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TIME THROUGH TIME:
AN EVOLUTIONARY PERSPECTIVE

by

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1978

An expanded version of a paper presented by
the Senior Author to the American Folklore
Introduction

Analysis of the nature of time has engaged the attention of many historic philosophers and logicians including Aristotle, Augustine, and Kant. However, within the anthropological framework, Maxwell (1971:48) notes that the cross-cultural study of time has not yet even been given a name, nor have "schools" of thought emerged, and only occasionally have individuals considered the subject toward the goal of understanding why men perceive and order time as they do.

Time as a Reality

The reality of time was a perplexity to Augustine (Confessions xi.3) in his oft-quoted: "What, then, is time? If no one asks me, I know; if I wish to explain it to one that asks, I know not." Augustine insisted that time is grammatically a noun, a precept which is central to the later linguistic content of this paper. However, even he had difficulty in its definition, in that using his name-substance theory of meaning, there is no referent. Gale (1968:5) observes that "time is a name that does not name."

Time is a universal reality. It is perceived by each society within the context of cultural constructs which are created by the society in terms of its own history and ethos. Using a broad cross-cultural approach, this definition relieves the necessity
to consider time as an "abstract Thing," (Allen, 1947), or, alternately, as dimensional (spatial/temporal).

Time is a phenomenon of universal existence and may be described by various societies in differing ways. Something must go into each of these constructs, and if time is not considered as an abstract or a dimension, then to what do these constructs refer? Time is analogous to the universal cultural construct of an indigenous kinship system which develops and is meaningful to participants in role definition and expectations. Whether Spring is determined by an astronomical equinox, a "green season," or, as in Eskimo, "when rivers commence to flow" is inconsequential except that the onset of Spring may influence behavior and values of members of a specific society. To measure distance by the non-parallel spatial units of light-years, a "ten minute walk", or "two days by dog-team" merely suggest that space-time dimensions universally exist, but are important only in locally significant terms. Any or all of the Western philosophical definitions of time as static, dynamic, segmented, linear, cyclical, spatial, or temporal, as well as other concepts unique to indigenous groups, may occur in native cultures. Their importance and role can be assessed only internally based on ethos, values, and the local level of technology.

**Time in Evolutionary Perspective**

Time appears to have both biological and cultural components when viewed in terms of the ascent on an evolutionary scale. Orme (1969) succinctly summarized studies on a series of faunal types ranging from crabs and the mayfly to passerine birds and
rats, and he concludes that with increasing complexity an increased capacity to deal with time become apparent.

At the human level, the increase of brain size appears to be directly associated with the occurrence of greater conceptual ability, including the use of tools and speech. Pumphrey (1951) links the origin of language to the Upper Paleolithic and the emergence of Homo erectus who were, unlike those of an earlier phase, capable of making tools for future use. This suggests that tools made for future use indicate the presence of time concepts, and he associates the origin of language with this by asserting that language includes the past and future (it continues in both), whereas speech is restricted to the present. In possible agreement with Lenneberg (1967), there may be a biological imperative for man to conceptualize, in both time and space, since man alone through the vehicle of culture has the opportunity to direct his destiny—to exercise free will—through group and personal choice.

These distinctions may be somewhat subjective. It may be that Australopithecus conceptualized the "future", as Oldowan choppers were made for future use. Furthermore, having once made the tools, he must have remembered in order to repeat the process by which he made the tools, thereby conceptualizing not only the future, but also the past. So indeed, might Jane Goodall's chimps, who carried ad hoc tools from termite hill to termite hill, be said to have exercised foresight.

As hominid forms ventured into ecological zones alien to their assumed ancestral tropical homeland, we believe that they were required to think ahead, to plan for seasonality in the food
quest and a supporting material culture. Simultaneously, as populations grew, with needs to establish rules of reciprocal interaction (kinship) and even minimal jurisprudence, they were forced to think back to search for solutions (precedence) to immediate problems. Although evidence suggests that other animals may have limited time/space perceptions, language still appears to be the conceptual medium which confers upon man his unique time-binding capacity. To know the developmental sequence of conceptualization of time on the prehistoric level would contribute substantially to an understanding of the development of culture, but may always remain within the shaded area of inference.

The biological component of time is still operative in man even in the most technologically-advanced cultures. Self-evident is the "time to work, time to rest, time to live, time to die" syndrome of the individual circadian rhythm applicable at all stages of human existence. Modern rapid transportation, however, quickly disturbs it--namely, the effect of "jet lag."

The cultural component of time in an evolutionary schema involves a correlation of technology (including the methods of time reckoning) with the cultural perception of time as indicated by linguistic usage. Although others, such as Childe and White, or even archaeologists Willey and Phillips, have established more detailed divisions of human evolution, only three seem important here: Hunters (including fishermen and gatherers); Farmers and Herders; and Industrialists. Each of these three groups, representative of increasing technology, will be briefly analyzed.
Hunters probably once roamed entire continents, but are now small and isolated groups living in habitats that range from tropical rainforests to the Arctic coast. Essentially, their life style is predicated upon the use of local resources, often without much modification. To our knowledge, no single cross-cultural study has been undertaken to assess the number of human hours of labour required per individual in non-literate societies, or the time needed (daily, weekly) to meet minimal requirements for food and other material culture. Such a comparative study might prove highly illuminating and at variance with the long-standing notion that "primitive" people are continuously grubbing for sheer survival.

Sahlins (1972) alludes to this notion when he suggests that Arnhem Land (Australia) hunters and gatherers failed to develop a higher level of technology not because of a lack of time, but because of too much leisure time, which led to idleness. He also observes that the Hadza of Africa refuse to participate in the neolithic revolution because to do so would rob them of their spare time. Indeed, Sahlins (1972:35) submits that "the amount of work (per capita) increases with the evolution of culture, and the amount of leisure decreases."

Among isolated recent reports, Lee (1972) provides data for the !Kung Bushmen living in the very arid Kalahari Desert to the effect that subsistence requirements for food may be met in the modest output of labor of only two to three work days per adult per week; building a house for the rainy season camp is only a day's work; the all-important digging stick can be whittled in an hour; and even a complete set of bow arrows, and quiver can
be made in three to four day's time, with a life expectancy of several years. Among the !Kung, the food quest is a routine daily activity, with only minor variances due to differences in the abundance of food during wet and dry seasons.

Time reckoning among Hunters appears, in general, to be associated with observation of natural phenomena, and devices for measuring the passage of time are virtually non-existant. Nillson (1920) stresses that socially-used divisions of time reflect social life rather than the astronomical observations on which it is based. Given the lack of importance of time relative to survival among Hunters, it follows that linguistic development in reference to time would be lacking. Of the many other recent case studies available (cf. Kluckhohn and Strdbeck, 1961, et al), none reveal an elaborate time vocabulary. To paraphrase, time is measured in "sleeps," "moons," and/or "seasons of activity" that are locally important. Age is generational, based on kinship, rather than chronologically. Among our Eskimo informants, specific past events are recalled only by reference to a series of other, mutually-known circumstances.

Farmers and Herders are the product of the transition from food gathering to food production associated with the Neolithic. The definition by Leach (1958:120-1) merits quotation:

If there is any single criterion which distinguishes primitive society from that which is more advanced, it is that in the former, all persons of one sex have the same interests and acquire the same skills, while in the latter, technical tasks and special duties come to be carried out by specialists. It seems that historical and magical time-
thinking develop out of primitive time-thinking along with specialization of labor and reflect the special interests of the priestly and official classes.

