology have been given in Hoebel, 1939, and Steward, 1938, pp. 284-306.

structure. There are no factors other than purely historical ones to account for the strong development of the mother-in-law taboo only in the extreme south or for the fact that in the south, brothers-in-law were restrained but among Idaho Shoshoni had something of a joking relationship with one another.

Other social activities were partially delimited by Intermontane culture. Dances and, to some extent, the costumes, songs, and musical instruments associated with them, depended upon the size and stability of communities. The small and impermanent communities of the nomadic peoples inhibited the development of dances. People who are scattered in family units during most of the year and who are rarely able to assemble in groups larger than 50 persons or for periods of more than a few weeks are not likely to have a great interest in a large number of dances. This is probably why most of the western subarea had only the round dance in aboriginal times. In the post-contact period, however, when larger and more permanent communities of Indians had attached themselves to settlements of the white man, several dances spread widely even while the native culture was breaking down. The "crazy" or "rabbit" dance spread from the south and perhaps also from a second center in the north, and the "back-and-forth" dance, derived from the Ute bear dance, was introduced from the east. Changes in dances, therefore, involved an increase rather than displacement of the previous stock.

This process is more apparent among the Northern Shoshoni. At the earliest known period, they had more than a dozen dances and others have been added from various neighboring tribes almost to the present day. The much greater size and cohesion of Northern Shoshoni bands was clearly the factor facilitating acceptance of this dance repertoire. Similarly, Southern Ute have, especially during the recent reservation period, added many new dances (Opler, 1939b).

A very similar situation prevailed respecting ceremonialism. Performances requiring group participation were, except for the round dance, lacking in the western subarea; communities simply could not muster enough participants. The people were, moreover, indifferent to public ritual. Although the round dance was occasionally accompanied in all localities by prayers for good health and, in the north, by prayers for fertility of nature, its main purpose was recreational. But in post-Caucasian times, both the ghost dance and peyote cult have spread widely, though not reaching all groups. Several Northern Shoshoni and probably Ute public performances, however, were held for other than purely recreational purposes. The sun dance, introduced at the end of the last century, cured illness of participants

among Northern Shoshoni and Northern Ute and gave supernatural power among Southern Ute. Several scalp and victory dances celebrated successful warfare.

Of all social activities, games were probably least integrated with the total Intermontane culture. None was connected directly with any economic or social activity. All were devoid of ritual or religious concomitants, except that men often dreamed gambling powers. Games were adopted by the Intermontane people because they directly satisfied a love of playing and gambling, both of which were strongly developed. They were readily perpetuated in the area because most of them could be played by a small number of persons. It is doubtful, however, whether the Intermontane people invented any of these games. Neither the function nor the specific games were peculiar to the area. Some, like the hand game, shinny, and dice had a general western distribution, shinny even extending across the continent; all were universal in the area. Others cut across part of the Intermontane area and extended into neighboring areas. Thus, the ball race, ring-and-dart, certain forms of dice, quoits, and arrow throwing were more or less northern here and elsewhere, whereas hoop-and-pole, ring-and-pin, and other forms of dice tended to be southern. None of these coincided distributionally with any culture area.

Although group ceremonialism was minimal in the Intermontane area, crisis rites were strongly developed. These were individual or family affairs. None had any features that interrelated them with other parts of the culture. As they neither affected nor were greatly affected by the total culture, their underlying concepts and even some of their specific ritual content must have developed and been perpetuated for psychological reasons. The belief that during childbirth and menstruation a woman is potentially evil and that even her husband suffers temporary abnormality is widespread elsewhere and obviously very ancient. Its ultimate origin and its persistence despite other cultural changes doubtless involves psychological principles. Similarly, attention to disposal of the dead and subsequent mourning are ancient practices. It is expectable, however, that some of the ritual associated with crisis rites should be variable; part of it was even transferred from other contexts.

Childbirth, besides necessarily practical procedures, involved many observances that had supernatural import. Everywhere, the woman was isolated, though the period varied from 5 days to a month, and she was required to abstain from meats, to use a stick for scratching, and to wear new clothes at the end of confinement. In most localities the father was also either isolated or restricted in his activities and

required to use the scratching stick, avoid certain foods, avoid gambling, run daily, and, at the end of the wife's confinement, to build a new fire, wear new clothes, and give away his first winnings in gambling and the first large game killed. The purpose of these restrictions on the father, however, was not to insure the welfare of the child, in the couvade sense, but to insure his own future well-being. Thus, although many of these ritual observances for both parents occur also in California and the Southwest and even in parts of South America, suggesting that the general complex is very old, Intermontane development seems to have slightly shifted emphasis, especially away from the couvade. In some details, such as disposal of the afterbirth, use of paint, shaman's help during birth, and other features, there was considerable local variation.

At puberty, girls were subject to most of the childbirth observances. But whereas both rites had in common the fear that the woman would contaminate men, they were otherwise entirely dissimilar in purpose. Puberty rites prepared the girl for adulthood. Their general function as well as many of their specific details probably developed from an ancient and widespread complex. But some slight shifts of interest had occurred in the Intermontane area. Belief in the girl's power to contaminate was somewhat moderated. In the northern part of the area, as in northern California, the rite prepared her for an industrious and meritorious life. In the south, as in southern California, emphasis was placed on her physical well-being rather than upon her behavior.

In most localities, death ritual was also a family matter. It involved only disposal of the corpse and overt manifestation of grief through mourning observances. In secondary features, however, some local variation occurred. Cremation, burial, or abandonment of the corpse in the house were practiced at different times and in different localities. The choice depended largely upon such local factors as hardness of the soil or availability of firewood. Conceptual, rather than practical determinants of the method of disposing of corpses, such as the occasional custom of cremating persons killed for witchcraft although other persons were buried, were uncommon. Detailed mourning customs also varied slightly. Chief mourners cut their hair; in the north, they also gashed their bodies. Bereaved spouses were required to refrain from remarriage for a period that was considerably longer in the south.

The only communal performance connected with death was the annual mourning ceremony, which consisted of dancing, singing, and burning gifts made to those who had died in the past year. As this ceremony was not readily performed with small groups of people, it

did not spread rapidly until post-Caucasian times. It never spread beyond Southern Paiute, Owens Valley Paiute, a few southern Nevada Shoshoni, and possibly a few Ute.

Warfare was, to some degree, affected by local conditions. In the western subarea, fighting was infrequent. It was usually caused by theft of women, which entailed some bloody but brief encounters between Shoshoni and Northern Paiute and between Paiute and their neighbors, but employed no special war implements, regalia, or practices. Between Shoshoni groups, woman-abduction caused fighting without the intent to kill. The peace that normally prevailed in the west is no doubt partly explainable by the absence of political frontiers and of claims to natural resources. Villages were interlinked through kinship and through various communal enterprises. In the post-Caucasian period, however, military bands rapidly developed and engaged the white man in stubborn combat for several years. Northern Shoshoni and Ute, on the other hand, had long been in contact with warring Plains tribes from whom they had acquired a strong military complex. They conducted raids to count coup and steal horses, used war regalia and a large number of weapons, and held war dances.

Although the Intermontane area lacked religious beliefs and practices that involved group ceremonialism, the concept of the individual's supernatural helper or power obtained through a vision was strongly developed. Some of these powers served such private purposes as hunting, gambling, fighting, running, etc., whereas others were shamanistic, enabling the individual to cure disease of supernatural origin. This concept of supernatural powers or helpers is obviously very stable as it occurs throughout many primitive culture areas and as it has survived to a remarkable degree today in the Intermontane area. The basic belief, however, has permitted latitude in various secondary features that serve partly to characterize the Intermontane area as a whole and partly to distinguish the eastern and western subareas.

Throughout the area, the individual's dreamed power usually was based on the simple psychological principal of similarity. Either a person dreamed of doing successfully what he wished to do, e. g., gamble, or he dreamed of an animal having the desired attributes. Thus, swift birds gave the power of fleetness, mountain sheep the power to climb rocks, wolf, bear, and other pugnacious animals the power to fight, insects the power to hide, etc. In the north, however, dreams were often deliberately sought at caves, springs, and mountains, a practice clearly showing influence from the vision quest of the Plains. Elsewhere, the vision came unsought. Also in the north,

there was a belief in the mountain dwarf, whose character, however, varied from tribe to tribe. The eastern subarea naturally emphasized war powers.

Throughout the area, the shaman's power was distinguished from other powers by dreams or visions of greater intensity and frequency and by the ability it gave to cure disease caused by the intrusion of a foreign object, soul loss, or witchcraft. Shamanism tended to be hereditary. Usually "good" animals and phenomena gave doctoring power; "bad" things, especially coyotes and ghosts, predisposed a person to witchcraft. Several features characterize Northern Shoshoni and groups in contact with them: Shamans' powers sought at caves, springs, mountains, or at the sun dance, all of which, however, were inferior to unsought, dreamed powers; doctoring in the sweat house; repository for the shaman's pipe ashes; emphasis upon ghosts intruded into the body as a cause of disease; shaman's power to forecast enemy raids. In northern Nevada, shamanizing at communal antelope and even deer hunts was strongly developed. In western Nevada, there was emphasis upon the belief that a person receiving a shaman's dream must become a shaman and that an unsuccessful shaman was probably evil and should be killed. Here also, the shaman's assistant interpreted and a girl sometimes danced for him. There are also probably many local conceptual differences. Similarly, though shamans everywhere smoked and used eagle feathers, much of their equipment and many details of individual behavior that were prescribed by visions varied considerably. (See also Park, 1938.)

Shamanistic elements, despite some variability, tended to achieve a relative stability, however, through their linkage to the central concepts. For example, shamanistic smoking with the tubular pipe was far less variable in the area than lay smoking. The latter employed not only the ancient tubular pipe but, in the north, the platform pipe, and utilized a number of plants that were mixed with tobacco. In the west, women had chewed tobacco. Recently, the cigarette has been introduced.

Of negative traits in the Intermontane area, some were clearly precluded by local conditions, some were absent simply because of the absence of historical contacts that might have introduced them. The basic ecology, especially of the western subarea, with its limitations on population and on material wealth, probably precluded any development of rank, castes, slaves, or societies. It is difficult to see, however, that such features as clan, moieties, boys' puberty ceremonies, or men's tribal societies, all of which occur elsewhere in somewhat comparable situations were absent for any reason other than the absence

of sufficiently extended contacts with California or the Southwest, where they occurred.

This summary has shown that recent Intermontane culture was not an unalterably integrated whole in any locality but consisted of elements of varying ages and origins that were stabilized and integrated by different factors and in different degrees of completeness.

Certain features were fixed within relatively narrow limits by the ecology. In the western subarea, the activities involved in the exploitation of an arid environment by means of certain simple devices restricted the size and permanence of sociopolitical groups, prevented the formulation of concepts of property in real estate and the development of social classes, and placed comparatively narrow limits on the nature and function of such elements as houses, sweat houses, and garments. In the eastern subarea, the introduction of the horse and a bison-hunting economy provided a basis for the formation of bands and for the acceptance of foreign traits of both material and social culture, though many families and small groups, owning no horses, remained much like the western people. It made possible use of the travois, tipi, various articles of rawhide, more abundant clothing, and many implements and weapons. It was a factor in the acceptance of dances and in the development of warfare. The eastern ecology had not, however, greatly modified the basic type of family or of marriage, which had probably developed when economic conditions were similar throughout the entire Intermontane area.

Certain features of the Intermontane culture, however, were little related to ecology. Some, like shamanism, dreamed powers, and emphasis on birth, puberty, and death rites were evidently deeply rooted in mental attitudes. They occur in similar patterns in other parts of the world and survive today with remarkable vigor despite the impact of European culture on Intermontane economic, social, and religious life. These, moreover, are substantially the same throughout the area, varying locally only in secondary features.

Other independent parts of Intermontane culture, however, such as songs, dances, games, and ornaments were fixed neither by economic necessity, by mental attitudes, nor by functional interrelationship with other culture traits. When new elements were added to these categories, they increased rather than displaced the previous stock. Until recently, in fact, Indians have adopted songs, games, and dances from the white man, as they had previously borrowed from their Indian neighbors, and added these to their original repertoire. It is only in the past few years that a consciousness of the prestige value of those contributed by the white man has begun to lead to the aban-

donment of the old. It remains to be seen whether recent administrative efforts to rehabilitate the old will be successful.

From the previous analysis it is evident that the eastern and western subareas differed mainly in their basic economy, in several features directly traceable to these economies, and in secondary or variable traits pertaining to features which are otherwise uniform throughout the Intermontane area. The eastern subarea had the horse, bison hunting, and such dependent traits as band organization, developed warfare, tipis, rawhide articles, and a considerable number of dances. The western subarea utilized wild seeds by means of a basketry complex, hunted predominantly small game, had but little communal activity in hunting, dancing, or ceremonialism, used conical pole-and-brush houses, lived in winter encampments representing the maximum political unit, and virtually lacked warfare. Its material culture was delimited by transportational difficulties and by lack of activities involving many objects.

In the main outlines of such features as shamanism, crisis rites, and games, however, the eastern and western subareas were very similar. Local differences appeared only in secondary traits and did not always coincide with the subareas. Shamanism everywhere involved dreamed powers and curing by singing, sucking, recovering lost souls, and counteracting evil. The eastern subarea was somewhat distinguished by vision quests, war powers, and several conceptual and ritual details previously enumerated. Present data do not show any correspondence of variation in crisis rites with the subareas. Birth customs were everywhere hedged around with food taboos, isolation, and other restrictions for both parents. Girls' puberty and menstrual customs involved similar restrictions. In both kinds of rites, local peculiarities emerge only as details are considered. Games, on the other hand, show great local variation, but none coincide with the Intermontane subareas nor with any major culture areas. In short, neither shamanism, crisis rites, nor games exhibit any important features characteristic either of the Intermontane area as a whole or of its subdivisions that indicate strong patterning by any general cultural scheme. If viewed microscopically, of course, each locality has unique features; but from a broad point of view, fundamental similarities outweigh detailed differences even between this and other areas.

Although a broad distinction has been drawn between the Intermontane subareas, it must not be understood to mean that the eastern subarea was homogeneous. Two factors tended to produce differences within this area which, however, will not be fully understood until

the tribes have been more adequately described. First, many people never acquired the horse and continued to live very much like the people of the west. Some Northern Shoshoni families and apparently several whole groups of Ute in east-central Utah continued to forage on foot and subsist largely on vegetable foods. Even the Northern or Uintah Ute probably retained more western features than the Northern Shoshoni. For example, they hunted rabbits with nets, made rabbit-skin blankets, used no travois, and often built conical pole-and-bark lodges. Possibly, also, some Ute in Colorado who found the bison comparatively inaccessible, remained very much like the western people. On the other hand, the Wyoming or Wind River Shoshoni were certainly much more like the Plains tribes than were the Idaho Northern Shoshoni. Second, many traits of the eastern subarea, that did not arise directly from ecological factors but were imported, came from different sources. As the Shoshoni contacted northern Plains tribes while the Ute contacted various central and southern Plains tribes, it is probable that, if full information were available, the effects of these contacts on a large number of cultural details would distinguish the various bands (see Opler, 1939b).

THE INTERMONTANE AREA IN NEW WORLD PERSPECTIVE

Many analyses of native American culture (especially Nordenkiöld, 1931) have postulated that marginal peoples of North America—tribes of Canada and California—and of South America—tribes of eastern Brazil, Argentina, the Gran Chaco, and southern Chile—retain in some measure traits that once characterized an ancient American culture stratum but have been lost among more advanced, especially horticultural, peoples. The Shoshoneans have not been specifically mentioned in these treatises because information about them has been available only recently. They, however, no less than the tribes of California and Canada, should, on this hypothesis, retain many of these ancient traits.

Although it is impossible to follow the ramifications of this problem at present, we are now in a position to make a few observations.

First, of the many material traits which have been shown to occur in the marginal areas of North and South America, but not in between (Métraux, 1930; Ploetz and Métraux, 1930; Nordenkiöld, 1931), several do not occur among Shoshoneans. These include pit dwellings, bolas, the wedge, embroidery on leather. Other elements, precluded by local conditions, such as paddles or planked houses, need not be mentioned. (There are also unexpected absences of such

widespread traits as the stone ax.) Of the elements of material culture present in these marginal regions and among Shoshoneans, there is no archeological clue to the age of some: Water-boiling with heated stones, pit-ovens, fur cloaks, hockey, ring-and-pin game, dice games, rawhide rattles, and the balsa raft. Others, however, can be stated with reasonable certainty not to antedate the Basket Maker period in the Southwest. These are coiled and twined baskets, tubular pipe, moccasins, leggings, fringed leather, hairbrushes, shoe-hay, three-feathered arrows, water-proofed baskets, quivers, ladderlike baby-carriers or cradles, and sweat houses. It is entirely possible that these will be shown to have existed in earlier archeological horizons elsewhere. But, so far as the Intermontane area and the Southwest afford an archeological check on ethnographic deductions based on the age-area concept, these elements appear to be surprisingly recent. This raises the question whether any of them are archaic in the sense of representing an original, prehorticultural American culture or whether they are more recent. Is it not possible that some of these elements developed as part of an early horticultural complex but spread beyond the limits of farming because they were useful in a variety of localities and that others even spread rapidly and recently from the far north or ultimately from Asia?

Traits of nonmaterial culture postulated to have great antiquity on the basis of their marginal occurrences cannot be checked by archeology. Many of these were also known to the Shoshoneans. Like the material traits of similar distribution, they seemingly were not greatly affected by local conditions or patterns and persisted because of their inherent usefulness or desirability. Among these are the general concepts of shamanism and crisis rites. Both have continued to flourish where a complex ceremonialism has not crowded them out. It is probable that even many of the specific ritual elements comprising these complexes have remained more or less stable over a long period. For example, restrictions and isolation of both parents at childbirth, use of the head-scratcher by menstruating women, and certain burial and mourning customs have persisted because of their linkage with the central concepts. Mythology, especially the trickster cycle, shows also a marginal distribution that probably indicates survival from an early period.

To recognize, however, that cultural traits in marginal areas that lack a specific dependence on any local context are probably survivals of old and formerly widespread customs need not beg the question for all marginal traits. In the light of the earlier analysis of Intermontane culture, I venture to state that most major features of social patterns,

including community types, kinship customs, and marriage, and of political organization and property concepts develop directly from strictly local conditions. These result from a series of particular activities that, among marginal peoples, are predominantly economic and are necessarily adapted to environmental and ecological conditions. They are functionally interrelated to a high degree. If, therefore, certain social and political patterns are repeated in widely separated areas, as for example, the patrilineal band (Steward, 1936b), it is because the basic factors that have caused them are repeated, not because all Indians once had such patterns.

LITERATURE CITED

ANTEVS, ERNST

1925. On the Pleistocene history of the Great Basin. Carnegie Inst. Washington, Publ. No. 352, pp. 53-114.
1936. Pluvial and postpluvial fluctuations of climate in the Southwest. Carnegie Inst. Washington, Year Book, No. 35.

BARBER, E. A.

1876. The ancient pottery of Colorado, Utah, Arizona and New Mexico. Amer. Nat., vol. 10, pp. 449-464.

CAMPBELL, E. W. C. and W. H.

1940. A Folsom complex in the Great Basin. Masterkey, vol. 14, pp. 7-11.

CAMPBELL, E. W. C. and W. H., AMSDEN, CHARLES, and SCHARF, DAVID

1935. The Pinto Basin site. Southwest Mus. Pap., No. 9.

CAMPBELL, E. W. C. and W. H., ANTEVS, ERNST, AMSDEN, CHARLES, BARBIERI, J. A., and BODE, F. D.

1937. The archaeology of Pleistocene Lake Mohave. Southwest Mus. Pap., No. 11.

COLTON, H. S.

1938. Names of the four culture roots in the Southwest. Science, vol. 87, No. 2268, pp. 551-552.

COOKE, ANNE M.

An analysis of Basin mythology. Manuscript.

CRESSMAN, L. S.

1936. Archaeological survey of the Guano Valley region in southeastern Oregon. Univ. Oregon Monogr., Stud. Anthrop., No. 1.
1937. Petroglyphs of Oregon. Univ. Oregon Monogr., Stud. Anthrop., No. 2.
1938. Early man and culture in the northern Great Basin region in south central Oregon. Preliminary report read at the Pacific Division of the American Association for the Advancement of Science, San Diego, Calif., 1938. Manuscript.
1939. Archaeological research in Oregon. Commonwealth Rev., vol. 20, pp. 691-699.
Early man in south-central Oregon: Evidence from stratified sites. Manuscript.

- CRESSMAN, L. S. (Report on work of)
1938. Fresh light on the antiquity of man in America. Carnegie Inst. Washington, News Serv. Bull., vol. 4, No. 30, Nov. 6.
- CRESSMAN, L. S., and KRIEGER, ALEX D.
Atlatis from southcentral Oregon. Manuscript.
- ERWIN, RICHARD P.
1930. Indian rock writing in Idaho. 12th Bien. Rep. Idaho State Hist. Soc. Boise.
- GAYTON, A. H.
1935. Areal affiliation of California folktales. Amer. Anthrop., vol. 37, pp. 582-599.
- GIFFORD, E. W.
1928. Pottery-making in the Southwest. Univ. California Publ. Amer. Arch. and Ethnol., vol. 23, pp. 353-373.
- GILLIN, JOHN
1938. Archaeological investigations in Nine Mile Canyon, Utah. Univ. Utah Bull., vol. 28, No. 11.
- HARRINGTON, M. R.
1930a. Paiute Cave. Southwest Mus. Pap., No. 4, pp. 106-126.
1930b. Archaeological exploration in southern Nevada. Southwest Mus. Pap., No. 4, pp. 5-25.
1933. Gypsum Cave, Nevada. Southwest Mus. Pap., No. 8.
1934. A camel-hunter's camp in Nevada. Masterkey, vol. 8, pp. 22-24.
1937a. A stratified camp site near Boulder Dam. Masterkey, vol. 11, pp. 86-89.
1937b. Some early pit-dwellings in Nevada. Masterkey, vol. 11, pp. 122-124.
1938a. Folsom man in California. Masterkey, vol. 12, pp. 133-137.
1938b. Pre-Folsom man in California. Masterkey, vol. 12, pp. 173-175.
- HAYDEN, IRWIN
1930. Mesa House. Southwest Mus. Pap., No. 4, pp. 27-92.
- HEIZER, ROBERT F.
1938. A Folsom-type point from Sacramento Valley. Masterkey, vol. 12, pp. 180-182.
- HERZOG, GEORGE
1935. Plains ghost dance and Great Basin music. Amer. Anthrop., vol. 37, pp. 403-417.
- HOEBEL, E. ADAMSON
1939. Comanche and H3kandika Shoshone relationship systems. Amer. Anthrop., vol. 41, pp. 440-457.
- HUSCHER, HAROLD A.
1939. Influence of the drainage pattern of the Uncompahgre Plateau on the movements of primitive peoples. Southwest. Lore, vol. 5, pp. 22-41. Gunnison, Colo.
- JACKSON, A. T.
1938. Picture-writing of Texas Indians. Univ. Texas Publ. No. 3809, Anthrop. Pap., vol. 2.
- JEANÇON, J. A.
1927. Antiquities of Moffat County, Colorado. Colorado Mag., vol. 4, pp. 18-27.
- JONES, J. C.
1914. Geologic history of Lake Lahontan. Science, December, pp. 827-830.

JUDD, NEIL M.

1926. Archeological observations north of the Rio Colorado. *Bur. Amer. Ethnol. Bull.* 82.

KIDDER, A. V.

1924. An introduction to the study of Southwestern archaeology. *Pap. Southwest. Exped. No. 1, Dep. Arch., Phillips Acad.* New Haven.

KLIMEK, STANISLAW

1935. Culture element distributions: I. The structure of California Indian society. *Univ. California Publ. Amer. Arch. and Ethnol.*, vol. 37, pp. 1-70.

KROEBER, A. L.

1928. Native culture of the Southwest. *Univ. California Publ. Amer. Arch. and Ethnol.*, vol. 23, pp. 375-398.
1939. Cultural and natural areas of native North America. *Univ. California Publ. Amer. Arch. and Ethnol.*, vol. 38.

LEH, LEONARD L.

1936. Prehistoric pueblo ruins in Range Creek Canyon, Utah. *Univ. Colorado Stud.*, vol. 23, pp. 159-169.

LOTHROP, SAMUEL K.

1937. Coclé. An archaeological study of central Panamá. Part I. *Peabody Mus. Arch. and Ethnol.*, Harvard Univ., vol. 7.

LOUD, L. L., and HARRINGTON, M. R.

1929. Lovelock Cave. *Univ. California Publ. Amer. Arch. and Ethnol.*, vol. 25, pp. 1-183.

LOWIE, ROBERT H.

1923. The cultural connection of California and Plateau Shoshonean tribes. *Univ. California Publ. Amer. Arch. and Ethnol.*, vol. 20, pp. 145-156.
1924. Notes on Shoshonean ethnography. *Anthrop. Pap. Amer. Mus. Nat. Hist.*, vol. 20, pp. 185-314.
1939. Ethnographic notes on the Washo. *Univ. California Publ. Amer. Arch. and Ethnol.*, vol. 36, pp. 301-352.

MÉTRAUX, ALFRED

1930. Études sur la civilisation des Indiens Chiriguano. *Rev. Inst. Etnol. Univ. Nac. Tucumán*, vol. 1, pp. 295-493.

MORSS, NOEL

1931. The ancient culture of the Fremont River in Utah. *Peabody Mus. Amer. Arch. and Ethnol.*, Harvard Univ., *Pap.*, vol. 12, pp. 1-81.

NORDENSKIÖLD, ERLAND

1931. Origin of the Indian civilizations in South America. *Comp. Ethnogr. Stud. No. 9.* Göteborg.

NUSBAUM, J. L.

1922. A Basket-Maker cave in Kane County, Utah. *Indian Notes and Monogr.*, No. 29, *Mus. Amer. Indian, Heye Found.*

OPLER, MARVIN K.

- 1939a. Southern Ute pottery types. *Masterkey*, vol. 14, pp. 161-163.
- 1939b. The Southern Ute dog-dance and its reported transmission to Taos. *New Mex. Anthrop.*, September-December 1930, pp. 1-7.

PARK, WILLARD Z.

1938. Shamanism in western North America. *Northwest Univ. Publ. Soc. Sci.*, No. 2.

- PARK, WILLARD Z., SISKIN, EDGAR E., COOKE, ANNE M., MULLOY, WILLIAM T., OPLER, MARVIN K., KELLY, ISABEL K., and ZIGMOND, MAURICE L.
1938. Tribal distributions in the Great Basin. *Amer. Anthrop.*, vol. 40, pp. 622-638.
- PLOETZ, HERMANN, and MÉTRAUX, ALFRED
1930. La civilisation matérielle et la vie sociale et religieuse des indiens *Ze du Brésil méridional et oriental*. *Rev. Inst. Etnol. Univ. Nac. Tucumán*, vol. 1, pp. 107-238.
- RAY, VERNE F., MURDOCK, GEORGE P., BLYTH, BEATRICE, STEWART, OMER C., HARRIS, JACK, HOEBEL, E. ADAMSON, and SHIMKIN, D. B.
1938. Tribal distribution in Oregon and adjacent regions. *Amer. Anthrop.*, vol. 40, pp. 384-415.
- REAGAN, ALBERT B.
1933. Summary of archaeological finds in the Uintah Basin, Utah, to date. *Utah Acad. Sci.*, vol. 10, pp. 3-18.
- ROBERTS, FRANK H. H., JR.
1930. Early Pueblo ruins in the Piedra District, southwestern Colorado. *Bur. Amer. Ethnol. Bull.* 96.
- ROGERS, MALCOLM J.
1939. Early lithic industries of the lower basin of the Colorado River and adjacent desert areas. *San Diego Mus. Pap.*, No. 3.
- SMITH, ELMER
1934. A brief description of an Indian ruin near Shonesburg, Utah. *Zion and Bryce Nat. Notes*, vol. 6, pp. 13-18, January.
- STEWART, JULIAN H.
1933. Archaeological problems of the Northern Periphery of the Southwest. *Mus. North. Arizona, Bull.* 5.
1936a. Pueblo material culture in western Utah. *Univ. New Mexico Bull.* 287, *Anthrop. Ser.* vol. 1, No. 3.
1936b. The economic and social basis of primitive bands. *Essays in honor of A. L. Kroeber*, pp. 331-347. *Univ. California Press.*
1937a. Ancient caves of the Great Salt Lake region. *Bur. Amer. Ethnol. Bull.* 116.
1937b. Ethnological reconnaissance among the desert Shoshoni. *Expl. and Field-work Smithsonian Inst. in 1936*, pp. 87-92.
1938. Basin-Plateau aboriginal sociopolitical groups. *Bur. Amer. Ethnol. Bull.* 120.
1939. Some observations on Shoshonean distributions. *Amer. Anthrop.*, vol. 41, pp. 261-265.
- STEWART, OMER C.
1939. The Northern Paiute Bands. *Univ. California, Anthrop. Rec.*, vol. 2, pp. 127-149.
- STRONG, W. D.
1929. Aboriginal society in southern California. *Univ. California Publ. Amer. Arch. and Ethnol.*, vol. 26.
1935. An introduction to Nebraska archaeology. *Smithsonian Misc. Coll.* vol. 93, No. 10.
- THOMPSON, J. ERIC
1936. Archaeology of South America. *Field Mus. Nat. Hist., Anthrop. Leaf.*, No. 33.

VON BONIN, GERHARDT, and MORANT, G. M.

1938. Indian races in the United States. A survey of previously published cranial measurements. *Biometrika*, vol. 30, pp. 94-129.

WASSÉN, HENRY

1935. Notes on southern groups of Chocó Indians in Colombia. *Ethnol. Stud.*, No. 1. Göteborg.

WHEELER, S. M.

1937. An archaeological expedition to Nevada. *Masterkey*, vol. 11, pp. 194-197.
1938. A Fremont moccasin from Nevada. *Masterkey*, vol. 12, pp. 34-35.

WISSLER, CLARK

1938. *The American Indian*. 3d ed. New York.

WOODBURY, G. and E.

1932. The archaeological survey of Paradox Valley and adjacent country in western Montrose County, Colorado, 1931. *Colorado Mag.*, vol. 9, pp. 1-20.

ZINGG, ROBERT M.

1938. The Ute Indians in historical relation to Proto-Azteco-Tanoan culture. 10th Rep. Univ. Denver, Dep. Anthropol., pp. 1-19.

SOUTHERN PERIPHERAL ATHAPASKAWAN¹ ORIGINS, DIVISIONS, AND MIGRATIONS

By JOHN P. HARRINGTON

Bureau of American Ethnology

INTRODUCTION

Indian language in America is split up into stocks of interrelated dialects. Rarely indeed does a stock consist of a single dialect. Some of the stocks cover a vast area of much differentiated but interrelated languages. In many cases divisions have become detached from these stocks in prehistoric or historic times and wandered off to become linguistic islands surrounded by tribes of a different speech. An example of this in historic times is the Arapaho and Cheyenne, who have broken away from the main bloc of the Algonquian stock, to which they belong, the Arapaho coming from Ontario, Canada, and the Cheyenne from Minnesota.

Similarly, in prehistoric times the Sarcee of southern Alberta, Canada, the Kwalhioqua-Hoopan of the Pacific coast, and the Lipano-Apachean of Arizona and New Mexico broke away from the great Athapaskawan stock, which occupies all the interior of Alaska and northwest Canada in a single bloc.

ORIGIN OF THE ATHAPASKAWAN STOCK

We may disregard the Eskimoan (Eskimo-Aleutian) language as irrelevant to the problem of the origin of Athapaskawan because the former, though holding practically the entire northern shore of North America and the contra-Alaskan Siberian shore, is 1, distributionally unparalleled elsewhere in the world, 2, linguistically related to the Algonquian of the Northeast and therefore anciently intrusive at Bering Strait, and 3, too obviously intrusive in the west to affect the situation. Essentially, we have a vast bloc of Chukchean in Asia facing a vast bloc of Athapaskawan in America. Judging by their vast distribution and great dialect variation, these blocs have for centuries, probably millenniums, been stationary, stagnant, resistant.

When one studies the languages of the Caucasus—their great territory, their comparable differentiation, their mountain entrenchment—it is clear that they have been where they are for decemmillenniums.

¹ For the term Athapaskawan, see p. 506.

One has the same impression of millennial occupancy when studying the Chukchean stock. This stock extends from the Yukagiran stock, its western and probably related neighbor, to East Cape (Cape Déjnev) and from the Arctic Ocean to the southern tip of Kamchatka, where it abuts the Ainoan language. Even 20,000 years or more is an unimaginable time, but I feel sure that a map of 20,000 years ago would have shown the Chukchean stock largely where it is today. In recent millenniums the Chukchean stock apparently has not moved. This great stock not only prevents other stocks from reaching America, but is itself blocked from crossing the Strait and sending an offshoot skirting down the coast by tribes occupying the American side.

The first question is whether linguistic blocs or units were imported from Siberia into America already patterned like ready-made suits of clothes of various models, or whether only the goods were imported for tailoring into garments. I believe that the latter is the case.

It is fairly certain that new linguistic stocks have not migrated into America in recent centuries or even in recent millenniums. In fact, linguistic evidence seems to favor the hypothesis that beginning some 20,000 years ago, or even two or three times that long ago (this subject is treated in other articles in this volume), immigrants came, not as successive waves speaking different languages but perhaps with a single language that had not yet differentiated into the present American stocks. In short, I assume a monowave migration theory of the derivation of American languages.

