David G. Anderson

BULLETIN 5

SOUTHEASTERN ARCHAEOLOGICAL CONFERENCE

Proceedings of the Twenty-Second Southeastern Archaeological Conference

Edited by

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EDITOR'S NOTE:

This bulletin covers the proceedings of the Twenty-Second Southeastern Archaeological Conference held in Macon, Georgia, at Ocmulgee National Monument on November 12th and 13th, 1965. The subject of agriculture was a continuation of the previous year's meeting in New Orleans (published in Bulletin 3). All of the papers from the Friday afternoon session are included, but, unfortunately, it was discovered later that the Saturday morning session was not actually being recorded on the tape, and therefore, several of the papers are not included.

The group discussion and comments following the papers presented on Friday afternoon have been included with very little editing. Many of the sentences are incomplete and jumbled, but the original thoughts are there, and since the Saturday morning discussions could not be included, it was felt that the Friday afternoon group discussion might in some way make up for this loss.

The drawing on the front cover is a copy of the earliest known picture of corn, or Indian maize, to appear in Europe. It was published in the 1542 edition of DE HISTORIA STIRPIUM, a book on botany by Leonhard Fuchs, and aroused wide interest in the New World product.

Almost every publication needs space-fillers, and this one is no exception. Since the subject of this bulletin is agriculture, several quotes from Adair's HISTORY OF THE AMERICAN INDIAN have been used as space fillers.

One additional paper by David W. Chase, not presented at the meeting, is included. This contains several new pottery type descriptions from the Central Alabama area and brief backgrounds of the cultural periods involved. Chase also includes a radiocarbon date received on corn from Autauga Complex sites in Central Alabama.

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POST-PLEISTOCENE CLIMATIC CHANGE IN THE SOUTHEASTERN UNITED STATES

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ABSTRACT

Recent statements propose an "Altithermal" of increased rainfall for Southern Arizona, rather than desiccation, and other statements cast doubt on evidence of an Altithermal drouth period in the Western Plains. These two statements then have been invoked in discussion of climatic and ecological conditions in the Southeast. The Altithermal, as a resultant of increased isolation with consequent northward shift of planetary wind belts, is of necessity a period both of increased desiccation and increased precipitation; to extend local phenomena into a general statement is a direct reversal of scientific method.

For 30 years the phenomenon of the leached flints (cherts) of the Macon Plateau has been studied in a frame of supposed constant climatic (chemico-thermal) factor, hence the existing acid soil balance. Absence of conspicuous leaching during the last 3,000 years, with greatly accelerated leaching (to a factor of ten) in the preceding 4,000 years, indicate strongly basic soil environments above water table during the strengthened Bermuda (Atlantic) High, and a pronounced medial low-pressure trough funnelling an excess of Caribbean moist air northward via the Mississippi-Ohio Valleys. Such a climatic shift means a shift of soil types, a shift of dominant vegetation, hence a total ecological shift.

A number of special sessions and symposiums in recent years have been devoted to problems of Early Man cultures and Archaic cultures in a context of Post-Pleistocene climatic change. Increasingly noticeable has been a tendency to accept as well-documented, if not actually proven, the statement that the Altithermal may have been (or actually was) a time of increased precipitation rather than lesser precipitation, a time of moister climate rather than of drier climate. The statements, which ultimately are based on pollen counts from a comparatively limited area in Southern Arizona, discount or disregard the correlative evidence based on geomorphological, paleontological, paleobotanical and paleoclimatological findings in the Southwest and farther afield. The usually cited reference for a moister Altithermal is Martin (1963) where we find the following summary statement:

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> ...The pollen record has led me to reexamine venerated paleoclimatic theory prevalent in the literature of Southwestern prehistory and climatology. The Altithermal of 4,000 to 8,000 years ago is almost invariably spoken of as a time of drouth. If biologically important drouths occurred in the Southwest in post-Pluvial times, I have failed to recognize them in the fossil record. Pollen evidence suggests that the Altithermal was not hot and dry but rather relatively wet, at least in summer. (Martin 1963:70).

This is a meaningless statement. Arizona is in a belt of westerly winds from the Pacific throughout the year except for the four winter months, when a strong Rocky Mountain anticyclone may reverse the winds for weeks at a time. A slight shift northward of the planetary wind belts during the Altithermal is probable, but the effect would be an increase in winter rains (hence effective rainfall) along a belt immediately north of the 30° parallel, i.e., Southern Arizona. In other areas the effect might well be the opposite.

Unfortunately, quite similar statements are appearing which cast doubt on evidence for an Altithermal drouth period in the Western Plains -- that instead of a drouth we may have had a time of increased moisture, hence better grass and better grazing conditions for game animals. These two statements, of a wetter Altithermal in South Arizona, a time of increased precipitation, and that the Western Plains, rather than experiencing drouth, may actually have had a greater growth of grass, have been injected recently into discussion of paleo-ecological conditions in the Southeast. One wording, for instance, which makes this extension, is as follows (Byers, 1965:39):

> ...There was more grass. This was an optimum period in Arizona and the Western Plains and so forth ... I wonder what this does to the arid Altithermal hypothesis. I don't think you can hold the hypothesis any longer that people deserted the Southwest and moved over into the East in view of the few radiocarbon dates that we have. I think there was contemporary occupation in both areas ...

There are several errors here (either-or, yes-no questions); the Altithermal did not necessarily mean the abandonment of any one area, even in the most arid parts of the west, since artesian springs are found along most major faultlines, and throughout much of the west nearby refuge mountain areas were continuously habitable (Huscher and Huscher 1942; Wedel 1963; Hurt 1960). That people moved east is debatable; that material culture inventories closely matching those of the desert environment cultures of the west were spread much farther to the east during the Altithermal seems to me entirely probable.

Returning to the point of departure: the original statements, and hence extensions from them, are in error in that observations which may or may not have validity within limited areas, are then involed in far wider contexts where they certainly do not apply. A clarification of just what is known and what is now known, what is justified inference and what unjustified speculation, is particularly important because the supposed migration of large game at the onset of the Altithermal due to the increasing aridity of the Plains has been a classic explanation of the supposed late and marginal appearance of Early Man artifact types in the East. Results of recent years make it quite clear that there is no longer any justification

for invoking this particular time differential, nor is the supposed large scale migration of big game documented. Even marginal or refuge survivals of elephants and large bison types is difficult to defend, except perhaps in the case of the Mountain Bison of Colorado and the Yellowstone (Bison haningtonii), that with the Bison athapascae of Canada form a continuous size range between modern Bison bison and the Folsom-Lindenmeir-Midland-Scotts Bluff-Wolf Creek Bison occidentalis. Arguments for movements of peoples and cultures at later periods, due to the similarity of point types or associated artifact types are as yet equally difficult to document since our dating methods cannot pin down specific site assemblages in time well enough to distinguish east-west from west-east movements, or perhaps rapid horizon-marker diffusion without distinguishable movements of peoples.

There is no mystery about what is involved in the Altithermal period, since the principal of the planetary wind belts and the correlation of the altitude-latitude life-zones have been well known for 150 years. The Altithermal as a resultant of increased isolation with consequent northward shift of the planetary wind belts, is of necessity a period both of increased desiccation and increased precipitation. Similarly, a shift from winter rains to summer rains might actually mean a sharp decrease in effective rainfall, hence increased desiccation.

I want to emphasize that the above points are not captious quibbles. I am specifically stating that a very small number of persons, arguing from a very limited amount of evidence (pollen seriations from a restricted area), presented in very few published reports, are directly contradicting an enormous body of research, embodied literally in thousands of reports, and involving every line of evidence that can be brought to bear in the anthropological sciences, biological sciences, and the historical earth sciences. Even though we grant, as I do, that the observations may have a limited validity, to extend such regionally limited, local phenomena into a general statement is a direct reversal of scientific method.

The concept of an Altithermal period in the West of higher temperature, widespread desiccation and widespread erosion, and widely recorded geomorphologically, was first clearly explained by G. K. Gilbert, United States Geological Survey, in his report on Lake Bonneville (1890). Ernst Antevs, in the period after World War I, was largely responsible for working out the broader relationships of post-glacial climatic phenomena and bringing them into accord with similar phenomena throughout the Northern Hemisphere. J. Stuart Williams, Utah State Agricultural College, in a brief, tightly written but highly readable summary, brings together the key references for the necessary background to the problem of the Altithermal. This is the one best single introduction I know of (Williams 1956:13-25). My own direct interest in the problem, as some readers will be aware, dates to our finding twenty-five years ago (1914) of a stratified spring site near Denver, showing a three-stage deposition, with a burial firmly cemented in the second of the three layers, a carbonate-impregnated (or limey) marly silt. This was the second of two burials then known to have been found under conditions implying Altithermal age, E. R. Smith's Black Rock Cave burial being the first.

These findings were in essential agreement with Antev's schedules in demonstration of a depositionally recorded Altithermal for the High Plains and the Rocky Mountain Piedmont area. A decade later, a paper by Leopold and Miller (1954) extended the observations from Colorado on northward through Wyoming. In 1952 Richard Forbis and Jack Sperry reported a stratified Early Man site in Montana (McHaffie Site at Billings) with a Scottsbluff horizon between two light-colored soil bands about midway in the observed depositional column.

The specific types of depositional differentiation I am here citing grade out rapidly going eastward from the 100° meridian, a fact which suggests that sharply differing climatic regimens were operative in the eastern, or tall grass prairies, from that operative in the buffalo grass (Buchloea and Botyloides) and sage plains (High Plains). This is the difference between permanently dry subsoil and permanently wet subsoil discussed by Malin, using Thornthwaite's effective rainfall criteria, a difference probably operative throughout the period since the final Cascadian up-arching of the Rocky Mountains. Recent studies have pointed out the mechanism by which warm, moist Gulf air meets the cooler, drier air moving from the west and precipitation begins in a quite narrowly restricted zone at a quite constant distance eastward from the north-south Rocky Mountain Front Ranges (Rhea 1965). Williams, summarizing Leopold and Miller, points out that during the Altithermal an intensified Rocky Mountain High and a stronger Atlantic (Bermuda) High would bound a low pressure trough in the Mississippi Valley area, channelling warm moist Gulf air northward. The above observations point out the impropriety of making any one statement for any one area and then extending the findings to other areas without qualifications.

Dr. A. R. Kelly, 30 years ago, had called attention to the chemically altered flints of the Macon Plateau area, and a series of subsequent papers by Kelly, or by Kelly and Hurst, have discussed the chemistry involved. The standard statement as to the climatological and chemical factors, is that the present chemico-thermal conditions have held with little or no change in the discernible past (Kelly 1953; Bulletin 60, p. 330, citing Carter and Sokoloff 1951, 1952):

> Throughout their history, these specimens have rested in the same soil, been subjected to the same chemico-thermal factors, and the human interception had been produced upon the same flint materials...(i.e., he rules out simple linearity in change.)

In a series of papers presented at a symposium on the Archaic at Tuscaloosa in 1962, and again at Macon in 1963, and in the discussion following a number of points were made indicating the possibility of a sharply intensified Altithermal, depositional recorded. For instance, dune deposits were noted in areas now comparatively stable, and in particular it was noted that the flints recovered from buried levels in the dunes were highly leached (citing Fairbanks, Ripley Bullen, and Huscher. Huscher 1964:36-41; Symposium 1965, v. esp. 33,39). In a later communication I brought up anew the question of the specific chemical reaction involved but assumed the reaction must be an acid attack, since the moist humid southeastern climate should have resulted in continuously acid soils.

In 1964 Honea published a brief resume of the chemistry of flint leaching, noting that flints made up of silica crystals in a cement of collodial silica are readily attacked by alkaline carbonates, and that the leaching effect quickly can

be duplicated in a simulated accelerated weathering test by boiling the flints in a concentrated alkali. I boiled selected sample flakes of the Chattahoochee Valley flints (probably transported from the Flint River drainage) in concentrated sodium hydroxide solution and the flakes completely disappeared, leaving a creamy slurry.

The observed phenomenon of comparatively little patinizing effect in the last three thousand years, as pointed out by Dr. Kelly ten years ago (1953:327,330), but with strongly accelerated leaching in the preceding 4,000 years, to the point of complete removal of the soluble colloids from comparatively thick artifacts, suggests that the difference involves a shift from an alkaline, carbonate soil, such as would be characteristic of a warm dry, or warm and alternately wet and dry, climate, to a slightly cooler, continuously moist climate, such as produces the present acid soil environments of the Southeast.