The shift from food gathering to food production was gradual but pervasive; as new tools for cultivation and harvesting appeared, words to name them were created, and expanded the language. Time increased in importance, and as it did so, words for its description—astronomical, astrological, ritualistic—were added to the vocabularies. The historic development of measuring devices such as water clocks and sundials, together with calendars and numbering systems to analyze and record the passage of time have all been fully reported by many, and need not be recounted here. The effect of specialization of labor, including settled life for farmers and nomadism for pastoralists, must have triggered an enormous information and linguistic explosion. Leach (1958) and others link language with magico-religious values, involving the naming of festivals, the development of ritual, and the rise of a priesthood and political systems. Human history has deep roots in the elaboration of culture in this era, and the richness of our language reflects it.

Time reckoning among Farmers and Herders is determined in a variety of ways. Titiev (1960) provides a good example of time reckoning among the Hopi, who follow a "natural calendar" of sunwatching. The solstices are observed and often indicate that it is "time" for important calendrical rites. Various natural landmarks serve as calendrical markers in such a system.
Among the Tiv of Nigeria, Bohannan (1953) reports that time is not measured. Time is indicated by associations of natural phenomena (wet or dry seasons, for example) or social phenomena (such as when a "market" is held). Linguistic development reflects this lack of time measurement. The Tiv relate an event to the number of markets or the number of wet seasons elapsed since the event, but this indicates lapse of time only, rather than a specific time. Hence, the Tiv have no words for days, months, or years as units of time. Rather, they count suns, moons, or dry seasons -- natural phenomena -- to reckon lapse of time.

Evans-Pritchard (1940) describes time reckoning among the Nuer, noting that their "concept of seasons is derived from social activities rather than from the climatic changes which determine them," (1940:95). Their words for time, then, refer to social activities which occur at certain times, rather than to particular units of time.

The mechanized American farmer and rancher is of interest here in that even though calendrical time sets approximates for planting and harvesting, or the transfer of animals to other ranges or "round-up", the precise onset of each activity is still dictated by local weather and other immediate conditions such as soil wetness, and ripeness of a crop as determined by amount and intensity of sunlight. To perceive the language of time in this technological stage, one needs only to listen to the members of the contemporary farming community. The generalized perception, "it's calving time," means only that it is the season of several weeks duration when cows may drop their claves.
Tangentially, however, this same group may share Industrialist concepts in other situations.

By contrast, however, this technological stage also includes peasant societies that have inherited calendars and clocks. Yet generalized time also appears to play an important role and may reflect a basic time perception. Among Urdu-Hindi speakers, cul means "yesterday, today, tomorrow, sometime," with the connotation that "it will get done, maybe, and even if it doesn't, perhaps it's not important." The stereotype of the Spanish mañana or "tomorrow" (that may never come) is widespread throughout Latin America.

Generalized perceptions of time can be reflected not only in this manner, but may also be indicated by verb tenses within a language. Among the Hopi, Whorf (1938) notes that the past and present tenses in the reportive are not distinct. To distinguish between whether an event is or was occurring is meaningless in Hopi, which assumes that the listener can or did observe the action himself. Therefore, in the reportive tense, "then" and "now" are the same, implying that when something is happening or happened is not of as much concern as is the fact that activity occurs.

As world economy moves increasingly toward multi-national business, and as mass tourism expands, one of the most widely-reported frustrations arises from this Farmer and Herder generalized perception of time. Transportation is not infrequently described as operating on "local time," implying that busses, trains, and even planes go when they get a full load, get ready, or perhaps just when "the spirit moves them."
The Industrialists have emerged within this century and include only infra-group segments of some highly industrialized nations, including some countries of Northwestern Europe, Japan, the USA, and offshoots of these. They are defined in terms of their concept of time, which is keyed almost entirely to the clock -- to the exclusion of all other values.

Increased specialization of labor associated with metallurgy and all its attendant by-products led to another explosion of language to name new machines and their many parts. Metallurgy also made possible a refinement of time-keeping, giving rise within the past two decades to the nearly-accurate electronic watch and the atomic clock. The traditional, allegorical moon-face of the round clock is being replaced by the digital clock styled after the computer. That the wrist watch misses perfection by only one second per year is mute testimony to the commoditization of time. Mumford (1963:16) phrases it well in that "as Franklin put it, 'time is money.' To become as 'regular as clockwork' was the bourgeois ideal, and to own a watch was a definite symbol success. The increasing tempo of civilization led to a demand for greater power and in turn power quickened the tempo."

To cite specifically the Industrialists' preoccupation with time, human life may literally depend upon its reckoning. Japanese trains are noted for their speed and precision; a two-minute station stop means that the train will be stopped at the platform for exactly 120 seconds. An airline pilot flying instrument conditions and in a holding pattern for landing over one of the major airports executes a precise circular maneuver
that return him to the navigation station in exactly four minutes. Rotating beacons and sirens on emergency vehicles signal that literally "every second counts."

In perspective, however, every American has at his disposal an identical number of seconds, minutes, and hours within a day. Not all Americans are Industrialists, and the latter may not function in that capacity at all times.

Contrasts exist between the excessive commoditization of time of the hourly-wage employee (and his employer), and the college professor who often pays little attention to time. The former strikes for pay increases spelled out at "so much per hour," is keenly aware of differences in wages paid for various skills, and demands and is paid for, "over-time." The professor receives an annual contractual salary to meet a specified number of minimally-prescribed office hours. Only his individual conscience dictates how much additional time is allotted to research, grading papers, or academic dialog.

The American perception of time is a function of employment, lifestyle and values, and, despite philosophical rejection by some of the excessive commoditization, Industrialist language usage dominates all our speech.

Linguists have repeatedly identified that in English the content of meaning is borne by nouns in contrast to other languages, such as Navajo, where verbs are more important. In English, the noun is often the only utterance necessary to be understood -- "Help," "Stop," "Fire," "Thief," "Rape" -- all are nouns that cue action. "Time," however, enunciated solely as such, has no meaning.

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Dependent upon inflection, this utterance might mean "time's up," as in a game or an examination, but this noun must be perceived within some cultural construct. The *Industrialist* assigns to time simply the status of a commodity, and the meaning of the word must be expressed by modifiers, and especially by verbs.

Since time is a commodity with equal duration for all members, how can verbs tell us it is possible to "make" or "lose" time; to "save" it as if its fleeting qualities could somehow be stored in a safe-deposit box; to "find" time, ignoring that we already have it at our disposal; to "waste" time without implying value judgement that some activities are more important than others? Above all, how can one "kill" time, an inorganic, unseen substance?

Aside from verbs, some other modifiers might define the meaning, such as a "good times," "bad times," the "time of my life," "bed time," "meal time," or, the most loved phrase of the salaried employee, "quittin' time." And then we move to tempo -- to be "late" as a deviation to being "on time" is a sin; to be "early" may be embarrassing; to be "out of time" suggests lack of synchronization; and even one's "timing" in telling a joke is the key to its effectiveness.

Even in the analysis of the human life cycle, the anthropological status markers which define changing behavioral roles are age (time) markers. For youths, time seems endless, but for the aged, frequently "time is running out." In illness it is often said that one lives "on borrowed time." The plea of many very busy people seems to be for "more time," accompanied by allusions to "burning the midnight oil," "trying to squeeze it
all in," "time flies," and "it's later than you think." Medically-defined "speed sickness" (hypertension, ulcers, etc.) is an ailment of increasing frequency among Industrialists. Further elaboration of the validity of this constructual framework lies best with the reader to listen and observe the frequency with which time, per se, or time-related topics, recur in daily speech and actions.