The original migration toward America was probably not initiated by pressure of the Turkish-Mongol peoples or northern Siberians, as has often been assumed. Man has spread to the limits of continents without being pushed. The spread of stagnant Siberian stocks toward Bering Sea was slow and tentative. Even long-overpopulated China spilled scarcely at all into Oceania in front of her shore. Perhaps the stock that was to populate America occupied both the coast and interior of the Siberia side of Bering Sea, like the recent Chukchee, before venturing to cross East Cape. Once across, they left the Bering Sea area and moved south, especially along the coast where fish and shellfish are abundant. Early settlement of the coast as against the interior is indicated by the greater population density and linguistic diversity of the former. Centuries later, American population expansion, especially on the West Coast, including the area later occupied by the Eskimo, brought a halt to easy migration across the Strait. An equilibrium was reached, communication between Siberia

and America subsequently being more in the nature of visits back and forth by boats, as in the historic period, than of a continuous population flow. Such communication carried a slight Eskimo fringe, perhaps only a few millenniums old, to the Siberian coast.

The 20,000 years and probably more which are presumed to have elapsed since man's first advent in America are ample to account for the present diversity of Indian languages. This is 200 centuries, with something like four Indian generations to a century. English, despite the retarding effect of education and writing upon change, has been modified at a surprising rate. Chaucer's "whan that Aprille with hise shoures soote" ("for when April with its sweet showers")—phonetically, "hwàn θàt Ápril wiθ is cúurəs sóotə"—would, pronounced only 600 years or 18 European generations ago, have fallen as meaningless as Holland Dutch on modern English ears. American Indian languages with different backgrounds, contacts, and cultures, have changed at varying rates. But in 200 centuries or 800 generations, even though all American languages came from a single dialect spoken by a few original individuals, they would have differentiated beyond the point of provable genetic interrelationship. The oldest Indo-Germanic comes from only 1500 B.C. (the recorded Vedic Sanskrit), a period of only 34 centuries or 102 European-culture generations, as contrasted with the minimum of 200 centuries or 800 generations during which Indian languages have presumably been developing in some isolation. Little wonder that Sanskrit and English show dazzling likeness. It is remarkable that the American Indian languages can be proved to resemble one another as much as they have been.

One evidence of the common origin of American Indian languages is the occurrence throughout North and South America of the same first person singular pronoun, *na*, or the like. This can only be interpreted as an unsubmerged survival of the word for "I" which was used by the first arrivals in Alaska.

The most interesting future task of American linguists will not be the reduction of the number of language stocks, which at best are little more than guesses, but proof of the genetic relationship between all stocks. With perfected criteria, relationship with an east Asiatic stock or stocks may be shown. This will be of the utmost importance to the study of American origins, for, when a people has experienced culture loss or culture change, language may provide the only clue to their provenience. How could we know that the Navaho had originated in the North but for their Athapaskawan language?

DIVISIONS OF THE ATHAPASKAWAN STOCK

'Áđápaskàaw is a place name in the Cree dialect of the Algonquian stock which was applied to the Peace-Athabaska delta region just west of the western tip of Athabaska Lake in northern Alberta. 'Áđáp-ask-àa-w, locative 'Ađapaskaahk, means "place where there is grass or plants everywhere"—literally, "scattered-grass-it-is," a word of four syllables, or, clipped to 'Ađp-ask-aa-w, of three syllables. In adopting "Athapascan" as the stock name, Powell accepted a form with an over-abbreviated termination. It would be more accurate and still compatible with English to adopt the form Athapaskawan. (Compare these phonetics with the English Saskatchewan, a province of Canada.) Powell's spelling with p is correct, as the Cree language has no b. The Canadian and United States Governments have tacitly accepted the spelling with p, their geographical boards never having suggested its change.

The term "Athapaskawan" as used in this paper applies to a stock composed of the following genetically interrelated languages: 1, Eyak; 2, Tlingit; 3, Haida; 4, Powell's "Athapascan"—which languages occupy in a solid bloc practically all the most northwestern part of North America. These languages are all related phonetically, grammatically, and lexically.

The homeland of the Athapaskawan bloc seems always to have been in the bleak interior of northwestern Canada (fig. 31), just as Algonquian has been in northeastern Canada. Not far north of the Missouri drainage, streams flow into the Arctic. The most northerly part of the Great Plains and the Laurentian Upland to its east have Arctic Ocean drainage. To the west of these northern Plains run the Rocky Mountains, and west of these, the Coast Range, known in its northern section as the Alaska Range. Between these two ranges, a trough, known as the Northern Interior Plateau, extends all the way from Cape Prince of Wales to the United States line. The northernmost tip of the Great Plains lies within the Mackenzie River basin, and the northernmost tip of the Plateau in the great Yukon River valley. Practically all this great interior northwest of North America has, as far as is known, been inhabited since immemorial times by the northern or nuclear branch of the Athapaskawan-speaking peoples. The diversity of their languages and dialects argues long occupation in situ. All evidence indicates that these northern people were the nucleus or homeland from which islands of southern Athapaskawan people, surrounded now by alien tongues, have broken off.

Northern Athapaskawans consist of: 1, Pacific Coast people (Eyak, Haida, and Tlingit); 2, Northern Interior Plateau people (in-

cluding Yukon Valley people); 3, northern Great Plains people; and 4, northwestern Laurentian Upland people. The most southerly of the Northern Athapaskawans are the Carrier (with closely related



FIG. 31.—Athapaskawan divisions in relation to North American topographic features.

Chilcotin and Nicola Indians), the Sarcee, and the Chipewyan. The Carrier and the Sarcee are just north of the United States line. The Chipewyan are just north of the Churchill River which flows east into Hudson Bay and forms the boundary between the Chipewyan on the north and the Cree on the south.

Farther south, there are detached Athapaskawans in the west and in the east. These are southern peripheral bands that broke off from the northern nucleus and drifted south to form a pronglike distribution, the shape of a chicken wishbone, one prong extending down the Coast Range and terminating a little north of San Francisco, Calif., and the other extending down the plains at the eastern foot of the Rocky Mountains and terminating in a great area of country held by Athapaskawans in the Southwest. These prongs perhaps mark migration routes, but both have gaps, the eastern prong being broken to the extent of making the route uncertain.

The western prong formerly included the Tlatskanai and the Kwalhioqua, near the mouth of the Columbia River, and south of these a string of peoples in the Oregon and northern California Coast Range region. The eastern prong had a peppering of Lipanans on the High or westernmost Plains, and a body of Apacheans at its southern end where the Rocky Mountains break down. The western prong runs rather straight southward, but the eastern prong runs south and then hooks west, like the letter "j."

It was Horatio Hale (*Ethnography and Philology*, U. S. Exploring Expedition, 1838-1842, pp. 534-535, 1846)² who discovered that the Tlatskanai and "Umkwa" (now called Umpqua) languages of the Washington-Oregon region are related to the languages of the interior of the Far Northwest. Since the "Umkwa" are of the Hoopan division of languages which occupy much of the coast of Oregon and northern California, this discovery amounted to the connection of the whole group of lower Pacific Coast Athapaskawan languages with those of the north.

In 1852, 6 years after Hale's announcement, William W. Turner³ announced his discovery of the connection of Navaho and Apache with the Athapaskawan languages of the interior of the Far Northwest. Hale thus discovered the connection of the western prong, Turner that of the eastern prong, of southern Athapaskawan languages with the northern dialects.

In spite of the great distance between northwestern Canada and the Athapaskawans on the West Coast and in the Plains and Southwest, there is great linguistic diversity between various members of

² Turner, William W., in *Pacific Railroad Report*, vol. 3, pt. 3, p. 84, 1856, first referred the Hoopan language of northern California to Athapaskawan.

³ The Apaches, *Literary World*, vol. 10, No. 272, pp. 281-282, April 17, 1852. Turner, the Patent Office librarian, had based his conclusion on vocabularies collected by other persons and had read a paper on the subject before the American Ethnological Society March 27, 1852.

the northern bloc but close relationship between those of its southern edge—from west to east, the Carrier-Chilcotin-Nicola in British Columbia, the Sekeneh-Beaver-Sarcee in British Columbia and Alberta, and the Chipewyan in Alberta and Saskatchewan north and east of the Sarcee—and those who occur far to the south. This means that the Athapaskawan migrations to the south were comparatively very recent, having occurred perhaps during only a hundredth part of the time that man has been in America.

KWALHIOQUA-HOOPANS

The Kwalhioqua-Hoopan prong extends with several breaks down the Coast Range. Many of these Athapaskawan-speaking peoples are not on the coast itself, but are in the mountains inland from the coast.

KWALHIOQUA

Just north of the lowest course of the Columbia River, the small Willapa River rises in inland prairies and finds its way through the Coast Range to the Pacific shore, in its lower course paralleling the lower Columbia. In the drainage of the Willapa and also a little south of the Columbia River there survived until recently two Athapaskawan-speaking tribes, the Kwalhioqua and the Tlatskanai, detached from northern and southern Athapaskawans. These belonged with the Hoopan.

HOOPAN

The Hoopans form an irregular string of tribes, extending from Roseburg, Oreg., to the head of the Eel River in northern California. Perhaps the best known of all this division of Athapaskawans is the Hoopa tribe, who occupy the lowest course of the Trinity River, a great southeastern affluent of the Klamath River.

LIPANO-APACHEANS

These are the peoples of the eastern prong. Like those of the western prong, they are separated from the Canadian Athapaskawans by a wide gap.

Just as one dialect of Huron has turned more original *thy* into *khy*, while the other dialect retained it as *thy*, so the Lipanan languages have turned more original *th* to *kx*. (Just as Oglala Sioux has developed overaspirate *tx* from *th*, so Navaho has developed overaspirate *tx* from *th*, and Navaho *tx* is to be regarded as on the road to *kx* development.) Lipanan alone among all the Athapaskawan groups has this shift, as discovered by Goddard. Navaho *txoh*, "water," appearing in Lipanan as *kxoh*, "water."

LIPANAN

A. E. Thomas (*Forgotten Frontiers*, Norman, Okla., 1932) re-peoples the High Plains with Lipanan tribes in a spectacular way. The Lipanans are the "Prairie Apaches" mentioned by Whitfield (*Indian Aff. Rep.* 1854, p. 298). Thomas derives their names and all other information about them from Spanish archives. The Spaniards called these peoples Apaches (for which term see p. 512), but from a linguistic point of view, at least, the name Lipanan, a generic adjective derived from Lipan, one of their bands, is better. Thus, the term "Prairie Lipanan" is better than "Prairie Apache." Following this nomenclature, I shall speak below of Kiowa-Lipanan and Jicarilla Lipanan instead of Kiowa-Apache and Jicarilla Apache.

Cabeza de Vaca (1528 to 1536) may or may not have passed among Lipanan or southern Apachean peoples. Marcos de Niza and Estévan (1539) went through southern Apachean country in order to get a glimpse of Hawiku. But the first mention in history of Spanish contact with Athapaskawan peoples is in Castañeda's narration of the Coronado expedition, 1540-1542. At the time of this expedition the southern Apachean peoples hid out and are therefore not mentioned, but it is very important to note that southern Lipanan peoples are mentioned. This narrative therefore contains the first Spanish reference to Athapaskawan peoples; those people were Lipanans.

I shall list several of the prominent Lipanan peoples; the only three of these surviving at the present time are the Kiowa-Lipanan, Jicarilla Lipanan, and Lipan.

Kiowa-Lipanan.—The most northerly of all the Lipanans were the Kiowa-Lipanans, whose language fortunately is still spoken. About 1,800 Lipanans were with the Kiowa in and west of the Black Hills, now South Dakota, having sought the protection of alliance and co-traveling with them. Now, 139 years later, they are settled with the Kiowa in south-central Oklahoma. Dr. Pliny Earle Goddard found that the Kiowa-Lipanans were of recent southern origin, having drifted farther north than any other band of the High Plains "Prairie Apaches."

Paloma Lipanan.—Paloma, a Spanish name, means in this case "band-tailed pigeon." It is given in the compilations of Thomas. The Paloma Lipanans were stated by the Spaniards to be living in what is now northeastern Colorado, in the general region of the South Platte River, that is, the South Fork of the Platte, 150 miles straight south of the Black Hills. It may be, however, that Paloma Lipanan is merely the Spanish name for Kiowa-Lipanan.

Cuartelejo Lipanan.—Cuartel means "quarters" in Spanish, also "barracks of soldiers." Cuartelejo is its depreciative. The older Spanish orthography used, of course, q for c. The Cuartelejo Lipanans lived in what is now the southwestern part of Kansas. It was to this region that the Taos Indians, unable to endure Spanish military pressure, fled in 1680 at the time of the New Mexico Pueblo Indian uprising.

Jicarilla Lipanan.—These people are the Pee Xaih of the Navaho. The word means literally "having-winter" or "snow" and is also applied to any far northerner. The Spaniards always called these people Apaches de Jicarilla, literally "shallow-bowl-shaped-basket Apaches," referring to their manufacture of certain large coiled baskets.⁴

It was long ago stated that the Jicarilla Lipanans were divided into two geographical divisions known, among other spellings, as the Olleros and the Ollaneros. Olleros was translated "mountaineers," referring to habitation of this division in the Taos Mountains. Ollaneros was translated "plains people," referring to their location in the southwestern corner of Colorado and northeastern New Mexico. These two names should be Hoyero and Llanero. Hoyero is derived from Spanish hoya, "dell," "cove," or "corner in the mountains," being equivalent to rincon or rinconada (in Navaho "dell" is niłt'átiitc'ih and "dell person" is niłt'átiitc'iniih). Llanero is derived from llano, "plain." Hoyero thus means the same as serrano, "mountaineer," from sierra, "mountain." Hoyero is better however, since it refers to the division living in mountain dells instead of on the crests, which serrano, taken in its most literal sense, would indicate. Serrano would be rendered into Navaho as tziłniih, literally "mountain person." The Hoyero division ranged seasonally through the Taos Mountains. Apache Pass, east of Taos, still bears the name of these Apaches. Llanero is translated into Navaho as xalkainiuh, "plains person," and is applied not only to a member of the Llanero division of the Jicarilla, but also to any Plains Indian. The old misrendition of Ollero as "pot person," from Spanish olla, "pot," which would be 'ásaa'niuh in Navaho, is of course absurd.

⁴ These baskets were called jicarillas in Spanish. These are commonly known as "wedding baskets," but are used for many other purposes, for instance serving txahnaak'áh, "thick-mush," Spanish "xacuehue." The Paiute, Ute, and Jicarilla Lipanan (the three northern neighbors of the Navaho), all made such baskets and bartered or sold them to the Navaho. These baskets are called ts'aa' in Navaho. "Jicarilla person" in Navaho would be ts'aa'tinéh or ts'aa'ii'inih ('ii'inih, "maker"). But this is only a translation; a Jicarilla person is really called Pee Xaih by the Navaho.

In ancient times even the Dell division of the Jicarilla Lipanans is said never to have penetrated far west of the Rio Grande. After the Jicarilla Lipanan tribe had been conquered by the United States Army in 1854, their agency was located for a time at Abiquiu, N. Mex., old Spanish town on the south bank of the Chama River. The Jicarilla Lipanans were settled on the present Jicarilla Apache Indian Reservation, west of the Chama River, in 1873, with the agency at Dulce, N. Mex.

The Jicarilla Lipanan are by far the most populous of the Lipanan tribes, the 1938 census numbering them as 714.

Querecho Lipanan and Teya Lipanan.—Although several of Thomas' names of Lipanan bands are omitted here, I must mention the Querecho Lipanans and the Teya Lipanans both because they are mentioned by Casteñeda and because Teya has been wrongly thought to have something to do with the name of the State of Texas. The Coronado expedition encountered these two tribes on the plains east of the Rio Grande. Casteñeda said, "están gentes que llaman querechos y teyas."⁶ This passage is translated (*ibid.*, p. 527), "These people are called Querechos and Teyas." My discovery that Teya is the Pecos-Jemez word for eastern Apache, that is, Lipanan, proves that at least the Teya band mentioned by Casteñeda was Lipanan, and makes it probable the Querecho band was also Lipanan. It is impossible from the orthnography to tell whether the word should be rendered in modern Spanish orthnography as Querecho or Cuerecho. Espejo, *ca.* 1583, employs Casteñeda's Querecho as a term for Athapaskawan in general, or at least for Lipano-Apachean in general.

Lipán.—Perhaps the most southern of the Lipanan bands were the Lipans proper. In 1905, 19 individuals speaking the Lipan language, a remnant of the Lipan tribe, were removed by the Mexican and United States Governments from the Santa Rosa Mountains in the States of Chihuahua and Coahuilla, Mexico, and were settled on the Mezcalero Indian Reservation, which occupies an isolated mountain range surrounded by plains, in south-central New Mexico. Here the language is still remembered by a few descendants of the tribe.

APACHEANS

Apacheans include the Navaho and Apache proper but exclude the Lipanan. The name is derived from the Spanish word Apache, which was applied in early times to the Navaho (see p. 517), and indeed to the Lipanan tribes, as we have seen above. The Spanish word

⁶ Winship, George Parker, The Coronado Expedition, 1540-1542, 14th Ann. Rep. Bur. Amer. Ethnol., 1892-93, pt. 1, p. 546, 1896.

Apache was picked up by the Spanish from the Yavapai term 'Axwá, duoplural 'Axwáatca, "Apache person," perhaps partly through confusion with Yavapai 'apáa, duoplural 'apáatca, "person."⁶ The word Apache was, of course, originally ethnological with no linguistic connotation. The term Apachean is formed by adding Powell's postfix -an to the word Apache. As early as the end of the sixteenth century we find the word Apache employed in a general sense.⁷

The Navaho might well have been called the northern Apache, if the word Apache had not also been applied to various Lipanan peoples. The Navaho and Apache belong together linguistically. The former occupy roughly the northern part of the present States of Arizona and New Mexico, and the latter the southern part of these States. A belt of Pueblo villages—Isleta, Laguna, Acoma, and Zuñi—extends from east to west between and dividing these two belts of Apacheans. These Pueblos are remnants of a formerly more numerous people.

Navaho.—This name designates the Navaho-Apachean. In early Spanish, this tribe was known as Apache de Navajo (see below). The Navaho, not long ago a comparatively small people, have increased by expansion and by the incorporation of remnants of aliens until now they are the largest numerically of all United States monolanguage tribes. The 1930 census numbers them as 39,500; the 1939 census, as between 45,000 and 46,000. They are increasing at the rate of about 400 per annum. The six consolidated jurisdictions of the Navajo Reservation (see below) under the present Navajo Central Agency comprise 16,000,000 acres in Utah, Arizona, and New Mexico, and is the largest American Indian reservation in the United States.

It is well known to every Navaho that the tribe was anciently much smaller than it is now and that it developed in a region lying partly in the easternmost portion of the present Navajo Reservation. This old homeland is still known to all the Navaho as Tinétxah, literally "among the Navaho," that is, "the home of the real old-time Navaho." This Navaho expression would be more literally rendered by the French idiom "chez les Navahos," meaning "in the homeland of the Navahos" or "Navaho homeland place." The Navaho call their modern homeland or reservation Tinéh Pitxah.

⁶ The sounds w and xw are easily interchanged with p in loaning back and forth between Indian languages and Spanish or English; for instance, an old Navaho form for Washington is Pacjítóon (from Spanish) instead of the usual Wácjítóon (from English).

⁷ For instance, Oñate, Juan B., *Obediencia y Vasallaje de San Juan Baptista, Documentos Ineditos de Indias*, vol. 16, p. 114, 1596, writes: "Todos los Apaches."

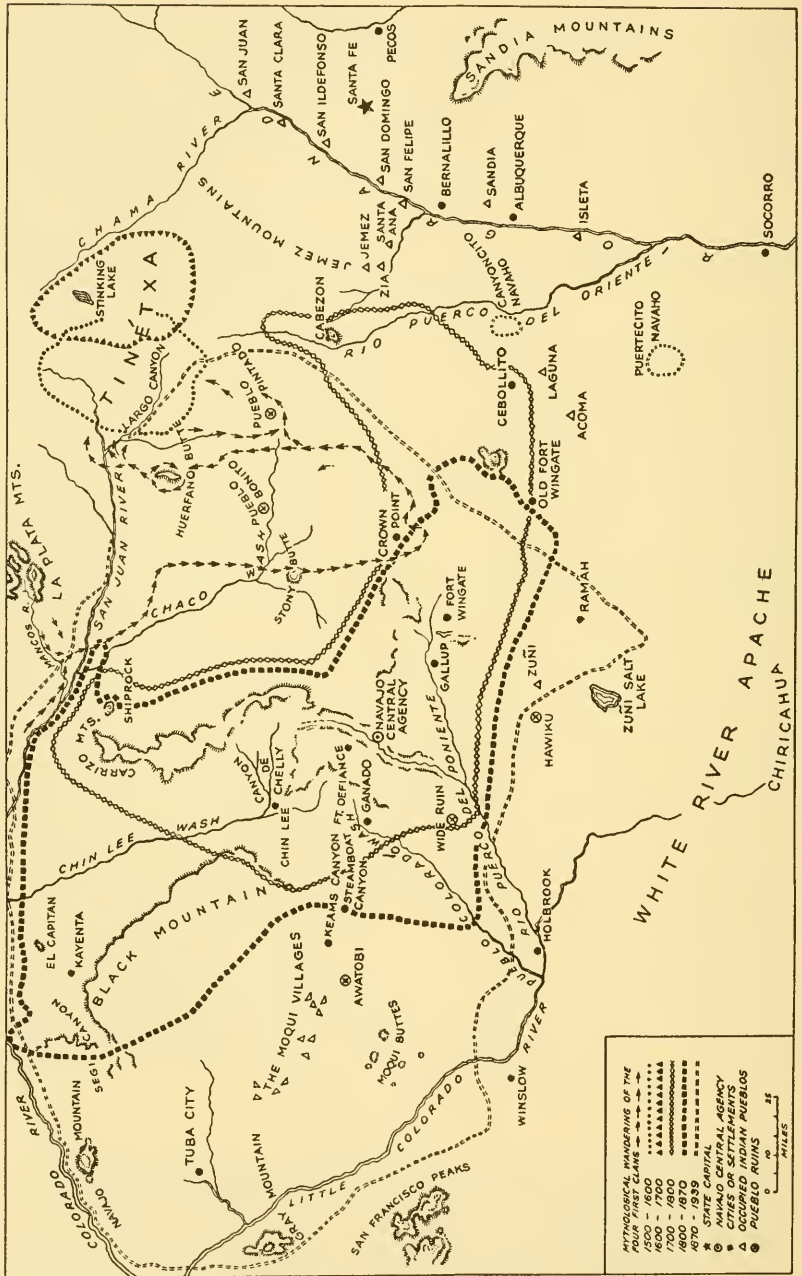


FIG. 32.—Navaho limits at different dates.

The location of the original homeland, shown in figure 32, is based on the earliest map (fig. 33), which names the Navaho region. A certain migrating clan was, according to mythology, joined by other clans, all coming to occupy Tinétxah which then centered in Largo Canyon, N. Mex. Tinétxah, according to the Navaho tradition, shifted slowly a little to the east, the center perhaps about Txóntoots'os, Stinking Lake (now called Burford Lake on some maps), located on

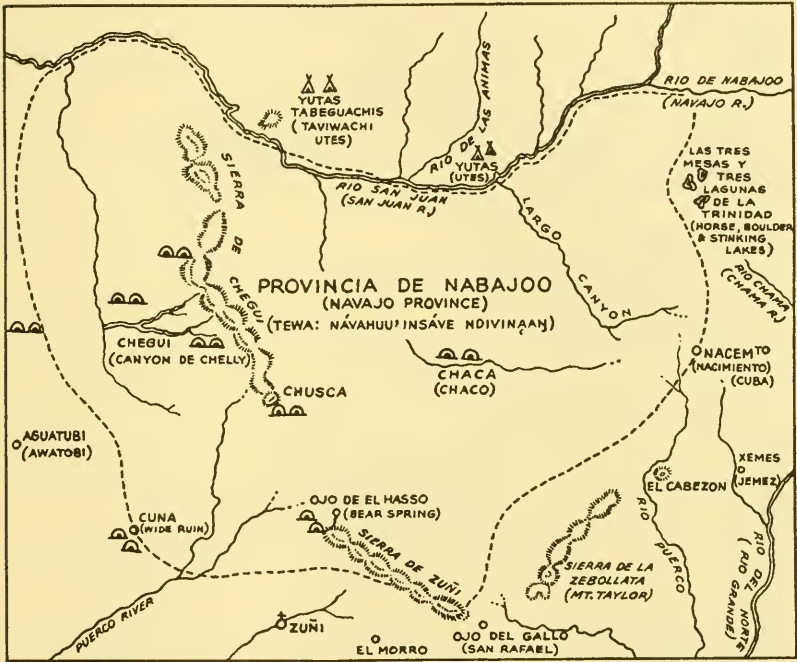


FIG. 33.—The earliest known map of the Navaho, after Dominguez and Escalante.

the present Jicarilla Apache Reservation. From this second location of Tinétxah, the tribe expanded west and south, but never lost claim to its more original habitat to the east. At present, the tribe extends west to the San Francisco Peaks and Flagstaff. In the south, it extends beyond the Santa Fe Railroad at three places: A large area about Ramah, near Zuñi; an area at Fort Wingate Vocational High School; and in the Puertecito region, northwest of Socorro and 34 miles due north of Magdalena, N. Mex. The Navahos of the last region have been found by Richard F. Van Valkenburg to be called by the curious name Tshetei'aał, literally "rock chewer." The Nava-

hos say that when these people became angry they went to chew rocks. These Puertecito Navahos developed in part from Indian slaves who ran away from the Spanish town of Socorro. Puertecito, meaning in Spanish "little gap," is called in Navaho T'iistshoh, "big cottonwood trees."



FIG. 34.—Navaho archeological sites in a portion of Tinétxah, the mythological home of the Navaho.

Some archeologists have regarded the Navahos as an Apache-speaking tribe which arose by incorporation of bands in the region of the Four Corners. A perusal of figure 32, which shows traditional and historical Navaho origins better than they are outlined in this text, will show that the Tinétxah can scarcely be described as located at the corners of the four States. Stinking Lake, the center of the second Tinétxah, is 130 miles practically due east of the Four Corners. The boundaries of the expanding Navaho nation are shown as of

different periods by various kinds of lines in figure 32. Some indication of the distribution of known sites of ancient Navaho hogans is shown in figure 34. This includes a portion of Tinétxah. Other Navaho hogan sites have been found far to the north of the area shown in this figure, and recently others have been found to the south of the area shown.

The eastern boundary of the Tinétxah probably ran from north to south through the region east of the three lakes, Horse Lake, Boulder Lake, and Stinking Lake (now called Burford Lake on some maps), which are shown on the Dominguez and Escalante map (fig. 33), as "Las . . . tres Lagunas de la Trinidad." Tinétxah extended a little east of these lakes but not to the Chama River. Perhaps the first overflow from Tinétxah was down into the region of the Rio Puerco del Oriente, or Puerco River of the East, and into the region of Tshootził, Mount Taylor (the Navaho cardinal mountain of the south).

The Again-Navahos.—The Navahos have a legend, as do the Kiowa, that in the remote past their people divided. When fire in this country turned the rocks red, as they still appear, a large body of Navahos, after long quarreling with the rest of the Navahos, was driven by the fire to migrate straight north. The Navahos sent a posse of their own men, who overtook these separatists and dubbed them Tinénáxwótlóoniih, literally "re-existent Navaho" or "again-Navaho." Modern educated Navahos tend to equate this separatist people to the Canadian Athapaskawans of whom they have heard through the Whites.

The three earliest occurrences in Spanish of the tribe-name Navaho are:

Jerónimo Zárate-Salmerón (*Relaciones de todas las cosas que en el Nuevo-Mexico se han visto y sabido . . . desde el año 1538 hasta él de 1626, Documentos Ineditos de Indios*): "Apaches de Nabahó."

Alonso de Benavides (*The Memorial of Fray Alonso de Benavides, 1630. Translated by Mrs. Edward E. Ayer, Chicago, 1916*): "Apache de Navajó" [meaning] "sementeras grandes."

Domínguez y Escalante, 1776, speaks of "Provincia de Nabajoo," "Rio de Nabajoo."

It will be noticed that the first two merely use the word "Apache" modified according to locality. The Spanish language in the region still preserves the pronunciation Navajó and also uses the masculine form Navajoso, plural Navajosos, as well as the feminine forms.

Only Benavides gives etymology. Although he does not state that the word "Navajo" is Tewa, it is perfectly plain from reading his

account that the word means large cultivated fields in general, and does not refer to any one spot. The Spanish capital of New Mexico was Santa Fe, which was in the heart of the old Tewa country, since Tewas formerly lived not only where they do now, northwest of Santa Fe, but also about and south of Santa Fe (for instance, south of Santa Fe at Galisteo, which was a Tewa pueblo). In the earliest times, much Tewa was spoken at Santa Fe, and still is. It is therefore most natural to look to the Indian language of Santa Fe for the source of an early name taken into Spanish. The Tewas still use the compound noun *návahúu'* (in Spanish, "arroyon enmilpeado") to designate a large arroyo with cultivated fields—a perfect description of the old-time Navaho region, with its cultivated fields in canyons. The Tewa compound with the addition of their word Apache would be *návahúu'-sáve*. This evidently produced Apache de Navaju which must have been the form taken into early Spanish and used in the writing of Benavides. This compound is analyzed as follows: *náva*, "cultivated field," "milpa," "garden"; *húu'*, "large arroyo," but *hée'*, "small arroyo"; *sáve*, "Apache person." There is a Tewa ruin called *návahúu'* located near Puye, in the drainage of Santa Clara Creek, some 14 miles due west of Santa Clara Pueblo. After studying the passage in Benavides in which he gives the etymology, and after long conversancy with the Tewa language, however, it seems to me certain that the reference of *návahúu'* is to arroyon enmilpeado in general, and not to a particular place. The modern Tewa term for Navaho person is "Wansave," literally "Jemez Apache" (*Wáan̄j*, "Jemez person") and arose from the considerable intercourse between the Jemez and the Navaho. It is certain that in earlier Tewa *návahúu'-sáve* was also in use, probably as one of several terms applied to the variety of Apache now called Navaho, some of these terms certainly having been vulgar and abusive. The Tewa word *náva*, "cultivated field," has cognates in other Tanoan languages and has absolutely nothing to do with Spanish dictionary word *nava*, "hollow," "plains surrounded by mountains." With the insertion of 'i', "the one," duoplural 'īj, "the ones," the compound appears as *návahúu'í̄sáve*, "persona de arroyon enmilpeado"; *návahúu'í̄jsáve*, "personas de arroyon enmilpeado." The Navaho country would be called in Tewa *návahúu'insáve ndivinaan̄j*, literally "gente de arroyones enmilpeados su tierra."

The Tewa word *návahúu'* translated in Navaho would be *tá'ák'ye pikhooh*, literally "cultivated-field arroyo." The Tewa word *návahúu'-sáve* translated into Navaho would be *tá'ák'ye pikhoonīh* (-nīh,

“person,” here taking the place of the Tewa word for Apache, since *-niih* is the general term for “person,” “Indian,” “Apache”).

The Spanish corruption, Navajó, of Tewa *návahúu'* is pronounced by the Navahos *Naapeexwóh*, and has considerable usage, though *Tinéh* is the regular and common way of saying Navaho.

White River Apache.—When speaking in English, the Navahos, like the local white men, nearly always say White River Apache instead of White Mountain Apache, though the latter is the name used in books. They seem to think of these Apaches as living along the White River rather than in the mountains. In Navaho, however, the name is *Tziłyá'íh*, literally “mountain-top person.” These Apaches are the nearest Apachean neighbors of the Navaho, with whom the latter have had intervisiting and contacts. Several Navaho clan names occur also among the White River Apache, and in fact several Navaho clans are said to have migrated to the Navaho from the White River Apache.

There are also several Apache bands west of the White Mountains, each distinguished by name. These may be collectively termed the Western Apaches.

Chiricahua Apache.—The Chiricahua Apache (Spanish: *los Apaches de Chiricahui*) are now on the San Carlos Indian Reservation, southwest of the White Mountains in Arizona. But the Chiricahua Mountains, from which they take their name, are in the southeastern corner of Arizona and the southwestern corner of New Mexico. The Navaho call them *Tchícíh*, “Chiricahua person,” which has the first two syllables of the Spanish form *Chiricahua*. Jerónimo, the famous Apache war leader, was a Chiricahua Apache and had his home at San Carlos Indian Reservation when he was not raiding in Mexico. The Chiricahua in reality comprise a number of Apache bands.

Mezcalero Apache.—The Mezcalero Indian Reservation is inhabited by Mezcalero Apache, Chiricahua Apache (many of whom belong to Jerónimo's people and were moved to the Mezcalero Indian Reservation from Fort Sill, Okla.), and remnants of the Lipan and other bands. These people are spoken of as easterners by the Apaches living farther west. The name Mezcalero is Spanish and means “gatherer or eater of mezcal,” century plant.⁸ They were named thus by the

⁸ There are at least 10 species of century plant found in southern Arizona and New Mexico, but only one species grows on the present Mezcalero Apache Indian Reservation, *Agave neomexicana*. *Agave parryi* occurs to the west and to the south of the Reservation, and *Agave palmeri* occurs to the southwest of the Reservation. Century plant of any species is called by the Navaho *nootah*, and from this is derived *nootahíh*, which exactly translates Spanish *mezcalero*, but is never used meaning “Mezcalero Apache person.”