Technically, the soils involved fall into the Greenville-Magnolia and Norfolk series, and standard references to the soils of the Southeast are in agreement that these soils, under present soil conditions are mildly to strongly acid. In terms of the pH scale, which has a median, or balance point, at 7.0 (i.e., 7.0 means that the soil is neutral, testing neither acid or alkaline), the Greenville soils would have an acidity of 5.0-5.5, acidity increasing on a pH scale comparatively slowly. Alkalinity, and specifically the chemical activity of the strong alkalines, increases geometrically as the pH number rises: thus a rise from a pH of 8.0 to one of 9.0 would increase the solubility of the flint by probably a thousand percent (10^3-10^4). Hence, only a slight shift to the basic side would equal a very much larger shift to the acid side in chemical activity. As I cited previously, the soil experts seem unanimous that there had been an acid-soil environment in the Southeast with no appreciable change in the discernible past, and this was the assumption I previously had accepted (Macon, 1964). Mitchell (1949:101) had cited as one of the side effects of the alkaline soil environment a redeposition of calcium carbonate in the interstices of the cortex from which the colloidal silicas had been leached. The direct correlation of the strongly leaching environment with the years 7,000-3,000 B.C. (the Archaic period) and little or no appreciable leaching in the past 3,000 years, is strong indication that the leaching is a result of chemico-thermal factors reflecting climatic change.

As Leopold and Miller (1954:54) have noted (cited by Williams 1956: 13-25, esp. p. 22), the effect of the Altithermal would be an intensification of the Rocky Mountain High and the Atlantic High (with its Bermuda High extension), hence a forcing of the Caribbean storm tracks westward. The two opposing high pressure systems, with a sharply constricted low pressure trough between, serve to channel the warm, moist Gulf air northward by way of the Mississippi and Ohio valleys, thence on northeast.

Under the present climate regimen a comparatively slight increase in the number of days that the Bermuda High covers the Southeastern United States is enough to disrupt sharply the local rainfall pattern and thus reduce actual local rainfall totals, but even more importantly, the total effective rainfall (Thornthwaite's evaporation ratio). Such an increase, if it persisted for a period of centuries, might well cause a shift from an acid soil balance to an alkaline balance in the general area of what is now the eastern (Appalachian, or Fall Line) storm track.

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EDITOR'S NOTE: Adair (HISTORY OF THE AMERICAN INDIAN) mentions several methods of preserving food.

"... The women plant also pompions, and different sorts of melons, in separate fields, at a considerable distance from the town, where each owner raises an high scaffold, to over-look this favourite part of their vegetable possessions. ... When the pompions are ripe, they cut them into long circling slices, which they barbacue, or dry with a slow heat. And when they have half boiled the larger sort of potatoes, they likewise dry them over a moderate fire, and chiefly use them in the spring-season, mixt with their favourite bear's oil. As soon as the larger sort of corn is full-eared, they half-boil it too, and dry it either by the sun, or over a slow fire; which might be done, as well, in a moderately hot oven, if the heat was renewed as occasion required. This they boil with venison, or any other unsalted flesh."

ECOLOGY OF THE LOWER MISSISSIPPI VALLEY

John Huner

The four areas that I will be talking about are the Atchafalaya Basin, some 75 miles long and 20 miles wide; the Chenier country marginal to the delta; the true delta itself; and the Ponchartrain Basin.

In the Atachafalaya Basin at the present time there is some farming on the higher ridge, but basically this is a very wet swampy environment. Natives have been lost for 4 or 5 days, or as they say, have lost their directions for awhile -- not actually lost. To show you the kind of money a person can make, during the spring flood which is annual, a man running a fishing line can make about $200-300 a week. With a little bit of farming -- some of them do have little garden patches -- it would be a pretty good income. Plus this, there is trapping of the more upland swamp game -- this is a cypress swamp -- such as mink and otter. Prior to 1940 this area was a big lumber industry, but it is still straight gathering even though it is on a modern civilization basis. Some of the cypress logs are 20 feet across. There was a big moss picking industry before the invention of styrofoam. People survived in this area during the depression by picking moss. No one starved because they could go out and pick as much moss as they wanted. There are also bull frogs and alligators, both of which bring in a good income. The main industry is fishing, and the species they catch are cat fish, fresh water drum, paddle fish or spoon bill cat, and buffalo gar. Crawfishing is another big industry which I don't think has expanded outside Louisiana. They also get fresh water snapping turtle, as opposed to the loggerhead turtle. Fresh water shrimp used to be a very big industry, but they are now used mostly as bait. Baby green turtles were also caught and sold for 10 cents apiece, and 50 could be easily caught in a day. Of course, these many things do not bring in much money alone, but combined accounted for a fairly reasonable income for these people. Now, of course, the river is silting up and they are having all kinds of problems. The fish are being killed, the people are going broke, and consequently are moving out of the area.

The second area is the Chenier country. This is composed mainly of Vermillion and Cameron Parishes. These two parishes combined have approximately 2,000 square miles, with only 70 square miles of habitable land: those are the Cheniers proper. In the early 30's cotton was grown in the Cheniers. They also had an orange industry there at one time. Presently the whole area is devoted to grazing, not on the Cheniers, but out in the marsh. If we want to make this nice and anthropological, we can call it herding at the best. I don't think it's straight agriculture yet -- they just turn the things loose, round them up, and have a big cattle drive. Trapping was a very important part of this area, but has now tended to decline. Back in 1945 Louisiana produced more furs than any other state, including Alaska. During the winter, a trapper could make $10,000 easily. Of course, trapping at that time extended all the way across the state. It has, however, declined due to the various hurricanes and the populated areas. Also, the nutria have replaced the other fur bearers and their market value was nil. Now they are coming back. The skins are bringing $1.50 -- twice as much as in the past -- and the meat is

being made into dog food. Another interesting thing is the ducks that come down through the area, and this produces a very good hunting industry. In the Cheniers they have camps. Membership is about $400 for a two-months season. In an 84,000 area refuge they counted six hundred thousand ducks, and hundreds of thousands of migratory birds.

Now we move into the marsh areas, the deltaic deposits. This area is very abundant in all sorts of fish species, shrimp, shell fish, and oysters. The shell fish, oysters mainly, puzzle me. I don't know whether to consider them gathering or cultivation. They do cultivate them, because they move them from one side of the river to the other. On one side they are seeded and on the other they are fattened. In 1963 Louisiana produced 11.4 million pounds of oysters, valued at 3 million dollars. In that same year they produced 59.4 million pounds of shrimp at 18.8 million dollars. There are various other species, such as crab and what they call menhader fish. The latter are bigger than sardines, and are ground up into oil, bone meal, etc. Cane farming is a big cash crop on Bayou Lafourche. This was a Mississippi channel and has nice wide natural levees about a quarter of a mile wide. All of a sudden you get to where the levee starts to narrow, and, as they narrow toward the Gulf, the marsh starts encroaching. Pretty soon you get to the point where agriculture stops. From there on all you see is a bayou line settlement with shrimp boats at almost every house. These people cannot farm in this area, so they switch to gathering. My point being that if any Indians lived down there, they could not practice agriculture. It is the same story as over on the present Mississippi. In Venice you have an orange crop, or had until the last two freezes and the hurricane, but from there on it is all marshes. Again you have the big shrimp industry and a lot of oysters. You also have a big charter boat industry there.

Lake Ponchartrain is bounded on the north by the Pleistocene surface which makes agriculture possible. But in Lake Ponchartrain, Du Pratz reports shrimping and oysters. An interesting point to note is that the nets they used in shrimping came from Paris. This would be 1720, so evidently there was a big market for shrimp at that early time. Presently I am not too sure of any "gathering" activities in the Ponchartrain area. Some crabs are gathered for local sale, but the only other thing I can think of is the shell dredging operation in which they are collecting tons of shell to use for roadbeds, driveways, etc. Most of the shells come from Indian middens. The pay roll was something like 75 thousand dollars in a year for one operator in New Orleans.

In conclusion, I think that it is possible to see that the majority of occupations in present day coastal Louisiana are those that rely on gathering and/or hunting. This is a product of the environment which limits the amount of "dry" land available for agriculture. Therefore, I feel that these same conditions were present during prehistoric times and that the aboriginal inhabitants were more or less limited to hunting and gathering subsistance rather than horticulture.

POINT BAR AGRICULTURE

Sherwood M. Gagliano
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In his description of agricultural practices of the Natchez, Du Pratz mentions the utilization of sand banks along the Mississippi for planting wild rice or water millet:

> I ought not to omit here that from the lowlands of Louisiana upward the river St. Louis (Mississippi) has many sand banks, which become entirely dry, after the waters have gone down at the end of the flood. These sand banks vary in length. There are some half a league long which do not lack a good breadth. I have seen the Natchez and other natives sow a grain which they called choupichoul on these sand banks. This sand is never cultivated and the women and children cover the grain, with a great deal of indifference, with their feet, almost without looking at it. After this sowing and this kind of cultivation they wait until autumn and then gather a great quantity of this grain. They prepare it like millet and it is very good eating. This plant is that which is called "beautiful savage lady" and which grows in all countries, but it needs a good soil, and however good is the quality of any European soil it there reaches a height of only $1\frac{1}{2}$ feet, while on this river sand without cultivation it reaches a height of $3\frac{1}{2}$ or 4 feet.
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> When these grains fail then they have recourse to potatoes which they find in the woods, but it is only when necessity compelt them, just as when they eat chestnuts.[1]

These sand banks were undoubtedly the active parts of point bars and towheads exposed during low river stage. A study of flood stage records at New Orleans gives some indication as to when river bars are exposed on the Mississippi. A compilation of 30 years of data from 1901 to 1929 indicates that rising stage usually lasts from January to April, and from early May the river starts to fall. As it falls, more and more of the

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[1] J. R. Swanton, "Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico." Bur. Amer. Ethnol. Bull. 43, 1911, p. 76. Taken from Du Pratz, "Hist. de La Louisiane, III, 9.

nonvegated silty and sandy point bars become available for planting. The bars, replenished with fresh riverbourne sediments each year, would require little preparation, other than the planting of seeds, because they are bare of vegetation.

It is quite probable that crops other than those mentioned by Du Pratz were also planted on these bars. In the vicinity of New Orleans, for example, the bars on the Mississippi are well exposed from mid-July until early February; ample time for a late corn crop. Mr. Robert Neitzel reports that occasionally farmers in central Louisiana still plant small corn fields on Red River point bars.

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EDITOR'S NOTE: The following description of Indian agriculture was taken from Adair's HISTORY OF THE AMERICAN INDIAN (published in London in 1775, reprinted by Samuel Cole Williams in 1953), pages 435-440.

"Every dwelling house has a small field pretty close to it; and, as soon as the spring of the year admits, there they plant a variety of large and small beans, peas, and the smaller sort of Indian corn, which usually ripens in two months, from the time it is planted; though it is called by the English, the six weeks corn. Around this small farm, they fasten stakes in the ground, and tie a couple of long split hiccory, or white oak-sapplings, at proper distances to keep off the horses; though they cannot leap fences, yet many of the old horses will creep through these enclosures, almost as readily as swine, to the great regret of the women..... Their large fields lie quite open with regard to fencing, and they believe it to be agreeable to the best rules of economy; because, as they say, they can cultivate the best of their land here and there, as it suits their conveniency, without wasting their time in fences and childlishly confining their improvements, as if the crop would eat itself.....

"The chief part of the Indians begin to plant their out-fields, when the wild fruit is so ripe, as to draw off the birds from picking up the grain. This is their general rule, which is in the beginning of May, about the time the traders set off for the English settlements. Among several nations of Indians, each town usually works together. Previous thereto, an old beloved man warns the inhabitants to be ready to plant on a prefixed day. At the dawn of it, one by other goes aloft, and whoops to them with shrill calls, 'that the new year is far advanced, -- that he who expects to eat, must work, -- and that he who will not work, must expect to pay the fine according to old custom, or leave the town, as they will not sweat themselves for an healthy idle waster'. At such times, may be seen many war-chieftains working in common with the people, ... About an hour after sun-rise, they enter the field agreed on by lot, and fall to work with great cheerfulness; sometimes one of their orators cheers them with jests and humorous old tales, and sings several of their most agreeable wild tunes, beating also with a stick in his right hand, on the top of an earthen pot covered with a wet and well-stretched deer-skin: thus they proceed from field to field, till their seed is sown."

ECOLOGY OF THE UPPER LOWER VALLEY

Stephen Williams
Harvard University

You have been given a good idea of what this important lower end of the valley is like, and I would like to give you an idea of what the remainder of the valley is like up to the mouth of the Ohio River. There is a terrific homogeneity of the ecology all the way through southeast Missouri. Those of you who are not familiar with that part of Missouri, perhaps do not realize that in its environment and general ecology, it is very much like north Louisiana. They do not have some of the benefits of Louisiana there, but you get many of the same things.

There are no sharp ecological boundaries that cut across the lower valley. Today, you have much the same thing. Agriculture extends as far north as the mouth of the Ohio and the characteristic things such as cypress, cane and the like, run all the way up to Missouri and the upper parts of the Ohio. There are few boundaries that one can draw across the lower valley when one speaks of them ecologically; for example, there is a boundary about the northern Louisiana border -- a little north of the Louisiana border -- and right across the Yazoo Basin above which Spanish moss does not occur in any great frequency, if at all. Above that line, live oaks are not found. I don't think they extend into the lower Yazoo at all. You get some live oaks in the upper Tensas. Alligators do not get much above the mouth of the Arkansas, according to the historical records. In general, when one looks at the over-all picture of the environment, the kind of fauna that were important for the aboriginal population, such as deer, duck, and small game, is an absolute continuum all the way up. Of course, you drop out the important kinds of things such as many of the things of the coastal environment, but you do have fresh water mussels up the entire valley.