In summary, the Industrialists have made time central to their cultural construct and endowed it with philosophical and social meaning far in excess of its economic and substantive importance.

Conclusions

Aside from the desire to learn about the origins and development of human culture, the analysis of the language usage of any given groups may prove to be a reliable index of its technology or relative acculturation. At a symposium on culture change, Vera Rubin noted that individuals in emergent societies want (in ranked order) a ballpoint pen, a watch, and a bicycle. Their felt need implies the willingness to accept the value systems inherent in the use of these objects.

The analysis of time as a cultural construct appears to offer insight into the evolution of human culture, particularly in terms of its conceptualization as expressed by language. Time and language are integrally related, as Gale (1968:242) observes: "What time makes it possible for us to say is exactly what cannot be said about time."
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PALEOINDIAN PREHISTORY OF SOUTH AMERICA

by

Judith Deel
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I. Introduction

One of the most intriguing and hotly debated problems in American archaeology today is the question of when early man entered America and the level of his technological status. It is almost universally accepted that man arrived by slow migration across the 1300 mile wide expanse of the Bering Land Bridge. But When?

Two articles serve as the basis for this paper. The first is that of Paul S. Martin, in which he proposes that man entered the New World for the first time at about 12,000 years ago; this will be dealt with only in review. Second, and most important, is the theory advanced in reply by Richard S. MacNeish, in which he proposes an original entry date of $70,000 \pm 30,000$ years ago. This paper will review the evidence offered by MacNeish and attempt to determine the validity of his claim for the antiquity of man in South America at greater than 20,000 years ago.

Paul S. Martin (1973;1976) proposes that man entered the
New World for the first time about 12,000 years ago. According to this theory, man, already a skilled hunter, had caused the extinction of the Pleistocene megafauna and migrated to the tip of South American by 10,000 years ago. Neither of Martin's theories - that man entered the new world for the first time 12,000 years ago, and was responsible for the extinction of the megafauna - are considered tenable in his paper. Concerning the extinction of the megafauna, suffice to quote C.C. Flerow (in Turekian 1971:483) "...men of the Paleolithic, Neolithic, and even of the Bronze Age, were certainly, absolutely, unable to destroy completely populations of large animals...extinction is determined by a set of causes. For different species, however, different factors are of decisive importance."

Martin considers the earliest reliable dates for man's presence in the New World to be the C-14 dates from the big game hunting tradition sites, i.e., Clovis. All the sites he mentions are mammoth kill sites, which fact presents an argument against Martin's theory. Mammoth bones are highly visible; most kill sites were first located because of the discovery of the enormous bones. This suggests that the sample may be biased, that Clovis and related cultures may not have relied exclusively on the exploitation of the megafauna, but also made

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use of smaller game and vegetable resources as well.

That man entered the New World for the first time 12,000 years ago appears unlikely in the light of archaeological data. The site of Tlapacoya in the Valley of México is beneath a deep volcanic ash layer C-14 dated in the range of 24,000 to 20,000 years ago (Willey 1971:27). C-14 analysis resulted in a date of 14,150 ± 180 years ago for cultural levels at Pikimachay Cave in Peru (MacNeish 1971:76). Other sites in South America are firmly dated from about 9,000 to about 11,000 years ago. If man was present at Fell's Cave on the Strait of Magellan around 11,000 years ago, he would have had to make the journey from the northern United States to southern Chile in about 1,000 years.

Martin proposed a population explosion among the big game hunting migrants, and a very rapid rate of diffusion. One argument against this is the problem of mobility. These were pedestrian hunters, who transported their possessions themselves, or, at best, on dog back. To preserve mobility, nomads space children; by taboos restricting sexual relations during nursing, or by infanticide, so that the women are encumbered by as few infants and young children as possible. Martin's proposed population explosion would have the paradoxical effect of reducing
mobility, which is the second essential component of his theory.

II. Background

Population movement into the New World, i.e., North, Central and South America, was dependent upon the emergence of the Bering Land Bridge (Beringia) during times of glacial advance and lowered sea levels. Sea level fluctuation and glacial advance and retreat have a complex interrelationship, especially in regard to the Bering Land Bridge and to the availability of an ice free corridor giving access to interior North America, and thus the rest of the New World.

There is no evidence that Beringia was ever glaciated, nor the greater part of Siberia and of interior Alaska. The climate was characterized by tundra conditions throughout the Pleistocene, when the bridge was emergent (Colinvaux 1964). Precipitation was too low to allow formation and expansion of ice systems, except in isolated highlands such as the Brooks range in northern Alaska. The Yukon drainage basin of central Alaska was ice free and rich in game, providing a living for early hunters even during times of maximum glacial advances. The north artic slope was also continuously ice free. One current theory is that early man migrated across the arctic slope and then down the Mackenzie river valley, when the ice systems
retreated to create a corridor into mainland North America. For a long time, it was generally accepted that humans had entered the New World 10,000 to 15,000 years ago, following the animals that formed the basis of their subsistence economy (Giddings 1954). Subsequently they migrated very quickly to the less severe environment south of the ice systems.

That view has been changing. Instead of a simple culture that hurried through and out of the inhospitable Arctic environment, early migrants are now thought to have been very highly Arctic adapted. Cultures in northern Eurasia at about 40,000 years ago were already efficiently adapted to the subarctic, tundra, and steppe conditions of that environment (Muller-Beck 1967).

Geologic evidence indicates high sea levels, suggesting a substantial retreat of the glacial systems, at between 30,000 to 25,000 BP, at between 48,000 to 40,000 BP in North America. If early cultures had been present in Beringia at these times, they would have been forced to retreat west to Siberia or east to Alaska by the rising sea and changing environment. At the height of the rise, Beringia would have been submerged. Because of the suggested extent of deglaciation, the MacKenzie Corridor would have been ice free and available to southward
expansion by flora, fauna, and early hunters during the latter part of these intervals.

One of the foremost advocates of an early migration, Richard S. MacNeish, suggests that "...migrating bands crossed the Bering Strait landbridge some 70,000 + 30,000 years ago and subsequently moved southward at a very slow rate" (MacNeish 1976:317). The early range of this date, 70,000 to 100,000 years ago, would extend into the Sangamon Interglacial. The main cooling of the Wisconsin Glaciation did not commence until about 73,000 years ago. Therefore, the Bering Land Bridge would extend into the Sangamon Interglacial. The main cooling of the Wisconsin Glaciation did not commence until about 73,000 years ago. Therefore, the Bering Land Bridge would not have been above sea level. Between about 40,000 to 48,000 years ago, which is included in the generally stable conditions of the Middle Wisconsin (59,000 to 32,000 BP), extensive deglaciation is indicated by near modern sea levels. Man could have entered mainland North America at this time.

The United States and Mexico were relatively easy for early migrants to move about in. Central America, however, is characterized by terrain that makes pedestrian travel difficult. During glacial maximums, the environment underwent change. The
The land area was not significantly increased. "Under any conceivable conditions, most of the Isthmus can not have exceeded a hundred miles in width, and much of that was blocked by mountains, many over 3,000 meters high" (Lothrop 1961:110). A slight shift eastward of the present climatic zone would have brought about savanna conditions along the west coast, allowing for the migration of grasses and the fauna characteristic of a savanna environment, along the area presently characterized by dense forest.

A second possible route of migration is by way of the mountain chains in Central America:

"...early human migrants entering South America by way of the Andes easily could have followed the same environmental zone for thousands of miles. These early migrants practiced a big game hunting economy with the animals hunted being adapted to specific vegetal zones. Their hunters would have exploited these game herds wherever they were found and thus would have followed these zones to the southern end of the continent... a movement of only 100 miles or so to the east or west would have forced the hunters to enter quite different environmental zones and to change their economy" (Hester 1966:378).