Spaniards because of their fondness for gathering, earth-roasting, and eating the crowns of the mezcal plant.

The Navaho have two names for Mezcalero Apache: 1, Naackálih (also used with tine'éh, "peoples," postpounded as a general name for Athapaskawans); 2, Pipaas Telaγalih, literally "hoop-and-pole hoop wabblor," applied at Xwêeltih by the Navahos to some Mezcalero Apaches because, when the latter played the hoop-and-pole game, they threw the hoop in a wabbly and zigzagging fashion.

Tribes of doubtful Athapaskawan affiliation.—There are several Southwestern tribes of doubtful Apachean affiliation. The Tobosos of Mexico, for example, were thought to be Apaches, but this is not certain.

ROUTES OF ATHAPASKAWAN MIGRATION SOUTHWARD

We have seen that several divisions of Athapaskawans split off at a comparatively recent period from the great bloc of their linguistic relatives in northwestern Canada and migrated far to the south. The distribution of the southern peoples came to form two long but somewhat broken prongs, one on the Pacific coast, the other along the Rocky Mountains.

The route of migration of the western prong is fairly obvious. It was almost certainly down the Plateau, and then through the Cascades. The route of the eastern prong is difficult to ascertain.

It seems very probable that the Athapaskawans of the eastern prong, here called Lipano-Apacheans, were once a variety of Sekeneh-Sarcee who, like the Comanche, moved slowly down the High Plains. Linguistically, they are closest to the southern group of Canadian Athapaskawans—the Carrier-Chilcotin-Nikola, the Sarcee, and the Chipewyan. The Sarcee live today on the High Plains of Alberta in southern Canada and the Chipewyan just north of Churchill River. These tribes are blocked on the south by the most western representatives of the Algonquian stock, the Blackfoot and Cree. But it is not difficult to imagine that a portion of one of them, probably of the Sarcee, seeking buffalo and perhaps pressed by other tribes, became separated from their kin and moved south to become the Lipano-Apacheans.

Three possible routes of migration of the Lipano-Apacheans into the Southwest and southern Plains are: Along the High Plains east of the Rocky Mountains; through the Rocky Mountains; down the Plateaus or through the Great Basin west of the Rocky Mountains. In reviewing these possibilities, several factors affecting Indian migrations must be considered.

The theory of corridor migration, expounded especially by Adolphe F. Bandelier in his Final Report and favored by many ethnologists, holds that migrations followed corridors because these offered fewest physical obstacles. Indian informants do not wholly agree with this, some of them stating that Indians on foot would as readily traverse mountain ranges or other rough places as follow an open corridor. According to all informants, the whole country was meshed with trails, some even following ridge tops and providing quite passable routes for migrating bands. The choice of a route depended far more on such factors as the presence of food, water, and other tribes than upon mere smoothness of terrain.

It is certain that the Athapaskawans moved amongst alien tribes during their progress south. And they moved, not with an ultimate goal in sight, but as aimless rovers whose movements from season to season over a long period were determined by such factors as game or enemy tribes.

HYPOTHETICAL ROUTE SOUTH VIA THE HIGH PLAINS

The easy line of southward movement, judging by the route taken by non-Athapaskawan tribes of buffalo hunters in historical times, is along the westernmost Plains, known as the High Plains—the rolling, flat country that lies just east of the Rocky Mountains. This is the “old north trail” of the historian, Walter McClintock.⁹ Others have dubbed it the “great northern trail.” Down this country at the eastern base of the Rockies, Comanches, Kiowas, Cheyennes, and Arapahos have drifted south in recorded times. This whole route from Canada to Mexico was inviting buffalo country and is traversed by many flowing streams which rise in the Rockies. The distance between the present Canadian and Mexican boundaries is approximately 1,400 miles. Walking 25 miles a day, a person would require at least 55 days to make the journey. The Navaho might have traveled this whole route as the result of being either the aggressors or victims in a single raid. But there is nothing to suggest that early culture involved raids of such magnitude. Like the historic Kiowa, the prehistoric Navaho probably drifted south, making seasonal movements, some of which even carried them back toward the north. We may be sure that the southward migration required generations of time.

The Apacheans, perhaps the first to come south, reached the region of eastern New Mexico and Texas at the southern end of the Rocky

⁹ The Old North Trail, or life, legends and religion of the Blackfoot Indians. London, 1910.

Mountains. At this latitude, the absence of a geographical barrier to the west, and the presence of Pueblo villages with corn easy to steal, the Apacheans naturally turned to the west, their progress being assisted perhaps by pressure of aliens to the east of them on the Plains. Some of them thus occupied the White River and Chiricahua regions in the south at an early time, while others of the same language occupied the mountains just west of the Chama in the north. Those in the south came to be known as the Apaches of various bands, those in the north as the Navaho, early called Navaho-Apaches.

Later perhaps, after the Apacheans had drifted south and then west, came the Lipanans, of a different but closely related language. Their final swing to the west, however, was blocked by their relatives who had preceded them. In recent times the Jicarilla have been settled in the west, partly in what was old Navaho country, and the Lipan proper have been gathered on the Mezcalero Reservation, where their remnants are settled among Apacheans.

The Spanish colonists of New Mexico found the Apacheans largely where they are now, though not quite so far west. They found the Lipanans, however, in variously named bands holding or roving in the Plains. They extended all the way from the Paloma band in what is now northeastern Colorado, 525 miles south of the Sarcee (the Kiowa-Apache, a Lipanan band that joined the Kiowa at the Black Hills, is not mentioned in the Spanish documents, but was perhaps beyond and distinct from the Paloma band), to the Lipan in the south. The last used to raid into what is now Mexico. The Querechos, mentioned in Castañeda's account of the Coronado expedition of 1540, are clearly a Lipanan band. The Jicarilla are the most populous extant Lipanan band and are now settled west of their former habitat.

The Lipanans were erroneously called Apaches by the Spaniards. It is better to distinguish Lipanans and Apacheans, including in the latter term all Apachean bands and the Navaho.

The Coronado expedition, which first penetrated the southwestern part of the United States, reported the White River region to be "uninhabited."¹⁰ This has been interpreted by historians as indicating that the Apacheans had not yet arrived in that region. The fact is that the White River region was doubtless full of Apacheans but that they were cleverly hiding out of sight.

The Lipanans and Apacheans are too nearly related linguistically to make it very likely that the Lipanans took the Plains route and

¹⁰ "Despoblado." Winship, George Parker, *The Coronado Expedition, 1540-1542*, 14th Ann. Rep. Bur. Amer. Ethnol., 1892-93, pt. 1, p. 424 and map opp. p. 344 (pl. 38), 1896.

that the Apacheans took the Basin route. It is, however, barely possible that the routes split in what is now the grazing country of Wyoming, formerly a great buffalo country. It is certain that they did not split in the Denver region, where the Rocky Mountains, perhaps harboring Utes, were a dangerous and effective barrier. The only two really notable passageways through the Rocky Mountains between Wyoming and New Mexico are where the two transcontinental railroads go through: the high plain in Wyoming where the Union Pacific Railroad passes, and the rolling continental divide country in New Mexico, formerly called Campbell's Pass and now popularly known as the Continental Divide, where the Atchison, Topeka and Santa Fe Railroad passes. Other so-called passes, though numerous, are small and high. Apache Pass near Taos, N. Mex., is named for the Jicarilla Lipanans, and together with several other passes in the same region, was used, especially by their Rincon or Dell division, in making temporary trips west into the Rio Grande drainage. Raton Pass, through which the Atchison, Topeka and Santa Fe Railroad runs, crosses a spur projecting eastward from the Rockies between Trinidad, Colo., and Raton, N. Mex. This was used before the railroad and served Indians moving north and south through the High Plains.

HYPOTHETICAL ROUTE SOUTH VIA THE INTERMONTANE AREA

It is unlikely that the Navaho traveled south along the great mass of the Rocky Mountains. Even though ruggedness of terrain may not have hindered their progress, it is difficult to believe that they would have preferred these peaks and valleys to the more open bison country to the east or indeed to the plateaus to the west.

Broadly considered, the Columbia Plateau is a northern extension of the Great Basin, and the Colorado Plateau is an eastern and southern extension of the Great Basin. These three plateaus merge imperceptibly into one another. And with only one crosswise barrier just north of the Canadian border, the Northern Interior Plateau (the trough between the Coast Range and the Rocky Mountains) extends all the way from Cape Prince of Wales opposite Siberia to the vicinity of the United States boundary, a distance of some 2,100 miles. One has, therefore, a succession of four contiguous plateaus leading from Cape Prince of Wales to the present New Mexico, suggesting a great trough of travel.

Several routes through the Columbia and Colorado Plateaus or even through the Great Basin are possible, but certain difficulties stand in the way of accepting any of these as that actually followed by the Athapaskawans.

In the first place the Lipanans were at the dawn of history scattered on the High Plains just east of the Rocky Mountains practically from Canada to Mexico. Migration of the Lipano-Apacheans by any Intermontane route would therefore have to assume that the Lipanans had first come south, Apacheans following later, and that the Lipanans had then swung to the east around the southern end of the Rocky Mountains and finally moved north in the High Plains, there adopting local habits and culture. This is possible, of course. Goddard believed that the Kiowa-Lipanans, instead of coming from Canada in their immediate prehistory, were a band of High Plains Lipanans, similar to the Paloma Lipanans, who had probably lived farther south.

A further difficulty in believing that migration was down through the Intermontane region is to know where the people started, for this region is wide in the north. Should Mooney be right in hinting Navaho migration from Oregon or California, many routes would be possible, including some via the Great Salt Lake. If the migration was from the Columbia Plateau, which merges on the south into the Great Basin, a number of easy routes would also be possible. Even if they came from the buffalo country of Wyoming, the only barrier to a direct march south through eastern Utah and western Colorado would have been the Uintah Range running east from Great Salt Lake. A migrating band could easily have crossed this rather well-watered range or skirted its western end. If they went around its eastern end, they would undoubtedly have come down the Green River valley to the junction of the Colorado River, and then traversed the western slopes of the Rocky Mountains to what is now western New Mexico. They would certainly not have followed down the canyon of the Colorado below the Green River, but would have cut across high mesa country into the San Juan drainage.

A bit of archeological evidence, cited by Steward (in this volume) fits the possibility of an Intermontane route. A people of apparent northern origin, the Promontory people, are known to have arrived in the Salt Lake region while it was occupied by Pueblo peoples, and to have remained there after the latter vanished. The identity and ultimate fate of the Promontory people is not known, but when future archeology has thrown more light on this mysterious group and has traced back Navaho prehistory, we shall know whether or not they bore any relation to early Athapaskawans.

CULTURAL EVIDENCE OF MIGRATIONS

Though Navaho language and apparently some mythology point clearly to a northern origin, the remainder of Navaho culture is unenlightening as to migrations.

Basically, Navaho culture is Great Basin in type, with a few Plains traits and a strong veneer of Pueblo features. Each Pueblo, such as Jemez and Zuñi, affected the culture of neighboring Navahos. For example, Navahos living in the extreme eastern corner of the Reservation show Jemez influence, the island of Navahos living south of the Santa Fe Railroad in the Ramah district, bordering on the Zuñis, show Zuñi influence.

When we make a detailed comparison of artifacts of the Navaho with those of other Indian peoples, we find curious agreements and disagreements. The Navahos have the typical Pueblo prayerstick and call it *k'et'áan*, and make some use of the Pueblo woman's spiral legging moccasin. The hogan or Navaho round house is a Basin type, as are the Navaho summer shelters.

As buffalo were extremely abundant on the High Plains along the eastern foot of the Rockies, it might be supposed that if there were buffalo culture among the Navaho, it would indicate that they had taken the High Plains route. But the Wyoming Basin and parts of the Great Basin also had some buffalo, so that whether the Navaho came south by the eastern or the western route, they would have gone through buffalo country. In fact the Athapaskawan Sarcee Indians of southern Canada live on the High Plains and were typical buffalo Indians. The Navaho therefore doubtless came from buffalo country and in coming south never left it. A personal communication from the late Prof. Junius Henderson states that the modern species of buffalo ranged sparsely throughout the present Navaho country in prehistoric times.¹¹ In historic times, the buffalo was restricted to the Plains, way to the east of the Navajo Reservation. A few years ago there were still aged Navahos who had been members of small parties that hunted buffalo on these distant eastern plains. Various Lipanans, indeed, lived upon the buffalo plains.

Navaho, thus, were probably buffalo Indians from remote times. They moved into a region where buffalo were scarce, and, when these became extinct, they sent hunting parties far to the east to bring

¹¹ A number of Navahos and Pueblos have recounted that in very early times the buffaloes used to range west of the Rio Grande. Vernon Bailey (*Mammals of New Mexico, North American Fauna No. 53, Bur. Biol. Surv.*, p. 12, 1931) states: "The Navajos . . . were great buffalo hunters, but so far back as the writer has been able to trace their records they journeyed east of the mountains to find their game or trade their wares for skins and meat." In the *Franciscan Fathers, A vocabulary of the Navaho language, English-Navaho, vol. 1, p. 43, Saint Michaels, Ariz., 1912*, it is stated: "There is no evidence in proof of the claim of some traditions and legends that the buffalo ever traversed the present Navaho country."

back buffalo for food, artifacts, and, what was most stressed of all, for ceremonies.

Some other Indian peoples peripheral to the buffalo area, for instance the Pit River Indians about Alturas, Calif., have little buffalo lore and scarcely remember the name which they had adopted from the Paiute for the animal. But the Navaho, although in historical times peripheral to buffalo country, have a native name for the buffalo, 'ayáníh, literally "eater" (in the sense of grazer), and have fully as rich a cultural representation of the buffalo as do the neighboring Utes and Pueblos. An artifact still made from the buffalo is the 'ayáni'ayáal, "buffalo rattle." About 8 inches of the tip of the tail was cut off, the bones were taken out, and the proximal part dilated, dried, and filled with little stones from ant hills or with jewels of the cardinal colors. The tip end of the tail served as the handle, the switch of hair hanging like a tassel. Recently, similar rattles have been made from cattle tails. 'ayán piyaa', "buffalo hair," was one of the four ingredients of smudge for curing venereal diseases. Recently a Navaho medicine man begged me to get him a considerable list of buffalo body parts, including dried male and female organs.

'ayán piyyin, "buffalo singing," is an important cycle of the pecee', "Flint Chant." These buffalo songs were being used recently to cure a sick baby.

Occasionally a word indicates culture history. Naatáa' meaning 1, "corn plant," 2, "corn ear," 3, "shelled corn kernels," has revealing etymology. Its literal meaning is "alien food." The prepound naa- is the same as in Naaáníh, Comanche, literally "many enemies," and in 'Anaasázih, "ancient Puebloan." Its independent form is 'anaa', "alien," "enemy." táa' means "food," being derived from a verb "to eat," and appearing as postpound in a number of plant names, e. g., in mā'jítáa', ironwood, literally "coyote food." Sometimes táa' appears as a short cut for naatáa'; or -naa- may appear, for instance in txaahnaak'áh, "thick corn mush," called in Spanish xacuehue.

This etymology by which corn means "alien food" unfortunately throws no light on Navaho origins. Perhaps "alien" merely signifies that corn was characteristic of alien or non-Athapaskawan tribes of the Southwest.

Washington Matthews states that the Navaho, according to their mythology, first acquired corn from the Txówoł or Taos Indians in the fourth world. A long myth obtained by R. F. Van Valkenburgh, however, claims that the Navaho clans found corn in an 'Anaasázih ruin and grew the seeds from which came Navaho corn. (In this connection it is interesting to note that Basket Maker corn, dated at about

A.D. 700, was sprouted and raised under the direction of Dr. Castetter at the University of New Mexico.) Thus, mythologically, corn, *naatáa'*, is either **txówołtáa'* or *'anaasázitáa'*.

Ethnology at least indicates that corn was acquired from an alien source. This is not true, however, of cotton, which was no less certainly borrowed by the Navaho. The word for cotton, *ntik'á*, merely means "inflammable."

Lipano-Apachean social organization fails equally to indicate early history. The Navaho and all Apacheans are matrilineal, matrilocal, and polygamous, with marriage often to two or more sisters or to a daughter and her mother. None of these features have any specific resemblance to tribes farther north that might be evidence of migration routes.

Navaho tradition, according to Van Valkenburgh, looks to the country north of the present Reservation, and to the Pacific shore directly west of the present Reservation, for the derivation of pristine clans, six of these being derived from the north and six from the west. The *tiyintine'éh*, "nonearthly people," came into this world, as a fourth-layer world, through Island Lake, Colo., but the six clans of earthly people of northern origin from whom the Navaho are descended, were made out of corn by the nonearthly people in Mancos Canyon, Colo., some 100 miles south of the lake of emergence. The six clans of western earthly people were made out of the clam-shell body of *Yookai'astzáh*, "Clam Shell Woman," by Clam Shell Woman herself on an island off the Pacific shore. It will be seen that these traditions, resembling those of the Pueblos, are religious symbolism, and throw little illumination on their real provenience. The possibility of this religious tradition retaining any true recollection of origin is to be discountenanced all the more when it is understood that two beings known as *'Atshéxastxiin*, "First Man," and *'Atshé'astzáh*, "First Woman," were in this present fourth world all the time, not coming out with the nonearthly people through the lake of emergence, but figuring frequently all through long stories as creators and not as the ancestors of the present Indians. The account of the wandering without goal which resulted in the coming of the nonearthly people, who are zoomorphic but gifted with human speech, from the lowest world of darkness into this world of light, is symbolic of the remote predecessors of present man coming from darkness into light. There are some younger, educated Navaho who imagine that they see in the nether worlds a symbolism of antipodal Asia.

The Navahos' own knowledge of their origin is either nil or symbolic. Although it is stated that only zoomorphic, nonearthly people

came out through Xatjínáh (literally "the exit"), Island Lake, Colo., many Navahos think loosely that this symbolizes their own ancestors coming out of the earth and in the north. Some philosophical Navahos take this to mean that their people were autochthonous or born of the earth in their present habitat, while others stress the slight northern location of their mythic entry into this world and interpret it to mean that the Navaho came from the north.

According to Washington Matthews, the nuclear clan of the Navaho was the Tshéntjikhiniih clan, a name of disputed etymology.¹² Other clans, of the most varied provenience, some of them Pueblo refugees at the time of the Pueblo rebellion against the Spaniards, attached themselves to this nuclear clan and the Navaho were the result. Washington Matthews did not know that an informant tends to make his own clan the nuclear clan. The Tshéntjikhiniih clan was made the original clan simply because Matthews' information came from a member of this clan, Van Valkenburgh has determined.

In spite of all this disjointedness of tradition, a persistent but hazy belief that the Navahos came from the north is reflected in the lore concerning the dead. Deceased were buried with their heads to the north and are believed by all Navahos to travel north to Xaatjínáh and down through this hole to Séitaxisk'it, literally "the sand piles," to which all trails converge. Here the dead clutch into the steep sand vainly trying to climb up out, only to slip down again with the sand (séi xiijóoc, "the sand is slipping down").

Navaho mythology has many incidents in striking likeness to the mythologies of the Far North. For instance, we have the mention of péec'ée', "flint-shirt," reminding one at once of the mythology of the Shoshoni and others in the north. Tee'txyeel, literally "flat horn," of Navaho story, sounds like a recollection of the moose, but is stated to be the ceremonial name of the male antelope. The 'Anaa'tjih, "Alien Chant," mentions a place of great plains where tshénaxáléh carried off the ancestors of the Navaho people one by one. Can this be a recollection of the High Plains, or of the Wyoming Basin? A feature of the Naatchit, the old-time winter-month tribal ceremony of the Navahos and formerly midpoint of all Navaho ceremonies, was dancing in a deep pit inside the hogan, reminiscent of the pit-banquette house floor of the north.

Navaho mythology is seen thus to look to the north, and to a limited extent to the west with no suggestion of eastern provenience.

¹² Matthews, Washington. The gentile system of the Navajo Indians. Journ. Amer. Folk-Lore, vol. 3, April-June, 1890.

Navaho archeology, unlike the religious symbolism, however, shows substantial fact. Richard F. Van Valkenburgh has discovered Navaho archeological sites in southwestern Colorado 100 miles north of the San Juan River. Speculation as to future discovery of further sites still farther north is fascinating, and if these Navaho sites can be proved to occur a sufficient distance to the north, the Basin route of migration may be established.

The earliest certain Navaho hogan tree-ring date at Tinétxah, the early Navaho homeland (p. 513), is, according to the studies of Van Valkenburgh, 1575. The hogan bearing this date is at Mud Lake, on the southern side of Rincon Largo Canyon, southwestern affluent of Largo Canyon (see fig. 34 for location of site). In the summer of 1939 Mr. and Mrs. John Y. Keur excavated 99 ancient Navaho hogan sites in the region of Guadalupe Canyon, south of the Tinétxah, all of these sites being pre-1800 but more exact dating has not yet been ascertained.

In and to the east of the old Navaho country there are a number of stone watchtowers, built on elevations commanding views. These are called *atalayas* in Spanish, a word which is also applied to eminences which would serve as lookouts but lack structures. Since the stonework of these watchtowers is the same as that of 'Anaasázih (Pueblo) ruins, one might think at first that they were of 'Anaasázih origin, but recent archeological work by Van Valkenburgh, and later by Mr. and Mrs. Keur, has shown that the watchtowers, as far as is known, are, in every instance, intimately associated with and probably contemporaneous with Navaho hogan ruins. They seem therefore to have been built by the Navahos and not by the 'Anaasázih. The Navaho term for such a watchtower is *xa'tees'í'í'piyan*, literally "house of watching."

Harold S. Gladwin (Excavations at Snaketown, vol. 2, Comparisons and theories, Globe, Ariz., 1937) believes that the Navaho arrived in sufficient force to cause the 'Anaasázih to evacuate their settlements in 1300. This date is probably correct, since archeology and other studies indicate that it was perhaps between 1300 and 1400 when the Navaho came into the eastern part of the present Navajo Reservation. The mythological wandering of clans shown in figure 32 is not substantiated by archeology or by the theories of northern provenience. The first regions of occupation shown in this figure substantiated by archeology and by the theories of northern provenience are the two Tinétxahs. The whereabouts of the Navaho before they occupied the two Tinétxahs is an unsolved question of their migration route.

HISTORIC APACHEANS IN THE SOUTHWEST

A search for clues as to the migrations of Athapaskawan peoples to the Southwest has yielded largely negative results. We know only that they came originally from the Far North and were already established in the Southwest when their known history begins in the sixteenth century.

There has, however, been a slight western movement of the Lipano-Apacheans within historic times. The Jicarilla and Lipan proper have very recently been moved by the United States Government to reservations just west of their former habitats. The Navaho have spread 250 miles west, from Largo Canyon, N. Mex., to the region of Flagstaff, Ariz. This was brought about partly through the influence of the United States Government and partly because Apache had shifted westward into the Tonto Basin of Arizona.

A detailed account of early historic Navaho expansion is largely undocumented in writing and can best be learned through family traditions of informants. At the time of the Pueblo uprising, 1680, certain Pueblo refugees joined the Navahos as clans. The Navaho evidently occupied Chelly Canyon after 1700 and had probably also spread to the Ramah region. During recent historic times, expansion has been only toward the southwest. Subsequent to 1800 they expanded from the Black Mountain region into the region of Navaho Mountain and Little Colorado River, part of which was, or had been, occupied by the Havasupai.

The great age-reckoning point or hegira of Navaho history is what the Navahos call the "captivity"—a military internment between 1867 and 1868 in an area 40 miles square about Fort Sumner in east-central New Mexico. (It is still barely possible to gain from the oldest living Navahos an account of Navaho life before this captivity, but to do so will not be possible for long.) The headquarters of this captivity was at old Fort Sumner, 7 miles south of the present Fort Sumner, N. Mex. Old Fort Sumner is called by the Navahos Xwêeltih, from Spanish *el fuerte*, "the fort." Of the Navaho Indians rounded up at Xwêeltih, 7,012 were returned. An uncomputed number had fled to outlying places and were never taken to Xwêeltih. In addition to Navaho, most of the Mezcalero Apache tribe, and some Comanches, were at Xwêeltih.

After signing a treaty with the United States Government, the Navaho were granted a reservation of some $3\frac{1}{2}$ million acres. Returning from Xwêeltih, they were removed to Cac Pitxooh, literally "bear spring," Fort Wingate (the location of the present Fort Wingate Vocational High School). After a year there, they were removed to

Tshéxwotshoh, literally "rock meadow," Fort Defiance. The reservation given the tribe after the captivity was wholly west of the Tinétxah, its eastern boundary running from north to south 7 miles west of Crown Point. Thus the United States Government had an important hand in the Navaho shifting and expanding toward the southwest.

The "Navajo Agency" was located at Fort Defiance, Ariz., until about 1904, from which date until 1936 the Navahos were under six separate jurisdictions, each with an agent. During this period the agency of the Southern Navajo Jurisdiction was located at Fort Defiance. In 1936 the jurisdictions were placed under a general superintendent by the establishment of the Navajo Central Agency 7 miles southeast of Fort Defiance and now known as Window Rock, Ariz.,³³ where beautiful new buildings had just been erected at an unoccupied site. The locality of Window Rock is described by the Navaho as Tshéyaxwotzánih, literally "perforated rock." Window Rock Agency is actually called by the Navahos Khixwótchó'íh, literally "homely houses," applied because of the pueblo-like appearance of the buildings.

Van Valkenburgh, in "A Short History of the Navajo People, Window Rock, Ariz.," 1938, has further materials for the study of Navaho expansion.

SUMMARY

The first immigrants to America, who crossed Bering Strait some 20,000 or more years ago, probably spoke a single language derived from one of the old Siberian stocks. Subsequent millenniums have allowed ample time for this single original language, unfixated by writing, to differentiate into the present American Indian language stocks. Of these stocks, Athapaskawan probably developed during most if not all its history in northwestern Canada, where it is found today in greatest dialectic diversity.

At a comparatively recent date, divisions of Athapaskawans budded off from the Canadian bloc and drifted south. Though the historic distribution of these southern Athapaskawans is not continuous from Canada, it more or less resembled two great prongs extending south from the far northern bloc. One drift had carried the Kwalhioqua-Hoopen peoples down the Coast Range as far as California to form

³³ There is a second Tshéyaxwotzánih, "Window Rock," projecting out from the south wall of the central portion of the Canyon de Chelly; the name is a mere description, as is the term Tshénaná'áhih, literally "spanned rock," applied to any natural bridge.

the western prong. Another carried the Lipano-Apachean peoples into the southern High Plains and the Southwest to form the eastern prong.

The latter consists of two divisions, Lipanans and Apacheans. The Lipanans, formerly called Apaches, comprised Prairie Lipanan (Prairie Apache), Jicarilla Lipanan (Jicarilla Apache), Kiowa-Lipanan (Kiowa-Apache), Paloma Lipanan, Cuartelejo Lipanan, Querecho Lipanan, Teya Lipanan, and Lipan proper. The Apacheans consisted of Navaho, White River Apache, Chiricahua Apache, Mezcalero Apache, and others. Linguistic relationship between the Lipano-Apacheans and the southernmost of the northern Athapaskawans—the Carrier, Chilcotin, Nicola, Sekeneh-Beaver-Sarcee, and Chipewyan—was closer than between the main divisions of the northern Athapaskawan bloc.

As to the routes by which the Lipano-Apacheans may have migrated south—the High Plains, the Rocky Mountains, and the Intermontane area—present evidence does not permit a definite conclusion. Any trace of culture picked up during migration has been lost, the Intermontane and Plains features being insufficient to indicate the route of migration. Mythology suggests a northern origin but is more legendary than factual. Archeology has not yet traced Navaho remains to any very early period nor to any area outside the Southwest. The location of Lipanans on the High Plains in the historic period favors the theory that migration was via the High Plains, that is, the "Old North Trail," but is not conclusive. The westward drift of Apacheans in the Southwest in historic times may also seem to fit the High Plains theory, though it does not prove the direction of migration in prehistoric times, especially before 1300 or 1400 when the Navaho and Apache are presumed to have appeared in the Southwest amongst the Pueblo villages.

The writer wishes to express his indebtedness to Richard F. Van Valkenburgh for information at every turn throughout this paper.

OUTLINE OF ESKIMO PREHISTORY

By HENRY B. COLLINS, JR.

Bureau of American Ethnology

(WITH PLATES 11 TO 16)

INTRODUCTION

On examining an ethnographic map of North America one is immediately impressed by the fact that the entire Arctic and much of the sub-Arctic zone is occupied by a single stock, the Eskimo. The uniformity of language, of physical type, and of culture in the Eskimo area, though a matter of common knowledge, is of such outstanding significance as to require an attempt at explanation. How does it happen that all of Arctic America, roughly two-fifths of the entire circumpolar area, is in the possession of a people who speak a single language throughout their 6,000 miles of territory, whose social and material culture exhibit everywhere the same basic patterns, and whose physical type stands rather sharply apart from adjacent Indian groups to the south? Are there indications of closer and more fundamental affiliations with the Old World that would justify us in looking there rather than to America for the origin of the Eskimo race and culture? Or is it possible that the present cleavage between Eskimo and Indian resulted not from separate origins but from secondary influences of environment, internal specialization, and contacts which combined to mask a basic and original relationship between the two? Though there has been no lack of discussion of these questions previously, they are of such a nature as to be elucidated more fully by archeological data, which provide an actual insight into the past, than by examination and appraisal of the existing phases of culture alone. Since the archeological evidence has been made available only recently, it is timely to reexamine Eskimo problems principally from this point of view, calling attention to the positive determinations now achieved as well as to the further problems that have arisen.

Probably in no other part of the world is archeology more obviously an extension of ethnology than in Alaska and Greenland. Long continued occupancy of favorable coastal locations has resulted in the accumulation of great refuse mounds at many places. Some of these old sites have been abandoned for centuries; others, including some

of the oldest and richest, have either been abandoned recently or are still occupied. On Little Diomedé Island, for example, the modern houses are built on top of the old midden, and the present population adds its yearly quota to the mass of refuse that has been accumulating continuously for probably 2,000 years.

In the Arctic, archeology reveals a remarkably full and detailed picture of life conditions in the past, for the permanently frozen soil has preserved many objects that would otherwise have perished. Another fortunate circumstance is the complexity of Eskimo material culture. Implements, weapons, ornaments, and utensils exist in great numbers and many of them, instead of remaining² constant, have undergone considerable modification in prehistoric times. With such an array of material available, refinement of analysis makes it possible to establish not merely general, but often exact and specific, relationships between different sites and areas.

Although archeology has made progress in the Far North, it is not to be supposed that the most basic problems are anywhere near a final solution. Because of the somewhat exceptional circumstances mentioned above, it has been possible within a relatively short time to segregate some of the components that will enter into the final picture and to block out a chronological framework within which and beyond which future discoveries may be fitted in place. But there are still many serious gaps in the chain of evidence; many areas are unexplored archeologically and much remains to be done before Eskimo prehistory can be known in its entirety.

But despite the shortcomings of the archeological record, it is obvious that the data comprising it must form an essential part of any valid deductions regarding the processes that have been operative in the development of Eskimo culture. Even though archeology may not at present reveal a completely clear picture of original conditions it at least carries us back a considerable distance into the past and provides a new point of departure from which the problem may be attacked.

In the following pages, after a brief consideration of the geographic setting in relation to some of the broader aspects of cultural distribution and differentiation, we will examine the archeological evidence and attempt thereby (1) to ascertain the extent to which it explains present conditions, (2) to draw whatever conclusions are possible regarding the probable origin and relationships of the older cultures, and (3) to point out the nature of the further problems that arise, whether or not the solutions are in sight at present.

LVA

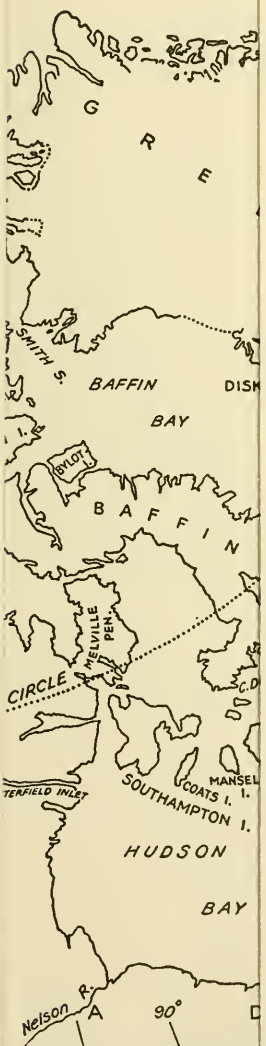




FIG. 35.—Map of the circumpolar regions.

ENVIRONMENTAL FACTORS AFFECTING THE DISTRIBUTION
AND MODE OF LIFE OF THE ESKIMOS

The specialized character of their Arctic habitat has influenced the life of the Eskimos in many ways. There is no need to enter upon a full discussion of this subject here. The close interrelationship of Eskimo culture and environment is well known, and has been recently discussed at length by Weyer (1932) and Birket-Smith (1936). We will only refer briefly to some of the environmental factors that have most directly affected the distribution and mode of life of the Eskimos.