I want to say something about the differential use through time of that. Aside from those things, the amazing thing is the great ecological homogenity of this valley even in terms of temperature. You do not have an important variator of crops whatever particular aspect you look at. The interesting thing in contrast when we do turn to culture, is that we can see lines across the valley at one time or another. There are cultural lines which very sharply cut the valley through time. And so we see culture operating as confining boundaries which cut this very homogenous ecological area.

THE DEVELOPMENT OF AGRICULTURE

IN THE LOWER VALLEY

John S. Belmont
Pitzer College

The southern Lower Mississippi Valley is quite distinct environmentally from the areas to the east, west, and south. Through most of prehistory after the archaic there are cultural boundaries which roughly correspond to the valley-hills ecological boundary on east and west, and a less distinct boundary corresponding to that between the Lower Valley and the Gulf Coastal Plain. There is also a very sharp cultural boundary to the north, which fluctuates between the latitudes of Vicksburg and Greenville, Mississippi. South of this line the cultures are related to those of the Gulf and ultimately Florida; north of the line the cultures have ties with Tennessee, Missouri and the Midwest generally. I know of no ecological boundary in this area that would explain the cultural one, and would be happy to hear suggestions on this point.

At any rate, that part of the Lower Valley between this line and the Gulf Plain forms a consistent cultural unit. Is there any archaeological evidence for a specialized economic adaptation or way of life within this area that might have helped keep it culturally distinct? There is a surprising lack of evidence for corn agriculture here, at least until Plaquemine times -- after perhaps 1200 A.D. Is there a specialized non-agricultural economy here? This seems to me most unlikely in view of the cultural attainments of this area and its suitability for corn agriculture.

The point must be made that abundance of corn in the archaeological record is not a reliable indicator of the importance of corn in a culture -- only of the presence of certain practices which lead to the charring and preservation of corn. One of these is cooking corn on the ear, especially roasting it in the ashes, a universal practice in the Midwest and the Atlantic areas. Boiling, baking or even roasting the kernels, ground or unground, is far less likely to leave recognizable remains for the archaeologist. Although the Natchez did parch kernels over the fire, there is no evidence that they roasted ears, or in fact used any cooking method wherein the cob would come near fire. Such methods are normally associated with "green" or freshly picked young corn, but even in their equivalent to the "Green Corn" or harvest ceremony, the Natchez, unlike the Greeks, did not roast the new sacred ears. According to DuPratz they shelled, ground, and baked the corn. Thus the scarcity of corn on Natchezan and Plaquemine sites, and its complete absence on earlier, presumably ancestral, sites in this area should not necessarily be taken as evidence that corn agriculture was a late arrival here.

In the absence of actual remains of corn, one must look for indirect evidence of the development of agriculture. One avenue of approach is the analysis of shifting settlement patterns. In the southern Lower Valley sequence there are certain major shifts in site locations through time which may relate to increasing reliance on agriculture.

Sites of the early Poverty Point and Tchefuncte periods are too few in this area to make any pattern. With the coming of Marksville, however, the known sites seem to be along the Mississippi and other major streams. Small streams such as Bayou Macon, which are thick with later sites, have no trace of Marksville occupation.

The next period, Issaquena, is represented by many sites, most of which are along the smaller streams. The main stem of the Mississippi has few large sites, but Issaquena sherds are not uncommon here either.

The Troyville period follows Issaquena to the south of Vicksburg, but Deasonville, an intrusive culture from the Mississippi hills, occupies the Yazoo basin to the north. There are somr similarities between the sites of these two cultures (ring middens, little or no mound building) but there are also important differences. Deasonville middens are usually shell middens, while in both Troyville and Issaquena shell only appears in lenses within the midden. Both cultures generally avoid the Mississippi and sites cluster along the smaller streams, especially those along the bluffs. But while for Troyville the bluffs seem to be the center of settlement for a culture exploiting both hill and valley niches, for Deasonville, at least at first, they are a frontier area for a population which extends well back into the hills.

Coles Creek, a temple mound building culture, emerges out of Troyville with heavy doses of influence from both Deasonville and Floridian cultures. During the early period of this culture sites spread over the whole area, displacing the late Deasonville from the Lower Yazoo, and occupying every type of stream in the Valley, especially those with the well developed sandy levee deposits ideal for corn growing. In the later Plaquemine phase of the culture, sites were established on streams such as the Big Black which penetrate well into the hills, and by the historic Natchezan period major sites had been established well back in the hills away from any bottom lands. Nevertheless, the Valley is still definitely the core area for the culture, which utilized only the fringes of the hill country as a whole.

Although Coles Creek ceramics strongly influenced the emerging Caddoan culture and coastal Louisiana cultures as well, Coles Creek culture itself expanded little beyond the southern Lower Valley. This is in marked contrast to Mississippian culture which from modest beginnings in the Cahokia area and the northern Lower Valley spread over most of the eastern United States. I think at 900 A.D. Coles Creek culture was the equal in cultural development and areal spread to early Mississippian, but by 1700 it was all but engulfed by the Mississippian tide.

A plausible explanation for this is that while Mississippian was based on an economy adaptable to the whole range of Woodlands environments, Coles Creek economy was viable only in the Lower Valley, either due to too great a dependence on corn as opposed to hunting, to specialized farming techniques, or to an overly complex economic organization.

The settlement pattern shifts I have described may indicate steps in the development of this specialized adaptation. The Marksville pattern implies

a primitive corn agriculture adapted to the active channel of the Mississippi -- perhaps a point-bar agriculture such as Woody Gagliano suggests. The move back into the smaller bayous in Issaquena times suggests either new corn varieties or farming methods more generally adapted to the Lower Valley environment. The abandonment of the main Mississippi meander belt in Troyville-Deasonville times may represent a retrenchment and partial return to a hunting and gathering economy. This is especially likely in the case of Deasonville, with its hill settlements and shell middens. With the coming of Coles Creek, on the other hand, we seem to have the emergence of a fully adapted valley agricultural economy. This economy provided the base for an impressive density of population and ambitious programs of mound building within the Valley, but it, or the social system which supported it, lacked that broad relevance to the Woodlands as a whole that was found in the Mississippian adaptation. So the Coles Creek culture, perhaps because of the very lushness of the environment which supported it, became peripheral to the major developments of eastern prehistory.

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EDITOR'S NOTES: The following descriptions of food preparation among the Cherokee was taken from Adair's HISTORY OF THE AMERICAN INDIAN (published in London in 1775, reprinted by Samuel Cole Williams in 1953), pages 435-440.

"Corn is their chief produce, and main dependence. Of this they have three sorts: on of which hath been already mentioned [smaller sort of corn which ripens in two months]. The second sort is yellow and flinty, which they call 'hommony-corn'. The third is the largest, of a very white and soft grain, termed 'bread-corn'. In July, when the chestnuts and corn are green and full grown, they half boil the former, and take off the rind; and having sliced the milky, swelled, long rows of the latter, the women pound it in a large wooden mortar, which is wide at the mouth, and gradually narrows to the bottom: then they knead both together, wrap them up in green corn-blades of various sizes, about an inch-thick, and boil them well, as they do every kind of seethed food. This sort of bread is very tempting to the taste, and reconed most delicious to their strong palates. They have another sort of boiled bread, which is mixed with beans, or potatoes; they put on the soft corn till it begins to boil, and pound it sufficiently fine; -- their invention does not reach to the use of any kind of milk. When the flour is stirred, and dried by the heat of the sun or fire, they sift it with sieves of different sizes, curiously made of the coarser or finer cane-splinters. The thin cakes mixt with bear's oil, were formerly baked on thin board stones placed over a fire, or on broad earthen bottoms fit for such a use: but now they use kettles. When they intend to bake great loaves, they make a strong blazing fire, with short dry split wood, on the hearth. When it is burnt down to coals, they carefully rake them off to each side, and sweep away the remaining ashes: then they put their well-kneeded bread loaf, first steeped in hot water, over the hearth, and an earthen bason above it, with the embers and coals a-top. This method of baking is as clean and efficacious as could possibly be done in any oven; when they take it off, they wash the loaf with warm water, and it soon becomes firm, and very white. It is likewise very wholesome, and well-tasted to any except the vitiated palate of an Epicure."

GROUP DISCUSSION AND COMMENTS

STEVE WILLIAMS (Commenting on John Belmont's paper) -- To generalize and to get away from the Tensas Basin for a moment and to follow what John was just saying, our data beyond the time of Christ is so relatively limited that, as you perhaps know, we can't even prove that Poverty Point people hunted deer. We have such few scraps of faunal material, and, of course, absolutely no evidence in regard to agriculture on an inferential level. I might say that one of the interesting things on the Tchefuncte level is a real difference that must have occurred on the economic base. John mentioned the spread of pottery not affecting economic boundaries. We have some pretty good Tchefuncte in the upper Tensas Basin, and of course, there is the so-called Tchula material from Jaketown in the lower Yazoo. The economics of this Tchefuncte culture up here must be rather different from the Tchefuncte in the type area, and yet the pottery is very similar. Coming up to Marksville and its late descendent (what we determine Issequena or late Marksville) we saw some very nice late Marksville pots this morning from the mound near Grenada. It is true that we have what looks like an implant of a culture. I will not argue from which way it is coming, but this implant of a few Marksville period sites we can briefly review. There is just one good Hopewellian site from southeast Missouri, nothing really good in northeast Arkansas, the Landing Site, a very good one in the upper Tensas Basin and one or two in the lower Yazoo. What happens apparently after this implantation of Marksville is a real spread of cultural explosion on this general Hopewellian base, whatever it is. It was a very successful one, because you get a real culture explosion and a terrific cultural homogenity reaching two or three hundred miles up and down the Mississippi. We have in this material we call Issequena or late Marksville, material from right near Marksville reaching right up into the middle of the Yazoo Basin. It is virtually identical and a continuous distribution; lots of sites and rich middens. I wish we knew what they were doing. Certainly they are doing it very productively, whatever it is.

John mentioned the Deasonville-Troyville relations. He did not go into some of his own research that indicates the extent of this coastal influence which comes up into the valley with this Deasonville culture -- or this woodland culture as you may call it. It apparently is coming down in a southwesterly direction, out of the hills, and penetrating as far down, in some instances, as Greenhouse. Here we must have or very likely have quite a different economy. We need only think back to John Bennetts paper written back before the war on the distinction (in an environment very similar) around Kincaid between the bottom land farmers and the upland hill people. As you are aware, this same kind of distinction exists even today. We speak of the hill type Deasonville culture. I think very reasonably that it did reflect a different kind of economic base and it did have a success that came in and was then replaced perhaps around 800 A.D. by a Coles Creek culture, as it apparently developes somewhere in this area and radiates out from that point. What's going on up here about this same time is important, this important date line about 800. It certainly is a development somewhere around Cahokia. The development of the culture complex that we term Mississippi, and the important radiation from the north to the south.

As it comes from the river it does not get strong much further south than about the Louisiana border. At sites, like Lake George, it is interesting to speculate what the difference, if there was any basic economic difference between Plaquemine-Coles Creek culture -- the resident culture -- and this intrusive Mississippi culture. As we know, there certainly was something about the generalized Mississippian culture that was pretty darn effective whatever environment it went into. We see it first spreading across into Georgia and finally up into the Carolinas, reflected by hybrids such as Lamar. We see the same sort of thing happening in the north where Oneota goes out in that direction, and yet we have this resident culture continuum. Here Coles Creek-Plaquemine, which is ultimately intensified by it, perhaps there is more than a difference in pottery types here, but we do not know too much about it.

BELMONT -- I don't think I made myself too clear about that swampy business I went into, as Dr. Williams did, about the Mississippian, but here you have pretty good evidence that the Deasonville coming in from the hills does push the descent of Marksville culture down toward the south, it persists at places like Greenhouse down at the mouth of the Red River. A little bit later in time, the Greenhouse-Troyville, late, late Marksville, is itself replaced by something that is also called Troyville (which should be called something else) coming up from the coast. Deasonville coming down from the north, presumably non-agricultural cultures, wiping out this specialized adaptation of Marksville, presumably could not come to terms with areas outside the boundaries.

WILLIAMS -- This is during Weeden Island time, to put a name to the culture.