Hester considers the first migrants to have been big game hunters. MacNeish, on the other hand, considers the first migrants to be "relatively unskilled hunters and gatherers who possessed a technology that seems neither very specialized nor well adapted for undertaking the food quest and dealing
with its by-products" (MacNeish 1976:316). He divides Paleo-
indian prehistory into four stages of development based on tool
assemblages and faunal remains; the stages "to some degree re-
present a classification of subsistence systems, showing a
general evolutionary development" (ibid).

III. Stage I - 20,000 + BP

Stage I of MacNeish's classification is equivalent to the
Pre-projectile point stage. Proponents describe this stage as
a relatively crude stone chipping technology of unspecialized
hunters and gathers; possibly derived from the Asian Chopper-
Chopping tradition and dating back to 30,000 to 40,000 years
ago in the New World (Willey 1971:26). Bird (1965) points out
that "crudeness" is not an indication of great age and that
crude percussion flaked basalt is found contemporaneous with
fine bilateral pressure flaking of chalcedony, jasper, and
chert. Bird (ibid) also points out that the subsistence base
will dictate the tool kit, i.e., preceramic fishing cultures
lacked projectile points.

The technology of Stage I is characterized by a "series
of chipped stone bifacial hand-held choppers with sinuous sharp
edges, chipped cores, unspecialized bifaces, and thick flake
scrapers and spokeshavelike tools" (MacNeish 1976:316). This technology is associated with a wide variety of fauna and probably flora, suggesting unspecialized hunters and gatherers.

For South America, Stage I is placed at greater than 20,000 years ago. The lowest levels of Pikimachay Cave, in the Ayacucho Basin of highland Peru, are considered the best evidence for Stage I in South America. The earliest phase, Paccaicasa, includes, from the lowest, levels k, j, i1, and i.

Zone k occurs in a depression in the lava bedrock and is 8" thick. The neutral acidity of the soil is interpreted as indicating a grassland environment (MacNeish 1971:73). Near the top of the deposit were found vertebrae fragments and a rib fragment, possibly of an extinct ground sloth, although exact identification has not been made. In association were "four crude tools fashioned from volcanic tuff and a few flakes that had been struck from tools" (ibid). One flake is of a green stone that would appear to have been transported into the cave from an outside source. Carbon-14 analysis of bone from this level yielded a date of 20,200 ± 1,000 years ago (MacNeish 1976:317).

Zone j occurs as a brownish soil 12" thick over a wider area of the cave. Faunal remains consist of rib and vertebrae
fragments of ground sloth and an unidentified leg bone of a smaller mammal. Cultural remains consist of fourteen crude tools of volcanic tuff and forty flakes of unspecified material, interpreted as waste from toolmaking (MacNeish 1971:73). The soils of zone i and the succeeding zone ii are quite acid, suggesting that they were formed when the climate was less arid and the vegetation included forest cover. Carbon-14 analysis of one of the ground sloth vertebrae resulted in a date of 19,600 ± 3,000 BP.

Zone ii occurs as a 15" thick orange soil layer. The level contains fossilized and burned animal bone, some of it possibly worked with a burin. Tools of unspecified material and type occurred in the level. A carbon-14 analysis of a fragment of sloth scapula yielded a date of 16,050 ± 1,200 BP (MacNeish 1971:73).

The uppermost level of the Paccasicasa phase, zone i, consists of 18" of slightly browner soil, suggesting a return to drier climatic conditions (MacNeish 1971:73). Crude stone tools and waste flakes of unspecified material occur throughout the layer. Faunal remains consist of sloth and horse bones. Carbon-14 analysis of one of the bones resulted in a date of 14,700 ± 1,400 BP (ibid).
The Paccaicasa phase artifact inventory consists of fifty tools, of uniformly large and crude workmanship. Most of the artifacts are of volcanic tuff, which MacNeish himself (1971) says does not flake well and that "...it takes a skilled eye to distinguish many of them from unworked tuff detached from the cave walls by natural processes." Other tools were made of rounded pebbles and pieces of basalt, said to come from outside the cave (ibid:75).

"Artifacts include large crude bifacial and slab choppers, cleavers, hammers, scraping planes, and crude concave-and convex-sided unifacial scrapers or spokehavelike objects, as well as a single pointed flake that could have served on a projectile, and a flake showing blows from a burin" (MacNeish 1976:317).

Pikimachay Cave is located in a hill composed of volcanic rock; the roof and walls are volcanic tuff, the same material as the crude "tools" recovered from the Paccaicasa phase zones. There is a possibility that at least some of the artifacts are natural fragments detached from roof or walls - so called "naturefacts." There are also many sources of good chipping stone, including obsidian, available in the Ayacucho Basin. An unexplained problem is why early tool makers did not take advantage of good quality stone that was easily obtained in the vicinity of Pikimachay Cave.
The Alice Boer site on the Rio Claro, Brazil, has crude tools in the earliest level that may be related to the Pikimachay material (MacNeish 1976). The site is undated. The report is apparently not yet available in translation.

IV. **Stage II - 16,000 -12,000 BP**

Stage II cultures are also considered to be unskilled hunters and gatherers, with a technology somewhat better adapted to the food quest than that of the previous stage. "Fair but still inadequate" samples suggest the technology emphasized stone flake tools manufactured by percussion and pressure and the fashioning of bone tools (MacNeish 1976:318). Besides the older types of implements of Stage I, the tool types include specialized unifacial tools, such as drills, spokeshaves, end-scrapers, denticulates, and unifacial projectile points; the bone tools include perforators, scrapers and projectile points made with burins (ibid:316). The dates for Stage II in South America range from 12,000 to perhaps as much as 16,000 years ago (ibid:317).

Two levels at Pikimachay Cave contain good evidence for Stage II. Zone h1, 20" of a deep, yellow soil, is of neutral acidity indicating cold conditions. Faunal remains consisted of sloth, horse, and possibly saber-toothed tiger, with other
species unspecified. Artifacts include some seventy tools and numerous waste flakes. The majority of the material was of basalt, chalcedony, chert, and quartzite pebbles. These lithic materials would have had to have been introduced into the cave from outside sources.

Zone h soil was 12" deep and of a soft, light orange color, strongly acidic, indicating a return to a forested environment. Faunal remains include sloth, horse, ancestral camel, puma, extinct deer, skunk, and other unidentified species (MacNeish 1971:75). The cultural material of zone h is also characterized by the use of new tool materials, i.e., chalcedony, chert. About 250 finished artifacts and over 1,000 waste flakes were recovered. Core tools include choppers, heavy spokeshaves, split pebble scrapers and fluted wedges. The inventory of flake tools include burins, gravers, sidescrapers, flake spokeshaves, denticulate flakes, and unifacial projectile points. Bone tools include triangular projectile points, polishers, antler punches, rib bone "fleshers" and one polished animal toe bone which may have been an ornament (ibid:76). Carbon-14 analysis of sloth bone from zone h resulted in a date of 14,150 ± 180 BP.

The unifacial artifacts from Ayacucho seem closely related to the materials from the lowest levels of Los Toldos Cave in
Argentinian Patagonia (MacNeish 1976:318). The indirect date of Los Toldos of around 12,600 years ago may represent the end point of the Stage II complex (ibid). The Los Toldos report is apparently not yet available in translation.