In the Eskimo area, unlike some others, we do not have to deal with major shifts of population or profound changes in culture due to ecological factors. The local fauna, which was the sole food resource, was practically identical in prehistoric and recent times. The historic picture of man's adaptation to the region is therefore simpler than it might have been if other forms of food economy, such as agriculture, the extensive utilization of wild-plant life, or the domestication of animals had likewise to be taken into account. The food supply has not, of course, remained entirely constant. In northern Alaska the musk ox has been exterminated and the caribou driven inland beyond the reach of the Eskimos. Conditions are somewhat different with regard to the whale. Though present from the earliest times and though utilized to some extent (possibly as dead animals drifted to shore), the whale was hunted little, if at all, by the earliest Eskimos. On the other hand the extinct Thule culture of the Hudson Bay region was a whaling culture, and it is significant that Thule culture sites, abounding in whale bones and baleen, are found in parts of the central archipelago where whales are now very scarce or entirely absent. There seems to be good evidence that the land in these regions was gradually elevated and the sea level simultaneously lowered until the waters became too shallow for whales. As Mathiassen points out, this may have been one of the primary reasons for the Thule culture having withdrawn from regions it formerly occupied.

Another factor that may have affected the distribution of population is climatic change even though the evidence thus far produced is of a local character. Norlund's excavations in South Greenland, for example, seem to show that the climate has become increasingly severe since the establishment of the Norse settlements there in the Middle Ages. Such a change would increase the amount of drift ice, so as to choke up the bays and fjords and render certain sections unsuitable for hunting sea mammals. In a region like Greenland such an increase of drift ice would cause the population, which is entirely littoral, to move on to some more favorable coast.

Despite its enormous extent the Eskimo habitat exhibits little variability. It is restricted almost entirely to the belt of treeless tundra which borders the northern coast line where climatic and other natural conditions are similar throughout. In some parts of Alaska Eskimo settlements extend up the lower courses of the larger rivers, penetrating the interior forest zone for short distances; and the Nuna-tagmiut in the interior of northern Alaska and the Caribou Eskimo in the Barren Grounds west of Hudson Bay afford examples of Eskimos who live either partly or wholly independent of the sea. With a few such exceptions as these, however, the Eskimos are a maritime people, receiving from the sea everything essential to their existence. Driftwood and whale bones provide material for the framework of their houses. The flesh and blubber of the seal, walrus, and whale furnish the bulk of their food and the fuel for cooking, heating, and lighting. Seals and walrus provide not only skins for clothing, boat coverings, lines, and harness, but bone and ivory for innumerable implements, weapons, and utensils.

The marked difference between summer and winter environment has a pronounced effect on the life of most of the Eskimos, especially those in the Central regions. The extent to which the mode of life is affected by seasonal change differs regionally, depending on which varieties of fish, mammals, and birds are sought as food and on whether or not the population itself is migratory or stationary. The Eskimos of St. Lawrence Island near Bering Strait live throughout the year in permanent villages. Their food consists almost entirely of sea mammals—seal, walrus, whales—some of which are available at all seasons; in summer birds can also be obtained. The Copper Eskimos of Coronation Gulf, on the other hand, have no fixed habitations of any kind. They spend the winter in snow houses built on the sea ice and hunt seals; in summer they wander through the interior in pursuit of caribou. Between these two extremes, but more similar to the St. Lawrence Islanders, are the Eskimos of the Alaska mainland where salmon fishing is an important occupation in the summer. Here, though the settlements are permanent, there is a general exodus from them during the summer months when the village breaks up into small family groups which move out to fishing stations along the coasts. The usual summer dwelling is a tent, but at some places south of Bering Strait there are permanent summer houses, and occasionally, as on Nunivak Island, separate villages for summer and winter occupancy.

RELATIVE UNIFORMITY OF CULTURE IN ARCTIC
AMERICA AND EURASIA

Considering modern Eskimo culture in its typical maritime aspects and disregarding local deviations resulting from Indian contacts, there seems to be no reason for questioning the truth of the common assertion that it constitutes a relatively homogenous complex. And though we need not expect, and certainly cannot demand, that physical type should coincide with culture, the probability that we are dealing with a cultural entity of a specific and somewhat restricted nature receives added emphasis when we observe also that physically, and to some extent even psychically, the Eskimo stand out rather sharply from their Indian neighbors. Linguistically, of course, Eskimo unity is even more striking, for the same language, with only dialectical differences, is spoken over the entire 6,000 miles of coast line from East Greenland to Bering Sea.

The Old World situation is very different. The similarities in the culture of the boreal peoples of Eurasia are mostly of a general character, whereas among Eskimo groups correspondences are close and specific. Linguistic diversity is likewise far more pronounced, for in contrast to the single language spoken in Arctic America there are no less than four independent stocks in northern Siberia—Eskimo, Chukchee, Yukaghir, and Yeniseian—in addition to Ural-Altain groups such as the Tungus, Yakut, and Samoyed.

It seems obvious that the present distribution of peoples in northern Eurasia has resulted in large part from a series of northerly thrusts from the interior, brought about by pressure from centers of denser population to the south. In contrast to Arctic America, where a culture based principally on the hunting of sea mammals extends across the entire continent, most of the peoples of northern Eurasia are reindeer breeders. The hunting of marine mammals is of importance only in the extreme northeast near Bering Strait, where some of the Chukchee and Koryak, in addition to the Siberian Eskimos, live in much the same way as the westernmost Alaskan Eskimos. West of the Chukchee Peninsula the coast is low and swampy and the sea shallow, making long stretches of coast unsuitable for human occupancy. The population tends to center along rivers, where fishing can be carried on, and in the relatively higher and dryer sections of the tundra, where the reindeer nomads can find suitable pasture for their herds.

The antiquity of reindeer nomadism is still a moot question. In parts of northern Siberia, however, it seems to be later than a settled

form of life along the coasts and rivers. Thus on the Yamal Peninsula, at the mouth of the Ob, the excavations of Cernecov have revealed an old maritime culture more like that of the Eskimos than of the reindeer-breeding Samoyed who occupy the region at present. Similarly in northeast Siberia the Chukchee seem clearly to have displaced or caused a marked contraction of a once rather widespread Eskimo population that inhabited the coast between the Kolyma River and Bering Strait.

On the whole, aboriginal life in northern Eurasia is relatively complex as compared with that of Arctic America. This is due, however, more to historic than to natural causes, as might be expected, since northern Eurasia is the periphery of an interior, continental area that for many centuries has been the center of advanced cultures and teeming populations.

Whereas the relative complexity of the ethnic picture in northern Eurasia is due to historic contacts and movements having their roots in inner Asia, the opposite condition in Arctic America may be attributed to the absence of comparable factors. The numerous languages spoken in Arctic Eurasia are sufficient proof that the region has been penetrated by different groups of peoples in the past. The presence of a single language—Eskimo—on the Arctic coast of America suggests that no such penetration has occurred there. Although the culture and physical type of certain Eskimo groups have been affected by Indian contact, the unity of speech indicates that there have been no Indian movements en masse into Eskimo territory north of the Pacific.

The relative isolation of the Eskimos in a remote habitat where a very special environment has imposed definite limitations on the acceptance of culture traits from neighboring areas, has insured for them a high degree of immunity from outside cultural influences. This has obviously been a potent factor, though a negative one, in the maintenance of a closely knit culture complex. Positive factors in the maintenance of cultural uniformity are provided by the geographic pattern, by the self-sufficiency of the culture itself, and by the comparative poverty of the cultural reservoir from which it might have drawn. Thus, similarity of environment would make possible the establishment, and insure the retention, of the complex over the whole of the Arctic and sub-Arctic littoral. Because of its close adjustment to the environment and its highly efficient exploitation of all available resources, maritime Eskimo culture required no stimulus from without; and even if it had been less self-contained, there was little of

importance that it could profitably have borrowed from the Indians of the adjacent interior.

The geographical pattern has likewise facilitated and directed the spread of the complex. With expansion to the north impossible and to the south impracticable, the Eskimos could move only east and west. Thus confined to a narrow coastal zone, they could spread rapidly across the northern fringe of the continent, provided they possessed adequate means of transportation—boats for travel in the summer and dog sledges in winter.

It has sometimes been supposed that another factor responsible for the uniformity of Eskimo culture is a strong conservatism that has led it to resist internal change and cling tenaciously to established forms, even to minute details, over long periods of time. This assumption, however, presupposes that Eskimo culture in exactly its present form is of considerable antiquity. The alternative explanation would attribute the marked cultural uniformity to recent contacts that ironed out local differences or to a recent and rapid spread of the culture itself. As Stefansson (1914) and Sapir (1916) have pointed out, the long Eskimo journeys by umiak and sledge offer so much opportunity for the interchange of material objects, ideas, songs, legends, etc. that it is quite unnecessary to account for observed identities in these categories on the basis of an innate conservatism. Are the many close and specific correspondences in Eskimo culture the result of secondary movements, or do they mean that the original spread of the culture was recent?

Archeology provides at least a partial answer. It shows that the basis of the present uniformity was established during the Thule period around a thousand years ago, when an Eskimo culture originally derived from Alaska, appeared in the Central regions and in the course of succeeding centuries extended its influence as far as East Greenland. There is also evidence of a return movement within the past few centuries that brought to northern Alaska features that the Thule culture had developed in its Central habitat. This later movement, the exact nature of which is not yet clear, brought about a further strengthening of ties between East and West.

But although archeology has provided a partial explanation of the present uniformity of culture in the American Arctic, it has likewise shown that at a still earlier period, when the Old Bering Sea and Dorset cultures occupied the regions about Bering Strait and Hudson Bay, respectively, there was a greater diversity of culture than has existed subsequently.

As for the role of conservatism, it is now clear that this has served only to preserve and perpetuate the framework of the culture; within that framework, many of the constituent elements have undergone far-reaching changes in the course of time.

CULTURAL POSITION OF THE ESKIMOS IN RELATION TO NEIGHBORING PEOPLES

Birket-Smith has emphasized the important fact that the summer life of the Central Eskimos is essentially the same as that of the interior Indians and that the special developments that give Eskimo culture its characteristic stamp are those connected with their winter life, which is entirely different from that of the Indians. Throughout the greater part of the Eskimo territory this winter specialization, especially as affecting hunting techniques and implements, transportation, and (in the Central region) type of dwelling, has given rise to a series of external cultural manifestations that are indeed unique in America. Although these are striking in appearance and functionally of the greatest importance, they are but one of the numerous facets that combine to give Eskimo culture as a whole its distinctive form and character. If we take into account all aspects of the culture—its material side, art, language, folklore, social customs, and religious beliefs and practices—there seems no avoiding the conclusion that the Eskimo occupy a position of cultural isolation in America. The Central Eskimos, with the material side of their summer life so like that of the Indians, exhibit the distinctive Eskimo pattern only in their winter activities; with the Alaskan and Greenland Eskimos this pattern is more nearly permanent.

Although Eskimo culture is fundamentally distinct from that of the Indian, in some localities they have many points of resemblance. The southernmost Alaskan Eskimos, in Prince William Sound and on Kodiak Island, possessed a modified Eskimo culture that in many respects betrayed its close affinities with the Northwest Coast. North of the Aleutian Islands the distinction between coastal Eskimo and interior Athapaskan breaks down as cultural interchange produces transition zones wherever the two come into contact, as along the Yukon, Kuskokwin, and other streams to the northward. A similar condition is found in Labrador, where, as Speck has shown, the Montagnais-Naskapi have taken over many features of Eskimo culture, and in the Barren Grounds west of Hudson Bay where there are close correspondences between the Caribou Eskimo and the Chipewyan (Birket-Smith, 1930).

With the exception of such instances as these, where direct contact between Eskimo and Indian has more or less modified both groups, Eskimo culture in its basic aspects is recognizable as a distinctive unit. It can hardly be denied that there is more of a break culturally and even physically between Eskimo on the one hand and Athapaskan and Algonquian Indians on the other than there is between the two latter, or for that matter between almost any other two adjacent Indian groups.¹

In Siberia, on the other hand, there are two groups—the maritime Chukchee and Koryak—whose mode of life is so close to that of the Eskimo that it must be considered in large part as an actual extension thereof. Resemblances to Eskimo culture are also to be observed among the more distant Siberian tribes, particularly the Yukaghir. Old Eskimo sites on the north coast of the Chukchee Peninsula and archeological evidence of underground houses, toggle harpoon heads, the kayak, pottery, and other Eskimo-like features as far west as the mouth of the Ob River, point to still closer affinities in the past, when, probably before the intrusion of the reindeer breeders, the Arctic coast of Siberia had a more settled population of sea-mammal hunters. These archeological remains far to the west of the present Eskimo territory and the greater cultural similarity of the Eskimos to certain Asiatic tribes than to any of the Indian groups, seem to provide clear evidence of a close and fundamental relationship of the Eskimos with the Old World. The cultural resemblances between Chukchee-Koryak and Eskimo, which seem too fundamental and deep-seated to have been acquired through recent contacts, and the archeological indications of a more widespread Eskimo population in northeast Siberia in the past, are facts that have been ignored or inadequately explained by proponents of the theory that the Eskimo have entered Alaska from the east only in comparatively recent times and still more recently crossed over to the Siberian shore.

REGIONAL DIFFERENCES IN ESKIMO CULTURE

The conventional division of the Eskimos into three branches—Eastern, Central, and Western—recognizes certain important cultural differences and has been the point of departure for most of

¹ Kroeber (1939, map 6 and table 18) recognizes this condition in distinguishing the Eskimo area as one of the five major culture provinces north of Mexico, the others being the Northwest Coast, Intermediate and Intermountain, Southwest, and Northern and Eastern.)

the theoretical discussions of the origin of the culture. The Central Eskimo, in contrast to the Eastern and Western, possess a culture that is at once simple and highly specialized. The individual elements are comparatively few and technically are relatively crude, simple, and unelaborated. As a functioning unit, however, Central Eskimo culture displays the closest possible adjustment to its exceptional environment. In such important features as the snow house built on the sea ice, the dog sledge, and certain hunting practices, especially the hunting of seals at the breathing holes, it exhibits a degree of specialization unparalleled in the east or west. In the Central region, therefore, we find the highest development and specialization in those practical activities that are basic to existence. In the east and west living conditions are much easier. Richer and more varied natural resources, and, in Alaska, cultural acquisitions from neighboring peoples, permitted a development that is much less one-sided and far more elaborate, especially in its nonutilitarian aspects.

The belief that the culture and physical type of the Alaskan Eskimo had been strongly modified by Indian contacts led Boas to seek the origin of the race and culture in the Central region, where these were preserved in purer form. The same view was expressed by Steensby, whose extensive comparative study of the regional variations of Eskimo culture led him to formulate the theory that its elements and activities were stratified chronologically, those characteristic of the Central, or Arctic, phase being older than those found in Alaska and Greenland. This theory, especially in the more developed and elaborated form advanced by Birket-Smith, emphasized the great difference between the summer and winter life of the Eskimos. It assumed that the latter had become specialized and adapted to the sea when ice fishing on the frozen lakes and rivers of the interior had been transferred to hunting seals at their breathing holes in the sea ice. This form of seal hunting, known as the "maupok" method, together with the blubber lamp, which is vitally important in an area lacking wood, was regarded as a *sine qua non* for the development of the typical Arctic phase of Eskimo culture. As the Central area with its smooth, unbroken expanse of sea ice, was the most likely place for this adaptation to have occurred, and as the complex of elements and practices associated with breathing-hole hunting was actually more fully developed here than elsewhere, it was here, according to the theory, that the typical Eskimo culture came into being.

As to the probability of this hypothesis, it should be remembered that, despite its central location, the Central Arctic is economically

a marginal area, where sea mammals are far less abundant than in Alaska or Greenland, where driftwood is scarce, and where other material resources are limited. It is here that the Arctic exerts the whole of its repressive force and demands the utmost of human ingenuity; here a maximum of effort is necessary to support life on almost a minimal basis. One may question the inherent probability of the hypothesis that the entire complex associated with sea-mammal hunting arose in a region where conditions were so adverse that only through the possession of a single, perfected technique—the maupok method—could human life exist, when there were other regions, such as Bering Strait, where a more abundant and varied food supply did not call for the development of any technique to such an extreme point. It seems more likely that the advanced method of seal hunting on the sea ice practiced by the Central Eskimos was a secondary development, the end product of processes initiated elsewhere under more favorable environmental conditions. According to this view there is no more reason to regard this particular hunting technique as basic to the existence of all Eskimo culture throughout the north than there is to consider the snow house as the original form of Eskimo habitation. Without the snow house it would have been impossible for the Eskimos in the Central archipelago to live on sea ice in winter, and without the maupok method they could not have captured seals there. Both traits are specializations that were called forth by a unique and limited environment, specializations which made possible the occupancy of that particular area. But there is no reason for assuming that they were basic to the development of Eskimo culture as a whole.

A cardinal principle in the various theories of the Central origin of the Eskimo has been that the Alaskan branch of the race, having been strongly influenced by the interior and Northwest Coast Indians, was less pure, both physically and culturally, than the Central Eskimo. Boas believed that the Eskimos had entered Alaska relatively recently, disrupting an earlier continuity between the Northwest Coast Indians and the Paleo-Asiatic tribes of northeastern Siberia—a continuity that was indicated principally by the close similarity in the mythology of the latter two regions. Birket-Smith also regards the Alaskan Eskimos as comparatively recent migrants from the east and believes that the differences in language, physical type, and culture between them and other Eskimos are explainable by their having intermingled with an earlier non-Eskimo people whom they found already established along the shores of Bering Sea.

In physical type and culture—but not in language—the Alaskan Eskimos unquestionably show evidence of Indian influence. The question is whether this is recent or ancient. Was the Bering Sea region occupied by non-Eskimo (presumably Indian) peoples before the Eskimo appeared on the scene? Or, were the Eskimo the original settlers, who in later times came under Indian influence? Archeology alone can provide a definite answer, and although the evidence to be discussed later is not nearly as complete as might be desired, it will be seen that it points unequivocally toward the second of the two alternatives.

PREHISTORIC ESKIMO CULTURES

The first systematic excavations in the Eskimo territory were conducted by Dr. Therkel Mathiassen, in the years 1922 and 1923. Excavating at old sites to the north and west of Hudson Bay, Mathiassen uncovered abundant evidence of an old and formerly widespread Eskimo culture, which in many respects was very different from that of the Central Eskimos, who now inhabit the region (Mathiassen, 1927). The Thule culture, as it was designated, was a typical maritime culture, based primarily on the hunting of seals, whales, and walrus. In its general configuration the Thule culture closely resembled that of the western Eskimos, and Mathiassen was able to show that it must have originated in the west, somewhere along the coasts of Alaska or Siberia north of Bering Strait.

Later investigations in Greenland by Mathiassen and his colleagues Helge Larsen and Erik Holtved have traced in considerable detail a long series of developmental changes, beginning with the Thule culture and leading up to that of the modern Greenland Eskimo (Mathiassen, 1930b, 1931, 1933, 1934, 1936; Larsen, 1934, 1938; Holtved, 1938). Of particular significance was the discovery of direct contact during the Inugsuk stage between the Eskimos of West Greenland and the medieval Norse colonists of South Greenland. From this association it has been possible to show that the Inugsuk culture, which was a derivative of the Thule, dates from the thirteenth and fourteenth centuries (Mathiassen, 1930b).

Scattered widely throughout the eastern Arctic, from Hudson Bay to northwestern Greenland and as far east as Labrador and Newfoundland, are found the remains of another prehistoric culture which differed fundamentally from the Thule. This was the Cape Dorset culture, which was first recognized by Dr. Diamond Jenness in 1925 (Jenness, 1925, 1928b, 1933). According to present indi-

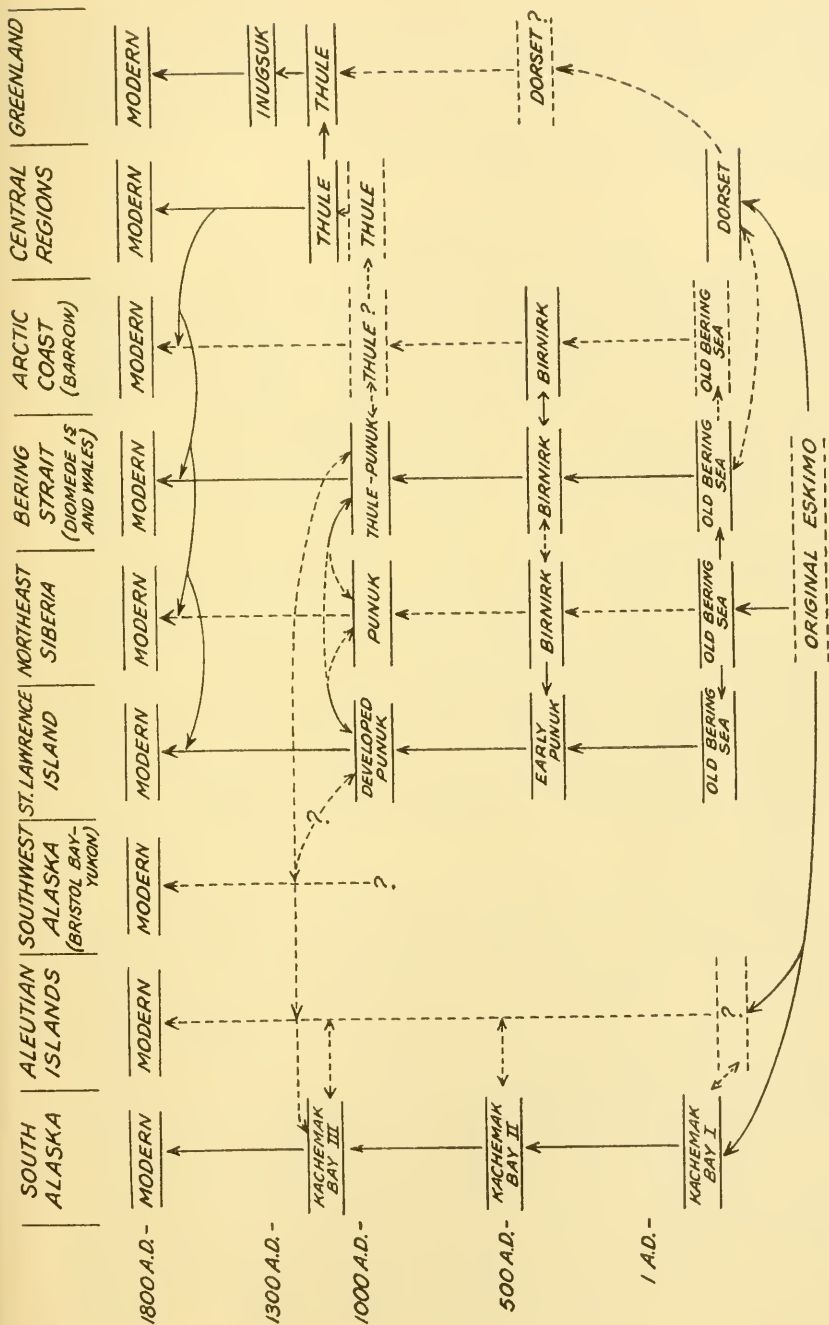


FIG. 36.—Chart showing approximate age and relationships of prehistoric Eskimo cultures. Broken lines indicate hypothetical movements and culture stages for which direct evidence is lacking.

cations the Dorset people were already established in the eastern Arctic when the Thule Eskimos arrived from the west. Compared with the Thule or any other Eskimo culture, the Dorset is a curiously one-sided, primitive culture, which lacked many typical Eskimo elements and which seems to have been based more on fishing than on the hunting of sea mammals.

OLD BERING SEA AND PUNUK CULTURES

The first systematic archeological investigations in Alaska north of the Aleutian Islands were conducted by Dr. Jenness at Cape Prince of Wales and on Little Diomedé Island, Bering Strait, in the summer of 1926 (Jenness, 1928a, 1928b). These investigations marked a turning point in Eskimo archeology for they brought to light the first evidences of a prehistoric Eskimo culture—the Old Bering Sea—which appeared to have been ancestral both to the Thule and modern Alaskan Eskimo cultures although in certain respects very different from either of these. In the same year Dr. Aleš Hrdlička learned of the existence of large kitchen middens on St. Lawrence Island, 150 miles south of Bering Strait. Some of the specimens of “fossil” ivory that the Eskimos had excavated from these sites, and which Dr. Hrdlička obtained, showed that the Old Bering Sea culture had flourished there as well as at Bering Strait (Hrdlička, 1927, pp. 145, 155-156). Though it was the oldest stage of Eskimo culture known in Alaska, the Old Bering Sea culture was by no means simple or primitive, but was already highly developed and characterized especially by an elaborate and sophisticated art style.

Subsequent investigations by the writer at the southeastern end of St. Lawrence Island and the nearby Punuk Island in 1928 and 1929 revealed a stage of culture intermediate between the Old Bering Sea and the modern (Collins, 1929a, 1929b). This intermediate culture, which has been called the Punuk, was contemporaneous with, and in certain respects equivalent to, the Thule. In 1930 excavations were carried on at five abandoned sites of different ages near Gambell, at the northwestern end of St. Lawrence Island. The latest of these sites (Old Gambell) had been abandoned only about 50 years. Two others (Seklowaghyaget and Ievoghiyoq) represented the Punuk stage. The fourth (Miyowagh) had been established during Old Bering Sea times and occupied through the transitional early Punuk. The fifth site, which was completely buried beneath the sod and rocks on the lower slope of the mountain, had not been

known to the local Eskimos. Fortunately, it turned out to be a pure site of the Old Bering Sea period and thus provided information on the implement types of that culture (Collins, 1931, 1932, 1935, 1937b).

Meanwhile, Otto W. Geist had been excavating at Kukulik, a large abandoned site on the north coast of St. Lawrence. In 1934 and 1935, in the lower levels of the 20-foot midden, Geist found Old Bering Sea material underlying Punuk, which in turn underlay the modern deposits (Geist and Rainey, 1936; Rainey, 1936a). The Kukulik excavations were particularly valuable in revealing a direct stratigraphic sequence of all known culture stages in a single midden, whereas the Gambell sequence had been based on a successive stratigraphic linkage of one site to another.

Finds of occasional decorated objects or characteristic harpoon heads north of St. Lawrence Island show that the Old Bering Sea culture existed also on the Diomed Islands, on the adjacent Siberian and Alaskan shores of Bering Strait, at Point Hope, and probably at Point Barrow. It is only on St. Lawrence Island, however, that the Old Bering Sea culture has been fully revealed and the following summary is based on the excavations there.

On St. Lawrence Island as a whole, including the nearby Punuk Island, there have been found thus far two pure Old Bering Sea sites; two others which were established during Old Bering Sea times but which continued to be occupied after the close of that period; and three others which might, after fuller excavation, show the same history. The distribution of these ancient settlements was essentially the same as in the latter part of the nineteenth century, the villages being located along the west, north, east, and possibly south shores of the island. Most of the sites, even the two which were abandoned in Old Bering Sea times, are situated in the immediate vicinity of the modern settlements, and another site, Kukulik, which was established in Old Bering Sea times, was occupied continuously up to 1879.

Despite their proximity to the modern settlements, the position of some of the old sites in relation to the present shore line affords evidence of physiographic changes, possibly of considerable extent. For example the Old Bering Sea site at Gambell is situated on the lower slope of the mountain, half a mile back from the present beach, 30 feet above sea level and well above the extensive gravel plain on which the modern village and all of the other old sites are located. As such a location would hardly have been chosen deliberately, it would seem reasonable to infer that the site was estab-

lished either before or shortly after the gravel foreland had begun to form and when the sea was much nearer the base of the mountain. On the other hand, there is local evidence of subsidence, or encroachment of the sea, on Punutuk Island off the eastern end of St. Lawrence. Here houses of Punutuk age in the lower levels of the midden lie 6 feet beneath the beach, at a point that is reached by storm waves every summer.

The two pure Old Bering Sea sites provide no exact information as to the size of the settlements. Both are subsurface sites that have suffered erosion in the past, and neither of them has been completely excavated. The maximum depth of midden material at the Hillside site at Gambell was 3 feet. The site extended, though possibly not continuously, for over 100 yards, suggesting that the houses may have numbered 15 or 20. At another site, Miyowagh, the Old Bering Sea deposits reached a total depth of 8 feet, and the site, oval in outline, had an average diameter of something more than 100 yards. Again a conservative estimate would seem to call for at least 15 or 20 houses occupied at a single time.

Considering all of the prehistoric St. Lawrence sites, however, there is clear evidence that the population in Old Bering Sea times was smaller than during the Punutuk and modern periods. At all of the larger sites the bulk of the habitational refuse is post-Old Bering Sea, and there are numerous other sites belonging in their entirety to the Punutuk, protohistoric, or modern periods. As nearly as can be judged at present the population of St. Lawrence Island in Punutuk times was not less than 1,500, which is the number of inhabitants estimated for the period just prior to 1878-79, in which year a severe epidemic and famine caused the death of around 1,000 people. Judging by the prehistoric sites known at present, the Old Bering Sea population might be estimated as between one-third and one-fourth that of the Punutuk, or roughly, between 375 and 500 individuals. This would be a minimum estimate and may be subject to sharp upward revision as future discoveries are made. Because of their greater age, Old Bering Sea sites are much less conspicuous than those abandoned more recently. The two pure Old Bering Sea sites were not even known to the local Eskimos, there being practically no surface indications to lead to their discovery, and it is mere conjecture as to how many more such sites may exist on the island. Furthermore, just as at Miyowagh and Kukulik, Old Bering Sea remains may lie buried in the lower levels of sites which are known but not yet explored.

The villages of the Old Bering Sea Eskimos, like those of their modern descendants on St. Lawrence Island, were occupied the year

around. Caribou have never lived on the island, and there are no large streams to provide salmon. Consequently, there was no summer hunting in the interior, salmon fishing, or similar occupations to produce marked seasonal variations in the life and activities of the people.

There was no necessity, however, for the Old Bering Sea Eskimos to leave their coastal villages at any time of the year, for the sea alone provided an entirely adequate supply of food and other necessities of life. Animal remains found in the middens indicate no change in the nature of the fauna; and, judging from the quantities of bones, food animals were as plentiful then as at present—possibly even more abundant. Then, as now, the Eskimos' food was provided mainly by the sea mammals—seals, walrus, and whales, supplemented by birds and fish, principally cod. Whales, although utilized—perhaps when they drifted ashore dead—do not seem to have been actively hunted as in later times; for in contrast to the great number of whaling harpoon heads recovered from Punuk and later sites, only a single such implement is referable to the Old Bering Sea period.

Seals and walrus were killed in sufficient numbers for the meat and blubber to be stored in underground caches for use throughout the year. Birds, and to a lesser extent codfish, were the only strictly summer foods of any importance. The great quantities of bones in the middens indicate that murre, auklets, cormorants, eider ducks, and other sea birds were captured in large numbers. Some were snared, for parts of the snares have been found; others were killed with the bird dart, hurled from the throwing board, or shot with bow and arrow. Auklets may also have been caught then as today with long-handled scoop nets. The bolas, which the modern Eskimo use to catch birds in flight, was not employed by the Old Bering Sea people. It came into use in the Punuk period and may possibly explain in part the great increase in the number and variety of bird bones found in the Punuk middens.

The Bering Strait region was especially favored in the abundance of walrus. Indeed, the comparative richness of the Old Bering Sea culture may in large measure be explained by the fact that these animals, which are not especially difficult to capture, were available in such large numbers. The walrus provided a far more abundant supply of meat and oil than the seal; its tough hide was superior for making boat covers, house roofs, and lines, and its ivory provided excellent material for making many kinds of implements as well as for the elaborate carvings so characteristic of the period. In short, it was probably the abundance of walrus, more than any other single factor,

that made possible the initial concentration of population at numerous places around Bering Strait. With an assured food supply and with other basic needs of life thus provided, attention could be turned to other than subsistence activities, with the result that on the material side, at least, there was opportunity for the development of a technical and artistic virtuosity unequalled elsewhere in the Arctic.

The houses of the Old Bering Sea Eskimos, to judge from the two examples known, were small, semisubterranean, square to rectangular structures, averaging 9 to 13 feet to a side. The floors were of stone, and there were no sleeping platforms as in modern Eskimo houses. The walls were built of small horizontally laid timbers and occasional whale jaws, held in place with bone and wooden stakes. The form of the roof is unknown. There was a long narrow entrance passage, lower than the floor of the house, having a floor and walls of stone and a roof of timbers. There was no fireplace, heat and light being furnished by saucer-shaped pottery lamps. Food was cooked in deep, round pottery vessels. Other household utensils included pails with round or oval wooden bottoms and sides of baleen, wooden trays and bowls, and ladles and spoons of wood, bone, or ivory.

Cutting tools included stone-bladed knives and adzes (pl. 11, *B*, 28-30, 10; pl. 12, *A*, 5-8, 13). There were also stone graters (pl. 11, *B*, 16, 34), side and end scrapers (pl. 11, *B*, 17-26), whetstones (pl. 11, *B*, 27), bow drills (pl. 12, *B*, 7-10), reamers (pl. 12, *B*, 22), and wedges (pl. 12, *A*, 11, 12). Many of the implements were of rubbed slate (pl. 11, *B*, 1-5), like those of the modern Eskimo, but large numbers were also made of chipped chert and other varieties of harder stone (pl. 11, *B*, 7, 11-26). Walrus scapulae were used as snow shovels. For digging in the frozen ground, there were heavy picks made of walrus tusks and mattocks of whale rib.

Seals and walrus were hunted with harpoons. The harpoon was a complex implement, consisting of a detachable bone or ivory head with stone blade, a loose foreshaft, which supported the head and which was set into a heavy ivory socket piece, and a long wooden shaft with bone or ivory ice pick at the base (pl. 11, *A*, 1-4; pl. 14, *B*, 2, 3; pl. 15, *A*, 1, 4-6). Harpoon heads, which occur in large numbers and in a great variety of forms at the old sites, are seen to have undergone constant modification in prehistoric times, so that they form the most dependable single criterion of cultural change at our disposal (pl. 16, *A*). Other objects used in connection with hunting were wooden wound plugs (pl. 11, *A*, 9), ice scoops of netted baleen for clearing out the seals' breathing holes (pl. 11, *A*, 27), skin floats

which were attached to the harpoon line (float mouthpiece and stopper, pl. 11, *A*, 7, 8), ice creepers which were fastened under the boots when walking over smooth ice (pl. 11, *A*, 15, 16), and snow goggles to protect the eyes from the blinding glare of snow and ice in spring (pl. 12, *B*, 15).