SEARS -- It has been very obvious to me for quite sometime while working over in this section south of Highway 80, which is the real heart of the Gulf coastal plain (has nothing to do with anything else except they put Highway 80 at the right place) down here to the forks. Instead of something called Deasonville, there is the old Miller Culture which comes down into the area. The pottery is cordmarked. You also get just the beginning of Troyville coming across and we find a few actual Troyville sherds of the earlier Issaquena variant. But the point it, just about the same time you get the explosion over in the lower valley, the same thing happens all the way across this section of the Gulf Coastal Plain. You get a mixture, both the Issaquena pottery types, the cord marked pottery coming down -- those things disturb the period. You get sand tempered Florida equivalents which you have to feel to determine if they are Troyville or Weeden Island, Just when all of this happens you get the tremendous explosion of a lot more sites and a lot bigger sites all over the place. The other gimic is that at this time, right out of this area, for a couple hundred years, you get the few big ceremonial sites built in. That would be up in your Coles Creek Period, I think, so you are really talking about the same kind of thing, maybe early Coles Creek or later. The point on this, looking backwards at it, and talking about economy and agriculture is the only darn excuse for this to have happened, is the tremendously more effective economic system. It is suddenly a lot more people getting fed by something, and this goes on for I think one hundred years. It probably accounts for population building every ten years or something; this would account for what you see over there. My point is that if everybody has been wandering around utilizing these various environments by hunting and gathering, and if things have just been moving along slowly, I

see how you can get this tremendous population explosion for all of these other sites by only continuing more hunting and gathering. Something else has to come in right about at this point. The first temple mounds may have something to do with it, but it isn't Mississippian agriculture. These are not Mississippian sites, even if there are a few platform mounds around. For the area you are talking about, Middle Mississippi when it does show up, I am positive is an invading culture which comes in and slaps these people out and replaces them. It's not what is going on in the valley I am quite sure, but it is over here. Mound building comes in and moves on down as far as Pensacola, There is no transition from your local culture into these things, they are getting chopped off and the same thing I am quite sure is happening over here with Fort Walton. Now we know about their agricultural system within some kind of reason. We can guess it is corn. The big sites and the little ones have moved down onto the flood plains. They are using some kind of flood plain agriculture at this time, not right on the coast, but inland a little bit. I am pretty sure that this will also have something to do with the introduction of the southerlie technique for corn. This is common for all the Muskogean people and is the way to prepare it. It finally occurs to me that it perhaps accounts for the complete lack of stone mortars, metates and manos in the southeast and the use of the log mortar. So this is a nice complex, it hangs together, but it doesn't have anything to do with the earlier one. What I am suggesting is that we must have at this point all the way across here, to account for what we see, utilizing the first slopes of the Red clay hills and a lot of that country, the flood plains and other parts of it, some kind of effective agriculture that simply is a different kind than the Mississippian agriculture. I would like some thoughts as to what it may be.

GRIFFIN -- Now, Bill, you may be looking at it very clearly, but you haven't said yet what kinds of materials they are. The names of the sites, complexes, etc., that you are talking about. I'm lost.

SEARS -- OK. From here on down in this river, you start out with the Miller Complex, basically. I have forgotten the various levels. It starts out fabric marked with one kind of temper, and then changes to sand temper cord marked. After that you get actual Issaquena materials showing on the same sites and mixed in with it, so apparently this is trade wares. There is apt to be more cord marked, but it depends on how far up and down this river you are. If you are further south you get more Issaquena, if you are further north, you get more cord marked.

GRIFFIN-- Has this ever been published?

SEARS -- No, this is in that survey report I am working on to get out. Over on the Alabama, you have practically none of the cord marked and fabric marked material. You still get the Issaquena materials and you get more things like Deptford wandering around. Early Swift Creek is more pertinent at this point. Sites with a lot of plain ware, but there aren't many sites, these are little ones with this kind of thing. You can kinda see what is happening with ideas moving across here and down, but at a point when you are farther up into something like fully developed Troyville over here, this cord marked stuff is in its late equivalent phase. You are just judging really that you are in Troyville by a few trade sherds. You get some checked stamped

pottery moving up here from the coast -- your fine check stamped --, or over here you get your clay tempered checked stamped, and it's just before this that you get this tremendous increase in number of sites and size of sites. Just before the check stamped is where we see the bigger ceremonial sites show up. There is one site, Kolomoki, ... There is one Weeden Island type of site (I haven't worked this out of the coastal plain) over on one of the branches of this river with absolutely no check stamped pottery on it, but with a good platform mound. It is not a tremendously large one. About 200 yards from the platform mound there is a small burial mound full of rocks, and the midden is spread out between these two units. So that is another platform mound at this kind of time level. Just when these things show up,you get a tremendous number of small sites all over the place. We have a very sparse occupation along the Florida Northwest Coast. In Deptford times when you see the first Issaquena material show up -- it is actual clay sherds or copies within the clay tempered here -- you are about on early Swift Creek level. The Deptford is changing into early Swift Creek all across this whole area, actually, but we are looking at it from the coast. Now most of the early Swift Creek middens have nothing in them but plain ware and early Swift Creek. The Troyville kind of material -- the rocker stamped stuff -- is basically a burial mound ware, and hardly shows up in the midden. But all of a sudden all of the pottery types that we have as Weeden Island, which are pretty much duplicates of the standard Troyville types, show up along this coast. Then we get these tremendous growths of sites all along the Northwest Coast, up into southwest Georgia, and all the way over almost to Alabama up to Highway 80.

BELMONT -- Is this early Weeden Island times?

SEARS -- Yes, actually your Weeden Island itself is an explosion on that coast. There are very few sites with early Swift Creek material in it, and they have very little of the coastal plain material in them. At that time, the coastal plain material -- call it Troyville or Weeden Island as you wish -- I mean in that tradition -- is basically a burial ware and does not show up in middens in any real quantity. These have to be kept separated, but as soon as it does show up in the middens, this is the time when you can get the tremendous number of sites. Your ceramic complexes anywhere along this coast in a village site are apt to be half Weeden Island series, half complicated stamped or half Weeden Island and half checked stamped.

BELMONT -- This story is very different from that in the lower valley. As I was trying to point out, in Troyville -- Weeden Island I times -- you have a contraction; less sites in the lower valley than in Issaquena. You have probably a non-agricultural shell mound. The Coles Creek -- that's Weeden Island II -- is where you get the expansion.

SEARS -- Well, you have one mistake, one flaw in there of matching up which is probably part of the trouble here. This Troyville level or your Issaquena level, lets chop this in half.

BELMONT -- No, Issaquena goes in here.

SEARS -- OK, Issaquena was early Troyville the last time I went to a conference.

GRIFFIN -- Issaquena is really Santa Rosa-Swift Creek Period. This is Weeden Island I and Weeden Island II.

SEARS -- Well, even that isn't true. Santa Rosa-Swift Creek has fourteen or fifteen different dimensions, but Issaquena relates only to the later part of what Willey calls the Santa Rosa-Swift Creek, which is characterized in village middens by early Swift Creek pottery. This Santa Rosa stuff is again ceremonial ware, which is part of our complication.

GRIFFIN -- Depends on our earlier times.

SEARS -- Yes.

GRIFFIN -- Well, they had Manny Stamp material up there.

SEARS -- Actual Manny Stamp? You can get that problem solved very nicely over here in the delta with Bruce Trickeys material, where standard assemblages are early Swift Creek sand tempered and Manny Stamped clay tempered. This is the standard normal assemblages for Porter Hopewell. So there may be a slight difference in time here, but the same thing generally is taking place. Maybe I am saying it takes place a little earlier over to the east of you, but the basic economic question is still there. This is before Mississippian, by any of the definitions except those which say that any of the big sites which have mounds on them are Mississippian. There is a tremendous population increase, as exemplified by the number of sites, size of sites, etc. The reason has to be economic. You can't, I don't think, have an increase in hunting and gathering utilization at that particular point in time that would explain it.

GRIFFIN -- Do you get any period of decline following this?

SEARS -- No. It gets chopped off by Fort Walton and by the Mount Hope and Pensacola cultures.

GRIFFIN -- The long time span between what we've been talking about and the appearance of mound building material down towards the coast?

SEARS -- No, you don't get the decline, you get less usage of the ceremonial mound. But, I am quite sure that the biggest of the middens along the coast and up through South Alabama and these various weird complexes I am talking about, are pretty well up toward the late end of the thing and it is that occupation which is chopped off when the Middle Mississippian occupation comes in. I don't think you ever have a decline here, it continues to grow. It is only this one tremendous spurt I see, and any other tremendous spurt at the top of the chart is actual population replacement. OK. We know what Mississippian agriculture is. It accounts for all these Mississippians being so successful as they are here. I don't think we know what accounts for this earlier one that is going on across the earth that produces Weeden Island, that produces Coles Creek, produces tremendous expansion of various complicated cultures up in here that have been put together apart,

as you said once before, like if we had studied this area first.

KELLY -- I have always been interested in the situation there on the Chattahoochee which has recently been completed. And it is very striking that Weeden Island types continue all the way up the Chattahoochee until we are just above Columbus-- near the falls -- and then we come to a screeching halt so suddenly and startling in terms of type distribution that you ask yourself why this should be?

SEARS -- This same population explosion we are talking about or whatever you want to call it, actually took you all the way across the back of the Okeefenokee to St. Simons Island. It doesn't matter whether we are talking about it. I think the ideas, whatever they were, started here in your area, I'm pretty darn sure they did because this is the way the ceramic things move, to start with Weeden Island and so forth. But, it goes like a wave and carries it by sheer momentum all the way across the back of the Okeefenokee Swamps to the Georgia Coast.

BELMONT -- It may be that the pushing of the Issaquena people out of much of the valley by Deasonville is what starts the development along the Florida Coast. Maybe they go down there.

SEARS -- I sincerely doubt that any place where I am, I am talking about people moving at all. I think this is the successful economic system probably related to religious ideas come openly out of Hopewell. It's pushing across here. But if we had some kind of hint what this might be. Are we talking about a different kind of corn agriculture, or a different kind of agriculture. This is something else. If we could feel our way into that system and could get a hint, then all of this may fall back together in a pattern.

YARNELL -- I think it is not so much the botany as the economy. Notice on the sites that we worked on that were clearly agriculture, the hunting and gathering seems to be quite specialized. You get large game in hunting or you get a concentration of small units such as walnut, hickory, or mussell shells. In Urbana last year, they were working on these Oneota sites that had extended beyond the line of expected agriculture. They noticed that the faunal remains in the earlier site where they had clear evidence of agriculture, were showing specialized patterns. Soon as agriculture dropped out, you get a generalization including practically anything they could find.

SEARS -- That is one thing that has showed up in zoo-archaeological work in Florida. We are getting a more and more specialization in game as you get later in time, and any other particular evidence for a change in economy, but just less kinds. Another example came out in Kolomoki several years ago, with practically nothing but deer and turkey being eaten. When you can afford to be that specialized in the animals you hunt, you are not very darn hungry.

YARNELL -- I was wondering if this Oneota thing could be turned around backwards, if the possibility of the agriculture worked in the other direction.

SEARS -- Yes, that is what I was suggesting. There are other things that say this should be agriculture. I will bet that when we do zoomorphical studies on some of these other sites, we will get the same thing. There will be a lot of animals

there, but there will be a tremendous amount of concentration in the choice kinds of meat. They simply are not paying as much attention to the other things, that is true, although the suggestion is there. The question still is, what kind of agriculture?

LARSON -- On the first point, I don't think this is quite true. The deer are probably much more easily slaughtered in large numbers where you have agriculture than they would be where there is no agriculture. They are commensurate with man.

SEARS -- Yes, that is true, but this does not account for the sudden dropping of what is called slow game. You can always go out and club the opposum to death in this country without any difficulty at all. But apparently in later times, like the Kolomoki situation, if you do not want opposum to eat you do not bother with it. In earlier times you get opposums because they are something you can eat.

FAIRBANKS -- I don't believe there is a drop in slow game. You get your terrapin, etc. in sites as well as you do your other game.

SEARS -- Shift in percentage is what I am saying. I think at Kolomoki it is 90 or 95% deer and turkey, the other 5% odds and ends. There is some turtle in it. Whereas, in some of the earlier times it runs the other direction.

FAIRBANKS -- After the American Revolution they had corn in one pit and right next to it they had chicken eggs and pigs and cows and terrapin, they didn't drop it.

SEARS -- No, they didn't drop it, but you don't get (as you do for example in some of the shell middens along the coast down in the Deptford time level) 75 or 80% of your stuff in the odds and ends in the animals that are running around. At that level you get some 75 or 80% of opposum, wood rats, racoons, turtle -- any of these things-- and only 5 or 10% of the deer. You get to the other level, it runs the other direction, it seems to me. This isn't evidence, obviously. I am suggesting that there is a change in direction here as somebody said before.

VOICE -- When did this come into Kolomoki. This all deer and turkey?

HAAG -- Why don't we ask Dr. Griffin about the different kinds of agriculture in the Southern Illinois as it might effect this area?

GRIFFIN -- We do not have any dates yet on the Salt Cave material that has been investigated by Patty Jo Watson and the material itself by Yarnell. There are a lot of goards in the cave, so that when we get dates on the occupation by the people, there should be some correlation between the date of the goard and the date of the people. You have a lot of native plant material that you can prove were eaten by the people. I think a reasonable assumption is that goards at least were being utilized in the middle south, in the Kentucky area, by 1000 B.C., perhaps earlier. We have some squash seed from Saganough -- which is about 120 miles northwest of Detroit -- at 500 B.C.

and this identification of squash seed was made a year before.