The Ayacucho complex from Pikimachay Cave and Los Toldos Cave material are the best South American representatives of Stage II (MacNeish 1976:319). The El Bosque site in Nicaragua yielded chipped stone unifacial implements of unspecified type from a large fossil bed (ibid). A date for the fossil bed in general is placed at around 22,000 BP. It is not known if the cultural material is contemporaneous with the fossils or more recently intrusive.

The lowest levels of Guitarrero Cave in northern Peru, in the Callejon de Huaylas, fall in the recent end of the time range for Stage II. Carbon-14 analysis of charcoal from the lower levels resulted in dates of 9,790 ± 240 and 12,560 ± 360 BP (Lynch and Kennedy 1970:1308); the first date of 9,790 ± 240 BP is actually later than dates from samples from the levels 15 cm above it is the same stratigraphic column. As the upper level (Guitarrero II) yielded 4 consistent dates, the second date of 12,560 ± 360 BP is accepted as accurate for the lower level (Guitarrero I).
The lithic industry from Guitarrero I consists almost entirely of simple flake tools and unretouched flakes (Lynch and Kennedy 1970:1308). Scrapers predominate in the more than 500 artifacts recovered and other types include a few choppers, hammerstones, crude cores and lamellar flakes, graver scrapers, a small bifacial knife, and some stream rounded pebbles, possibly bolas (ibid). "The Guitarrero industry shares general characteristics with MacNeish's Ayacucho complex and the early flake industry at Laguna de Tagua-Tagua in central Chile" (ibid).

A human mandible was found in association with the Guitarrero I complex in the lowest stratum of the cave (Lynch and Kennedy 1970:1309). The likelihood of an intrusive burial or other disturbance is considered unlikely, as "ten levels of unbroken and apparently uncontaminated preceramic deposits lay directly above" (ibid). If in true association, the mandible may be the oldest human skeletal material recovered in South America, dating around 12,000 BP.

The site of Laguna de Tagua-Tagua in central Chile is in a basin surrounded by mountains. The site is near the outlet of a lake, making a favorable location to hunt animals coming in to water. A charcoal sample submitted for carbon-14 analysis was dated at 11,380 ± 320 BP - "the earliest date yet obtained
for human occupation in Chile" (Montane 1968:1138). As at Guitarrero Cave, the date appears too recent for inclusion in Stage II.

Chipped stone was found in association with extinct fauna, including horse, mastodon, deer, and canid (Montane 1968:1137). The horse remains represent one individual. Some of the bone exhibits prominent cuts made by a tool, and many of the bones were smashed. Both the horse and the mastodon, of which one was represented, were scattered, totally lacking anatomical arrangement (ibid), and were incomplete. The same stratigraphic level as the fauna yielded 50 artifacts, frequently found as close at 2 to 5 cm from the bones (ibid). The material is principally chalcedony and basalt, with obsidian flakes and an obsidian knife also occurring; other tools types are scrapers, hammers, and many sharpening flakes. Bone tools are flakers and smashed mastodon incisors that may have been used in the process of butchering.

The El Abra rock shelters in Colombia are also included in Stage II although the carbon-14 date of 12,400 ± 160 BP for the first evidence of human occupation is again almost out of the time range for Stage II. Subunit C3 was characterized by a warm moist climate with a forest, mostly alder, vegetation
cover (Hurt et al 1972:1107). The lower level yielded 16 chert flakes and pebbles from the outside of the shelter; the upper level yielded 21 flakes and pebbles. Most of the tools were characterized by "alteration of only the working edge of a single face by percussion flaking of the raw material" (ibid:1106). Chert is not found in the vicinity of the rock shelters, but does occur in the extinct lake bed and in the river terraces (ibid:1106-1107). Since the tool type was primarily scrapers, unifacially percussion flaked, the early levels could possibly have been specialized work areas where only one activity was carried out.

V. **Stage III - 15,000 - 11,000 BP**

Stage III is represented by complexes in the 15,000 to 11,000 year range in South America. This extensive overlap in time with Stage II is explained by MacNeish as the co-existence of Stage II hunter/gatherers with the more specialized Stage III big game hunters. The cultures of Stage III are characterized by a series of relatively specialized tools to hunt and process Pleistocene game and...
"...were specialized hunters of big game or herd animals in a wide variety of environments. Their technology seems considerably advanced over the previous stage, for they fashioned fine leaf-shaped bifacial projectile points as well as blades and produced skillfully made flint burins, perhaps for making even better bone tools" (MacNeish 1976:320).

MacNeish (1976) believes that these new subsistence techniques were ultimately derived from Asia. He seems to consider an actual migration of people from the Bering Strait area to be responsible for the introduction of the culture in the Americas. If MacNeish's hypothesis is accurate, then blockage of the Mackenzie River valley by the merging of the Laurentide and Cordilleran ice systems did not occur, as many Canadian archaeologists and geologists now believe (ibid).

The Joboid series from the Rio Pedregal river terraces on the north coast of Venezuela have been grouped into four successive complexes: Camare, the earliest, Las Lagunas, El Jobo, and Las Casitas (Rouse and Cruxent 1963:29).

"Crude chopping tools, made by battering a piece of quartzite with another stone in order to knock off flakes and thereby to sharpen the edges of the original stone, are characteristic of the entire Joboid series. Larger flakes ... were used after further trimming, the thinner ones probably as knives and the thicker ones probably as scrapers ... the Camare and Las Lagunas complexes, of the upper terraces, lack projectile points of stone. Presumably ... spears (made) entirely of hard, tropical woods (were fashioned). (Rouse and Cruxent 1963:29-30).
Stone projectile points begin in the El Jobo sites on the second terrace of the Rio Pedregal. Knives, scrapers, gravers, and coarse hammerstones were also found in the surface collections of the El Jobo site (Cruxent and Rouse 1956). The El Jobo points and the knives are lanceolate or leaf-shaped, of an sandy quartzite, percussion chipped with fine trimming along the edges (ibid). Because of the great quantity of chips and the absence of bone and shell, the authors suggest that the site is the remains of a workshop.

Two charcoal samples were collected from the Joboid sites, but resulted in modern dates (Rouse and Cruxent 1963:29). Geologic study of the river terraces suggests an age of possibly greater than 10,000 BP for El Jobo and possibly around 15,000 BP for Camare (ibid:29-30).

Three other sites in the Rio Pedregal area are advanced as the most reliable evidence for Stage III in South America. At all of them were found the diagnostic leaf-shaped El Jobo or Lagunas-like points (MacNeish 1976:322).

The site of Tiama-Tiama yielded a series of extinct animal bones in the lowest four "clearly defined strata" (MacNeish 1976:322). The species represented include mastodon, glyptodon, megatheridae and horse, in a context suggesting that the
animals were killed at a waterhole. In associated with the bones were three El Jobo points, a possible semi-lunar scraper, crude flakes, an anvil stone, and rocks which may have been used as hammers, axes, or choppers. Eleven radiocarbon dates taken from this bone layer ranged from 11,860 BP to 14,400 BP (ibid).

The site of Muaco lies around a spring. The species found include mastodon, megatheridae and horse. The fauna and flora were adapted to a humid climate, upon which basis the deposit has been assigned to the late Pleistocene (Rouse and Cruxent 1963:35). Some of the bones of extinct species had been broken, burned, and grooved, indicating human activity. The cultural material includes three leaf-shaped points, one definitely identified as El Jobo; retouched flakes, pebble choppers, a Joboid type scraper, and a number of hammerstones (ibid); (MacNeish 1976:322). Three Carbon-14 dates on bone range from 9,030 to 16,375 years ago.