Numerous symmetrical, plummet-shaped fishline sinkers of ivory (pl. 12, *B*, 1-3) show that cod fishing was important, but we know little regarding the kind of hook used. It may have been merely a sharp sliver of bone attached to a wooden shaft. Light fish spears were also used (pl. 11, *A*, 18).

Umiaks and kayaks, with skin covers and wooden frames, were used for traveling as well as for hunting, just as they are today. Loads of meat were hauled over the ice on toboggans made of long strips of baleen. The only known sledge was small and low with heavy ivory runners (pl. 12, *A*, 1-4), very similar in its general form and function to the modern hand sledge used for hauling umiaks and loads of meat over the ice. The large built-up sledge, which is now in use everywhere in the Arctic and which is always pulled by dogs, seems to have been entirely unknown to the Old Bering Sea Eskimos, as was the idea of dog traction in general. Dogs were kept in considerable numbers, to judge from the bones in the middens, but they were smaller than the modern variety. They may have been used primarily as food animals, for in most of the skulls that have been found there are large holes evidently made for removal of the brain. As Jenness has pointed out, a partial analogy to this situation is provided by the statement in Frobisher's Voyages that in the sixteenth century the Eskimos just north of Hudson Strait kept a small breed of dog for eating and a larger one for hauling the sleds (Jenness, 1940).

The few fragments that have been preserved indicate that the clothing of the Old Bering Sea Eskimos was essentially the same as that worn today, except for the absence of reindeer or caribou skins. Boots were made of heavy sealskin, body clothing of seal and bird skins, and waterproof coats of seal and walrus intestines. Though the ground squirrel is plentiful on St. Lawrence Island today, the virtual absence of its bones in the middens indicates that the skin of this animal was not utilized for making clothing as on the Alaska mainland.

Ornaments were rare, consisting of simple brow bands and occasional gorgets and buttons (pl. 12, *B*, 12, 13; pl. 14, *B*, 1). On the other hand, one of the most striking characteristics of the Old Bering Sea Eskimos was the practice of decorating many of their artifacts,

even those of a strictly utilitarian nature, with the graceful flowing designs typical of the period.

On the basis of the Gambell excavations it has been possible to distinguish three styles of Old Bering Sea art (Collins, 1937b, pp. 40-56, 76-92, 202). Style 1, the earliest, was found only at the pure Old Bering Sea site—the "Hillside" site. Five of the eight specimens decorated in this style lay between or below the floor stones of houses. Although style 1 (pl. 14, *A*, 1-10) made use of such typical Old Bering Sea elements as concentric circles and ellipses often with a dot or circular inlay at the center, lines with spurs attached, the double line, and the broken line, it was very different in total appearance from the more elaborate, harmonious designs of styles 2 and 3. It was a distinctly linear style in which surfaces were covered with a profusion of radiating lines, long sharp spurs, short detached lines and broken lines. Plate 14, *A*, 1-6, shows examples of this early Old Bering Sea art from the Hillside site at Gambell; plate 14, *A*, 7, is from Little Diomedé Island, and 8-10, for which I am indebted to Dr. F. G. Rainey, are from the pure site of this period later discovered on Punuk Island by Otto W. Geist (see Rainey, 1937).

Although style 1 is simpler and more generalized than styles 2 and 3 its place in the Old Bering Sea sequence is clearly indicated not only by the elements it had in common with the later styles, but by the fact that at the Hillside site it occurred in association with style 2. Some of the undecorated objects associated with style 1 art are identical with specific types of the later Old Bering Sea stages; others are types which underwent developmental changes in later times. A striking example of the latter is the curious "winged" objects that in different gradational forms are characteristic of the various prehistoric culture stages on St. Lawrence Island and elsewhere (Collins, 1937b, pp. 41-43, 87-89, 197-201). The earliest examples (pl. 14, *A*, 3, 8), though decorated in Old Bering Sea style 1 and differing in structural detail from later specimens, embody the basic features of the broader-winged types bearing style 2 and 3 ornamentation (pl. 14, *B*, 8; pl. 15, *A*, 3, 9). The latter in turn, through a series of gradual changes, developed into the "trident" and "turretlike" forms of the Punuk stage (pl. 13, *A*, 23, 24; pl. 15, *B*, 7).

Old Bering Sea style 2 was found at the Hillside site and at the next oldest site, Miyowagh. Typical examples are shown on plate 14, *B*. In contrast to the simple and somewhat "scratchy" designs of style 1, those of style 2 are thoroughly integrated and more effectively and consciously adapted to the rounded ivory surfaces. The

principal motives are closely spaced, parallel lines, broken lines, small circles set between converging lines, and small independent design elements of various kinds set in as panels.

The distinction between styles 2 and 3 is somewhat more arbitrary. In style 3 (pl. 15, *A*) special emphasis is placed upon elevated concentric circles and ellipses. These are larger and occupy a more prominent place in the decorative scheme than did the smaller circles of style 2, and they are often arranged in pairs so as to suggest the eyes of an animal.

The Punuk culture, which on St. Lawrence Island succeeded the Old Bering Sea, was primarily a continuation and outgrowth of the older culture, though it also received a number of new elements from Siberia. Punuk art, though based to some extent on that of the Old Bering Sea, soon became very different, the deftly incised curving lines and free-hand circles and ellipses of the older art being replaced by deeply cut, straighter lines, prominent spurs, dots, and circles, all made with metal tools (pl. 13, *A*, 3, 18-20, 23, 24; pl. 15, *B*, 1-10).²

The houses of the Punuk stage, though larger than those of the Old Bering Sea, were constructed in the same manner. Among many artifacts that continued into the Punuk stage without change were earthenware lamps and cooking pots, walrus-scapula shovels, baleen pails, ivory picks, mattocks, wedges, meat hooks, some forms of knives, arrows, and harpoon heads, reamers, awls, ulus, drills and drill rests.

There are other features, however, in which it is possible to trace developmental changes: Art; harpoon heads and parts (pl. 15, *B*, 1-4, 6; pl. 13, *A*, 1-2, 9), bird darts (pl. 13, *A*, 5), ice creepers (pl. 13, *A*, 13, 14), arrows (pl. 13, *A*, 6-8), fishline sinkers (pl. 13, *A*, 12), knives, adzes (pl. 13, *A*, 15, 16), "winged" objects of unknown use (pl. 13, *A*, 23, 24), needle cases (pl. 13, *A*, 20), sledge runners (pl. 13, *A*, 25). Implements of chipped stone, so abundant in the Old Bering Sea culture, were almost entirely replaced by those of rubbed slate.

² The use of metal in the Punuk stage long antedated the seventeenth or eighteenth centuries, the period of Russian contact, for Punuk art with its metal-incised lines occurs even in the lowest levels of the 16-foot midden on Punuk Island—a site which seems to have been abandoned for at least 200 years. Laufer (1914, pp. 262, 264, 265) has shown that the Su-chen, a Tungusic people living to the north of Korea, probably somewhere near the Amur, were in possession of iron in A. D. 262. This suggests the possibility that iron in small quantities may have reached northeastern Siberia and St. Lawrence Island, as early as a thousand years ago (Collins, 1932, p. 117; 1937b, pp. 30, 304-305).

The following elements, most of them Thule, appear suddenly in the Punuk stage, evidently as importations from Siberia: Whaling harpoon heads (pl. 13, *A*, 3), the Thule type 2 harpoon head (pl. 16, *A*, 15), blunt bird arrows (pl. 13, *B*, 11-13), bird bolas (pl. 13, *B*, 14-16), wrist guards (pl. 13, *B*, 4, 5), bow braces and sinew twisters for the sinew-backed bow (pl. 13, *B*, 6-8), plate armor (pl. 13, *B*, 18), sealing scratchers (pl. 13, *B*, 1), fishhooks (pl. 13, *B*, 2, 3), heavy ivory net sinkers (pl. 13, *B*, 25), bone and ivory daggers (pl. 13, *B*, 19), iron-pointed engraving tools (pl. 13, *B*, 26-28), ivory and bone pendants (pl. 13, *B*, 31-34, 36, 37), and link ornaments (pl. 13, *A*, 17, 19; pl. 13, *B*, 35, 39).

The modern underground house with walls of upright timbers and whale bones and with a wooden floor and sleeping platform is a still later importation, as is also the modern type of flat-bottomed earthenware lamp with high parallel ridges, and the thin-walled rectangular cooking pots with suspension lugs.

Lastly, there are numerous important elements in use on St. Lawrence Island today that do not occur at the prehistoric sites and that must have been received from Siberia within the past 200 years. Such elements include: The built-up sledge with flat bone shoes; swivels and trace buckles for dog harness; ferrules for end of whip handle; wooden sealing retriever with iron prongs; ivory blocks for uniak sail lines; small ivory bird, mammal, and human figures, used as toys; torsion trap for foxes; net gauges; pipes; glass beads; long barbless arrowheads, triangular in cross section; iron lance blades; curved bone snow-beaters for clothing; two-handed skin-scraper with small stone or iron blade at center; grass combs with circular row of teeth; and showshoes. The modern St. Lawrence house, which is a surface structure, octagonal in outline with wooden frame and skin roof, is in all probability also a recent importation, although we cannot prove that it was not present earlier.

The modern St. Lawrence Islanders are a branch of the Yuit, or Siberian Eskimos. Until very recently they maintained close contacts with Siberia, which is only 40 miles away, but were almost completely isolated from Alaska. Although the archeological evidence indicates an equally intimate relationship with Siberia in the past, St. Lawrence culture was less provincial than now, for the Punuk and Old Bering Sea cultures existed also in Alaska, both on the Diomed Islands and on the mainland. But even in the past the immediate and direct contacts were probably with Siberia rather than Alaska.

Systematic archeological investigations have not been made in northeastern Siberia, but we do know that at various places along the

coast there are large kitchen middens comparable with those on St. Lawrence Island. From scattered indications it appears that the Punuk and Old Bering Sea cultures were well represented on the Siberian coast. Rasmussen's archeological collection from East Cape includes a number of late Punuk harpoon heads (Mathiassen, 1930a, pl. 18); and Bogoras (1904-1909, vol. 1, p. 117, fig. 33) illustrates several early Punuk types excavated from old villages. One Old Bering Sea harpoon head has been reported from Plover Bay (Collins, 1929b, pp. 4, 5, fig. 1); and in the Ethnographical Museum at Oslo are eight Old Bering Sea harpoon heads and a comb excavated by Dr. H. U. Sverdrup at old sites on the Siberian coast in the vicinity of Bering Strait. Two other harpoon heads which Sverdrup excavated on an island at the mouth of the Kolyma River belong to the Birnirk, or prehistoric Point Barrow type (Mathiassen, 1927, II, p. 180).

On the basis of Jenness' excavations and of subsequent collections it appears that the Diomedede Islands were another important Old Bering Sea center. The presence on the Diomededes of the three styles of Old Bering Sea art described above and a number of characteristic harpoon heads and other implements shows close relationship with St. Lawrence Island. Punuk art is also found on the Diomededes, as well as on the opposite Alaskan shore at Cape Prince of Wales, where it occurs in association with Thule remains.

Old Bering Sea remains are far less abundant on the Alaskan mainland than on the Diomedede and St. Lawrence Islands. Except for a single specimen with style 1 decoration from the mouth of the Kuskokwim, to which we shall refer later, Old Bering Sea material has not been discovered south of Bering Strait. There are only uncertain indications of its existence at Cape Prince of Wales and none at all northward to Kotzebue Sound, although the latter region has not been carefully explored. At Point Hope farther up the Arctic coast Rainey and Larsen have recently discovered an important old site which is remarkable for the absence of pottery, slate implements, and lamps; the art is described as being closest to that of Old Bering style 1 (American Antiquity, January 1940, p. 233). The sporadic occurrence of Old Bering Sea art and harpoon types at Point Barrow places this as the eastern and northern limit of the culture as known at present.

Summarizing, we may say that the most intensive development of the Old Bering Sea culture occurred on St. Lawrence and the Diomedede Islands. The practical identity of the cultural manifestations at the two places throughout the Old Bering Sea and Punuk stages indicates

close contact over a considerable period of time. Considering the 150 miles of open water between them, which is rarely traversed even today, it would seem that such contacts were established and maintained by way of the adjacent Siberian coast, where, as we have seen, the Old Bering Sea culture in all probability flourished to a greater extent than on the opposite Alaskan shore.

BIRNIRK AND THULE CULTURES

North of Bering Strait the earliest culture stage of which we have adequate knowledge is the Birnirk, first described by Dr. J. Alden Mason (1930) on the basis of materials excavated by W. B. Van Valin at old mound sites near Point Barrow. Excavations at these and other sites by James A. Ford in 1931-32 have added to our knowledge of the Birnirk culture and thrown further light on its chronological position.

The presence of typical Birnirk harpoon heads at the mouth of the Kolyma River on the north coast of Siberia indicates the probable western extent of the culture. At Bering Strait the only site thus far discovered is a small one of late Birnirk age near Cape Prince of Wales. There is no evidence of the Birnirk culture as a distinct stage south of Bering Strait, but the occurrence of typical harpoon heads in the early Punuk horizon on St. Lawrence Island shows that contacts had extended southward.

The excavations around Barrow do not seem to have revealed all stages of culture development from prehistoric to modern times; the Birnirk appears as a more or less detached unit rather than as part of a local culture sequence. Consequently, it is difficult to determine its exact position in relation to the relatively complete sequence established for St. Lawrence Island. However, comparison with the other prehistoric phases in Alaska shows first of all that, with the exceptions noted below, the Birnirk contains no unique forms of any significance and no general kinds of implements that are not also known to the Old Bering Sea and later phases. The bulk of its elements are what might be termed common Western Eskimo types, characteristic of prehistoric and modern north Alaskan culture as well as of Thule. However, the particular forms of some of the Birnirk elements—such as throwing boards, arrowheads, and needle cases—indicate specific relationship with Old Bering Sea. This relationship is strengthened by the sporadic occurrence at Birnirk sites of Old Bering Sea art, pottery with curvilinear stamped decoration, and the presence of side blades and multiple basal spurs on harpoon heads.

On the other hand the Birnirk types that are absent in the Old Bering Sea culture seem to be relatively late, most of them being characteristic of the Punuk stage on St. Lawrence Island. These include: Wrist guards, sinew twisters for the sinew-backed bow, bird bolas, sealing scratchers, one bird bone inserted in another. Except for the wrist guard, these are also typical of the Thule culture. A further indication of the contemporaneity of Birnirk and Punuk is the presence of Birnirk-like harpoon heads at sites of Punuk age on St. Lawrence Island. Although side blades and multiple basal spurs were by no means lacking in the Old Bering Sea, harpoon heads specifically resembling the Birnirk in shape as well as in the particular arrangement of blades and spurs do not appear until the beginning of the Punuk stage. Whenever harpoon heads of this type are ornamented, it is in the simple Birnirk style, and, like the northern Birnirk heads, they are made of bone, whereas other St. Lawrence types are almost invariably made of ivory.

In view of the direct relationships of the Birnirk both to Old Bering Sea and Punuk, the writer has suggested that it should be regarded as an outgrowth of the former (Collins, 1937b, p. 372). Jenness, on the other hand, points out that at Barrow, Old Bering Sea art disappears in the Birnirk stage, whereas on St. Lawrence Island there was a succession and continuation into the Punuk stage. Because of this and of the differences in harpoon heads, Jenness has suggested that "The Birnirk (and its first-born child the Thule) is perhaps *not* a direct offspring of the Old Bering Sea, but both may be offsprings of some less advanced culture that flourished on the northeast coast of Siberia around the mouths of the Kolyma and Indigirka rivers." (Jenness, 1940.) The paucity of art at Barrow is indeed striking and, in view of the many resemblances of Birnirk to Old Bering Sea and Punuk, one may well wonder why nothing comparable to the art sequence of St. Lawrence Island and Bering Strait has been found at Barrow. Such differences, however, could be explained as regional variations. This explanation would avoid the further difficulties that arise if we attempt to equate the Birnirk as we now know it with the earliest stage of Old Bering Sea. If the Birnirk sites were contemporaneous with the earliest Old Bering Sea remains elsewhere it is strange that nothing has yet been found around Barrow to bridge the gap between that time and the present—a gap of many centuries duration, to judge from the long and continuous process of cultural modification that occurred on St. Lawrence Island throughout the Old Bering Sea and Punuk stages. Furthermore, if the Birnirk sites are not only pre-Punuk but also older than the bulk of Old Bering

Sea remains elsewhere (i.e., older than the culture stages characterized by Old Bering Sea styles 2 and 3), how are we to account for the presence therein of such typical Punuk elements as those mentioned above? The only explanation of such an anachronism would be to assume that the cultural developments exhibited in the Old Bering Sea-Punuk sequence on St. Lawrence Island were of local significance only and were strikingly different from those on the Siberian and Alaskan mainland where the Punuk may have been much older. Although cultural change would no doubt have proceeded unevenly over so wide an area, local differences would hardly have been this great. The distribution of Old Bering Sea and Punuk remains on the Diomedes and the adjacent Siberian and Alaskan coasts gives every indication that cultural developments there were generally synchronous with those observed on St. Lawrence Island. This is indicated most clearly by conditions at Cape Prince of Wales, where Punuk art and implements occur in intimate association with Thule remains at a site which is demonstrably later than Birnirk and Old Bering Sea.

As pointed out above, the Birnirk elements, aside from those that show specific relationship with Old Bering Sea and Punuk, are widespread, undifferentiated types, shared alike by Old Bering Sea and later phases—types that might readily be explained as continuations from an Old Bering Sea basis. The question of the relationship of Birnirk and Old Bering Sea will probably be clarified when we have fuller knowledge of the nature and content of the culture associated with Old Bering Sea style 1 art at Bering Strait and on the Arctic coasts of Alaska and Siberia. We know that both this style of art and a certain type of harpoon head that was associated with it on St. Lawrence Island occur on the Diomedes, and that a similar art style and harpoon type is reported from the site recently discovered by Rainey and Larsen at Point Hope.

This may have been the stage of culture postulated by Jenness (1940) as the "hypothetical parent culture" that gave rise both to the Birnirk and Old Bering Sea. That the distribution of the two latter cultures tends, in a broad sense, to have been mutually exclusive, bears out Jenness' suggestion that the Birnirk clung to the northern shores of Siberia and Alaska, while the Old Bering Sea colonized the Siberian coast and islands south of East Cape. But whereas the stage of culture represented by style 1 led directly to those represented by Old Bering Sea styles 2 and 3, there was probably an intervening and as yet undiscovered stage between the "parent culture" and the Birnirk as

we now know it, as the latter seems to have been contemporaneous at least in part with the Punuk.

In another direction the Birnirk played a highly important role. It gave rise to the Thule culture which spread eastward to the Central region and Greenland, where it flourished for some centuries and established the foundation for much of the present culture of these regions, especially of Greenland. The Dorset culture, which preceded the Thule, will be discussed later. Mathiassen's investigations at the old Thule sites provided conclusive evidence of the former continuous distribution of a settled population of sea-mammal hunters from Alaska to Greenland. They bore out Hatt's contention (1916a) that the absence in the Central region today of elements pertaining to such a culture was the result of historical change rather than of inhibiting environmental conditions as postulated by Steensby (1916).

The old Thule sites are scattered over an extensive area north and west of Hudson Bay, both on the mainland and on the islands of the Arctic Archipelago. In contrast to the modern Central Eskimos of this region, who live in snow houses in the winter and spend the summer in the interior hunting caribou, the Thule Eskimos lived in semisubterranean houses of whale bones, stones, and turf, situated at places favorable for hunting whales, seal, and walrus:

The Thule culture, as we know it from these old finds, shows us a highly developed and remarkable Eskimo culture. It presents to us a people, living in permanent winter houses by the coast, in conical tents in summer, hunting the whale, the walrus, the seal, the bear and the caribou, trapping foxes, catching birds and salmon, all by the means of a highly developed implement technique. They had all the typical Eskimo forms of weapons and implements: the dog sledge, the kayak, the women's boat, the harpoon with moveable foreshaft, loose head and bladder; the ice-hunting harpoon, the bladder dart, lance, bow and arrow, fox trap, bola, bird dart, throwing board, salmon dam, salmon trap, salmon spear, leister, snow knife, men's and women's knives, the mattock, adze, bow drill and hand drill, scrapers, needles and needle cases, the blubber pounder, soapstone cooking pot, pottery, combs; they mastered a highly developed proficiency in ornamentation and carving and were also familiar with the snow house. It is an Eskimo culture which, in many respects, is richer and more developed than that met with among the present day Central Eskimos. (Mathiassen, 1927, II, p. 6.)

From the position of the Thule sites in relation to existing shore lines it appears that when the oldest of them were occupied, the sea was 10 to 13 meters higher than at present; later Thule sites date from a period when the sea stood 5 meters higher than today. Although recognizing the uncertainties involved in dating the sites by changing shore levels, Mathiassen suggested that the age of the Thule

culture would be a thousand years or more if the land had risen at approximately the same rate as in northern Scandinavia. This estimate seems to have been confirmed by Mathiassen's later investigations at Inugsuk in west Greenland, a site representing a somewhat later phase of the Thule culture than those that had been excavated around Hudson Bay. There was clear evidence that the Inugsuk culture had been influenced to some extent by that of the Norsemen. This fact and the presence of a number of Norse objects in the midden showed that the site and the stage of culture it represented dated from the thirteenth or fourteenth centuries, when the Norsemen were living in south Greenland. If the Canadian Thule culture was several centuries older than the derivative Greenland phase, we would seem to be justified in assuming that the Thule culture was in existence in the Central region as early as A.D. 1000.

Though differing markedly from the culture that supplanted it in the Central region, the Thule showed strong resemblances to existing phases of Eskimo culture elsewhere. The Sadlermiut of Southampton Island, who became extinct in 1902, possessed a culture very close to the Thule. The Polar Eskimos in the Cape York district of north Greenland resemble the Sadlermiut in a number of ways and like them have retained much of the old Thule culture. But the modern Eskimo group showing the closest relationship to the Thule culture is that at Point Barrow, Alaska:

. . . we find that of the 152 unquestionable Thule elements we recognise no fewer than 94 in the Point Barrow district, and, what is more, they are for the most part types which belong to the most characteristic in the Thule culture, as for instance 22 of the 31 "representative forms" of the Thule culture . . . All in all, one must say that the likeness between the Thule culture and the Point Barrow culture is exceedingly great; and in respect of these it is not nearly so necessary, as in West Greenland, to turn to old finds for the purpose of finding parallels to the Thule culture. The greater part of the elements mentioned above are in use among the Point Barrow Eskimos to this day, or at any rate they were when Murdoch visited them in the 1880's, and for the most part these are elements which play a predominating part in their culture, such as the thin harpoon heads, whaling harpoon head, foreshaft and socket piece, sealing stool, seal scratcher, arrow heads, bola, women's boat, the knives, adze, drill, mattock, wedge, ulo, scraper, etc. There is hardly any doubt that the Point Barrow Eskimos are the Eskimo tribe living today that most closely approaches the Thule culture. (Mathiassen, 1927, II, pp. 174, 175, 176.)

The situation with respect to the modern Point Barrow Eskimos raises the question of the exact status of the Thule culture in Alaska. If, as we have stated, the Thule culture was derived originally from the Birnirk, the prehistoric Point Barrow culture, how are we to

explain the close resemblances that also exist between the Thule and modern Point Barrow?

First we must review the evidence leading to the conclusion that the Birnirk was ancestral to the Thule. Though the St. Lawrence finds afforded no proof of this exact relationship, they did show that the Birnirk was older than the Thule there. It was pointed out that the Punuk stage was contemporaneous with, and in certain respects equivalent to, the Thule, numerous specific Thule traits making their appearance at that time. Birnirk influence was also felt on St. Lawrence Island, but at a somewhat earlier stage, for the Birnirk harpoon heads appear in the early Punuk horizon, the Thule types in the later Punuk. Furthermore, the Birnirk shows certain specific resemblances to Old Bering Sea, the Thule none.

There were several reasons for assuming that the Birnirk culture as represented at the old sites around Barrow was ancestral to the Thule: 1, except for a relatively few elements such as art, the throwing board, stamp-decorated pottery, needle cases, and side blades and divided spurs on harpoon heads, which showed relationship to Old Bering Sea, and the wrist guard, which was Punuk, the Birnirk elements in general were the same as those of the Thule; 2, at the Birnirk and Thule sites there was little evidence of the numerous special forms which are so prominent in the culture of the modern Point Barrow Eskimos—forms which seem to represent a recent, local development after the Thule culture moved east; 3, the characteristic Birnirk harpoon head with an asymmetrical divided spur and a small inserted stone blade on one side and a barb on the other seemed a likely prototype of the Thule head with plain spur and two barbs at the side. Moreover, other types of Thule harpoon heads had ornamental grooves on the side that were evidently residual slots for side blades. In short, since the Birnirk is demonstrably older than the Thule and yet shares with the latter a great many common western Eskimo elements, there was good reason for regarding it as the ancestral stage, even in the absence of direct stratigraphic evidence.

Confirmation of the postulated Birnirk-Thule sequence has recently been obtained through investigations at Kurigitavik, an abandoned site at Cape Prince of Wales, Bering Strait. Jenness, who made the first excavations at this site in 1926, showed that it represented the Thule stage of culture (Jenness, 1928a). In 1936 the National Geographic Society and Smithsonian Institution made additional excavations at this site, which dates from the time when the Thule Eskimos migrated eastward to Hudson Bay (Collins, 1937a, 1939). As might

be expected, the material from Kurigitavik is by no means identical with that from the Canadian Thule sites, for there is no trace there of numerous elements which the Thule culture acquired or developed in its Central habitat. Furthermore, the presence at Kurigitavik of such typical Punuk and modern western Eskimo features as Punuk art, armor, masks, labrets, fishline sinkers, the "cannon-shaped" mouthpiece for the bladder float—all of which are lacking in the Canadian Thule culture—indicates that the eastward Thule migration did not proceed directly from this point, but from farther east. Except for such elements as these, however, the material from Kurigitavik corresponds in general with that from the Canadian Thule sites.

The Birnirk-Thule relationship at Kurigitavik was shown principally by the distribution of harpoon heads in the midden. One of the most prominent forms was the Thule type 2, with two barbs and a plain spur (pl. 16, *B*, 1-5). These occurred from the surface to somewhat below the middle of the 7- to 9-foot midden. In the lower levels of the midden this type of harpoon head began to assume features suggestive of the Birnirk—a somewhat more slender form, a bifurcated spur, and in one instance, one instead of two barbs (pl. 16, *B*, 6-9). Finally at the base of the midden a typical Birnirk head was found (pl. 16, *B*, 10). Pottery was distributed in a similar manner, curvilinear stamped sherds of the Birnirk type being present in the lower levels, plain ware above.

There were no traces of Old Bering Sea art or diagnostic implement types at Kurigitavik, although several objects were decorated in typical Punuk style. The prevailing ornamentation was one of spurred lines, Y figures, and small hachured areas, a simple geometric style of art characteristic of the Canadian Thule and modern north Alaskan cultures. Several objects were decorated with simple pictographic designs, also like those made by the Thule and modern north Alaskan Eskimos.

On the basis of the evidence summarized above we may assume that Kurigitavik was occupied while Punuk culture was flourishing on St. Lawrence Island, and when other groups of Eskimos, probably between Point Barrow and the Mackenzie, were spreading eastward and carrying the Thule culture on to Hudson Bay. If we accept Mathiassen's dating and assign the Inugsuk stage in Greenland to the thirteenth or fourteenth centuries, and assume the Canadian Thule culture from which it sprang to be one or two centuries older, then it would appear that the original movement of the Thule culture from Alaska occurred somewhat prior to A.D. 1000.

No sites dating from the time of the original movement have been discovered, either around Barrow or in the Central area, though intensive search would probably reveal them. Such sites when found will bridge the temporal gap between those of Birnirk age around Barrow and the oldest Thule sites thus far known in the Central region—Naujan and Malerualik. We would expect these original Thule sites to show closer resemblances to Birnirk, such as in the more general use of pottery or of harpoon heads with side blades. On the other hand they would probably not exhibit other Thule features that later developed or were acquired in the Central area.

We may now return to the question of the interrelationship of Birnirk, Canadian Thule, and modern Point Barrow. First, we observe that although in some respects the Birnirk shows connection with Old Bering Sea, the bulk of its elements are shared also with Thule and modern Point Barrow. The relationship between Birnirk and Thule is indicated by a general similarity of basic culture content; there are few if any elements peculiar to the two. On the other hand, in addition to the many elements which Birnirk, Canadian Thule, and modern Point Barrow possess in common, there are also a few exclusive and specific resemblances between the last two. These are soapstone lamps and cooking pots, trace buckles and swivels for the dog harness, ulu handles with central hole, and small knobs on tangs of bone arrowheads. These features, which are typical and prominent in the Central Thule culture, are equally prominent at modern Point Barrow and elsewhere in northern Alaska but have not been found at any prehistoric Alaskan site. If we include modern St. Lawrence Island and Bering Strait, we can add to the list small ivory bird figures, harpoon heads with drilled lashing holes around the socket and rivet holes at the tip, and wick ledges on (pottery) lamps—typical Canadian Thule elements which are likewise typical of modern, but lacking in prehistoric, Alaskan culture. How are we to explain these exact and specific resemblances between prehistoric Central Thule and modern north Alaskan culture? If the Thule culture has an antiquity of anything like the thousand years assigned it by Mathiassen, the only explanation would be that such elements were introduced into northern Alaska within the past few centuries by a return movement of Thule peoples subsequent to the original eastward spread of the Thule culture.

Ethnographic, linguistic and somatological evidence supports the deductions from archeology that the north coast of Alaska has been subjected to a relatively late wave of Eskimo migration from the

east. The modern Point Barrow house, with its wide rear sleeping platform and its sloping gabled roof supported by a single transverse roof beam, differs fundamentally from the Eskimo houses below Norton Sound. The latter have low sleeping platforms along three sides and a roof that is slightly domed or cribbed and supported by four upright wooden posts rising from the floor. On the other hand, the presence of a wide sleeping platform at the rear is a feature of all Central and Eastern Eskimo houses; and a sloping roof supported by a transverse beam is typical of Greenland houses. It appears, therefore, that in roof structure and arrangement of the sleeping platform the modern Point Barrow house resembles Central and Eastern Eskimo houses more closely than it does the typical Alaskan form.

Language provides further evidence of a close relationship between northern Alaska and the East. Jenness (1933, pp. 379-380) has pointed out the remarkable fact that the dialects spoken by the Alaskan Eskimos north of Norton Sound are closer to those of faraway Greenland and Labrador than to those of the adjacent Yukon-Kuskokwim region to the south. It is difficult to see how such linguistic unity, extending over so enormous an area, can be explained except on the basis of direct and recent contacts.

The linguistic evidence is paralleled by that of physical anthropology, and here fortunately we have old finds that provide an insight into the past. Hrdlička (1930, pp. 318-329) has shown that the skulls from the Birnirk sites around Point Barrow are extremely long, narrow, and keel-shaped like those of the Greenland Eskimo. The Birnirk crania are similar to others from recent burials on Seward Peninsula, and we know that the same type was present on St. Lawrence Island during the Old Bering Sea period. There is a marked difference, however, between this type of skull and that of the modern Point Barrow Eskimo, the latter being considerably shorter, wider, and lower. In an earlier study Hrdlička (1910) had pointed out that a close similarity existed between this modern Alaskan type and skulls from Southampton Island and Smith Sound, Greenland. We now know that the Southampton Island, Smith Sound, and modern Point Barrow Eskimos are the three modern groups whose culture is closest to the Thule, and because of this the writer has suggested that these groups, rather than Van Valin's pre-Thule group from Birnirk, represented the physical type associated with the Thule culture (Collins, 1934b, pp. 311-312). The skeletal remains from Mathiasen's Thule sites in the Hudson Bay region have now been described by Fischer-Møller (1937), and the results are in agreement with this view. The

Central Thule skulls were found to be almost identical with those from modern Point Barrow and quite distinct from the old Birnirk series. The somatological evidence is as yet incomplete in that the Birnirk physical type has not been found at ancient sites in the Central area. However, as was pointed out, there is evidently a temporal hiatus between the Birnirk sites around Barrow and the oldest of the central Thule sites excavated by Mathiassen. Older Thule sites must exist in the Central region or Greenland, and we would expect these to reveal the Birnirk physical type.

It appears, therefore, that the modern Eskimos of northern Alaska are more closely related in language and physical type to those of the Central regions and Greenland than to their immediate neighbors south of Norton Sound. This is not wholly true of culture, for these Eskimos share a number of elements with other Alaskan groups and possess still others that have developed locally and remained restricted to the Arctic coast. Nevertheless, the north Alaskan Eskimos show much closer cultural resemblances to the Eastern Eskimos than do those south of the Yukon, principally because many of the features that the north coast of Alaska shares with the Thule culture are absent below Norton Sound.