There was some effective domesticated plants by the time of the Hopewellian period, and by that I mean from about 200 B.C. to 300 or 400 A.D. This certainly wasn't as effective as the later Mississippian agriculture, and there is no fundamental disagreement between this position and that adapted by other individuals. It is that there is some amount of agriculture in this period, but that it did not provide the type of effective subsistence pattern of adequate storage for good population build-up that we seem to get somewhat later. There are individuals with the data that has been presented here which suggests that on a Post-Hopewellian time level, there seems to be a significant increase in populations here in the south. There is not too much of a population decrease in some of the Post-Hopewellian complexes in the upper Mississippi Valley. There is deteoriation, but perhaps not population deteoriation. Then we have this development along the Mississippi Valley area, in this favorable ecological area for agriculture. Then we have this striking development of Mississippian agriculture subsistence and the way of life which could be based on it. This seems to begin to develop by around 700 or 800 A.D. and by 900 to 1000 Cahokia was a pretty effective site, with large cypress logs being used -- at least in one instance -- in a village. I am told now that the pollen diagrams apparently from approximately 1000 A.D. are showing a considerable amount of cypress at St. Louis. So that this may be some part of an explanation for a development in the Mississippi Valley area -- in this favorable ecological area -- for agriculture. All an effective economic system irrespective of ceramic types or minor cultural pattern, of linguistically and socially related groups of people who are burgening in rather constricted areas. I suggest it is a great mistake to regard these as cultures with a capital "C", but use them as cultures with a small "c", and that the important cultural change which is taking place is of the economic base. This is what I am talking about when I speak about Mississippian.

RITCHIE -- There is a parallel situation to be mentioned in the northeast, where, between A.D. 1000 and 1100 -- we have ample radio-carbon dates to support this date -- the first real big population explosion takes place. This is when an enormous profileration of sites (the villages are larger for the first time and all this whole pattern that we are talking about) appears in our area for the first time. This is correlated positively and definitely with the first appearance of corn. I suspect corn may have been known in our area somewhat before this, but we have never found it in a site. But by this time we find it in all the sites. Now corn with agriculture becomes a big subsistence pattern. The results are this enormous blowing out of the population and the spread of sites all over the place. The big thing later than what we are talking about here for the lower Mississippi -- much later -- but the phenomenon seems to be these various activities.

SEARS -- I think we are really talking about similar things happening over a tremendously wide area. I still think there has to be two different things involved, because we are talking about getting a big jump about the same time your Mississippian agriculture starts. It might be related, this I will freely grant, but it reaches a certain kind of level of effectiveness in our area and stays there. It is not as effective as real shell-tempered middle Mississippian peoples coming down with their temple mounds, who were so darn effective that over

to the east of the Mississippi Valley, when they come in, they are able to simply cut these people off and replace them. So what I am suggesting perhaps is that there really are two economic systems involved as far as the lower southeast is concerned. One which may be an inspiration or relationship from the north produces this version, but it is not as good as the one which was developed further to the north. That simply produced more people who were able to replace these down here. There really are two distinct culture patterns here with two economic systems.

GRIFFIN -- There is a variance in the economic shift, one more effective than the other.

SEARS -- That is right, something of that sort.

BELMONT -- There are two shifts then in the Gulf Coast.

SEARS -- That is right. One is this first one I am talking about and the second is the shift that I am quite sure is actual population replacement which implies the kind of reasoning I have been doing. That these people had an even more effective economic base and they are the classic Mississippi culture as exemplified by the mound builders and Pensacola complexes. They are so successful that they just walk all over these other people and disappear. I don't know if they married the women or what, but there is no transition, they just cut things off.

FAIRBANKS -- There is a new publication that I just received, William T. Sanders Cultural Ecology of the Teotihuacan Valley. I am under the impression that he shows that there was a major increase both in population and in communities in the valley of Teotihuacan about 1000 A.D.

HAAG -- Surely that couldn't be correlated with the introduction of corn.

SEARS -- Scotty MacNeish suggested one time that what might be responsible here was simply a change in corn type coming out of Mexico. Corn that was raised by the late very successful Mississippian peoples has a great many advantages, including being one that was adaptable to a lot more situations than an earlier corn might have been.

HAAG -- Stu Neitzel had some evidence along those lines. That there really were two varieties of corn, and that there are actual ethnographical reference to two crops of maize being raised.

SEARS -- Yes, and I would bet that in the later period the less effective one was being raised over in the valley by Plaquemine people and their descendents the Natchez, and the more successful ones would be associated with the classic shell-tempered big temple mound people in the Middle Mississippi.

HAAG -- But is it the Natchez that this reference of two crops refers to?

BELMONT -- By that time there is a heavy Mississippian influence on the Natchez.

HAAG -- Yes, I guess that is right.

BELMONT -- I think maybe this southern variety of corn was simply not as hardy as most other plants, that is in the ecological line.

SEARS -- The correlated thing is that the later Mississippi peoples moved down on the flood plain, had bigger communities, far more consistent, than the earlier peoples. This new variety of corn might be one which was really adaptable to the wet flood plain, natural levee kind of situation, whereas the earlier corn was not too successful in that kind of situation.

McNUTT -- I want to bring out a point. I don't know of any place in which, with the invention of agriculture, there was a great booming of the cultural system. We know it didn't happen in Mexico or the Southwest, and it didn't happen here.

SEARS -- Not with the invention of agriculture.

McNUTT -- The agriculture comes in and various types of pottery and other cultural things develop on an agricultural base, right around 800 or 900 A.D. I think that you can just about predict that if you have agriculture coming into, on the one hand, North Georgia, and on the other hand the Mississippi Valley around St. Louis, I would be willing to bet on which one was going to produce the more effective subsistence. Red clay just doesn't grow corn. They might have had to clear all that land, we don't know. They might have had corn, but I just don't think we can argue.

SEARS -- But the point still remains that if you have a big increase in population you have got to increase the subsistence base. This can be done either by a more effective cultural thing, or maybe a better storage system will do it, but it is more likely in some of these instances, that you simply have a better crop to work with.

KELLY -- I would like to present the possibility that maybe cultural factors which added up to strong areas of cultural conservation would make for more redistributing over our area and that we have a tendency as archaeologists to argue the clear superiority of a product whether it is a better type of corn or a better subsistence base, that this would necessarily take over or supplant even an older or more inefficient system. I might point out that this subject has been studied by applied anthropologist, based on a better yield of potatoes. There are all sorts of factors involved in their kinship, religion, family, etc., that would prevent these people from taking the clearly advantageous and better product which would have given them more security and help them subsist for a long time. It seems to me that this is clearly a cultural factor and has a lot to do with the spread, movement and greater acceptance, and of course a better base for an expanding population. The trouble is that as archaeologists we can't uncover artifacts or data which will enable us to put our finger on these other cultural factors which were probably very powerful and critical.

SEARS -- This explosion that we have been talking about here is certainly tied in with the religious system, because we are getting the same spread of Weeden Island and the elaborate mortuary culture associated with it. That is simply the final product coming out of the original Hopewell system that is moving across here, and the agriculture, community patterns, burial mound systems and everything else are all tied into one neat bundle, and it is reasonably effective. The Middle Mississippian peoples, by the time they appear, had a completely different bundle. It may well be that you had to take the whole system with it. They weren't about to do that, so that they lost.

GRIFFIN -- This is one of the points that I think comes out very clearly in this whole presentation; that is, if there had been at any time a really significant introduction of peoples and of cultural systems and agriculture into the area, you would have a pattern like you have in Europe. With the introduction of agriculture along the Danube, there was a great development of population in a completely different cultural system shown on these sites than you get in any other areas. We don't have that in the east at all.

SEARS -- He could hardly be more wrong; does anybody want to take turns?

BELMONT -- You have small movements of this kind.

GRIFFIN -- Oh, yes, you get small movements. I'm talking about from Meso-America. That is what I am talking about. The agriculture coming in from outside the area.

BELMONT -- St. Louis to Pittsburgh to Yazoo City; that kind of movement?

GRIFFIN -- I was under the impression that Pittsburgh was still in the United States.

MacCORD -- I would like to interject one thing here. I have no quarrel with the spread of cultural traits by adaptation or force or any other way, but we talk about a culture as being more involved than moving in and pre-empting an area, conquering or driving out other people. I think we need to bring in the physical anthropological evidence. I think we are talking out in space right now and we ought to get down to the people themselves. Is there a transplanting or a movement of people? Use blood groups or whatever we can use.

SEARS -- That is one which has been suggested many times and has not been done partly because people have not had the samples, but I would suggest that what we are talking about is cultural systems, and you can sure have two cultural systems with exactly the same physical types. Even if this study was done and they all turned out to be Orpholids or Sylvids, it wouldn't make any difference.

BELMONT -- I think in Indian warfare generally, there was not a wholesale wiping out of these populations.

SEARS -- Some interbreeding and some just movement over to the areas where they weren't. So you pick up a distance of 50 miles and it will be two generations before 50 miles is that much of a problem.

VOICE -- In historic references, when they went into a village, they took care of it completely. They wiped out men, women, and children. Of course, they had guns, but this situation is entirely different, people dying off like flies.

SEARS -- There is another point that is relevent to that and it is that most of these Mississippian sites, when Mississippian first appears in the new area, appear to be fortified sites. They were not just playing games. The parallel I have drawn is exactly like our own expansion into the Ohio Valley. When a community pushes out into this other country and fortifies the advance positions. Eventually you get rid of the Indians or most of them and then you push the next part out and fortify it. That was still going on it seems to me, This whole Mississippian business is awfully late, after the historic period, which accounts for the fortification of Mobile, for example.

WILLIAMS -- The Iroquois didn't kill. You read the very earliest references before guns come into the upper Northwest. You read about their big raids and they will talk of a half dozen or so being killed.

SEARS -- But aren't we in a danger of drawing comparisons that might not necessarily be the result? I suggest that the Iroquois pattern, if it is applicable in the southeast as a culture pattern, is probably something that come to our very early Middle Mississippi.

VOICE -- Their warfare pattern certainly was, because they were raiding through the southeast.

GRIFFIN -- They didn't raid until they got guns, and until they solidified their position by annihilating their advisaries who didn't want to join in their league for peace.

VOICE -- When a new economic system moves into an area, you don't necessarily want to use the same items that the other people have.

SEARS -- Actually this does not seem to be the case. I am suggesting that there is a Middle Mississippian coming down from the north at this time, doing the same thing through the lower southeast, reaching the coast finally, probably about 5 minutes before DeSota came along.

MacCORD -- It seems to me that if the men were killed off and the women and children adapted by conquering groups, the women would continue to make their ceramics as they had learned as children from their mothers, and we would find a hybridization of pottery types which we do not find.

SEARS -- I can give you a very good example of why that is not true. If you have ever lived in a small town and seen a bride brought in from outside that small town, see how long she continues the culture pattern of the town she came from. When you enter a community you do things the way that community does. I don't

know how much of this marrying women occurred anyhow. I think sex goes to our heads sporadically, as archaeologists. Anyway, a culture that is moving along has an adequate supply of its own women with them.

MacCORD -- There is a similar situation in Korea, where we had a neolithic population with a more cultural group coming in from South Korea, and becoming the ruling class over the neolithic people. This was possible because this new group coming in had horses, iron, bronze, gold, and the use of the wheel. They became the ruling class over the Japanese, but the basic Japanese population did not change. We may have this in Indian times and because they are bringing something that has more prestige than the common people have.

SEARS -- Let's look at the situation right around here where I know it very well. On both sides of this you get differences: whether you put clay or sand in your pottery for the period of time we are talking about. There are even two sites right here where they can see the other site across the mouth of Mobile Bay. Those Indians knew what the rules were, because on this side they put clay in their pottery and on this side they put sand. This is the only difference in the pottery, percentages or anything else. This was the dividing line and they knew it. Now, you get a cultural continuum here that you can trace with this kind of thing, filtering back and forth. But at a certain point, there is not another single sand or clay tempered pot sherd made any time at all. You get new layers on old middens or new middens in which all of the pottery is classic Middle Mississippian types with shell temper in it. It is exactly that sharp. I suggest that you can only bring this about by bringing in a total community lock, stock and barrel -- and maybe potmaker -- and running the previous inhabitants out. Otherwise there would have to be some layers of transition.

HAAG -- Let's get back to the Mississippi Valley for a minute.

PERINO -- On what Bill is saying. I think it has been abundantly proved that in the Mississippi Valley around Cahokia the Mississippian people come up and actually acculturate with the late Woodland people. They didn't drive them out or kill them. I think there is very good evidence of that, although it is not in print. Getting back to Steve's Tansas area, I want to quote Marquette on corn. "We saw at the same time some that was ripe, some that had only sprouted, and some that was beginning to milk". Evidently they grow it three times a year. This means production; production means that there is a lot more to eat.