The site of Cucuruchu, in the same general area as Muaca and Taima-Taima, is a dry site, although there are a number of springs in the area, and offered the possibility of an undisturbed stratigraphy (Cruxent 1970:223). A bone bed of fluvial origin was dry and showed no evidence of disturbance of any
kind, nor were there any intrusive materials (ibid:224).
Species represented include mastodon, megatheridium, and glyptodon. Native horse was not present as at the other two sites.
Two points of the El Jobo type were found among the fossil bones (ibid). A wider, thicker "point" found among the bones may be a knife.

"...not yet able to determine the exact age of association but believe it may vary between 9000 and 16,000 BP. This is the range of three radiocarbon determinations obtained from burned bones at Muaco and two at Taima-Taima" (Cruxent 1970:225).

The Huanta phase at Pikimachay Cave in the Ayacucho Basin, Peru, is found in strata bracketed by dates of 14,150 and 10,400 years ago (MacNeish 1976:322). The characteristic artifacts of the phase include bifacially flaked projectile points with a "fishtail" base, gravers, burins, blades, semilunar sidescrapers, and "teardrop" shaped endscrapers (MacNeish 1971:77). Faunal remains include horse, an extinct species of deer, and possibly llama (ibid).

The second Peruvian site, Cerro Chivateros, is the largest of the fine grained quartzite outcrops in a range of steep hills in the lower chillon valley (Lanning and Patterson 1967:64). The site appears to be a quarry and workshop but not a campsite; the slopes are thickly covered with debitage (ibid).
The lowest of five major strata, the "Red Zone", is a reddish silt containing unworked quartzite fragments and little quartzite tools, including simple straight-edged and notched scrapers, single and bi-pointed perforators, and a few burins (Lanning and Patterson 1967:64-65). The reddish silt may indicate a dry climate similar to the modern conditions. The Red Zone is tentatively dated between 12,000 and 10,500 BC.

A hard salitre crust formed during a time of increased humidity, with only a few artifacts of the Red Zone complex, underlay the third strata, a silt layer deposited under dry conditions. The Chivateros I complex is typical of the Andean Biface Horizon (Lanning and Patterson 1967:65), and consists of thick, pointed bifacial tools, large tools with serrated edges, and heavy unretouched flakes, large scrapers, notched stones, knives, and bifacially flaked leaf-shaped points. The beginning of the complex is placed at about 9500 BC. Chivateros I is overlain by a second salitre layer, indicating a return to more humid conditions. Wood from the Upper Salitre resulted in dates of 8,420 ± 160 and 8,440 ± 160 BC and apply to late Chivateros I (ibid).
VI. **Stage IV - 13,000 to 8,5000 BP**

Stage IV covers the time range of 13,000 to 8,500 years ago. The cultures are assigned by MacNeish to the specialized big-game hunters. Specialized tools had been developed for a wide variety of tasks (MacNeish 1976:317) and include blades, haftable end-scrapers, bifacial knives, bone needles and awls, flint burins, many other tool types for working skin, butchering, and preparing food, and a "whole series of specialized bifacial projectile points".

"Distributions of these specialized point types and their associated artifact complexes suggest that the Amerindians of Stage IV had adapted their hunting techniques and tool kits to specific large environmental zones with certain indigenous fauna and flora that would require slightly different food collecting techniques" (MacNeish 1976:317) ... they had developed a number of secondary subsistence options that aided them in their adaptations to these environments and even to the seasonal and microenvironmental differences within them" (ibid:323).

The most widely reported point type for South America is a narrow, long "fishtail" point, which has been found in almost every country in South America, as well as Panama and Honduras (MacNeish 1976:323). Sites where this point type occur include El Inga, Ecuador; Los Toldos Cave, Argentina; Fell's and Palli Aike Caves on the Straits of Magellan.
The El Inga fishtail points exhibit pronounced fluting of the stem and basal-edge grinding, both also characteristic of the North American Clovis-Folsom complexes (Willey 1971:45). "...excavations at El Inga might provide the link between the Paleo-Indians of the Plains region and the men of Fell's Cave and so tell much about the nature of the north-south migrations" (Mayer-Oakes 1963:53). El Inga I artifacts are principally of obsidian and include bifacially flaked knives, flake and blade scrapers, and simple angle burins (Willey 1971:45). The radiocarbon date for El Inga is 9,030 ± 144, the sample coming from a deep provenience and resulting in the earliest date for the site (ibid).

Willey (1971:45) considers this date too young if one is to assume a relationship between the "almost identical" Magellan I and El Inga I projectile points and between these and the similar Clovis-derived points of North America. He suggests that a date of closer to 9000 BC would be "more in keeping with the spread of this fish-tailed and fluted point form from north to south". H.M. Wormington, E. Mott Davis and Alex D. Krieger (in Cruxent and Rouse 1956) agree that the similarities in point forms are suggestive of relationship between the complexes.
The magellan I complex includes Fell's Cave and Palli Aike Cave, on the north side of the Strait of Magellan. Fell's Cave is a rock shelter, the first occupational level containing many bone fragments, including native horse, sloth, and guanaco; and four fire hearths (Bird 1938:270). The Magellan fishtail points were bifacially worked by percussion and pressure flaking; on many specimens is a short fluting of the fish tail (Willey 1971:44). Other artifacts include unifacial flake end and side scrapers, bone flaking tools and awls, and dislike implements of lava, which are found elsewhere associated with fishtail points (Bird 1970); (Bird 1938:270). The Palli Aike tool assemblage is basically the same; the faunal remains consist of native horse and sloth, as at Fell's Cave; three cremation burials occur with the Magellan I level (ibid:269). The radiocarbon date for Palli Aike is around 6700 BC, which may be to late to be valid (Willey 1971:45).

Another complex which seems to be contemporaneous is characterized by broad bodied, wide, contracting-stem points with keeled and plano-convex end-scrapers, scraper planes, large side-scrapers, and perhaps blade tools. (MacNeish 1976:323). The best evidence for the complex is from the lower levels of Tequendama Cave, near Bogota, Colombia. Five dates on it range
from 10,025 to 10,920 BP (ibid). The lower four levels of the Alice Boer site, on the Rio Claro, Brazil, contained most of the tool types mentioned above and bears a date of 14,200 BP. MacNeish (ibid) suggests that the complex of broad-stemmed points was a late Pleistocene savanna-selva adaptation, but does not offer evidence in support of this hypothesis.

Peruvian sites assigned to Stage IV include Lauricocha I (about 9,500 BP); Tres Ventanas I (9,000 to 10,500 BP); Guitarrero 1b and 2e (9,000 to 10,500 BP); and the Puente phase of Ayacucho (9,100 to 10,500 BP) (MacNeish 1976:323). The fauna hunted include modern species, e.g., llama, as well as now extinct Pleistocene species.

Wille (1971:49-50) suggests that the biface projectile point technology was introduced into South America from North America in the form of a fish-tailed semi-fluted point. He considers these cultures to have been specialized big-game hunters, and exploited a different series of environmental niches than the older inhabitants, so that there was no significant "displacing" effect as the nomadic hunters moved southward. This north to south movement was rapid, occurring between 9,000 to 8,000 BC, generally. Wille further suggests (ibid) that the leaf-shaped projectile points characteristic of South
American complexes, e.g., El Jobo, resulted from the influence of the new technology.

An alternate hypothesis is offered (Willey 1971:50) which would see the early leaf-shaped points as an indigenous South American development out of the antecedent Biface tradition; the fish-tail point could thus have been developed out of the simpler leaf-shaped form (ibid).