Archeology thus reveals the prehistoric trends that seem to have been responsible in large part for the rather sharp distinction in language, physical type, and culture between the Eskimos north and south of Norton Sound. This distinction apparently must be explained on the basis of contacts established and maintained during the Thule period. The Thule culture, which, like the parent Birnirk stage, was originally restricted to northern Alaska, moved eastward, took root, and flourished in the Central area and Greenland. In this way a maritime, and originally Alaskan, form of culture was given a wide distribution throughout the east. We know very little of the archeology of the Alaskan coast between Norton Sound and the Aleutian Islands, but judging from present indications no such Thule influences were exerted there.

The linkage between the Arctic coast of Alaska and the east, first established when the Thule culture was transplanted to the Hudson Bay area and further strengthened by a later return movement to Alaska may also explain in large part the uniformity of present-day Eskimo culture; for it is precisely the Thule-derived culture of the Central region and Greenland, rather than that of such typical Central groups as the Caribou, Copper, and Netsilik, that furnishes the bulk of the specific correspondences to Western Eskimo culture.

At present we have no means of determining the exact nature, source, or time of the postulated secondary Thule movement into northern Alaska. But however it occurred, the reality of some such movement or movements can hardly be doubted. In no other way can we explain the absence in Alaska until protohistoric or modern times of such definitely prehistoric Thule elements as soapstone lamps and cooking pots, wick ledges on pottery lamps, trace buckles and swivels for dog harness, knobbed arrow tangs, ulu handles with central opening, small ivory bird figures used as dice, and drilled lashing holes and rivet holes on harpoon heads. The sudden appearance of these elements and their close correspondence with those in the east, show that they were introduced into Alaska directly by migration rather than through gradual diffusion.

The somatological evidence likewise suggests that actual movements of people were involved; and the close relationship of north Alaskan dialects to those of the remote east would seem to be better explained as a recent condition, resulting from contacts established within the past few centuries, than as one of many centuries duration that had originated in the primary movement of the Thule culture eastward and persisted unchanged from that time to the present.

DORSET CULTURE

As we have seen, the Thule culture, despite its prominent role in the formation of much of present-day Central and Greenland Eskimo culture, cannot be understood without reference to Alaska, its place of origin; it is closely linked on the one hand to the prehistoric Birnirk and Punuk phases and on the other to the modern culture of northern Alaska.

The history of the Dorset culture, which existed also in prehistoric times in the Hudson Bay region, is very unlike that of the Thule culture. The Dorset culture is, in many respects, unique and localized; its relationship to Alaska is not at all clear, but the few points of resemblance that exist are to the oldest Alaskan stages—the Old Bering Sea, Birnirk, and prehistoric Aleutian-Cook Inlet cultures.

The Dorset culture was first described in 1925 by Dr. Diamond Jenness. While working over archeological materials from Coats Island in the northern part of Hudson Bay, and Cape Dorset on the southwest coast of Baffin Island, Jenness observed that, after separating the objects belonging to the modern and Thule cultures, there remained a large number of specimens obviously unrelated to either of these. These specimens were very distinctive in type, those of bone

and ivory from Cape Dorset all being deeply patinated, in contrast to the much lighter color of the Thule and modern pieces. The characteristic harpoon head, represented by some 200 specimens, differed from any other known type; it was small, had a bifurcated basal spur, an enclosed socket which was narrow and rectangular in outline, and a single or double line hole which was cut out instead of drilled. Another type of harpoon head resembled Mathiassen's Thule type 1, having a plain spur and an open socket; the line hole, however, was usually placed near the edge instead of the center and was gouged out as in the other Dorset type. The fact that harpoon line holes as well as the holes on other implements were all cut out instead of drilled was a significant point, showing that the Dorset people were unacquainted with the bow drill.

The nature and content of the Dorset culture is thus summarized by Jenness (1933, pp. 391-393):

One feature that immediately attracts attention in all Dorset remains is the smallness of the implements. There are no large mattocks, snow-knives, sled-runners, and other objects made from whale bones; no large whale bones at all, apparently, and no fragments of baleen, or so few that they play no important part in the culture. Their absence, and the absence of any suitable harpoon-heads, indicate that the Dorset Eskimo did not hunt whales like the Thule people, although they hunted both seals and walruses. Still more remarkable is the absence of the holes made with a bow drill that are so conspicuous in all Thule remains. The Dorset people laboriously gouged out their holes, or reamed them out with a crude hand-drill fitted with a roughly triangular blade of chert, quartz, or chalcedony that was notched on each side above the base like their knife blades. Lacking, too, are many objects common in Thule remains, but not as yet certainly identified in any Dorset site. Thus there seem to be no fragments of bows or of bone arrowheads (although arrowheads of stone are abundant enough); no sled or harness toggles; no inflators or stoppers for seal-pokes; no finger-rests; toggles, or parts of throwing-sticks for harpoons. We cannot actually prove, at present, that the Dorset people used kayaks, umiaks, or even the dog-sled, although without the two latter, at least, it is hard to imagine how they could have spread over so large an area of land and sea. Doubtless we shall find some of these objects in Dorset sites still untouched; but their absence from the collections hitherto received greatly contrasts with their frequency in Thule remains, and strengthens the feeling that we are here confronted with a different culture.

A closer examination of the specimens themselves confirms this impression. Implements of ground slate, which are so common in Thule remains, are comparatively scarce compared with the number of chipped implements made from chert, chalcedony, and quartz; and the chipping on these implements, especially on the arrowheads, is finer and more delicate than anything known elsewhere from Eskimo territory, or, indeed, from the entire continent. Many chert and chalcedony points were not only chipped but partly ground, and ground and polished blocks of quartz were used as rubbing stones, practices that also seem quite

unique on the continent. There are no tangs on the stone knife blades and arrowheads, as elsewhere in Eskimo territory; the latter are all triangular, with sharp points and concave bases, while the knife blades . . . have one or more notches on each side of the straight base. Then there are three varieties of stone scrapers, of which one, a doubly-convex form, seems unknown elsewhere; and soapstone plummets that appear in Beothuk and Algonkian sites, like the triangular arrowheads, but not in Eskimo outside the Dorset area. Of bone, ivory and antler implements peculiar to the Dorset culture are six varieties of harpoon-heads with the rectangular sockets . . . ; an open-socketed harpoon-head of very primitive type; knife handles with a slot on the side near one end, and leister (possibly also bird-spear) points, that are similar to Thule types in the eastern Arctic, but much smaller and slenderer; large numbers of delicate needles fashioned from solid bone and fitted with gouged-out eyelets; and various objects of curious shapes, some undoubtedly ornaments or charms, others of unknown use. A few specimens are shaped like animals, or bear animal carvings in low relief, in what seem to be the usual Eskimo style; but there are also linear engravings so crude that they suggest the beginnings of Eskimo geometric art rather than degenerated versions of Thule patterns.

The Dorset culture is now known to have had a wide distribution in the eastern Arctic. It centered apparently around Hudson Strait, on the south coast of Baffin Island, and on Coats, Mansel, and Southampton Islands in the north of Hudson Bay. Dorset material has also been found at Iglulik on the northwest coast of Hudson Bay, on Melville Peninsula, on Bylot Island and Navy Board Inlet on the north coast of Baffin Island, on King William Island, Devon Island, and Ellesmere Island, as well as in north Greenland. For the most part there are only scattered finds from these places, and little is known regarding the sites themselves. In 1936 Holtved excavated a pure Dorset site on Inglefield Land, North Greenland (Holtved, 1938); and the site at Iglulik, excavated in 1937 by Lieutenant Rowley, is reported to have been pure Dorset (Jenness, 1940).

In most of the above-mentioned localities Thule material has also been found, indicating that two very different prehistoric cultures had occupied the same parts of the eastern Arctic. In 1929, however, Wintemberg extended the range of the Dorset culture considerably when he discovered several pure sites on the northwest coast of Newfoundland and on the opposite coast of Labrador, where Thule remains were entirely absent (Jenness, 1933, p. 390; Wintemberg, 1939).

Mathiassen, who collected Dorset material from Button Point on Bylot Island and Kuk on Southampton Island, at first regarded the Dorset as only a late and specialized phase of the Thule culture (Mathiassen, 1927, I, pp. 206-212, 258-260; II, pp. 164-165). However, Jenness has pointed out that the striking differences between the Dorset and Thule implements and the absence in the Dorset of

so many elements typical of both Thule and recent Eskimo culture showed that they could hardly have been related in this way. These pronounced typological differences, together with Wintemberg's discovery of Dorset remains in isolation in Newfoundland and Labrador, showed clearly that the Thule and Dorset were separate cultures (Jenness, 1933, pp. 390-391, 394) :

It is very difficult to believe that both the Thule culture itself, and a peculiar twelfth- to fifteenth-century phase of it, could overlap each other in so many parts of the eastern Arctic and preserve their separate characteristics alongside of one another; that this peculiar phase, practically unchanged, could extend from northern Greenland and Ellesmere Island to Newfoundland within one or two centuries. Every difficulty disappears, however, if we regard the Dorset as an independent culture, contemporaneous in some places with the Thule, in others preceding and probably extinguished by it. . . . If [the Dorset were] merely a late phase of the Thule, we must believe that the Thule people deliberately abandoned whaling and all its associations, that they gave up the use of the bow-drill, changed the forms of their stone arrowheads and knives, devised new types of harpoon-heads that were inferior to their old ones and more difficult to manufacture, and replaced their rather delicate geometric art by crude engravings of quite different patterns. Furthermore, we must believe that these and other changes occurred within the space of two or three centuries. It seems incredible.

As previously stated, the Thule culture has played an important role in Greenland. The investigations of Mathiasen and his colleagues Larsen and Holtved have given a detailed and comprehensive picture of the gradual development of culture from the Thule stage down to modern times. There are indications, however, that the Dorset culture, which existed in pure form at least in north Greenland (Holtved, 1938), has also had a part in the formation of Greenland culture.

From Disko Bay, West Greenland, Solberg some years ago described an assemblage of stone implements which he regarded as evidence of an early "Stone Age" (Solberg, 1907). The specimens described were from museum collections and had not been systematically excavated, so that in the light of present knowledge of Greenland archeology they cannot be regarded as representing a distinct culture. Nevertheless, there is a striking resemblance between these stone implements and those of the Old Bering Sea and Dorset cultures; and the fact that the most characteristic forms are not present at pure Thule sites suggests that the "Stone Age" complex may represent a mixture of Dorset types—or special Greenland variants of these and Thule type (Collins, 1934a; 1937b, pp. 335-336). It should also be mentioned that "Stone Age" types occur

at Ammassalik, East Greenland, in both the early and later prehistoric horizons (Mathiassen, 1933).

Another point of interest is that nangissat, or "jumping-stones," long rows of evenly spaced stones set in the ground, which until recently were known only from Greenland (Disko Bay, Ammassalik, Julianehaab District) have now been discovered at a Dorset site in Newfoundland (Wintemberg, 1939, p. 86), at several places on St. Lawrence Island (Collins, 1937b, pp. 26, 354-356), and in the Caribou Eskimo territory west of Hudson Bay (Jenness, 1940). It seems possible, therefore, that these "jumping-stones" may originally have been connected with both the Dorset and Old Bering Sea cultures.

Mathiassen's recent excavations at three old sites in Disko Bay have revealed evidence of six culture periods, the oldest of which is assigned to the tenth to twelfth centuries (Mathiassen, 1934). However, there are a great many other old sites in Disko Bay (Mathiassen gives the location of over 60 in all), so that it would seem quite possible that some of those not yet investigated might turn out to be sites of pure or modified Dorset culture.

Holtved's discovery of typical Dorset culture in north Greenland lends significance to these scattered indications to the south, and leads one to suspect that the Dorset may have preceded the Thule culture in Greenland, as it did in the Hudson Bay region.

The origin of the Dorset culture is considerably more uncertain than that of the Thule. In the case of the latter we have a typical Eskimo culture which had moved from its Alaskan home and established itself in the Central regions. The Dorset, on the other hand, is deep-rooted in the east and, unlike the Thule, cannot be explained without reference to adjacent Indian cultures.

The Beothuk of Newfoundland used a harpoon head very similar to the curious Dorset type. Moreover, the soapstone pots and plummets, semilunar slate knives and various kinds of chipped stone knives and arrowpoints used by the Dorset people are types that are likewise characteristic of prehistoric Indian culture of the northeast. In pointing out these resemblances Jenness (1933, p. 395) remarks:

These parallels strongly suggest early contacts between the Dorset Eskimo and their Indian neighbors, contacts that must have extended over many centuries and probably antedated the arrival of the Thule culture in the eastern Arctic. It was from the Indian tribes, apparently, that the Dorset people derived the shapes of their knives and arrowheads, while they themselves contributed to the Indians bone harpoon-heads, semi-lunar knives, and soapstone pots.

Because of its Indian affinities and its striking dissimilarity to the Thule culture, both Mathiassen and the writer have suggested that the Dorset culture may have been of Indian origin (Mathiassen, 1936, p. 130; Collins, 1937b, p. 373). Considering all the evidence, however, I believe that this explanation is improbable. The Indian-like features of the Dorset culture might very readily have resulted from early contacts so that there would be no necessity of deriving the culture itself from an Indian source. As Jenness has pointed out, the Dorset culture possesses a number of elements that, though distinctive in appearance, are basically Eskimo. It is difficult to see how these can be regarded as secondary acquisitions, for the Thule is the only prehistoric Eskimo source from which they could have been derived and yet the types in question are non-Thule (Jenness, 1940).

In one important respect the Dorset has left its imprint on modern Central Eskimo culture. The dominant harpoon head of this area—the flat heavy type with bifurcated base and both openings of the line hole on the same side—is clearly derived from one of the Dorset types. Some of the complicated Greenland forms have apparently arisen from a blending of this type with the barbed Thule type 2.

In stone technique the Dorset resembles the earliest known Alaskan cultures: like the Old Bering Sea, prehistoric Aleutian, Kodiak, and Cook Inlet cultures, it abounds in implements of chipped stone, numerous types of which were not utilized by the later Eskimos. On the other hand, the later stages of Eskimo culture, beginning with the Punuk and Thule, made more extensive use of rubbed-slate implements. One unique type of slate implement, with rubbed flattened edges (pl. 11, *B*, 4, 5), which in Alaska is restricted to the Old Bering Sea, recurs in the Dorset culture of Newfoundland, and implements closely resembling it are found in Disko Bay, Greenland, where they accompany numerous other Old Bering Sea-Dorset types in chipped stone.

Dorset art with its straight lines, long oblique spurs, and short detached lines is somewhat suggestive of Old Bering Sea style 1. Its practice of carving small human faces on the sides of objects also has a parallel in the Aleutian Islands, where prehistoric bone dart heads are similarly decorated.

The Dorset culture thus presents a few but apparently significant points of resemblance to Old Bering Sea and other early Alaskan cultures. However, it cannot have been derived from the Old Bering Sea culture as we now know it, for the latter possesses many features completely lacking in the Dorset. We may conclude with Jenness

(1940) that the Dorset "has stemmed from the same parent trunk as the ancient cultures of western Alaska," and that it left Alaska before the Old Bering Sea culture had reached its full development around Bering Strait.

ALEUTIAN ISLANDS, SOUTH ALASKA, AND THE NORTHWEST COAST

We may now return to Alaska and examine the prehistoric cultures south of Bering Strait. Unfortunately, nothing is known of the archeology of the extensive stretch of coast between Norton Sound and Bristol Bay, an area of strategic importance because it lies between two centers of intensive but dissimilar cultural development—Bering Strait and the Aleutian Islands.

Excavations have been made by Weyer at an old site at Port Møller, on the north coast of the Alaska Peninsula. The midden, composed almost entirely of shells, was 11 feet deep, and the material recovered was very similar to that from the Aleutian Islands (Weyer, 1930).

Dall's famous paper "On Succession in the Shell-Heaps of the Aleutian Islands," aroused wide interest because of the spectacular claim of cultural stratification advanced (Dall, 1877). Three periods of occupation were postulated: First, a littoral period, dating back some 3,000 years, when the people subsisted entirely on shellfish, principally sea urchins, when they had no houses, no clothing, no manufactured implements, weapons, or ornaments of any kind, and did not even know the use of fire; second, a fishing period, when newcomers from the mainland appeared with crude stone and bone implements but remained ignorant of fire; and, third, a hunting period, marked by a general cultural advance and by the hunting of sea mammals. Although Boas and a few others had expressed skepticism, this supposed chronology was generally taken at face value, until it was completely refuted by Jochelson's investigations in 1909.

Jochelson (1925, p. 110) was able to prove conclusively that "the Aleut came to the islands with a comparatively high primitive culture, not far removed from that found by the Russian invaders." As to cultural modifications that might have occurred, Jochelson (*ibid.*, p. 110) remarks: "Of course during the period of occupation changes in the native material life did occur, partly as the result of adaptation to changes in the environment, partly as a matter of culture progress, but these changes were trivial." It is a question, however, whether Jochelson has not underestimated the extent of cultural change on the Aleutian Islands. At any rate the cultural stability which he pictures

is not in harmony with the discoveries of Hrdlička on Kodiak Island and of de Laguna on Cook Inlet.

The great number of old kitchen middens throughout the Aleutian chain, some of them over 20 feet deep, proves that this area was as densely populated in prehistoric times as it was when the Russians arrived in the eighteenth century. It should be noted that the middens in this part of Alaska are entirely different from those left by the Eskimo proper, being composed largely of shells, only negligible quantities of which are present in the northern Eskimo middens. But, admitting that access to unlimited quantities of shellfish would favor the more rapid accumulation of refuse, nevertheless the deposits are so extensive that a large population is certainly indicated. It was probably not less than the 15,000 or 16,000 estimated for the period of first Russian contact. Considering its limited area, the Aleutian region was one of the most densely populated centers of North America, having 64.70 inhabitants per 100 km. (see Kroeber, 1939, p. 135).

The cultural material from the Aleutian middens is of a generalized Eskimo character as indicated by the presence of such types as chipped-stone and rubbed-slate implements, stone flakers, planing adzes, whetstones, drill points, harpoon heads, foreshafts, socket-pieces, barbed dart points, awls, needles, needle cases, spoons, shovels, wedges, float mouthpieces, side prongs for bird darts or fish spears, labrets, pendants. In only a few instances, however, are there specific resemblances to the northern Eskimo types, the Aleutian forms being very distinctive in appearance. Moreover, the Aleutian culture includes elements which are foreign to northern Alaska, such as stone lamps, notched and grooved stones in large numbers, beds on dart heads for the blade, elaborate barbed points, dart heads with wide flattened tangs, and curved compound fishhooks. On the whole there is a sharper contrast between Aleutian culture and that of Bering Strait than between Bering Strait and Greenland. In short, Aleutian culture, like the language and physical type, must be described as divergent Eskimo.

An important point to be determined is whether the older stages of Aleutian culture were more Eskimoid than the later. As Jochelson's materials are not described separately by sites or by strata, they are inconclusive in this respect. However, de Laguna found that the oldest culture stage at Cook Inlet was the most Eskimo-like, and it would be somewhat surprising if this were not also true of the Aleutian Islands. Hrdlička's later investigations on the Aleutian Islands, as

yet unpublished in detail, may throw light on this question. They have already shown that the physical type in prehistoric times differed from that of today. As on Kodiak Island, the skulls from the lower levels of the middens are longer and higher, and therefore more Eskimoid, than those of the modern Aleuts, which are extremely low and broad (Hrdlička, 1937).

Hrdlička's excavations on Kodiak Island have shown that this was a population and culture center on a par with the Aleutian Islands. In addition to the difference in physical type just referred to, Hrdlička (1935, p. 50) found evidence of cultural change:

There were two distinct peoples here, the older, to whom are attributable about three-fourths of the deposits, and the later, of the same stock as found on the island by the Russians. . . . [The later people] differ culturally as well as physically from the earlier people, whom they completely displaced.

The culture of the oldest occupants of the site was in the main superior to that of the same people of later time, and differed from this in several marked respects. It shows a superior art in lamp sculpture; a lesser variety of points and of objects of bone; absence or great scarcity of ivory; prevalence of chipped, with rarity of polished, large points and knives; absence of chisels and axes; frequency of "bird stones"; presence of characteristic small harpoons. . . .

As time goes on, from the old to the intermediate, the physical characteristics of the people remain the same, but their habits and culture change. The old lamp art fades away gradually; chipped stone implements are more and more replaced by the polished variety; the stone ax and adze appear, though still rarely; a new form of barbed point—a long slender cylindrical shaft with one, two or even three rows of small barbs—appears, as do poinards and other bone tools; ivory objects, handsomely carved, up to ivory portraits, occur now and then, and so do various decorative and fetishistic articles. . . .

De Laguna's investigations at Kachemak Bay in Cook Inlet have provided information on prehistoric culture sequence which is especially valuable because this region, at present occupied by Athapaskan Indians, lies near the southern periphery of Eskimo territory. The earliest phase of Kachemak Bay culture is more Eskimoid than the later phases and included such types as grooved stones, adz blades, hammerstones, whetstones, round or oval stone lamps, chipped-stone and polished-slate blades, bone drills, harpoon heads, foreshafts and socket-pieces, dart heads, barbed points, fishhooks, awls, needles, stone flakers, wedges, pendants, labrets.

In summarizing the development of Kachemak Bay culture de Laguna (1934, pp. 129, 130, 131) states:

The stone industry of the earlier times is characterized by the greater relative importance of chipping, including even the chipping of slate. . . . Later, polished slate grows in importance, and is applied to new types, while chipped stone becomes relatively less common. . . . Notched stones suddenly appear

in great numbers in the Second Period. . . . Stone types characteristic of the later stages are the slate awl, the slate mirror, and the decorated stone lamp.

In the bone industry, we must note the importance of the Thule Type 1 harpoon head in the First Period. . . . In succeeding periods this very primitive harpoon head yields place to more developed types, and becomes less important than the barbed dart head . . . the labret is found even in the earliest period. . . .

In many respects, the culture of the last two periods . . . was richer than that of the first. . . . The culture of the Third Period shows a development away from the more typical "Eskimo" pattern towards a more specialized, local complex: This seems to be in part due to the accretion of cultural elements peculiar to the North Pacific regions.

In spite of the generalized Eskimo character of the early culture at Cook Inlet we find no diagnostic Old Bering Sea or Punuk types that might indicate direct contacts in prehistoric times between Bering Strait and south Alaska. On the other hand there is a close relationship between Punuk art and that of the modern Eskimos of the Yukon-Bristol Bay area, and Punuk motives (nucleated circles, straight lines, spurred lines, and dots) also occur sporadically in the Aleutians and at Cook Inlet. At Cook Inlet these Punuk motives occur in the Third Period of the Kachemak Bay culture. Though there is nothing in the south Alaskan art to suggest Old Bering Sea composition, some of the simpler elements of style 1 do occur: Pairs of long, lightly incised parallel lines; pairs of short transverse lines; and spurred lines. Also, in E. W. Nelson's Eskimo collection in the United States National Museum there is a deeply patinated object of unknown use found at an old site near the mouth of the Kuskokwim River, which bears a typical Old Bering Sea style 1 decoration. It would not be surprising therefore if future discoveries should reveal definite Old Bering Sea influences in this part of Alaska.

These suggestions of Old Bering Sea art, slight though they be, together with the previously mentioned Dorset resemblances, suggest that the Eskimo basis of south Alaskan culture is an ancient one, as old as, or older than, the stage of culture represented by Old Bering Sea style 1 art at Bering Strait. We know nothing of the archeology of the Eskimo territory immediately north of the Aleutians—from Bristol Bay to the Yukon—an unfortunate circumstance because undoubtedly a reciprocal relationship existed between this area and south Alaska. But whatever influences may have been received from this intervening area, there were apparently no direct contacts of any importance with Bering Strait after the culture had become established. The absence of movements and contacts comparable to those that produced such a uniformity of culture from north Alaska to

Greenland permitted the growth of a specialized form of culture in south Alaska, one which developed more or less in isolation and which later was subjected to strong influences from the Northwest Coast. The archeological evidence from Cook Inlet, Kodiak Island, and the Aleutians affords no support to Birket-Smith's theory that the Aleuts and Pacific Eskimos were originally a broad-headed, non-Eskimo people who later became Eskimoized culturally and physically.

The increasing Indian influence in the later stages of culture at Cook Inlet is indicated by the following typical Pacific Coast features which, according to de Laguna, appear after the First Period at Kachemak Bay: Dismembered burials; burial on top of refuge island, trophy heads, utilized human bones, the splitting adze, pestles, copper bracelets and beads, stone clubs, stone saws, elaborate stone lamps of special form, slate and shale mirrors, nose pins.

The prominence of such features as these in the later culture and their absence in the more "Eskimoid" culture of the earlier period lends weight to other indications that in earlier times, before Northwest Indian culture had reached its apex, Eskimo influence had been stronger on the Northwest Coast. Kroeber, speaking of the mutual relations of the modern Eskimo of Prince William Sound and the Tlingit, notes that the former have taken over more of Tlingit culture than the latter have of Eskimo. He then calls attention to the possibility that "at an earlier period, when the Northwest culture was as yet less developed, the Eskimo influence was the more potent, but that the elements derived from it have long since been worked over so as to seem native Northwestern" (Kroeber, 1939, p. 29). De Laguna (1934, p. 218) concurs in this: "A close connection between British Columbia and southwestern Alaska must have existed at a period prior to the development of the modern Northwest Coast culture, and probably before the Tlingit occupied their present territory."

The writer has pointed out that the presence of Eskimo-like geometric ornamentation at prehistoric sites in British Columbia and Washington, together with the absence of typical Northwest Coast art at old sites in Prince William Sound and British Columbia suggests a greater antiquity for the geometric style. This bears out Boas' view that the latter style in southern British Columbia represents the survival of an older art; whereas in Northwest Coast art proper a later and vigorous internal growth has placed more and more emphasis on elaborate animal motives (Collins, 1937b, pp. 291-292).

There are other features, such as whaling, urine tanning, floats for harpoons, and stone graves, in which the southern tribes on the Northwest Coast, especially the Nootka, resemble the Eskimo (Birket-

Smith, 1929, II, p. 232; Birket-Smith and de Laguna, 1938, pp. 528-529). In this connection might also be mentioned the Nootka's use of the multipronged bird dart, their practice of burying fish in the ground to rot, and burning whale oil in shell lamps. Lantis' recent analysis of the whaling ritual among the Eskimos and the whale-hunting tribes of the Northwest Coast—the Nootka, Makah, Quinault, and Quilleute—has shown how remarkably close are the ceremonial observances of this nature in these widely separated regions (Lantis, 1938).

Hrdlička's investigations on Kodiak and the Aleutian Islands have now demonstrated a physical relationship with southern British Columbia and Washington. As stated before, the prehistoric inhabitants of Kodiak and the Aleutians differed from the modern Aleut in having longer and higher heads. Smith's excavations in southern British Columbia revealed that a long-headed population preceded the modern broad heads. According to Hrdlička (1936) this long-headed southern type closely resembles that from the lower levels of the Kodiak and Aleutian middens.

The physical evidence thus affords a striking parallel to that provided by culture and lends support to the view that the Eskimo represent an earlier stratum than the Tlingit, Haida or Tsimshian: specific Eskimo traits being absent (probably having disappeared) in the northern part of the Northwest Coast but retained at the southern periphery, in a prehistoric as well as modern setting; whereas Tlingit influence on adjacent Eskimo culture appears to have been exerted only recently, being absent in Kachemak Bay 1. The results of the recent archeological investigations, therefore, may be said to sustain the generally accepted view, first expressed by Boas, that whereas the highest recent development of Northwest culture has taken place among the Tlingit, Haida, and Tsimshian, the earlier center of the culture lay in the Columbia-Frasier region.

As Kroeber has shown, Northwest Coast culture occupies a unique position in America. An intensive local development has been fostered by a rich environment and by "the unusual degree to which its material, native and imported, has been worked over into its own patterns" (Kroeber, 1939, p. 28). Though little affected by Middle America, it has been subjected to unusually strong Asiatic influences.

According to Kroeber (1923, pp. 7-8):

. . . essentially Northwest Coast culture shares with American culture only basic universal elements presumably derived from Asia; . . . it lacks regularly the generic American elements that were developed on American soil and be-

came diffused; and . . . what is specific in it is either a direct outgrowth on the spot from the relatively undifferentiated primitive American culture or the result of later Old World influences.

Although the question of the origin of Northwest Coast culture need not concern us, it may be worth while to consider briefly the nature of the Asiatic resemblances and the manner in which they may have been brought about, since these are questions having a direct bearing on cultural conditions in the Eskimo area, particularly in South Alaska.

With regard to specific traits common to the Northwest Coast and Asia, Kroeber recognizes that a distinction should be made between those limited to northeastern Siberia, which might very readily have been introduced from America, and those of wide distribution in Asia. Slat or rod armor, hats, and the spindle Kroeber places in the latter category, as presumably derived from Asia; and certain general tendencies, such as wealth emphasis, are thought to have had a similar origin. Cedar-bark beaters, the pear-shaped maul, and edged clubs, though present in the Old World, he regards as probable examples of convergence.

Olson (1934) believes that these and other elements were imported from Asia. Jenness (1940) similarly explains slat armor, woven hats, curved fish knives, grave monuments, and possibly musical style. It should be noted that most of the traits mentioned by Olson and Jenness are much more characteristic of southeastern Asia or Oceania than of northeastern Asia: Carved house posts and grave monuments, grass raincoats and skirts, wooden pillows, bark beaters, edged clubs, special forms of pestles, the musical style. The wide distribution of these elements in eastern Asia south of the Amur and in Oceania, and their restricted range in America, suggest an Old World origin, and since they are absent in the Aleutian Islands and around Bering Strait, the possibility should be recognized that they may have been brought to America directly across the Pacific in relatively recent times. The ceremonial use of wood shavings, grass, and shredded bark, to which Boas (1933) has called attention, should probably also be assigned to this group; as Sternberg (1929, pp. 355-356) has pointed out, this is one of a considerable number of features which the Ainu share with Indonesia.

We may distinguish, however, between Northwest Coast-Asiatic resemblances of this nature and those of another kind—elements of much wider distribution in America, which usually occur in the Aleutians, and which in Asia tend to cluster around the Amur region and Kamchatka and occasionally extend to the Chukchee Peninsula.

De Laguna's analysis of the Kachemak Bay culture of Cook Inlet revealed unmistakable evidence of relationship between the prehistoric culture of South Alaska and that of Kamchatka and Japan (de Laguna, 1934, pp. 116-117). In addition to similarities in numerous widespread varieties of stone implements, dart points, etc., these areas have in common such specific elements as: House with roof entrance, refuge island, notched and grooved stones, stone with hole, grinding stone and slab, oval stone lamp, lamp with ring, labret, toggle harpoon head with closed socket and line hole in plane of the spur, broken and cut human bones. Practically all of these elements occur also on the Aleutian Islands, the only exceptions being the harpoon heads with line hole in plane of the spur and broken and cut human bones.

As the Asiatic-South Alaskan correspondences which de Laguna mentions are too exact to be explained as environmentally determined or fortuitous, and since (with the exception of the labret), they do not occur around Bering Strait, it would seem that they must have been transmitted across the Aleutian chain. Is it possible, then, to determine the direction of the movement? For some of the traits mentioned the evidence is inconclusive; they might have originated either in America or Asia. There are others, however, such as the stone lamp and the labret, which strongly suggest that the Old World has been the recipient rather than the source (Collins, 1937b, pp. 376-377). Labrets, widespread in western North America, including the Aleutian Islands, and present in the oldest culture stage at Cook Inlet, are unknown to modern Asiatic peoples; but one was excavated by Jochelson (1928, p. 43) at an old site in Kamchatka and another by Baba (1934, pl. 1, fig. 12) in the Kuriles. The distribution of the stone lamp in these regions is very similar. Stone lamps are present in great numbers and in a wide variety of forms at Cook Inlet, on Kodiak Island, and the Aleutians; in Kamchatka and the Kuriles they are less numerous and more standardized in appearance, corresponding very closely in size, shape and rim form to some of the South Alaskan, especially Aleutian, types. It seems difficult to avoid the conclusion that labrets and a certain type of stone lamp were American elements that crossed the Aleutian chain and succeeded in gaining a foothold on the adjacent Asiatic littoral. The circumstances in connection with pottery also seem significant. Pottery is abundant at all of the Kamchatkan and Kurilian sites, being part of a widespread Old World Neolithic complex. On the Aleutians, however, despite the presence of suitable clay, pottery is completely absent, a condition one would hardly expect if there had been a strong culture drift from these regions into the islands and thence to the Alaskan mainland.

The writer has previously suggested that the roof entrance, which was characteristic of Aleutian, Kamchadal, and Koryak houses, was also of American origin; for although it had a wide and sporadic distribution in North America, it was restricted in Asia to the two tribes mentioned (Collins, 1937b, pp. 275, 277, 280). Since then, however, Zolotarev (1938) has cited additional Russian sources showing that the roof entrance was more common in Siberia than had been supposed, having apparently been known to the Samoyed as well as several of the Amur tribes. The American origin of this trait therefore appears somewhat doubtful.

In their recent monograph "The Eyak Indians of the Copper River Delta, Alaska," Birket-Smith and de Laguna have shown that a considerable number of Eyak traits have a circum-Pacific distribution. While recognizing that it is difficult to decide whether particular elements originated in Asia or America, the authors feel that "There can hardly be any doubt that the general direction of this drift has been from Asia, more particularly perhaps from the Lower Amur region, towards North America" (Birket-Smith and de Laguna, 1938, p. 520). However, many of these traits have the appearance of being deep-rooted in America, more so perhaps than in Asia. Examined on the basis of distribution, only one of the elements mentioned—vegetable arrow poison—seems unmistakably Asiatic in origin; for, as Heizer (1938) has pointed out, the use of aconite arrow poison in Asia extends from the Himalayas to Kamchatka but in America is restricted to Kodiak and the Aleutian Islands.