HAAG -- Some places you probably couldn't do this but twice a year. I think farther south the better your opportunities might have been for a continuous crop practically.

BELMONT -- There certainly is a fusing of culture in the lower valley with Mississippian coming in, there is no doubt about it. Perhaps this is because here in the lower valley this Gulf thing had gotten an economy that was close enough to the Mississippian that it was not easily replaced. They had a very heavy population before they had any Mississippian influences.

GRIFFIN -- I would like to raise a little point. The Natchean material 20 years ago was associated with a complex like this. Now is this part of the tradition starting back here in Tchefuncte or do you get that killed off in Plaquemine more or less, with a replacement of the stuff coming down from the north? Natchean in these terms would then not be a result of the development in situ, but a part of this pressure coming down south. It is related to the material up farther north, type of design, style of vessel forms and so on. I am suggesting that Natchean is not a culmination of the development in place, but is a result of the movement from the north.

PERINO -- In southeast Missouri and eastern Arkansas, from Natchez northward you find sites with Mississippian and Baytown sherds mixed. There are quite a number of these sites. You are getting a mixture and acculturation of Mississippian traits either up or down the valley. We don't have any carbon dates on these sites in the Memphis area, and we don't know which way it is going.

GRIFFIN -- Do you ever get any burials where you get both with the same burial?

PERINO -- Well, we get whole village sites with refuge pits having both.

GRIFFIN -- I know you can do that, but the trick is, what is the precise temporal relationship of these things?

PERINO -- One thing we know is that we get the bottles at this time -- clay tempered bottles -- We get a few clay tempered Mississippi vessels along with a lot of shell tempered ones of the formative Mississippian type with the rudimentary effigy heads on the rim.

SEARS -- You know, there might be another point that just occurred to me with respect to this. From Marksville up into Plaquemine there is a tremendous amount of cultural variation all through here. Every river valley has something different, it may be a different combination of things, from two other valleys, or what have you, but there is a lot. It is at the time, whether it was Middle Mississippi influences or invasion, that all across through here life gets awfully monotonous and the same. We are talking about potsherds. With the acceptance of potsherds this has something to do with cultures and cultural success has something to do with an economic system.

WILLIAMS -- What Jimmy said about Natchean. One of the things that strikes me after looking at Neitzel's Fatherland material is that certainly in what we termed Natchean, there is a strong Plaquemine base and in the Plaquemine sites over in the Tensas you do get shell tempering coming in. You get shell tempered brushed ware, for example, and I certainly would agree that the classic type --Fatherland Incised, Bayou Incised, Natchez Incised -- apparently come in from influences from the north and are not derived directly from other Plaquemine types. Another interesting aspect of this thing is where did the red ware in Natchez come from? There is an awful lot of red ware in Natchez. There is not one single bit of red ware at this time within a couple hundred miles directly north. I think that there is a third ingredient that comes into Natchez possibly from over in the hills.

SEARS -- What is wrong with bringing the Natchez material in from the Caddoan area further over in the west?

GRIFFIN -- Caddoan has it too because they are on the same time level. You have the same style from about the mouth of the Arkansas down to the mouth of the Red River, throughout this entire area, and even the complex of materials that are on late Caddoan sites in eastern Louisiana are again the result of northern influences to some degree.

SEARS -- It would be possible, but we seem to be getting a long way away from ecology. This kind of style it seems to me has a slightly longer history of development over here. The bottles that we were talking about before, this kind of engraved design, has something to do with development over here. It probably started its history, with ideas from here and over from here. I am suggesting that it might have got back into Natchez out of this part of the world, instead of coming down from the north.

GRIFFIN -- I am just talking about the Arkansas, roughly the mouth of the Arkansas area. This is where I can see the connections on immediately pre-Natchean level.

BULLEN -- These improvements in economic levels might change a little in peninsula Florida. There is a terrific change that occurs about the Tchefuncte time, but from then on in Deptford, Swift Creek, Weeden Island there are many more people, many more sites in Weeden Island I and in Weeden Island II there is more yet.

HAAG-- That is the situation in the lower valley.

GRIFFIN -- What is your date for the first burial mound in Florida?

BULLEN -- Well, 1 A.D., something like that. I think that is reasonable.

SEARS -- Except we do not get much of that. We just get a few sherds or something that says they are in contact with these people.

BULLEN -- Another thing, those things do not go to the east coast, probably for economic reasons. The land is not suitable for corn.

HAAG -- We got a long way from agriculture. Someone brought up the subject of bottles. I declare this meeting adjourned.

ECONOMIC BASIS OF TENNESSEE VALLEY PREHISTORY

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No attempt has been made to determine the prehistoric ecology of the Tennessee Valley. A few descriptions of some areas can be found, but no comprehensive account exists. It is evident that the valley encompasses more than one ecology region, however. This is indicated by the existence of three physiographic provinces and also the cultural complexes which are identified within each of these provinces. Because of this the archaeological story of the entire Tennessee Valley can only be related in gross terms; i.e., broad cultural stages.

Geologists recognize at least three physiographic provinces in the valley. In the east, the river drains the western slopes of the Appalachians. Here the valley averages 45 miles in width and is characterized by many, long, narrow ridges separated by small valleys. Elevations range between 1500 feet on the ridges and 600 feet in the valleys. Forest cover included yellow pine and hardwoods such as oaks, hickories, yellow poplar, black gum, chestnut and basswood.

The middle valley which includes part of northern Alabama had a forest cover of yellow pine and bottomland hardwoods, i.e., tupelo gums, willow, swamp chestnut, green ash, sycamore, cypress and soft maples. The western, or lower, valley had a forest cover of upland hardwoods like that of the eastern valley. This part of the valley is narrow and relatively rugged, about 10-20 miles wide.

These brief descriptions suggest the nature of the terrain and the character of the soil. They also provide some indication of available plant food sources. The faunal remains found in archaeological sites indicate utilization of game, mussels and fish as food sources. In general it appears that the Indians became well adapted to their environment by the end of the Archaic stage. Within the western and middle valley large shell mounds accumulated during the Late Archaic. During the early Woodland continued utilization of mussels as food sources is indicated. Therefore, periodic residence on the river bank was a common practice.

It has been suggested that an Archaic type of adaption persisted for a considerably long period of time in the western valley. While this may be only a difference in a conceptual approach to cultural classification, it certainly indicates that no drastic, or radical, change in the food economy took place until the introduction of corn cultivation. A similar conclusion can be reached regarding the middle and eastern, or upper valley. Thus, Griffin's concept of "continuity with change" applies.

Developments within each of the three physiographic provinces tended to differ as the time period approached the present. No doubt this was due to different influences being received in each area. In the eastern valley early Woodland material includes artifacts not common in other parts of the valley. While the sources of some of these influences cannot be pinpointed, it is clear that some contact with the northern neighbors existed. Later more southern influences are discernible, especially in the ceramics.

When the traits characterizing the Mississippi stage appear, they do so as discrete complexes. The house types indicate changes, but these do not coincide with ceramic change. This suggests that a selection of traits was being made by the "indigenous populations". In terms of food economy, corn kernels do occur with Late Woodland (Hamilton) traits in the middle valley. Whether corn was being cultivated locally or not will remain a question. Certainly the abundance of corn remains increases after this. But must abundant remains be encountered before cultivation can be assumed?

In summary, it is becoming increasingly evident that the shift from Woodland to Mississippi in a taxonomic sense took place gradually. The replacement of the old was accomplished by what appears to be a selective process rather than a migration of new populations with new ideas.

Many loose ends exist. Lately, I have been interested in the evidence for changes in water levels. Did the river flood regularly, or has there been a cycle of wet years and dry years? How long did a population wait before returning after the valley had been flooded?

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EDITOR'S NOTE: Adair (HISTORY OF THE AMERICAN INDIAN) includes a short description of the Cherokee method of planting corn.

"They commonly have pretty good crops, which is owing to the richness of the soil; for they often let the weeds outgrow the corn, before they begin to be in earnest with their work, owing to their laziness and unskillfulness in planting: and this method is general through all those nations that work separately in their own fields, which in a great measure checks the growth of their crops. Besides, they are so desirous of having <u>multum in parvo</u>, without much sweating, that they plant the corn-hills so close, as to thereby choak up the field. -- They plant their corn in straight rows, putting five or six grains into one hole, about two inches distant -- They cover them with clay in the form of a small hill, Each row is a yard asunder, and in the vacant ground they plant pompions, water-melons, marsh-mallows, sunflowers, and sundry sorts of beans and peas, the last two of which yield a large increase.

"..... They have a sort of wild potatoes, which grow plentifully in their rich low lands, from South-Carolina to the Mississippi, and partly serve them instead of bread, either in the woods a hunting, or at home when the foregoing summer's crop fails them."

PLANT FOOD REMAINS ON TENNESSEE SITES: A PRELIMINARY REPORT

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Since supervised archaeological work began in Tennessee in the early 1930's, carbonized plant remains have been collected and reposited at the University of Tennessee. Botanical specimens were sent periodically to specialists for identification. In 1964 the University's Department of Anthropology initiated a more intensive study of prehistoric subsistence patterns in the Tennessee Valley. This report is fundamental for further research; it is the preliminary listing of both wild and cultivated plant remains that have been reported on Tennessee sites. With the cooperation of botanists we hope to obtain additional information about aboriginal ecology in the Tennessee Valley.

Archaic

Table 1 is conspicuous for two reasons; the apparent paucity of sites and the fact that all sites listed are Late Archaic. Except for the lower or western valley of the Tennessee and the Cumberland drainage, little professional work has been done on Tennessee Archaic. Two of the earliest sites in the Cumberland Valley, Jellicourse and Allen (Morse, n.d.) were shallow and produced no floral material. The Middle Archaic Eva site (Lewis and Lewis, 1961) apparently produced no floral remains, at least not in noticeable quantities.

All the Late Archaic sites in Table 1 are in the lower or western valley except 40Mi5 and 15 which are located in the Middle Valley in southeastern Tennessee. It is generally accepted that the Late Archaic peoples were intensive collectors as well as hunters; therefore, the scarcity of charred nuts and seeds is surprising. This scarcity is probably due in part to overlooking small nut fragments and seeds. Flotation of Late Archaic features on 40Mill in 1965 produced substantial burned plant remains. It seems, however, that many sites do not produce carbonized plant remains in any quantity. During excavation of the Cherry Site it was noted that although there was an elaborate pit complex no evidence of charred or decayed food were found in them (Osborne, n.d.). It is possible that a scarcity of nuts and other seeds on certain Archaic sites reflect the subsistence pattern--one of central-based wandering. Many of the shell middens could be warm season camps; in the fall and winter families might have moved into the protected uplands for nutting and hunting.

Woodland

In Woodland times central-based wandering seems to have continued; shell middens are often typical of Early Woodland in the eastern valley from the region of Knoxville to the Alabama line. The deep ashy middens of Early Woodland sites in the drainage of the Nolichucky and French Broad Rivers suggest more permanent sites, but this has yet to be demonstrated in the field. The importance of

shellfish and scattered settlements of the later Hamilton people is well known (Lewis and Kneberg, 1946).

Nuts occur in features on Early Woodland sites, but none have yet produced nut-filled pits. Other seeds have also been recovered including corn. This introduces the question about the advent and importance of cultigens in Woodland times. The corn recovered on an Early Woodland site on the French Broad River has not been included here because the site was occupied by an early Mississippi Cobb Island group. The first definite Woodland corn appears to be from a Late Woodland pit on the Westmoreland-Barber site. The specimens have been sent to a botanist and charcoal from the pit will be carbon dated. Flotation of this pit also produced large quantities of charred nuts and other seeds (see Table 2).

Mississippi

Table 3 illustrates the importance of corn on Mississippi sites although the presence of nuts and other seeds indicates collecting was still practiced. The majority of the sites produced 8-row corn with 10 and 12-row next in frequency. Paired rows were common.

Beans occur less frequently and the specimens tentatively identified as Phaseolus vulgaris from the Pittman-Alder site may be the earliest occurrence in the state. They were found in a burned late Hiwassee Island Focus house (Faulkner and Graham, 1965). The beans from North Mouse Creek and Upper Hampton Place were recovered in burned Mouse Creek pit houses. The Rhymer site is another Mouse Creek village, the beans being found in the plow zone. The beans from Williams Island do not have an exact provenience, but have been carbon dated at 330 ± 75 years ago or A.D. 1620 (Griffin, 1963: 43). These are probably from a late Mouse Creek or Dallas component. The only possible occurrence of beans is on the Loy Site, a Dallas village. These specimens have not been positively identified and could be honey locust seeds.

The occurrence of gourd is based on seeds recovered from the floor of a Mouse Creek structure. The "cucurbit" remains are tenuous; these are seeds found with corn on a Mississippi site in the lower valley. Like many of the specimens listed on the tables they should be examined by a botanist.