MacNeish is more in agreement with the latter hypothesis. He considers Stage IV to be "uniquely American in its development" (MacNeish 1976:322).

"...(Stage IV cultures) everywhere seem to have originated at the end of the Pleistocene roughly 10,000 to 13,000 years ago. Movement of these developed complexes was apparently relatively fast within certain microenvirons, but there is little evidence of inter- or even large-scale intra-continental migrations, either fast or slow" (MacNeish 1976:323).
VII. Conclusion

The middle interval of the Wisconsin refrigeration, (59,000 - 32,000 BP) was characterized by generally stable conditions; the late interval (32,000 - 13,000 BP) was characterized by greatly varying conditions and included the coldest intervals of the glaciation (Langway et al 1973:319). However, during the mid-Wisconsin, deglaciation may have been more extensive then generally assumed (Porter 1971). Geologic evidence indicates the submergence of coastal Georgia at about 48,000 - 40,000 BP, and again at about 30,000 - 25,000 BP. Evidence from the U.S. Atlantic continental shelf suggests that sea level was near the present level at about 35,000 - 30,000 BP. Evidence indicates a marine transgression about 50,000 BP and one at about 35,000 BP in New Guinea, during which sea level rose to within 25 meters of its present level (ibid).

"Because large magnitude fluctuations of sea level were chiefly a function of changes in volume of upper middle latitude continental ice sheets, these inferred high sea levels imply substantial volume loss and terminal recession of the Laurentide ice sheet. These intervals may have been times of extensive deglaciation in north-central North America, and, because of the widespread effects of the continental ice sheets on world climate, times of extensive deglaciation in the Cordillera." (Porter 1971:322-323).

Melting of a glacial system does not simply commence at the
"head" or terminus and progress back to the source. A recent theory suggests that continental glaciers begin to thin substantially in the central areas, the moisture ultimately returning to the sea and contributing to a rise in sea level; this thinning occurs long before the margins are affected by any noticeable retreat (Hopkins 1967:463). If this theory is correct, a passage southward would not have become available until the middle to last part of each episode of increased warmth and glacial retreat. Thus, between 48,000 BP and 25,000 BP, conditions occurred coincidentally that would have facilitated migration into mainland U.S. "From at least 25,000 to 12,500 years ago, the trans-Canadian migration route was blocked by coalescence of the Cordilleran and Laurentide ice sheets... The paucity of radiocarbon-dated sites suggests a sparse population at best (before closure)" (Haynes 1964:1412).

MacNeish "...tentatively propose(s) that the last of the pre-Punte strata at Flea Cave...coincide with the last Andean glacial advance" (MacNeish 1971:77). Based on the evidence of soil types and faunal remains encountered in the Paccaicasa, Ayacucho, and Huanta complexes, MacNeish states that "... if the Ayacucho evidence holds true for Andean glacial activity in general, the South American glacial advances and retreats do
not coincide with those of the Wisconsin glaciation in North America" (ibid); and, in fact, are in reverse sequence, i.e., and advance in North America would be a time of glacial retreat in South America. Other geologists (Morner and Frumanis 1973) interpret the evidence from South America as indicating the glaciation to have been synchronous with that of North America and Europe. The opinion of geologists in general is that "Late Pleistocene glacial chronology in South America is believed to parallel that of both Europe and the United States; that is, the major events - the glacial advances and retreats - are thought to have been essentially synchronous on all three continents" (Willey 1971:33).

The environmental sequence indicated by the succession of soils in Pikimachay Cave may reflect local conditions and variations; possibly the radiocarbon dates obtained from the small bone samples are inaccurate; or MacNeish's interpretation may be proven inaccurate by further analysis. Zones k, j, and i1 of the Paccaicasa phase yielded fragmentary bones of extinct animals, evidence that the deposits had been laid down during the Pleistocene. The 'tools' from these three zones were of volcanic tuff native to the cave interior, of uniformly large and crude workmanship. One green flake from zone k may have
originated outside the cave; it could as well have been transported into the cave stuck between a sloth's toes, as to have been carried there by man. The dates for these three zones range from $20,000 \pm 1,000$ BP (zone k) to $16,050 \pm 1,200$ BP (zone i1).

The uppermost level of the Paccaicasa phase, zone i, is C-14 dated at $14,700 \pm 1,400$ BP. Three of the 50 artifacts, and 12 of the more than one hundred flakes were derived from pinkish basalt pebbles "not found in or near the cave" (MacNeish 1970: 14). This would appear to be more acceptable evidence of human activity then the tuff artifacts, but the date does not support the extreme range of greater then $20,000$ BP proposed by MacNeish. There is also the possibility that the basalt, also of volcanic origins, may have been introduced into the cave by natural means, or occurred within the volcanic tuff matrix of the cave, or may be intrusive from the overlying zone h, which is included in Stage II.

Stage II, characterized by complexes of relatively unskilled hunter-gatherers, is dated by MacNeish at between 16,000 and 12,000 BP. Two of the seven sites assigned to this stage, the Ayacucho phase of Pikimachay Cave ($14,500 \pm 180$ BP) and Los Toldos Cave in Argentina (indirect date of $12,600$ BP), offer good evidence
of human activity. Four of the sites - Tagua-Tagua, 11,300; Cueva de la Indies, 10,500 - 13,100; Guitarrero, 12,560; and El Abra, 12,400 - do not fit in the assigned time range well, the assigned dates being too young, although the cultural material appears to fit the description of Stage II. There is the possibility that these assemblages may be incomplete, giving, therefore, a biased idea of the technology and subsistence base of the Stage II cultures.

Stage III is dated as extending from 15,000 to 11,000 BP. The extensive overlap in time is explained as the co-existence of the presumed hunter/gatherers of Stage II with the more specialized big game hunters of the Stage III complexes. MacNeish is in apparent agreement with some Canadian geologists that the Laurentide and Cordilleran ice systems did not merge during the Classic Wisconsin stage; he considers Stage III people to be a physical migration of people from the Bering Strait region, through the MacKenzie River Valley.

During the Classic Wisconsin maximums, lobes of the ice system in the Brooks range reached to within 10 miles of the Arctic shore on the north slope of Alaska; even if the ice systems did not merge in the MacKenzie region, it was quite likely to have been almost or totally uninhabitable due to the
proximity of 3-mile high ice masses to the east and to the west. Frigid arctic air, blocked behind the bulk of the glaciers, would have funneled through the one open corridor, adding a windchill factor to the environmental conditions. Beringia and the Yukon drainage basin were ice free and abounding with game. A question arises - why would a band of hunters abandon a game-rich environment to move into the glacier-dominated terrain of the arctic slope and the MacKenzie? They could not have known that the New World was in existence to the south. And it has still not been convincingly demonstrated that this corridor, did, in fact, exist at the time MacNeish assigns for the migration of Stage III cultures, at between 25,000 - 13,000 BP. It is this time range that many American geologists consider to be when the Cordilleran and Laurentide ice systems had merged. If this latter viewpoint is the correct one, i.e., that passage was impossible between the two ice systems, then Stage III cultures would of necessity have been an indigenous development out of the older, less specialized cultures.

The site of Cucuruchu in Venezuela appears to be undisturbed despite the presence of springs in the area; two El Jobo points were found in a bone bed containing extinct species, including mastodon. An indirect date places the site in the range of
16,000 to 9,000 BP. Date and point type include Cucuruchu in Stage III. Two sites in Peru—Huanta phase at Pikimachay Cave, and Chivateros I, are included on the basis of dating (10,400 to 14,150 BP, and before 10,400, respectively) - and on the tool assemblage, and are certain evidence of the presence of man.