Applying the same criterion of distribution several other Eyak elements seem more genuinely American than Asiatic: Stone pecking, the stone mortar, twined basketry, wooden quiver, stone boiling, raven myths. In these instances there is a wide distribution in western North America, usually from the Bering Sea through the Northwest Coast, into, or even beyond, the Plateau, whereas in Asia the same elements (except the wooden quiver) are most pronounced among the Kamchadal, with extensions to the Koryak, Chukchee, and other Paleo-Asiatics.

The evidence seems inconclusive as to the origin of the majority of circum-Pacific Eyak elements analyzed by Birket-Smith and de Laguna, but here again in most cases the distribution in America equals or exceeds that in Asia: Separate sleeping room, notched ladder for entrance, raised cache house, shirts made of horizontal strips of small animals' fur, man's apron, boat-shaped wooden vessels, round wooden plates, grass mats, sounding board, slavery, transvestism, bride service.

I am fully aware of the dangers involved in an indiscriminate use of distribution data as an indication of age or point of origin; the inadequacy of such an approach is nowhere more apparent than in the northern Eskimo territory where, as we have seen, many elements of demonstrable antiquity are restricted in their range, whereas younger elements by means of recent movements have been distributed far and wide. In the cases we have just been considering, however, the distribution seems significant, indicating that the cultural features common to America and Asia are of diverse origin, some having entered and others left America by different routes. The elements constituting one group—bark beaters, grass raincoats, etc.—have a southeastern Asiatic provenience, are lacking in the Aleutians and at Bering Strait, and therefore may have been introduced into the Northwest Coast directly across the Pacific. A further number of Asiatic elements to which we will refer in a moment—coiled basketry, the toboggan, bear ceremonialism, etc.—are shared by the Eskimo and interior Indian tribes but are generally absent on the Northwest Coast, and presumably entered America at Bering Strait. On the other hand, as far as the Aleutian Islands are concerned there is reason to believe that as many cultural influences have left America as have entered by that route. Aconite poisoning seems clearly Asiatic in origin, and there are doubtless others. But when we find widespread American elements present on the Aleutians and concentrated in Asia along the coastal regions nearest those islands it seems a reasonable inference that there has also been a culture drift from east to west. Most of the cultural manifestations in question are presumably of no very great antiquity and were therefore transmitted through peoples still occupying these regions. This being the case, there would seem to have been more opportunity for Aleuts—expert navigators, whose scattered settlements already extended for more than a thousand miles over a chain of widely separated islands—to have reached the broad shores of Kamchatka than for the Kamchadal, who are known to have been very poor seamen, or the Kurilian Ainu, to have made a fortunate landfall on the small and remote islands in the Aleutian chain.

One of the reasons for assuming that the cultural features common to the Northwest Coast, South Alaska, and Asia had been carried along the Aleutian route was that such features were either absent at Bering Strait, or if present, were not characteristically Eskimo and therefore were probably recent acquisitions there. On the other hand a number of Asiatic-American elements that do occur around Bering Strait are lacking on the Northwest Coast. This is apparent when we observe that most of the traits which Kroeber (1923) mentions as

common to Asia and areas surrounding the Northwest Coast but lacking in the latter region proper (coiled basketry, tailored clothing, boots, toboggan, skin boat, skin tent on pole framework, Alaska pottery) are more characteristic of the Bering Strait region than of the north Pacific, even though some of them do occur on the Aleutians.

It appears, therefore, that there are strong indications of cultural contacts between the Northwest Coast, South Alaska, and eastern Asia via the Aleutian Islands, but no evidence that direct Northwest Coast-Asiatic connections were ever established by way of Bering Strait. The findings of the Jesup Expedition pointed to the same conclusion, although a different explanation was advanced because of the particular manner in which the Eskimo were regarded. The relationship between the Northwest Coast Indians and the Paleo-Asiatic tribes of Siberia postulated by Boas, Bogoras, and Jochelson was based primarily on close similarities in folklore. Although the Chukchee were included in this relationship, their mythology, like their culture in general, had been strongly influenced by the Eskimo. The mythology of the Koryak and Kamchadal was much closer to that of the Indians, even though their territory lay far to the south of Bering Strait, the supposed point of connection (Boas, 1905, pp. 97-99):

An analysis of the religious ideas and of the folk-lore of these tribes gives us the unexpected result that among the Chukchee we have not only a great number of Eskimo stories, but also a considerable number of Raven myths, which show a striking analogy to Raven traditions of the Indians of the North Pacific coast. Among the Koryak and Kamchadal the Eskimo elements become much fewer in number, while the relative proportion of Raven myths which show similarity to Raven tales of America is much larger. . . .

This clew once given, we investigated the cultural similarities in this whole area, and found ample evidence that there must have been, at an early period, an intimate relationship between the Indian tribes of the Pacific coast and the peoples of eastern Siberia. The peculiar fact that this relationship comes out much more clearly some distance to the west of Bering Strait, particularly among the Koryak, proves that the similar traits of culture cannot have been transmitted indirectly through the Eskimo.

. . . . We must infer from these facts that the Eskimo are new arrivals on the Pacific side of America, that their original home was somewhere near, or east of the Mackenzie River, and that they interrupted, at an early period, the communication between the Siberian and Indian tribes. . . .

Now that archeological evidence is available a different interpretation seems necessary. The Eskimo are not recent arrivals in Alaska but have been there many centuries. Therefore, if a direct connection existed between Northwest Indians and Paleo-Asiatics before the Eskimos arrived at Bering Strait, it must have been very ancient indeed. This, however, is highly improbable for several reasons. First,

archeology has revealed no trace of the pre-Eskimo population at Bering Strait that such a theory demands, and the oldest Eskimo culture found there, instead of being closer to the Northwest Coast pattern, is actually farther removed from it than is modern Eskimo culture. This is in agreement with the situation on the Northwest Coast itself, for as we have seen, there is reason to believe that the culture there has attained its present high development relatively recently, whereas in earlier times stronger Eskimo influences seem to have been felt in the region. Moreover, the mythological resemblances between the Northwest Coast and eastern Siberia are much closer than they probably would have been after a separation of 2,000 years, the minimum period we must allow for the Eskimo occupancy of Bering Strait.

These difficulties are the outgrowth of several assumptions, namely: That the Eskimo are recent arrivals in Alaska; that the Northwest Coast-Siberian cultural connections are ancient; and that they were established by way of Bering Strait. If we recognize the antiquity of the Eskimo at Bering Strait and consider the possibility of trans-Aleutian contacts, the problem appears in truer perspective. It then seems reasonable to conclude that the close similarities in mythology, as in other aspects of culture, between Kamchadal-Koryak and the Northwest Coast are the result of relatively recent culture drifts, principally from east to west, across the Aleutian Islands.

CONCLUSION

The archeological discoveries in the north, instead of providing immediate evidence of the origin of Eskimo culture, have shown that it will be necessary to extend our search still farther into the past if that origin is to be revealed. In the Bering Strait region excavations have shown a long series of cultural changes, which, however, have been more in the direction of simplification than of progressive development; the Old Bering Sea culture is in many respects more advanced than that of the present-day Alaskan Eskimo. In south Alaska the situation seems to be somewhat different. De Laguna finds the oldest culture stage at Kachemak Bay to be of a simple, generalized Eskimo character in contrast to the later stages, which are more elaborate, principally because of increasing Northwest Coast influence. If the oldest Eskimo culture in south Alaska was not affected by Northwest Coast culture, we would expect the same to have been true of the Bering Strait region. The archeological discoveries bear out this expectation. We see that the high development of culture around

Bering Strait in prehistoric times was in no way the result of stimulus from the Northwest Coast. The influences from this region that are so prominent in modern Alaskan Eskimo culture appear to have been exerted only in relatively recent times. The Old Bering Sea culture shows no signs of such Indian influence. Despite its antiquity, it is already a highly developed, highly specialized Eskimo culture, basic to, and similar in its general configuration to, that still existing in Alaska. We may conclude, therefore, that the typical Alaskan Eskimo culture, divested of a considerable number of recent accretions, possesses historic depth; that instead of being an atypical, peripheral, and recent phase as compared with Central Eskimo culture, it may with more reason be regarded as the older, ancestral form.

Considering that Bering Strait and the adjacent parts of Bering Sea and the Arctic must always have been one of the finest hunting territories in the north and that the shores bordering these waters were provided with a plentiful supply of driftwood and were in every way suitable for human habitation, it is only natural that it should have been an early and important center of population. Archeology has shown this to be true. The densest Eskimo population in prehistoric, as in historic, times, was in the Bering Strait region, Kodiak, and the Aleutian Islands. An abundant food supply permitted a concentration of population, which in turn led to an intensification and elaboration of culture in these regions. The archeological evidence permits acceptance of the natural conclusion that Alaska has been the center of origin, as well as the center of highest development, of Eskimo culture.

The linguistic evidence points to a similar conclusion. The northern Eskimo dialects are all closely related whereas there is marked linguistic diversity south of Bering Strait. Jenness' comparative study of Alaskan and Siberian Eskimo dialects showed that "the dialects of the Siberian coast and of the Yukon and Kuskokwim delta diverged more widely from those spoken north of Norton Sound than the latter from the dialects of far-distant Greenland and Labrador." (Jenness, 1928b, p. 174.)

Sapir (1916, pp. 82-83) also emphasizes the importance of the linguistic differentiation in west and south Alaska:

Had the historical significance of linguistic differentiation been more generally appreciated, I doubt if the theory . . . of the distribution of Eskimo tribes from the west coast of Hudson bay as a centre would have received quite such ready acceptance. I do not wish expressly to oppose this theory, but merely to point out that it does not well agree with the linguistic evidence. The Eskimo linguistic stock is sharply divided into two dialectic groups, Eskimo proper and

Aleut. Inasmuch as Aleut is confined to Alaska and as a considerable number of distinct Eskimo dialects are spoken in Alaska besides, it seems very probable to me that the earliest at present ascertainable centre of dispersion of the tribes of Eskimo stock lies in Alaska.

The same opinion is expressed by other authorities on the Eskimo language—Thalbitzer, Bogoras, Jenness—not only on account of the linguistic diversity in Alaska but also because the dialects there and in Siberia are more archaic than those spoken in the Central area and Greenland.

It has been suggested above that one of the factors responsible for the high development of culture around Bering Strait was the abundance of walrus, which were more valuable than any other animal as a source of food, oil, skins for lines and boat covers, and ivory for carving. If the possession of ivory was one of the reasons for the high development of art at Bering Strait this would be consistent with the view, which is also preferable on other grounds, that the later and more elaborate forms of Old Bering Sea composition (styles 2 and 3) were of local origin. The particular combination of elements employed (straight and curving lines, dotted lines, spurs, small circles set between converging lines, and larger circles and ellipses) is found in no other art style, and the patterns formed are also unique. The oldest phase of Old Bering Sea art (style 1) lacks the elaborate curvilinear designs of the more developed art. Style 1 is essentially a linear ornamentation; the principal motives are short detached lines and various forms of rather crudely executed spurred lines, which in their somewhat haphazard arrangement seem very different from, though unquestionably related to, styles 2 and 3, as well as to the formal and stylized line and spur designs of modern Eskimo art.

In her comparison of Paleolithic and Eskimo geometric art, de Laguna (1932-1933) makes an acute observation in pointing out that the rigidity and conservatism of modern Eskimo art is an indication of extreme age; that this condition was the end result of many centuries of slow, stiffening growth, and that for this reason it is difficult to compare modern Eskimo art with the more fluid Paleolithic style, which, because of its lack of precision and restraint and its tendency toward experimentation, must be regarded as a young art. Though emphasizing the differences between Eskimo and Paleolithic art, which are chiefly "those which we should expect to find between an old and a young art," de Laguna recognizes the possibility of a remote connection. The archeological finds seem now to have provided confirmation of this interpretation. They have given us a glimpse of

Eskimo art in the process of formation, before the modern designs had become fixed and crystallized; and if the comparison be restricted to this early Eskimo art it is possible to make a somewhat better case for a relationship with Paleolithic design. The rather "scratchy" ornamentation of Old Bering Sea style 1 (and of Dorset art) resembles in a general way the equally variable line and spur designs of the Paleolithic and Mesolithic. The distinction between the Paleolithic-Mesolithic designs of this kind and those characteristic of Neolithic and later horizons in Europe is much the same as that which exists between Old Bering Sea style 1 and Punuk and modern Eskimo art: in both cases the older style is more generalized and variable, whereas the later style has become fixed and formalized. Whatever the explanation may be, it can be said that in the two oldest known phases of Eskimo art (Old Bering Sea style 1 and Dorset) the modern, conventionalized line and spur designs do not occur; that the latter were preceded by related designs of a more generalized and variable nature; and that this earlier ornamentation seems to show closer stylistic affinities with Paleolithic and Mesolithic art than with later styles in either America or Eurasia.

In a sense, this may be taken to epitomize the history of the Old Bering Sea culture in its entirety. Thus we may assume that the elaborate ornamentation of Old Bering Sea styles 2 and 3 had its birth, or its synthesis, around Bering Strait, even though its elements may have been deep rooted in antiquity. In the same way the general synthesis of elements and the elaboration of detail that resulted in the formation of the Old Bering Sea culture must have taken place locally, under the stimulus of a peculiarly favorable environment, even though the elements themselves may have extended far beyond Bering Strait.

The present evidence points clearly to the conclusion that the further extension of the more fundamental elements is to be sought in the Old World rather than in America. In Europe or Asia we find either existing today or having existed in earlier times such basic Old Bering Sea elements as the square, wooden, earth-covered house with entrance passage, skin boats, sledges and toboggans, the toggle harpoon head, inserted side blades on implements, the throwing board and bird dart, lamps, pottery vessels, needle cases, chipped-stone and rubbed-slate implements. Furthermore it will be observed that except for the underground house, the throwing board, pottery, and chipped-stone implements, these are all widespread Old World elements, which in America are found only among the Eskimos or in contiguous areas

where Eskimo influence has probably extended. From this it seems reasonable to conclude that such elements, which are basic in Eskimo culture, originated in the Old World, and that the roots of Eskimo culture are therefore to be sought there rather than in America.

One of the features of prehistoric Eskimo culture that most strongly suggests the European Mesolithic is the presence of small stone side blades on harpoon heads. The wide gap between Bering Strait and the Baltic has been lessened by the recent discovery of bone knives and projectile points with inserted side blades at early Neolithic sites on the Angara River near Lake Baikal (Okladnikov, 1938).

Cernecov's discovery, at the mouth of the Ob River, of an old Eskimo-like culture which had preceded that of the present Samoyed is important as indicating that the reindeer nomads were not the first to occupy the Arctic coast of Siberia (Cernecov, 1935). Though the site is apparently much more recent than those in the Lake Baikal region just referred to, it affords tangible support to Hatt's theory of the relative antiquity of the maritime form of culture in northern Eurasia in contrast to that of the inland nomads. As stated previously, a similar change has taken place in northeastern Siberia, where the Chukchee seem to have displaced an earlier maritime Eskimo population between the Kolyma delta and Bering Strait. The fact that a similar cultural succession has taken place in regions as far apart as Bering Strait and the Ob River, in conjunction with the distribution pattern of the essential elements of Eskimo culture, suggests that in earlier times, before the intrusion of the reindeer breeders, more or less isolated groups of sea-mammal hunters, possessing a generalized Eskimo type of culture, may have occupied the Arctic coast of Eurasia wherever it was suitable for such occupancy. For proof of this we must look to the Siberian coast, where it is to be hoped the necessary investigations may eventually be made.

LITERATURE CITED

BABA, OSAMU

1934. Archeological investigations in the Shimushu Islands (Kurile Is.).
Journ. Anthropol. Soc. Tokyo, vol. 49, No. 556, pp. 39-64, February.
(In Japanese.)

BIRKET-SMITH, KAJ

1929. The Caribou Eskimos. Rep. 5th Thule Exped., 1921-24, vol. 5.
Copenhagen.
1930. Contributions to Chipewyan ethnology. Rep. 5th Thule Exped., 1921-24, vol. 6, No. 3. Copenhagen.
1936. The Eskimos. London.

BIRKET-SMITH, KAJ, and DE LAGUNA, FREDERICA

1938. The Eyak Indians of the Copper River Delta, Alaska. *Kgl. Danske Vidensk. Selskab. Copenhagen.*

BOAS, FRANZ

1888. The Central Eskimo. 6th Ann. Rep. Bur. Amer. Ethnol.
 1901. The Eskimo of Baffin Land and Hudson Bay. *Bull. Amer. Mus. Nat. Hist.*, vol. 15, pt. 1.
 1905. The Jesup North Pacific Expedition. 13th Int. Congr. Americanists, New York, 1902, pp. 91-100.
 1907. Second report on the Eskimo of Baffin Land and Hudson Bay. *Bull. Amer. Mus. Nat. Hist.*, vol. 15, pt. 2.
 1927. Primitive Art. *Inst. Sammenl. Kulturforsk.*, ser. B, skrifter 8. Oslo.
 1933. Relationships between North-West America and North-East Asia. The American aborigines, their origin and antiquity, pp. 357-370. Univ. Toronto Press.

BOGORAS, WALDEMAR

1902. The folklore of northeastern Asia, as compared with that of north-western America. *Amer. Anthrop.*, n.s., vol. 4, No. 4, pp. 577-683, October-December.
 1904-1909. The Chukchee. *Mem. Amer. Mus. Nat. Hist.*, vol. 2.
 1925. Early migrations of the Eskimo between Asia and America. 21st Int. Congr. Americanists, Goteborg, pt. 2, pp. 216-235.

CERNECOV, V.

1935. Une ancienne culture maritime dans la presqu'île de Ya-mal. *Soviet Ethnog.*, 4-5, pp. 109-133. Moscow. (In Russian, abstract in French.)

COLLINS, HENRY B., JR.

- 1929a. The ancient Eskimo culture of northwestern Alaska. *Expl. and Field-work Smithsonian Inst. in 1928*, pp. 141-150.
 1929b. Prehistoric art of the Alaskan Eskimo. *Smithsonian Misc. Coll.*, vol. 81, No. 14, Nov. 14.
 1931. Ancient culture of St. Lawrence Island, Alaska. *Expl. and Field-work Smithsonian Inst. in 1930*, pp. 135-144.
 1932. Prehistoric Eskimo culture on St. Lawrence Island. *Geogr. Rev.*, vol. 22, No. 1, pp. 107-119, January.
 1934a. Therkel Mathiassen: Inugsuk, a mediaeval Eskimo settlement in Upernivik District, west Greenland. Ancient Eskimo settlements in the Kangamiut area (review). *Amer. Anthrop.*, n.s., vol. 36, No. 1, pp. 118-124, January-March.
 1934b. Eskimo archaeology and somatology. *Amer. Anthrop.*, n.s., vol. 36, No. 2, pp. 309-313, April-June.
 1935. Archeology of the Bering Sea region. *Ann. Rep. Smithsonian Inst. for 1933*, pp. 453-468.
 1937a. Archeological excavations at Bering Strait. *Expl. and Field-work Smithsonian Inst. in 1936*, pp. 63-68.
 1937b. Archeology of St. Lawrence Island, Alaska. *Smithsonian Misc. Coll.*, vol. 96, No. 1, Aug. 9.
 1939. Exploring frozen fragments of American history. *Nat. Geogr. Mag.*, vol. 75, No. 5, pp. 633-656, May.

DALL, W. H.

1877. On succession in the shell-heaps of the Aleutian Islands. *Contr. to North American Ethnol.*, vol. 1, pp. 41-91.

FISCHER-MØLLER, K.

1937. Skeletal remains of the Central Eskimos. *Rep. 5th Thule Exped.*, 1921-24, vol. 3, No. 1. Copenhagen.

GEIST, OTTO WM., and RAINEY, FROELICH, G.

1936. Archeological excavations at Kukulik, St. Lawrence Island, Alaska. *Misc. Publ., Univ. Alaska*, vol. 2. U. S. Dep. Interior, May 19. (Issued in April 1937.)

HALLOWELL, A. IRVING

1926. Bear ceremonialism in the northern hemisphere. *Amer. Anthropol.*, n.s., vol. 28, pp. 1-175.

HATT, GUDMUND

- 1916a. Kyst- og indlandskultur i det arktiske. *Geogr. Tidschr.*, vol. 23, pp. 284-290. Copenhagen.
- 1916b. Moccasins and their relation to Arctic footwear. *Mem. Amer. Anthropol. Assoc.*, vol. 3, No. 3, pp. 151-250, July-September.
1934. North American and Eurasian culture connections. *Proc. 5th Pacific Sci. Congr., Canada*, 1933, vol. 4, pp. 2755-2765. Univ. Toronto Press.

HEIZER, R. F.

1938. Aconite arrow poison in the Old and New World. *Journ. Washington Acad. Sci.*, vol. 28, pp. 358-364.

HOLTVED, ERIK

1938. Foreløbig beretning om den arkaeologisk-ethnografiske expedition til Thule Distriktet 1935-37. *Geogr. Tidschr.*, vol. 41, pp. 1-24, June.

HRDLIČKA, ALEŠ

1910. Contributions to the anthropology of Central and Smith Sound Eskimo. *Anthropol. Pap. Amer. Mus. Nat. Hist.*, vol. 5, pt. 2.
1927. Anthropological work in Alaska. *Expl. and Field-work Smithsonian Inst.* in 1926, pp. 137-158.
1930. Anthropological survey in Alaska. 46th Ann. Rep. Bur. Amer. Ethnol.
1935. Archeological excavations on Kodiak Island, Alaska. *Expl. and Field-work Smithsonian Inst.* in 1934, pp. 47-52.
1936. Archeological expedition to Kodiak Island, Alaska. *Expl. and Field-work Smithsonian Inst.* in 1935, pp. 47-52.
1937. Archeological explorations on Kodiak and the Aleutian Islands. *Expl. and Field-work Smithsonian Inst.* in 1936, pp. 57-62.
1938. Anthropological explorations on the Aleutian and Commander Islands. *Expl. and Field-work Smithsonian Inst.* in 1937, pp. 87-94.
1939. Exploration in the Aleutian and the Commander Islands. *Expl. and Field-work Smithsonian Inst.* in 1938, pp. 79-86.

JENNESS, DIAMOND

1925. A new Eskimo culture in Hudson Bay. *Geogr. Rev.*, vol. 15, No. 3, pp. 428-437, July.
- 1928a. Archeological investigations in Bering Strait. *Nat. Mus. Canada, Ann. Rep.* 1926, Bull. 50. Ottawa.
- 1928b. Ethnological problems of Arctic America. *Amer. Geogr. Soc. Special Publ.* No. 7, pp. 167-175.

1933. The problem of the Eskimo. The American aborigines, their origin and antiquity, pp. 373-396. Univ. Toronto Press.
1937. The Indian background of Canadian history. Nat. Mus. Canada, Bull. 86.
1940. Prehistoric culture waves from Asia to America. Journ. Washington Acad. Sci., vol. 30, No. 1, pp. 1-15, January.
- JOCHELSON, WALDEMAR
- 1905-1908. The Koryak. Mem. Amer. Mus. Nat. Hist., vol. 10.
1925. Archeological investigations in the Aleutian Islands. Carnegie Inst. Washington, October.
1928. Archeological investigations in Kamchatka. Carnegie Inst. Washington.
- KROEBER, A. L.
1923. American culture and the Northwest Coast. Amer. Anthrop., n.s., vol. 25, No. 1, pp. 1-20, January-March.
1939. Cultural and natural areas of native North America. Univ. California Press.
- DE LAGUNA, FEDERICA
- 1932-1933. A comparison of Eskimo and Palaeolithic art. Amer. Journ. Archaeol., vol. 36, No. 4, pp. 477-551, October-December; vol. 37, No. 1, pp. 77-107, January-March.
1934. The archaeology of Cook Inlet, Alaska. Univ. Pennsylvania Press.
1938. See Birket-Smith and de Laguna.
1939. A pottery vessel from Kodiak Island, Alaska. Amer. Antiquity, vol. 4, No. 4, pp. 334-343, April.
- LANTIS, MARGARET
1938. The Alaskan whale cult and its affinities. Amer. Anthrop., n.s., vol. 40, No. 3, pp. 438-464, July-September.
- LARSEN, HELGE
1934. Dødemandsbugten, an Eskimo settlement on Clavering Island. Medd. Grønland, vol. 102, No. 1. Copenhagen.
1938. Archeological investigations in Knud Rasmussens Land. Medd. Grønland, vol. 119, No. 8. Copenhagen.
- LAUFER, BERTHOLD
1914. Chinese clay figures. Field Mus. Nat. Hist. Publ. 177, Anthrop. Ser., vol. 13, No. 2.
- MASON, J. ALDEN
1930. Excavations of Eskimo Thule culture sites at Point Barrow, Alaska. Proc. 23rd Int. Congr. Americanists, New York, 1928, p. 383-394.
- MATHIASSEN, THERKEL
1927. Archaeology of the Central Eskimos. Rep. 5th Thule Exped., 1921-24, vol. 4. Copenhagen.
- 1930a. Archaeological collections from the Western Eskimos. Rep. 5th Thule Exped., 1921-24, vol. 10, No. 1. Copenhagen.
- 1930b. Inugsuk, a mediaeval Eskimo settlement in Upernivik District, West Greenland. Medd. Grønland, vol. 77. Copenhagen.
1931. Ancient Eskimo settlements in the Kangamiut area. Medd. Grønland, vol. 91, No. 1. Copenhagen.
1933. Prehistory of the Angmagssalik Eskimos. Medd. Grønland, vol. 92, No. 4. Copenhagen.

1934. Contributions to the archaeology of Disko Bay. *Medd. Grønland*, vol. 93, No. 2. Copenhagen.
1936. The Eskimo archaeology of Julianelaab District. *Medd. Grønland*, vol. 118, No. 1. Copenhagen.
1937. The Eskimo archeology of Greenland. *Ann. Rep. Smithsonian Inst.* for 1936, pp. 397-404.
- NØRLAND, POUL
1924. Buried Norsemen at Herjolfsnes. *Medd. Grønland*, vol. 67. Copenhagen.
- OKLADNIKOV, A. P.
1938. Archaeological data on the ancient history of Lake Baikal region. *Rev. Ancient Hist.*, vol. 1, pp. 244-260, Moscow. (In Russian.)
- OLSON, R. L.
1934. Recent archaeological work on the Pacific coast. *Proc. 5th Pacific Sci. Congr. Canada*, 1933, vol. 4, pp. 2841-2846. Univ. Toronto Press.
- RAINEY, FROELICH G.
- 1936a. Eskimo chronology. *Proc. Nat. Acad. Sci.*, vol. 22, No. 6, pp. 357-362, June.
- 1936b. See Geist and Rainey.
1937. Old Eskimo art. *Natural History*, vol. 40, No. 3, pp. 603-607, October.
1940. Archaeological investigation in central Alaska. *Amer. Antiquity*, vol. 5, No. 4, pp. 299-308, April.
- SAPIR, E.
1916. Time perspective in aboriginal American culture, a study in method. *Canada Dep. Mines and Res., Mem. 90, Anthropol. Ser. No. 13.* Ottawa.
- SMITH, HARLAN I.
1903. Shell heaps of the Lower Fraser River, British Columbia. *Mem. Amer. Mus. Nat. Hist.*, vol. 4, pt. 4.
1907. Archeology of the Gulf of Georgia and Puget Sound. *Mem. Amer. Mus. Nat. Hist.*, vol. 4, pt. 6.
- SOLBERG, O.
1907. Beiträge zur vorgeschichte der Osteskimo. *Vid.-Selsk. Skrift.*, vol. 2, *Hist.-Filos. Kl.*, No. 2. Christiania.
- SPECK, FRANK G.
1926. Culture problems in northeastern North America. *Proc. Amer. Philos. Soc.*, vol. 65. Philadelphia.
- STEENSBY, H. P.
1916. An anthropogeographical study of the origin of the Eskimo culture. *Medd. Grønland*, vol. 53. Copenhagen.
- STEFANSSON, VILHJALMUR
1914. Prehistoric and present commerce among the Arctic coast Eskimo. *Canada Dep. Mines and Res., Nat. Mus. Canada, Bull. No. 6, Anthropol. Ser. No. 3.* Ottawa.
- STERNBERG, L.
1929. The Ainu problem. *Acad. Sci., USSR., Publ. Mus. Anthropol. and Ethnogr.* vol. 8, pp. 335-374. Leningrad. (In Russian.)

THALBITZER, WILLIAM

1904. A phonetical study of the Eskimo language. *Medd. Grønland*, vol. 31. Copenhagen.
1914. The Ammassalik Eskimo. Pt. 1. *Medd. Grønland*, vol. 39. Copenhagen.

WEYER, EDWARD M., JR.

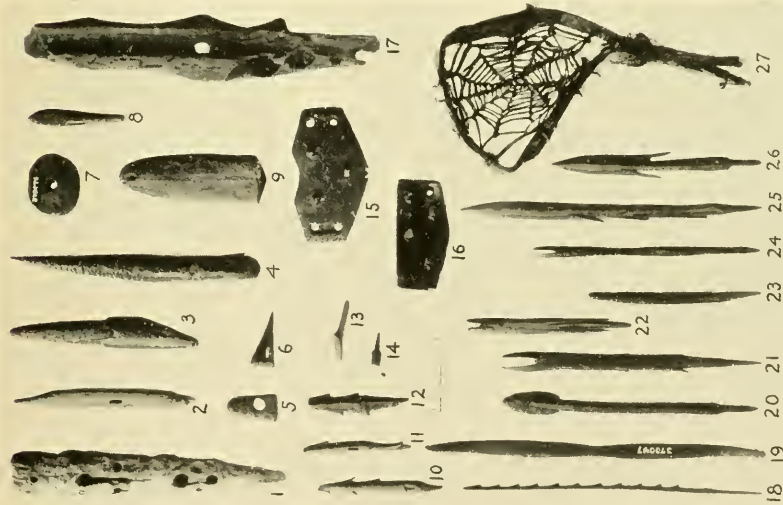
1930. Archeological material from the village site at Hot Springs, Port Møller, Alaska. *Anthrop. Pap. Amer. Mus. Nat. Hist.*, vol. 4.
1932. *The Eskimos, their environment and folkways*. Yale Univ. Press.

WINTEMBERG, W. J.

- 1939-1940. Eskimo sites of the Dorset culture in Newfoundland. *Amer. Antiquity*, vol. 5, No. 2, pp. 83-102, October; vol. 5, No. 4, pp. 309-333, April.

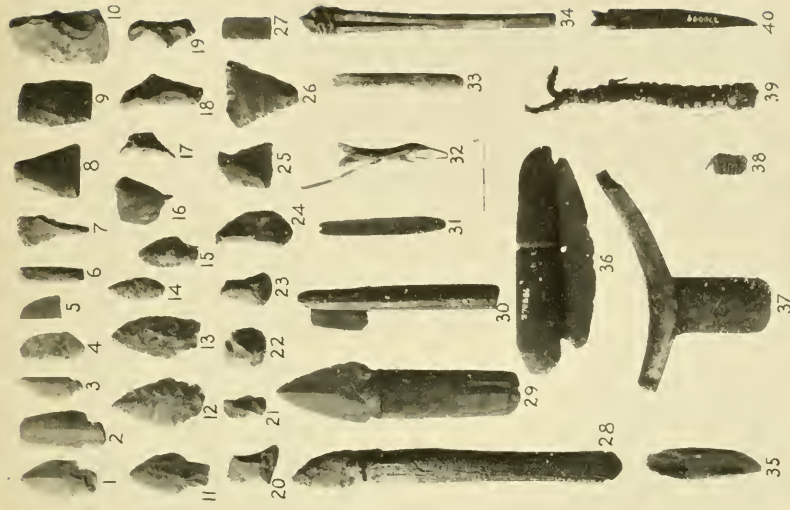
ZOLOTAREV, A.

1938. The ancient culture of north Asia. *Amer. Anthrop., n.s.*, vol. 40, No. 1, pp. 13-23, January-March.



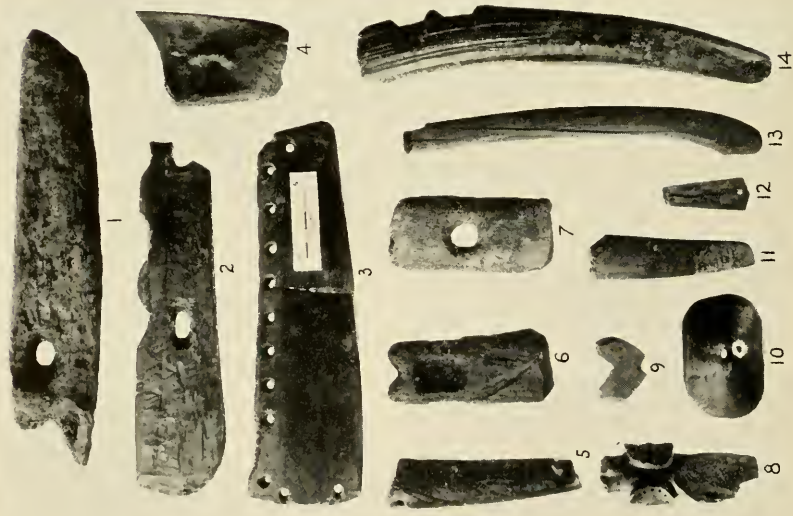
A. OLD BERING SEA IMPLEMENTS FROM HILLSIDE SITE AND MIYOWAGH, ST. LAWRENCE ISLAND, ALASKA

(For explanation see pp. 550-551.)