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TABLE 1: OCCURRENCES OF PLANT REMAINS ON ARCHAIC SITES

SITE	Acorn	Hickory Nuts	Walnuts	Uniden. Charred Nuts	Persimmon	Uniden. Seed	Total number of floral occurrences
5Bn11 - Thomas	X	X			X*	X	4
84Bn74 - Cherry		X	X				2
87Bn77 - McDaniel		X					1
1Dr1 - Oak View Landing	X						1
14Hy12 - Weldon Landing				X			1
40Mi5 - Pittman-Alder		X*	X*				2
40Mi15	X	X					2
Total number of individual occurrences	3	5	2	1	1	1	(13)

*Plant remains identified by botanist.

TABLE 2: OCCURRENCES OF PLANT REMAINS ON WOODLAND SITES

SITE	Corn	Acorn	Hickory Nuts	Walnuts	Uniden. Charred Nuts	Persimmon	Wild Plum	Total number of floral occurrences
6An21 - Crawford Farm		X*	X*					2
16By13 - Ledford Island		X*	X*	X*				3
17By14 - Candy Creek					X			1
10Hal0 - Sale Creek					X			1
40Md1 - Pinson		X	X					2
47Mg31 - Hiwassee Island			X					1
40Mi5 - Pittman-Alder		X*	X*				X*	3
40Mi11 - Westmoreland-Barber	X	X	X	X		X		5
40Mi20 - Lay-Barber		X	X					2
45Re17 - DeArmond					X			1
149Re53- DeArmond		X						1
86Rh41 - Hampton		X						1
Total number of individual plant occurrences	1	8	7	2	3	1	1	(23)

*Plant remains identified by botanist.

TABLE 3: OCCURRENCES OF PLANT REMAINS ON MISSISSIPPI AND CHEROKEE SITES

SITE			Corn	Beans	Cucurbit (?)	Gourd	Peach	Acorn	Hickory Nut	Walnut	Chestnuts	Uniden. Charred Nuts	Persimmon	Chinquapin	Wild Plum	Uniden. Seed	Total number of floral occurrences
4An17	-	Lee Farm Village	X*						X*		X			X			4
18An19	-	Cox	X														1
8Bn8	-	Harmons Creek						X						X			2
12Bn13	-	Jim Bridges								X		X					2
14Bn30	-	Lick Creek	X		X												2
15By11	-	Rymer	X	X				X	X	X		X		X	X*		8
3Ce10	-	Ausmus Farm	X*														1
4Cp5	-	Irvin Village	X*														1
6Cp9	-	Harris Farm	X*														1
7Ha1	-	Yarnell	X					X	X*								3
8Ha1	-	Dallas	X*					X									2
1Ha3	-	Hixon Place	X*					X*									2
64Ha10	-	Sale Creek	X*														1
40Ha60	-	Williams Island		X*													1
3,5Hs1	-	Slayden	X*														1
7Hy5	-	Thompson Village	X						X			X		X	X*		5
40Je1	-	Fains Island	X*														1
40Je10	-	Loy	X	X													2
37Mg31	-	Hiwassee Island	X*														1
63Mg31	-	Hiwassee Island	X*														1
40Mi5	-	Pittman-Alder	X*	X*				X*	X*	X*			X*				6
4Mn3	-	N. Mouse Creek	X*	X*		X*		X	X*							X	6
2Mr2	-	Chota-Tanasi	X*	X*			X*										3
2Pk1	-	Ocoee	X*														1
51Re1	-	R. H. Bell	X*														1
2Re12	-	DeArmond	X				X	X		X							4
85Rh41	-	Upper Hampton Pl.	X	X					X	X		X	X				6
1Sw1	-	Grey Farm	X						X								2
38Sw23	-	Stone	X														1
11Un11	-	Waters Farm	X*														1
Total number of individual plant occurrences.			27	7	1	1	2	8	8	5	1	4	2	4	2	1	(73)

*Plant remains identified by botanist.

NEW POTTERY TYPES FROM CENTRAL ALABAMA

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EARLY WOODLAND POTTERY: Two general occupational manifestations have been seen on a wide scale which are certainly Early Woodland, although no carbon dates have been received to tie them in. One of these is the Tensaw Creek Complex which was uncovered on the stream of that name in Lowndes County (Chase 1966). In this work, three newly identified pottery types were defined: CALLOWAY PLAIN, TENSAW CREEK PLAIN, and TENSAW CREEK STAMPED.

The Tensaw Creek types are sand tempered and thin, looking much like certain Early Swift Creek sherds of the same color and texture found in Western Georgia and along the Chattahoochee River. The stamped type looks much like Willey's SANTA ROSA STAMPED and is probably related to it somehow. Calloway is a mica-grit tempered thin plain ware which appears at first with local check stamped tetrapodal pottery and fades out before the appearance of Weeden Island in Central Alabama (three Weeden Island type sites have been found in the Montgomery area thus far). Since these types have been published elsewhere, the descriptions are not included here (see Chase 1966).

Several other Early Woodland types have been found which are probable variants of known types. These involve a sand tempered orange-yellow fabric impressed ware which looks exactly like a type which A. R. Kelly calls KELLOGG FABRIC IMPRESSED in Georgia. Associated with it is a very find cord impressed ware which is tentatively being called ROBINSON POND CORD IMPRESSED, but it is not prevalent, being found on only one site.

A second series of Cartersville-like grit tempered check stamped sherds is well defined in this area with at least ten sites represented. Check (large and small or fine are represented) stamped sherds are found in association with a small amount of complicated stamped (possibly Deptford related) and a curious run of what appears to be Tchefuncte type sherds (O'NEAL PLAIN, ALEXANDER PINCHED, and at least one LAKE BORGNE INCISED). Although no new types have appeared, the association in Central Alabama is significant and points up the east-west Early Woodland cultural contact situation. C-14 dates are surely needed.

Fiber tempered sherds of the STALLINGS PLAIN type are continually found. Also found are hardened and better made fiber tempered sherds associated with the tetrapodal check stamped Cartersville types just mentioned. These may be an extension of TCHEFUNCTE PLAIN and are not defined separately.

MIDDLE WOODLAND POTTERY: There seem to be two general complexes in the Central area which could justifiably be regarded as being in the Middle Woodland time zone (roughly, guess dates would run from 500-800 A.D.).

Preceding local Weeden Island manifestations (confirmed on three sites) is a phase described as the Dead River Phase involving two pottery types. They were first found on the Kirby State Prison Farm northeast of Montgomery. At Au 52, the type was seen in a lower level than our Weeden Island occupation. At Es 1 (Fort Toulouse Indian Site) it was seen as the lowest level on the site which

involved five distinct components. It seems to be a type without precedent. The paste, color and surface texture is reminiscent of the Avarett of the Middle Chattahoochee Valley (Chase 1959), but some forms suggest that it may be evolving from the earlier CALLOWAY PLAIN (Chase 1966). Two main types are seen: KIRBY PLAIN and DEAD RIVER PLAIN.

The other new types are present in the Hope Hull Complex, named by Griffin (1946) after the type site near Hope Hull, Alabama, a small community southwest of Montgomery. Actually, the greatest concentration of sites are found along the Tallapoosa River just east of Montgomery, with a few specimens appearing on the north side of the Tallapoosa and Alabama Rivers in Elmore County.

Two types of pottery are represented here: ADAMS PLAIN and MONTGOMERY RED FILMED. The former may have been general utility ware. Sand tempered, hard and well made, vessels and sherds amount to around 90% of all representative ceramics found. The red filmed type, only about 10% of all types found, may have had a ceremonial function. It appears both as plain and incised, and is somewhat reminiscent of WEEDEN ISLAND INCISED in the decorated form.

TYPE DESCRIPTIONS -- MIDDLE WOODLAND PERIOD

TYPE NAME: Kirby Plain (Dead River Complex)
PASTE: Method of Manufacture- Coiled
Temper - Finely graded grit- occasionally micaceous as in Calloway, but better surface finish
Texture - Smooth to somewhat coarse; like fine sandpaper
Hardness- 3.5
Color- Gray to buff
SURFACE FINISH: Scraped; somewhat coarse and grainy
DECORATION: None
FORM: Rim- Everted or re-curved
Lip- Square; semi-rounded
Body- Elongated, straight sided but curving in toward base
Base- Semi-conoidal
GEOGRAPHICAL RANGE: Not known
CHRONOLOGICAL POSITION: Suspect Middle Woodland in Central Alabama; At El 1 (Fort Toulouse Site) type was found under Hope Hull level
POSSIBLE RELATIONSHIPS: Averett (based upon texture, color, hardness, temper and general surface appearance of body sherds. Atypical of Averett would be rim, shoulder, and, in some specimens, the lip)

TYPE NAME: Dead River Plain (Dead River Complex)
PASTE: Method of Manufacture - Coiled
Temper- Fine-medium graded grit
Texture- Smooth, burnished
Hardness- 3.0
Color-Gray-orange-buff
SURFACE FINISH: Pebble burnished with tooling ripples on some surfaces
DECORATION: Traces of red film on certain specimens
FORM: Rim- Inverted
Lip- Rounded
Body- Hemispherical; semi-conoidal base
Base- Semi-conoidal to rounded broadly

GEOGRAPHICAL RANGE: Not known
CHRONOLOGICAL POSITION: Possibly at terminal phase of Woodland in Central Alabama
POSSIBLE RELATIONSHIPS: Averett in Western Georgia (see comments for KIRBY PLAIN)

TYPE NAME: Montgomery Red Filmed (and Incised) (Hope Hull Focus)
PASTE: Method of Manufacture- Coiled
Temper- Sand
Texture- Very smooth to burnished
Hardness- 3 to 3.5
Color- Unfilmed paste is gray to almost black
SURFACE FINISH: Burnished to a near shine in some specimens
DECORATION: Very fine and shallow etched or engraved rectilinear lines; usually parallel and in pairs. These are supplemented by slash punctates, usually zoned. Other type are linear punctates similar to WEEDEN ISLAND PUNCTATE type. All in rim area. Red film is really a bright orange color and covers entire vessel, inside and out.
FORM: Rim- Invariably inverted
Lip- Rounded and slightly thickened in most specimens
Body- Usually a shallow bowl, some being very large. One 'double pot' is known
Base- Rounded
GEOGRAPHICAL RANGE: Not known; major sites all in Montgomery area
CHRONOLOGICAL POSITION: Middle Woodland for this area. Type is always in association with ADAMS PLAIN, a totally different ware. Associated projectile points are small crude stemmed types similar to Weeden Island projectile points from Weeden Island and Late Swift Creek sites along the Chattahoochee.
POSSIBLE RELATIONSHIPS: It is tempting to consider this complex a Weeden Island remnant moving inland. More data is needed to confirm this. Type is counted as less than 10% of all Hope Hull pottery.

TYPE NAME: Adams Plain (Hope Hull Focus)
PASTE: Method of Manufacture- Coiled
Temper - Sand
Texture- Very smooth inside and out
Hardness- 3 to 3.5
Color- Mostly orange and gray, sometimes almost black. Typical specimen streaked with firing clouds
SURFACE FINISH: Pebble burnished. Rippling of pebble tool often seen on both inner and outer surfaces
DECORATION: None
FORM: Rim- Most commonly everted. Thickening toward lip common. Some sharply extruded (45°). "T" lip uncommon but present.
Lip- Rounded, small fold, extruded and squared all known and frequent
Body- Conical, sloping almost to pointed base in some specimens; others are globular.
Base- Commonly conoidal or semi-conoidal; rounded bases occur.
GEOGRAPHICAL RANGE: Large sites (several acres) are numerous in Montgomery area- especially in Tallapoosa River area.
CHRONOLOGICAL POSITION: Not clear. Guess is Middle Woodland.
POSSIBLE RELATIONSHIPS: Associated pottery is MONTGOMERY RED FILM and MONTGOMERY RED FILM INCISED which are similar only in terms of paste, thickness and hardness. These types look most like a form of WEEDEN ISLAND INCISED.

THE AUTAUGA COMPLEX: The type station for the Autauga Complex is located at the mouth of Bear Creek in Autauga County, Alabama. It was discovered in a reconnaisance during August of 1963.

At first, surface sherds found involved types which led us to believe that we were dealing with some sort of Alexander related Early Woodland. Several varieties of finger-nail pinched and punctated designs were involved, as well as a check stamped and a few cord impressed sherds. Stratigraphic tests and a project excavation during 1963 gave a broader range of associated ceramic types which, at the time, were called 'Bear Creek' after the nearby stream. It was later discovered that the name 'Bear Creek' was already in use (see the previous article by Edward B. Jelks), therefore the name was changed to Autauga after the county of the type site locale.

The explorations of 1963 gave us a picture of an essentially gathering-hunting people subsisting mainly on shellfish and forest game, but who had apparently acquired corn. This was revealed when several sherds of cord-roughened pottery were found in association with other types. Two burials were found, one semi-flexed senile female with a perforated fresh water mussel (Ellipteo crassidens) on the sternum.