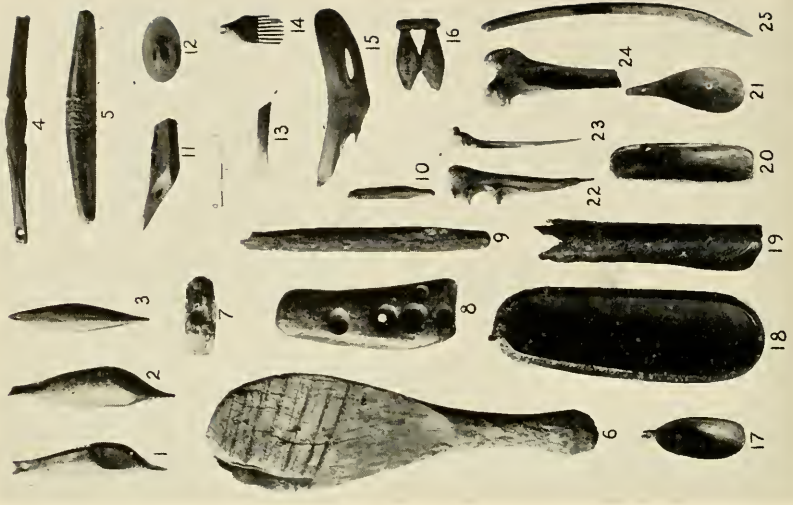


B. OLD BERING SEA IMPLEMENTS FROM HILLSIDE SITE AND MIYOWAGH, ST. LAWRENCE ISLAND, ALASKA

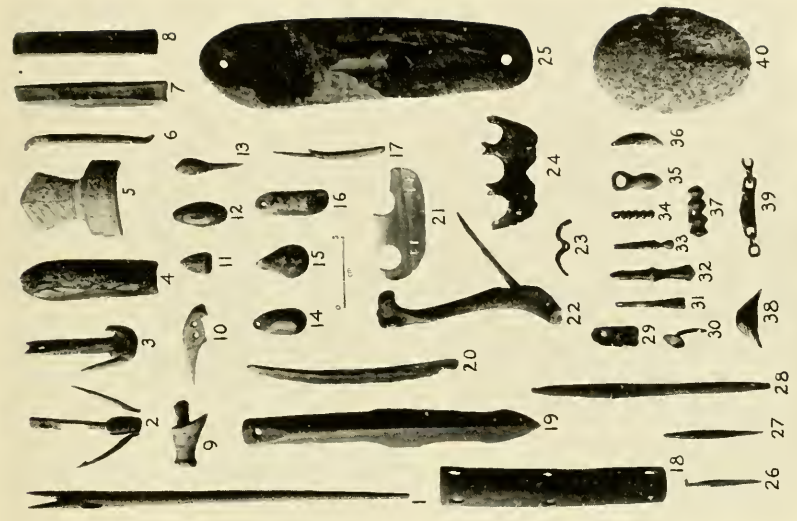
(For explanation see p. 550.)



A. OLD BERING SEA SLEDGE RUNNERS, ADZES, AND WEDGES FROM HILLSIDE SITE AND MIYOWAGH, ST. LAWRENCE ISLAND, ALASKA
(For explanation see pp. 550, 551.)

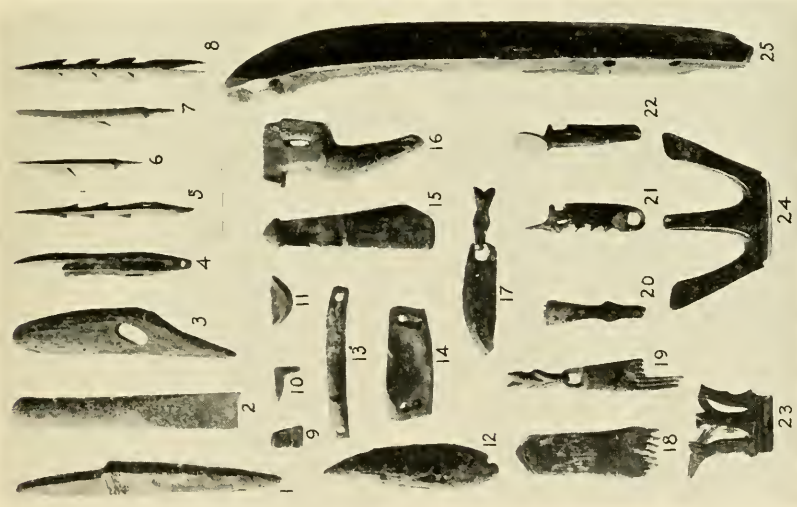


B. OLD BERING SEA IMPLEMENTS FROM HILLSIDE SITE AND MIYOWAGH, ST. LAWRENCE ISLAND, ALASKA
(For explanation see pp. 550, 551.)



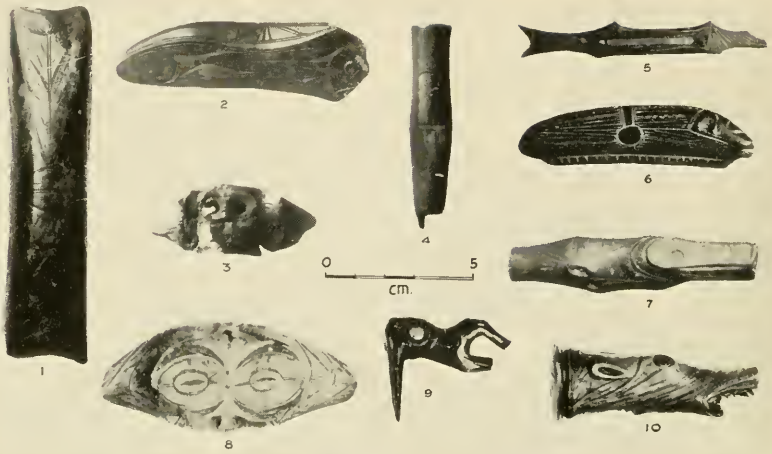
B. PUNUK IMPLEMENTS FROM VARIOUS SITES ON ST. LAWRENCE ISLAND, ALASKA

(For explanation see p. 554.)



A. PUNUK IMPLEMENTS FROM VARIOUS SITES ON ST. LAWRENCE ISLAND, ALASKA

(For explanation see p. 553.)



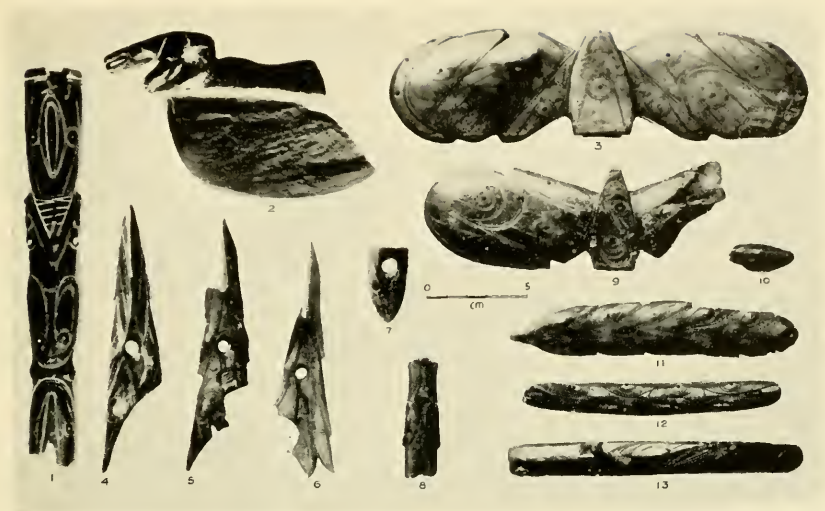
A. IVORY OBJECTS, ST. LAWRENCE AND DIOMEDE ISLANDS, DECORATED IN OLD BERING SEA STYLE 1

(For explanation see pp. 552, 585-586.)



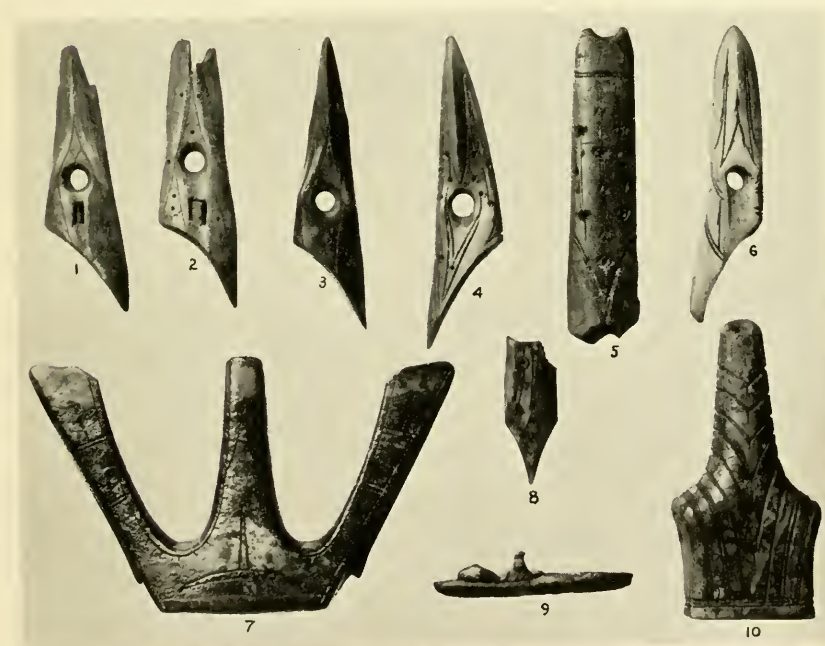
B. IVORY OBJECTS, ST. LAWRENCE ISLAND AND BERING STRAIT, DECORATED IN OLD BERING SEA STYLE 2

(For explanation see pp. 552-553.)



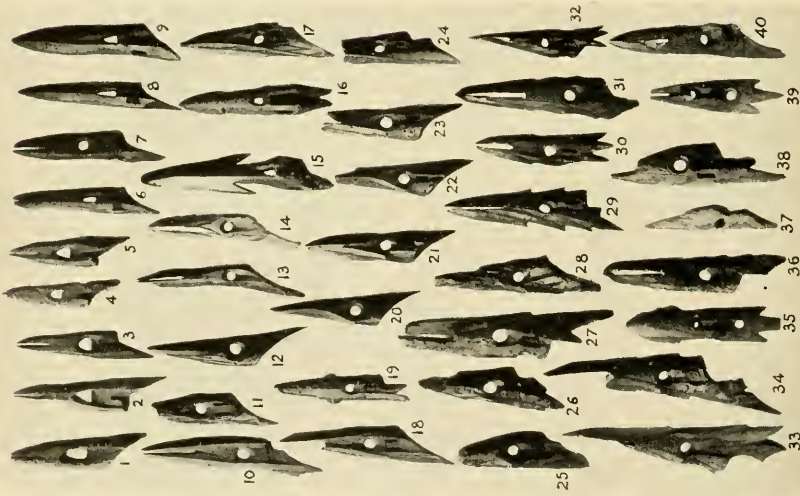
A. IVORY OBJECTS, ST. LAWRENCE ISLAND AND NORTH ALASKA,
 DECORATED IN OLD BERING SEA STYLE 3

(For explanation see p. 553.)



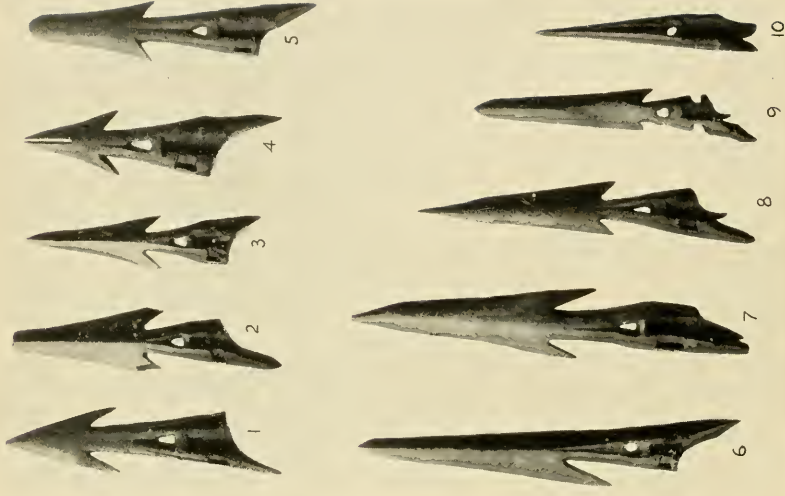
B. IVORY OBJECTS, ST. LAWRENCE ISLAND, DECORATED IN PUNUK STYLE

(For explanation see p. 553.)



A. HARPOON HEADS FROM GAMBELL, ST. LAWRENCE ISLAND, ARRANGED IN CHRONOLOGICAL ORDER.

1, modern; 2-9, protohistoric; 10-18, developed Punuk; 19-26, early Punuk; 27-40, Old Bering Sea.



B. HARPOON HEADS FROM KURIGIVIK, CAPE PRINCE OF WALES

1-5, Thule types from upper half of midden; 6-10, types with Birnirk-like features from lower levels of midden.

(For explanation see p. 562.)

BIBLIOGRAPHY OF ANTHROPOLOGICAL PAPERS¹
BY JOHN R. SWANTON

COMPILED BY FRANCES S. NICHOLS

1900

Morphology of the Chinook verb. Amer. Anthrop., n.s., vol. 2, pp. 199-237.

1902

Notes on the Haida language. Amer. Anthrop., n.s., vol. 4, pp. 392-403.

1903

The Haida calendar. Amer. Anthrop., n.s., vol. 5, pp. 331-335.

1904

The development of the clan system and of secret societies among the north-western tribes. Amer. Anthrop., n.s., vol. 6, pp. 477-485.

Origin of the Bellacoola. Ibid., pp. 743-744.

[Abstract of address on] The Tlingit Indians. Ibid., pp. 750-751.

[Abstract of address on] Social organization of the Haida and Tlingit. Ibid., pp. 760-761.

1905

Types of Haida and Tlingit myths. Amer. Anthrop., n.s., vol. 7, pp. 94-103.

Tlingit method of collecting herring-eggs. Ibid., p. 172.

The social organization of American tribes. Ibid., pp. 663-673.

Social organization of the Haida. Int. Congr. Amer., 13th Sess., New York, 1902, pp. 327-334.

Explanation of the Seattle totem. Journ. Amer. Folk-Lore, vol. 18, pp. 108-110.

Contributions to the ethnology of the Haida. The Jesup North Pacific Expedition. Mem. Amer. Mus. Nat. Hist., vol. 5, pt. 1.

Haida texts and myths. Bur. Amer. Ethnol. Bull. 29.

1906

A reconstruction of the theory of social organization *In* Anthropological Papers written in honor of Franz Boas (Boas Anniversary Volume), pp. 166-178. New York.

1907

Olchagras. Amer. Anthrop., n.s., vol. 9, p. 240.

Ethnological position of the Natchez Indians. Ibid., pp. 513-528.

A concordance of American myths. Journ. Amer. Folk-Lore, vol. 20, pp. 220-222.

Mythology of the Indians of Louisiana and the Texas coast. Ibid., pp. 285-289.

¹ In addition to the following titles, Dr. Swanton has published numerous articles on religious subjects in the New Church Review, the New Church Messenger, New Philosophy, and other periodicals.

1908

- Social conditions, beliefs, and linguistic relationship of the Tlingit Indians. 26th Ann. Rep. Bur. Amer. Ethnol., pp. 391-485.
- The language of the Taënsa. Amer. Anthropol., n.s., vol. 10, pp. 24-32.
- Haida texts—Masset dialect. The Jesup North Pacific Expedition. Mem. Amer. Mus. Nat. Hist., vol. 10, pt. 2.

1909

- A new Siouan dialect. *In* Anthropological Essays presented to Frederic Ward Putnam (Putnam Anniversary Volume), pp. 477-486. New York.
- Tlingit myths and texts. Bur. Amer. Ethnol. Bull. 39.
- Report of the 428th meeting of the Anthropological Society of Washington, Feb. 2, 1909. Science, n.s., vol. 29, p. 440.
- Report of the 429th meeting of the Anthropological Society of Washington, Feb. 16, 1909. *Ibid.*, p. 480.
- Report of the 430th meeting of the Anthropological Society of Washington, Mar. 2, 1909. *Ibid.*, p. 599.
- Report of the 431st meeting of the Anthropological Society of Washington, Mar. 16, 1909. *Ibid.*, pp. 599-600.
- Report of the 432d meeting of the Anthropological Society of Washington, Apr. 6, 1909. *Ibid.*, pp. 717-718.
- Report of the 433d meeting of the Anthropological Society of Washington, Apr. 20, 1909. *Ibid.*, p. 798.
- Report of the special meeting of the Anthropological Society of Washington, Apr. 27, 1909. *Ibid.*, p. 918.
- Report of the 434th meeting of the Anthropological Society of Washington, Oct. 12, 1909. Science, n.s., vol. 30, p. 656.
- Report of the 435th meeting of the Anthropological Society of Washington, Oct. 26, 1909. *Ibid.*, p. 816.

1910

- Reports of the 436th and 437th meetings of the Anthropological Society of Washington, Nov. 9 and Dec. 7, 1909. Science, n.s., vol. 31, pp. 37-38.
- Some practical aspects of the study of myths. Amer. Folk-Lore, vol. 23, pp. 1-7.
- Review of "Source book for social origins," by Wm. I. Thomas. Amer. Anthropol., n.s., vol. 12, pp. 96-100.
- [Articles] Chimmesyan family; Haida; Taënsa; Social organization; etc. *In* Handbook of American Indians north of Mexico, edited by F. W. Hodge. Bur. Amer. Ethnol. Bull. 30, pts. 1-2, 1907-1910.
- Ethnological problems of the lower Mississippi Valley. Proc. Mississippi Valley Hist. Assoc., vol. 2, pp. 112-127.

1911

- Indian names in historical documents. Proc. Mississippi Valley Hist. Assoc., vol. 3, pp. 341-346.
- Tlingit. *In* Handbook of American Indian Languages, by Franz Boas. Bur. Amer. Ethnol. Bull. 40, pt. 1, pp. 159-204.
- Haida. *Ibid.*, pp. 205-282.

- Siouan: Dakota (Teton and Santee dialects), with remarks on the Ponca and Winnebago. (Co-author with Franz Boas.) *Ibid.*, pp. 875-965.
- Indian tribes of the lower Mississippi Valley and adjacent coast of the Gulf of Mexico. *Bur. Amer. Ethnol. Bull.* 43.
- Indian languages of Mexico and Central America, and their geographical distribution. (Co-author with Cyrus Thomas.) *Bur. Amer. Ethnol. Bull.* 44.

1912

- A dictionary of the Biloxi and Ofo languages, accompanied with thirty-one Biloxi texts and numerous Biloxi phrases. (Co-author with James Owen Dorsey.) *Bur. Amer. Ethnol. Bull.* 47.
- De Soto's line of march from the viewpoint of an ethnologist. *Proc. Mississippi Valley Hist. Assoc.*, vol. 5, pp. 147-157.
- Haida songs. *Publ. Amer. Ethnol. Soc.*, vol. 3, pp. 1-63.
- The Creek Indians as mound builders. *Amer. Anthropol.*, n.s., vol. 14, pp. 320-324.
- A foreword on the social organization of the Creek Indians. *Ibid.*, pp. 593-599.

1913

- Investigations among the Indians of Oklahoma and Texas. *Expl. and Field-work Smithsonian Inst. in 1912*, pp. 41-44.
- Coonti. *Amer. Anthropol.*, n.s., vol. 15, pp. 141-142.
- A Haida food plant. *Ibid.*, 543-544.
- Results of some recent investigations regarding the southeastern tribes of the United States. *Ibid.*, pp. 690-691.
- Animal stories from the Indians of the Muskogean stock. *Journ. Amer. Folk-Lore*, vol. 26, pp. 193-218.

1914

- Ceremonial dances of the Creeks in Oklahoma. *Expl. and Field-work Smithsonian Inst. in 1913*, pp. 64-66.
- Primitive American history. (Co-author with Roland B. Dixon.) *Amer. Anthropol.*, n.s., vol. 16, pp. 376-412. *Reprinted in Anthropology in North America*, by Franz Boas, Roland B. Dixon, and others, pp. 5-41. New York, 1915.

1915

- [Co-editor with Henry S. Halbert of] A dictionary of the Choctaw language, by Cyrus Byington. *Bur. Amer. Ethnol. Bull.* 46.
- Institutional marriage. *Journ. Washington Acad. Sci.*, vol. 5, pp. 219-227.
- Linguistic position of the tribes of southern Texas and northeastern Mexico. *Amer. Anthropol.*, n.s., vol. 17, pp. 17-40.
- Dr. Swanton's reply [to criticism by Robert H. Lowie of Swanton and Dixon's "Primitive American History"]. *Ibid.*, p. 600.

1916

- Review of "The inequality of human races,"* by Arthur de Gobineau. *Amer. Anthropol.*, n.s., vol. 18, pp. 429-431.
- The terms of relationship of Pentecost Island. *Ibid.*, pp. 455-465.
- Henry Sale Halbert. *Ibid.*, pp. 449-450.

- Note on the aboriginal name "Aje." *Journ. Washington Acad. Sci.*, vol. 6, pp. 136-137.
- [Abstract of paper on] The influence of inheritance on human culture. *Ibid.*, pp. 411-412.
- Some information from Spanish sources regarding the Siouan tribes of the East. *Ibid.*, pp. 609-612.
- Ethnological work among the Natchez, Creek, and Chickasaw Indians. *Expl. and Field-work Smithsonian Inst. in 1915*, pp. 109-111.
- Terms of relationship in Timucua. *In Anthropological Essays presented to William Henry Holmes (Holmes Anniversary Volume)*, pp. 451-463.

1917

- Researches. *Expl. and Field-work Smithsonian Inst. in 1916*, pp. 130-131.
- Unclassified languages of the Southeast. *Int. Journ. Amer. Ling.*, vol. 1, pp. 47-49.
- The social significance of the Creek Confederacy. *Proc. 10th Int. Congr. Amer.*, Washington, 1915, pp. 327-334.
- Significance of the terms for brother and sister among primitive peoples. *Journ. Washington Acad. Sci.*, vol. 7, pp. 31-35.
- Some anthropological misconceptions. *Amer. Anthrop.*, n.s., vol. 19, pp. 459-470.
- [Abstract of] Some anthropological misconceptions. *Journ. Washington Acad. Sci.*, vol. 7, pp. 395-396.
- The route of De Soto. *Amer. Anthrop.*, n.s., vol. 19, pp. 581-582.
- Some Chitimacha myths and beliefs. *Journ. Amer. Folk-Lore*, vol. 30, pp. 474-478.
- Review of "Tsimshian mythology,"* by Franz Boas. *Science*, n.s., vol. 46, pp. 514-516.

1918

- Ethnologic work in Louisiana. *Expl. and Field-work Smithsonian Inst. in 1917*, pp. 100-106.
- Review of "Zuñi kin and clan,"* by A. L. Kroeber. *Amer. Anthrop.*, n.s., vol. 20, pp. 93-98.
- Pueblo clans: a reply [to A. L. Kroeber's discussion of the above review]. *Ibid.*, p. 463.
- Anthropology as a corrective of provincialism. *Journ. Washington Acad. Sci.*, vol. 8, pp. 286-289.
- Catawba notes. *Ibid.*, pp. 623-629.
- An early account of the Choctaw Indians. *Mem. Amer. Anthrop. Assoc.*, vol. 5, No. 2, pp. 53-72.
- [Abstract of] An early account of the Choctaw Indians. *Journ. Washington Acad. Sci.*, vol. 8, p. 633.
- [Abstract of] Some anthropological misconceptions. *Sci. Amer.*, Suppl., vol. 86, p. 325.

1919

- A structural and lexical comparison of the Tunica, Chitimacha, and Atakapa languages. *Bur. Amer. Ethnol. Bull.* 68.

Field-work among the Choctaw and Catawba. Expl. and Field-work Smithsonian Inst. in 1918, pp. 107-109.

Dr. Frank Baker. Amer. Anthrop., n.s., vol. 21, pp. 186-188.

Identity of the Westo Indians. *Ibid.*, pp. 213-216.

1920

The creation according to the Tlingit Indians of southern Alaska. *In* Kroeber, A. L., and Waterman, T. T., eds., *Source book in anthropology*, pp. 535-541. Berkeley, Calif.

[Abstract of] A structural and lexical comparison of the Tunica, Chitimacha, and Atakapa languages. *Journ. Washington Acad. Sci.*, vol. 10, p. 47.

Review of "Handbook of aboriginal American antiquities, Part 1," by W. H. Holmes. *Ibid.*, pp. 47-48.

International and interclass misunderstandings. *Ibid.*, pp. 405-411.

1921

The Tunica language. *Int. Journ. Amer. Ling.*, vol. 2, Nos. 1-2, pp. 1-39.

1922

Early history of the Creek Indians and their neighbors. *Bur. Amer. Ethnol. Bull.* 73.

Tokulki of Tulsa. *In* *American Indian Life*, edited by Elsie Clews Parsons, pp. 127-145. New York.

James Mooney. *Amer. Anthrop.*, n.s., vol. 24, pp. 209-214. [Unsigned.]

1923

New light on the early history of the Siouan peoples. *Journ. Washington Acad. Sci.*, vol. 13, pp. 33-43.

1924

Southern contacts of the Indians north of the Gulf of Mexico. *Proc. 20th Int. Congr. Americanists, Rio de Janeiro, 1922*, vol. 1, pp. 53-59.

Three factors in primitive religion. *Amer. Anthrop.*, n.s., vol. 26, pp. 358-365.

The factor of difference. *Journ. Washington Acad. Sci.*, vol. 14, pp. 493-497.

1925

Chance and evolution. *Science*, n.s., vol. 61, pp. 490-491.

1926

The subjective element in magic. *Journ. Washington Acad. Sci.*, pp. 193-197.

Notes on the mental assimilation of races. *Ibid.*, pp. 493-502.

1927

Review of "Evolution, genetics, and eugenics," by Horatio H. Newman. *Amer. Anthrop.*, n.s., vol. 29, pp. 116-117.

Review of "Dix Années (1914-1923) dans le Bassin de Fleuve jaune et Autres Tributaires du Golfe du Pé tcheu ly," by Emile Licent, S. J. *Ibid.*, pp. 120-124.

1928

- Social organization and social usages of the Indians of the Creek Confederacy. 42d Ann. Rep. Bur. Amer. Ethnol., pp. 23-472.
- Religious beliefs and medical practices of the Creek Indians. *Ibid.*, pp. 473-672.
- Aboriginal culture of the Southeast. *Ibid.*, pp. 673-726.
- Social and religious beliefs and usages of the Chickasaw Indians. 44th Ann. Rep. Bur. Amer. Ethnol., pp. 169-273.
- The interpretation of aboriginal mounds by means of Creek Indian customs. Ann. Rep. Smithsonian Inst. for 1927, pp. 495-506.
- Sun worship in the Southeast. *Amer. Anthropol.*, n.s., vol. 30, pp. 206-213.

1929

- Myths and tales of the southeastern Indians. *Bur. Amer. Ethnol. Bull.* 88.
- The Tawasa language. *Amer. Anthropol.*, n.s., vol. 31, pp. 435-453.
- A point of resemblance between the ball game of the Southeastern Indians and the ball games of Mexico and Central America. *Journ. Washington Acad. Sci.*, vol. 19, pp. 304-306.

1930

- Studies among the Choctaw of Mississippi and the Creeks of Oklahoma. *Expl. and Field-work Smithsonian Inst. in 1929*, pp. 213-216.
- An Indian social experiment and some of its lessons. *Scientific Monthly*, vol. 31, pp. 368-376.
- Some neglected data bearing on Cheyenne, Chippewa, and Dakota history. *Amer. Anthropol.*, n.s., vol. 32, pp. 156-160.
- The Kaskinampo Indians and their neighbors. *Ibid.*, pp. 405-418.
- Jesse Walter Fewkes. *Science*, n.s., vol. 72, pp. 5-7.
- Discussion of paper by Marius Barbeau on "The modern growth of the totem pole on the northwest coast." *Proc. 23rd Int. Congr. Americanists*, New York, 1928, p. 511.
- Discussion of paper by J. B. P. de Josselin de Jong on "The Natchez social system." *Ibid.*, pp. 561-562.

1931

- Jesse Walter Fewkes. (Co-author with F. H. H. Roberts, Jr.) *Ann. Rep. Smithsonian Inst. for 1930*, pp. 609-616. [Expanded from the article by John R. Swanton in *Science*, n.s., vol. 72, pp. 5-7, July 4, 1930.]
- Indian language studies in Louisiana. *Expl. and Field-work Smithsonian Inst. in 1930*, pp. 195-200.
- The Caddo social organization and its possible historical significance. *Journ. Washington Acad. Sci.*, vol. 21, pp. 203-206.
- Source material for the social and ceremonial life of the Choctaw Indians. *Bur. Amer. Ethnol. Bull.* 103.

1932

- Introduction to "The Green Corn Dance" [a letter written by John Howard Payne to a relative in New York, in 1835]. *Chronicles of Oklahoma*, vol. 10, pp. 170-172.

- Introduction and footnote to "The Choctaw Indians in the middle of the Nineteenth Century," by John Edwards, edited and annotated by John R. Swanton. *Ibid.*, pp. 392-425.
- Southeastern Indians of history. Paper read before the Conference on Southern Prehistory, National Research Council, Committee on State Archeological Survey, Birmingham, Ala., Dec. 18-20, 1932. [Mimeographed papers, pp. 5-20.]
- The relation of the Southeast to general culture problems of American prehistory. *Ibid.*, pp. 60-74.
- Choctaw moieties. *Amer. Anthropol.*, n.s., vol. 34, p. 357.
- Ethnological value of the De Soto narratives. *Ibid.*, pp. 570-590.
- A dictionary of the Atakapa language, accompanied by text material. (Co-author with Albert S. Gatschet.) *Bur. Amer. Ethnol. Bull.* 108.

1933

- Probable identity of the "Croatan" Indians. [A mimeographed circular issued by] U. S. Dep. Int., Office of Indian Affairs. 5 pp.
- Modern square grounds of the Creek Indians. *Smithsonian Misc. Coll.*, vol. 85, No. 8.

1934

- The landing place of De Soto. *Science*, n.s., vol. 80, pp. 336-337.
- Newly discovered Powhatan bird names. *Journ. Washington Acad. Sci.*, vol. 24, pp. 96-99.
- Review of* "Florida place-names of Indian origin and Seminole personal names," by W. A. Reed. *Amer. Speech*, vol. 9, pp. 218-220.
- Introductory note to "The Five Civilized Tribes," by Grant Foreman. Norman, Okla.

1935

- Notes on the cultural province of the Southeast. *Amer. Anthropol.*, n.s., vol. 37, pp. 373-385.
- Tracing De Soto's route. *Expl. and Field-work Smithsonian Inst. in 1934*, pp. 77-80.

1936

- Biographical memoir of William Henry Holmes, 1846-1933. *Nat. Acad. Sci., Biogr. Mem.*, vol. 17, 10th Mem. Presented to the Academy at the autumn meeting, 1935.
- Introduction to "A 17th Century letter of Gabriel Diaz Vara Calderon, Bishop of Cuba, describing the Indians and Indian missions of Florida," by Lucy L. Wenhold. *Smithsonian Misc. Coll.*, vol. 95, No. 16, pp. 1-6.
- Early history of the eastern Siouan tribes. *In Essays in Anthropology presented to A. L. Kroeber (Kroeber Anniversary Volume)*, pp. 371-381. Berkeley, Calif.

1937

- Comments on the Delgado Papers. *Florida Hist. Quart.*, vol. 16, No. 2, pp. 127-129.

Indian place-names. *Amer. Speech*, vol. 12, pp. 212-215.

Significance of the expedition of Hernando De Soto. Address read before the De Soto Committee, National Society Colonial Dames of America at Memphis, Tenn., October 1937. [Mimeographed.]

1938

The landing-place of De Soto. *Florida Hist. Quart.*, vol. 16, No. 3 (Hernando De Soto Number), pp. 149-173.

Historic use of the spear-thrower in southeastern North America. *Amer. Antiq.*, vol. 3, No. 4, pp. 356-358.

John Napoleon Brinton Hewitt: with bibliography of his works. *Amer. Anthropol.*, n.s., vol. 40, pp. 286-290.

Alphabet maker. A review of "Sequoyah," by Grant Foreman. *Washington Post*, May 4, 1938.

Picking up De Soto's trail. *Expl. and Field-work Smithsonian Inst. in 1937*, pp. 111-114.

1939

[Editor] Notes on the Creek Indians, by J. N. B. Hewitt. *Bur. Amer. Ethnol. Bull.* 123, pp. 119-159.

Some thoughts on the problem of progress and decline. *Science*, n.s., vol. 89, pp. 253-258.

Survival of horses brought to North America by De Soto. *Amer. Anthropol.*, vol. 41, pp. 170-171.

Final Report of the United States De Soto Expedition Commission. [John R. Swanton, Chairman of the Commission.] *H. R. Doc. No. 71*, 76th Congr., 1st sess.

Linguistic material on the tribes of southern Texas. *Bur. Amer. Ethnol. Bull.* 127. In press.



SMITHSONIAN INSTITUTION LIBRARIES



3 9088 01421 4894