The presence of corn evidence pointed up the need for further work at this site and othere where the Autauga Complex was present. Limited work was done on the Anderson Site on the Tallapoosa River and at three sites in Elmore County -- all of these furnishing much additional evidence of Autauga Complex pottery traits. We found that the perforated mussel shell was a trait appearing only in the Autauga Complex in this area. It does show up in what appears to be later Woodland of the McLeod time range further west on the Alabama River.

In 1964, a team from the University of Alabama under Roy Dickens worked on several sites in the Jones Bluff Dam Basin which included Au 7 (Bear Creek Site). Our suspicions of the corn tradition were confirmed when Dickens found carbonized corn in an Autauga Period pit. These were radio-carbon dated at 1030 $\pm$ 105 B.P. or 920 A.D. (Geochron # GX0598). This is probably the earliest corn date in Alabama. On the strength of this and the fact that one of the Autauga Complex burials had extreme fronto-occipital flattening, it was felt that possibly the complex was some form of Mississippian. In view of the bulk of the pttery design elements -- plus the evidence gathered at other sites which strongly demonstrate that these people were mainly forest hunters -- it is now felt that the complex is a very late form of Woodland in Central Alabama, the pottery indicating the retention of traditions of long standing (finger-nail punctated, similar to TAMMANY PINCHED: AUTAUGA INCISED, similar to LAKE BORGNE INCISED, etc.).

TYPE DESCRIPTIONS - AUTAUGA COMPLEX

TYPE NAME: Autauga Plain
PASTE: Method of Manufacture- Coiled
Temper - Small graded grit particles. In greyish or light yellow colored ware, the appearance is of a sort of "salt and pepper" texture.
Texture- Slightly coarse to smooth
Hardness- 3 to 3.5
Color - Grey, yellow, dark gray to almost black
SURFACE FINISH: Smooth but not burnished
DECORATION: None

FORM: Rim-Everted, rarely straight
Lip- Rounded or slightly squared (rare)
Body- Elongate-globular with taper toward base
Base- Semi-conoidal to somewhat rounded
GEOGRAPHICAL RANGE: Found from areas around Selma to points along the Tallapoosa River east of Montgomery - a range of some fifty to sixty miles. There is reason to suspect that it may manifest further west and south of the Selma area.
CHRONOLOGICAL POSITION: (See description of AUTAUGA ROUGHENED)
POSSIBLE RELATIONSHIPS: Paste of the 'salt and pepper' appearance is seen in post Autauga times on pottery associated with the local form of Lamar- or Later Mississippian. It is not seen in the Moundville shell temper related series.

TYPE NAME: Autauga Roughened
PASTE: Method of Manufacture- Coiled and partially laminated
Temper- Grit
Texture- Coarse on interior except for certain pebble smoothed specimens
Hardness- 3.0
Color- Usually light yellow. Firing clouds not common but when occurring, sherd is light gray in smudged portion.
SURFACE FINISH: Roughening occurs over all of exterior. Inner surface smoothed with stick and occasionally pebble. One or two plain rims with roughening terminating at shoulder have been seen.
DECORATION: Outer surface roughened by rolling corn cob over wet clay. Extends from base to lip in some specimens and only to shoulder in others.
FORM: Rim- Slightly everted
Lip- Rounded
Body- Somewhat globular, but walls tend to be straight toward base
Base- Somewhat semi-conoical
GEOGRAPHICAL RANGE: Not known
CHRONOLOGICAL POSITION: Date of corn in this complex recovered in 1964 by Roy Dickens, U. of Ala. was 920 A.D. $\pm$ 106 yrs. (Geochron # GX0598)
POSSIBLE RELATIONSHIPS: Too early to relate to known Mississippian cob roughened types - most of which would be in Lamar or other proto-historic levels.

TYPE NAME: Tallapoosa Punctated
PASTE: Method of Manufacture- Coiled
Temper- Grit (small percentage of sand tempered)
Texture- Smooth to burnished resulting in smooth surf. texture
Hardness- 3.0
Color- Grey to black; few are yellow or light gray
SURFACE FINISH: Appears to have been pebble smoothed in most cases
DECORATION: Zone punctations from shoulder to rim. Incised borders usually curvilinear. Punctations done with small pointed implement - possibly stick or bone awl. Appliqued small lugs occur on rim in some cases.
FORM: Rim- Inverted
Lip- Rounded
Body- Small bowl usually; overall shape elliptical to hemispherical
Base - Rounded
GEOGRAPHICAL RANGE: Not known
CHRONOLOGICAL POSITION: (See description of AUTAUGA ROUGHENED

POSSIBLE RELATIONSHIPS: Zone punctations imply a Gulf Coastal flavor. Appears similar to types ranging from CARABELLE PUNCTATED through FORT WALTON INCISED. In time, Fort Walton would be closer if one were looking for culture ties.

TYPE NAME: Autauga Pinched
PASTE: Method of Manufacture- Coiled. Some parts may have been laminated
Temper- Finely graded grit
Texture - Coarse on smooth parts, smoother interior
Hardness- 3 to 3.5
Color- Light brown or orange-brown. Occasionally gray
SURFACE FINISH: Undecorated areas of exterior usually smooth but not burnished
DECORATION: Pinch patterns made with thumb and forefinger. Often vertical rows and covering most all of vessel
FORM: Rim- Everted slight to moderate
Lip- Rounded
Body- Globular at midsection but tending to become semi-conoidal toward base
Base- Semi-conoidal to a lesser or greater degree
GEOGRAPHICAL RANGE: Not known. Sherds of the type found from Selma to points east of Montgomery - an 80 mile east-west spread. North-south range not clear.
CHRONOLOGICAL POSITION: (See description of AUTAUGA ROUGHENED
POSSIBLE RELATIONSHIPS: May be persisting old tradition with ancestral elements seen in TAMMANY PINCHED and ALEXANDER PINCHED. Gulf Coastal relationship with earlier TUCKER RIDGE PINCHED also suspected.

TYPE NAME: Bear Creek Check Stamped
PASTE: Method of Manufacture- Paddle laminated
Temper- Grit
Texture- Somewhat coarse; inner surface often burnished
Hardness- 3
Color- Gray or buff. Grit in some light colored sherds gives sherds a sort of 'salt and pepper' appearance
SURFACE FINISH: Inner surface often burnished
DECORATION: Lightly check stamped over entire surface. These checks are fairly large ($3\frac{1}{2}$ checks to the inch) but impressions are very shallow
FORM: Rim- Slightly everted from collar
Lip- Rounded
Body- Somewhat globular but long
Base- Semi-conoidal or rounded
GEOGRAPHICAL RANGE: Not known. Checks are remeniscent of the Wakulla-Wilson series, but cultural relationships are not firm and could only involve a diffused trait. MERCIER CHECK STAMPED
CHRONOLOGICAL POSITION: Late Woodland
POSSIBLE RELATIONSHIPS: May relate to WILSON CHECK STAMPED or McLEOD-DEPTFORD CHECK STAMPED which ought to be contemporary or perhaps slightly earlier.

TYPE NAME: Bear Creek Punctated
PASTE: Method of Manufacture- Paddle laminated
Temper- Graded grit
Texture- Coarse exterior, very smooth interior surface
Hardness- 3 - 3.5

Color- Slate grey to dirty buff
SURFACE FINISH: Exterior coarse; interior smooth
DECORATION: Repeated rows of gouged out depressions executed with a finger nail. Often scooped out clay is folded over next to the excavated depression. This seems to cover all of the upper vessel surface and probably down to the base.
FORM: Rim- Everted about 20 degrees
Lip- Rounded or squared with somewhat rounded edges
Body- Elongated
Base- Rounded with some thickening
GEOGRAPHICAL RANGE: Not known
CHRONOLOGICAL POSITION: Late Woodland seems most likely due to other artifact associated types.
POSSIBLE RELATIONSHIPS: Not clear. Traditions involving this type of design are much earlier as a rule. Similar trait noted in Weeded Island. Later gradational variant found in forms of TALLAPOOSA PUNCTATED where very light finger nail depressions are made.

TYPE NAME: Bear Creek Incised
PASTE: Method of Manufacture- Paddle laminate
Temper- Grit
Texture- Smooth, often well burnished
Hardness- 3
Color- Frequently gray, buff specimens known
SURFACE FINISH: Very smooth. Burnishing most frequent on inner surface
DECORATION: With blunt pointed tool, a stab-and-drag incised motif is applied usually parallel or diagonal to the lip. Separate punctations may appear as part of the design.
FORM: Rim- Inverted
Lip- Rounded
Body- Not known. Bowl shape suspected
Base- Probably rounded
GEOGRAPHICAL RANGE- Not known
CHRONOLOGICAL POSITION: Late Woodland in this area
POSSIBLE RELATIONSHIPS: Curious resemblance to LAKE BORGNE INCISED of Tchefuncte provenience in terms of decorative techniques and area of application (Ford and Quimby 1945)

TYPE NAME: Anderson Incised
PASTE: Method of Manufacture- Paddle laminate
Temper- Fine grit
Texture- Smooth
Hardness- About 3 to 3.5
Color- Shades of gray and buff, usually light in color
SURFACE FINISH:
DECORATION: Striated with multiple parallel lines starting at collar and running downward toward base from rim. May be done with brush of spaced twigs. Lines cross on body.
FORM: Rim- Everted about 15 degrees in typical specimen
Lip- Rounded
Body- Straight sided with slight expansion in middle
Base- Rounded
GEOGRAPHICAL RANGE: Unknown

CHRONOLOGICAL POSITION: Late Woodland
POSSIBLE RELATIONSHIPS: Not known. Found with AUTAUGA PLAIN but may be a late type. It was rare on type site (Au 7).

TYPE NAME: Anderson Punctated
PASTE: Method of Manufacture- Paddle laminate
Temper- Grit
Texture- Somewhat coarse; some specimens burnished smooth
Hardness- 3
Color- Buff to orange; rarely grayish
SURFACE FINISH: Smoothing done with stick tool; tooling marks not seen in rim area
DECORATION: Single or multiple rows of deeply impressed punctations usually either parallel or diagonal to lip. These punctations are frequently angular, square or rectangular - never circular.
FORM: Rim- Straight or inverted. No everted rims seen of this type
Lip- Thinned to semi-pinch and rounded or squared
Body- Not known - possibly globular
Base- Thickened and rounded
GEOGRAPHICAL RANGE: Not known. Have seen some sherds from Selma area. May range as far west as Wilcox County.
CHRONOLOGICAL POSITION: Later Woodland in Central Alabama
POSSIBLE RELATIONSHIPS: Not known. General appearance remeniscent of sand tempered Woodland types.

MISSISSIPPIAN POTTERY: Two new types, probably forerunners of or related to MOUNDSVILLE INCISED and WARRIOR PLAIN, were fonnd on the Shine Site (Mt 6) on the Tallapoosa River during a salvage operation there when the city of Montgomery was buiding a water intake plant on the site. It is owned by Mrs. Jere Shine, thus the types are named for the site and the owner. These types involve what may be very early shell tempered pottery for this area. They are similar in appearance to the Moundsville types, but lack the arched relief seen so commonly on the sides of the former, especially in the incised type. On the plain ware both lip nodes and handles do appear, the former often in the bend formed by a 'peak' or crenellation on the rim. The incised type seems to be of the handled variety with very thin line incising in rectilinear line groupings.

TYPE DESCRIPTIONS - MISSISSIPPIAN PERIOD

TYPE NAME: Shine Plain
PASTE: Method of Manufacture- Coiled
Temper- Shell
Texture- Smooth to almost burnished
Color- Usually buff to tan; yellow less common
SURFACE FINISH: Pebble smoothed over both inner and outer surfaces
DECORATION: None, except on some specimens; lip nodes do occur. Occasionally such nodes occur in groups of two; these were appliqued. Plain or noded handles occur in multiples of two, usually two to a vessel. Nodes occur inside of rim 'peaks' or crenellations.
FORM: Rim- Straight or slightly everted
Lip- Rounded, less commonly semi-squared

Body- Straight sided and rounded base in the typical specimen; globular in certain examples.
Base- Rounded

GEOGRAPHICAL RANGE: Not known. Types from the Shine Site. Component also uncovered at the Colome Site (Mt 3) about four miles east of the Shine Site.

CHRONOLOGICAL POSITION: Probably early Mississippian in Central Alabama. Southern cult elements in association (engraved gorget).

POSSIBLE RELATIONSHIPS: Not clear. Possibly Moundville or on an earlier level, Coles Creek; McKelvey Plain.

TYPE NAME: Shine Incised

PASTE: Same as for SHINE PLAIN

SURFACE FINISH: Same as for SHINE PLAIN

DECORATION: Rectilinear incised lines in vicinity of rim. Lines are roughly parallel and in groups of three or four. Lines do not cross and in some examples do not meet or intersect.

FORM: Same as for SHINE PLAIN

GEOGRAPHICAL RANGE, CHRONOLOGICAL POSITION, POSSIBLE RELATIONSHIPS: Same as for SHINE PLAIN.

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