MacNeish lists seventeen sites as evidence for Stage IV, dating between 13,000 to 8,500 years ago. These are the complexes characterized by bifacial projectile points and associated with extinct Pleistocene megafauna as well as modern species. There is little doubt as to the validity of the evidence offered to support this stage. MacNeish's view of this stage as an indigenous development is acceptable. By 13,000 - 8,500 PB, the population of the New World was not great, but dense enough to offer a certain amount of restriction of actual large scale population movements. It is reasonable to assume that interaction occurred between populations, allowing for exchanges of items and ideas, i.e., trade of raw materials, etc.

Geologic evidence supports the presence of man in the New World at around 40,000 years ago and possibly even earlier. The archaeologic evidence for South America advanced by MacNeish to support the presence of man at before 20,000 BP is, however,
not convincing. His Stage I site, the Paccaicasa phase at Pikimachay Cave, does not offer acceptable evidence of human activity until the top zone of the phase, dated at 14,700 ± 1,400 BP, which is within the time range assigned to both of the subsequent Stages II and III, and is not evidence of an early occupation at around 20,000 BP. It is reasonable to assume the possibility of the presence of man at around 20,000 BP; a route south of the ice systems was available between 48,000 and 25,000 BP. It remains to be seen if convincing evidence can be found to support the hypothesis of the peopling of South America at greater than 20,000 years ago.
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INTERACTION OF DIET AND DISEASE AT THE DONNAHA SITE,
YADKIN COUNTY, NORTH CAROLINA

by

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October 27, 1978
ABSTRACT

A study of the human skeletal remains from the Donnaha site in Yadkin County, North Carolina, has revealed a high frequency of a particular bone pathology (porotic hyperostosis). Because of the environment of the area an additional cause of this porosis is proposed. Chronic parasitic infection probably interacted with nutritional and physiological causes to produce the observed skeletal pathologies. The bases of these causes are discussed and a potential interaction of all causes is suggested as the cause of the high incidence of porotic hyperostosis.

This report is a study of a bone pathology (porotic hyperostosis) resulting from anemias in forty-seven individuals excavated from the Donnaha Indian site (ca. 1100 A.D.) in Yadkin County, North Carolina, during two field seasons (1973 and 1975), by Wake Forest University's Field Archaeology Program under the direction of Dr. J. Ned Woodall. The occurrence of skeletal
porosity, both cranial and post-cranial, has been observed in 49% (23/47) of the individuals examined from Donnaha.

According to El-Najjar et al., "Porotic hyperostosis (also known as symmetrical osteoporosis, cribra orbitalia, cribra cranii, or hyperostosis spongiosa) is a descriptive term for cranial and orbital lesions. These appear as widening of the diploe, thinning of the outer table, and the presence of small apertures, giving a coral or sieve-like appearance to the bone. In more severe cases, the lesions may enlarge to such a degree that the outer table becomes unrecognizable." (1976: 477). J. L. Angel extended this definition to include "the observed bone swelling and porosity seen in the long bones...in fully developed examples of this disease." (1967:379). H. U. Williams concluded in an early study of Anasazi infants "that porotic hyperostosis was the result of marrow hyperplasia due to anemia." (1929:839-902). Possible causes of these identifiable bone changes include thalassemia, sickle-cell disease, cyanotic congenital heart disease, iron deficiency, and parasitic infection.

It is widely known that many of the bone lesions occurring in porotic hyperostosis in the Old World were the result of hemolytic anemias. Angel (1967:378) has noted that the distribution of porotic hyperostosis "fits quite well the major
pattern of *P. falciparum* malaria and the Old World occurrence of the thalassemias (Chernoff 1959:899; Bannerman 1961) and of sicklemia (Singer 1962:152)." El-Najjar states: "no evidence of sickle-cell, thalassemia, or the G6PD deficiency in unmixed American Indian Natives. All reported cases of these are the result of European or African admixture." (1976:329). Therefore, hemolytic anemias cannot explain the high incidence of porotic hyperostosis in the Precolombian natives of the New World and cannot be considered significant contributors to the high incidence of porotic hyperostosis found at Donnaha.

Cyanotic congenital heart defects, the next possible cause of porotic hyperostosis, may be ruled out. It is highly unlikely that nearly half of any given population would suffer from severe congenital heart defects. The only reasonable conclusion which can be drawn is that cyanotic congenital heart defects cannot explain the high incidence of porotic hyperostosis found in the New World.

The significance of iron absorption in relation to porotic hyperostosis has been studied in recent years: "since hemoglobinopathies and malaria have not been found in unmixed Indian groups, only a disorder as common as iron deficiency anemia could explain the frequent skull pathology." (El-Najjar *et. al.* 1976:485).
General malnutrition has profound effects on skeletal and body growth and development. Steward (1975:55) lists the effects of a protein-energy deficient diet on children's bones: retarded growth, short bones and epiphyseal growth and osteoblastosis retardation. At the same time, a vitamin deficient diet would not only slow development, but would also expose the individual, particularly a child, to a high risk of anemia and (an increased) general susceptibility to disease. Further, a generalized mineral deficiency, for whatever reason, would retard body growth, particularly bone development.

El-Najjar et. al. (1976:484) have claimed: "The most common condition associated with marrow hyperplasia in human populations is iron deficiency anemia." Basically, there are only three possible causes of iron deficiency anemia: 1) repeated loss of significant amounts of blood, 2) a dietary cause, 3) a postnatal iron deficiency. Other than individual cases, as in the case of a bleeding ulcer, there are two main possibilities for chronic bleeding: menstruation in females, and parasitic infection. The significance of each in relation to New World porotic hyperostosis must be evaluated.

Females, prior to the onset of menstruation, have no greater requirement for iron than do males of the same age and hence
Should not be differentially affected. Further, by the onset of menstruation, females have already adopted an adult dietary regime, and are capable of extracting the necessary nutrients from their environment—provided, of course, that those nutrients are available. Hence, males and females should be affected equally prior to the onset of puberty and after homeostasis is reached in the female following the period of the onset of menstruation.

Parasitic infection is a well known cause of chronic blood loss which can lead to iron deficiency anemia. Of the many parasites which infect human beings, among those most likely to have contributed to the anemia observed at Donnaha are two species of hookworm: *Necator americanus* and *Ancylostoma duodenale*. Scott and Berowitz (1944) have summarized the life cycle of hookworms as a process involving: 1) the presence of larvae in the soil, 2) the larvae pass on contact through the bare skin, 3) enter the bloodstream where they are passed to the heart and lungs, 4) the larvae penetrate the alveoli of the lungs and may then be coughed to the mouth, 5) where they will be swallowed and enter the duodenum, 6) in the duodenum, the larvae mature and lay eggs, 7) which are passed in the feces to the soil, providing the potential for reinfection and the spread of the
parasite. The life cycle progresses in 6 - 10 weeks. Mature parasites may live for years within an individual, and eggs may be forthcoming with regularity for the life of the organism.

Parasites, particularly the species *N. americanus* (hookworm) are potentially significant contributors to the high incidence of porotic hyperostosis observed in the individuals at Donnaha only if their presence in the Southeastern United States during Precolombian times can be documented. Until recently, *N. americanus* and *A. duodenale* were thought to have been historic introductions to the New World. (Darling 1920:221).

As Marvin Allison (1974:103) noted, there is little proof of the existence of *N. americanus* in the New World in Precolombian times. Yet, the possibility remains "that either or both species (*N. americanus* and *A. duodenale*) have also been introduced into the American continent from Asia, Indonesia, or Polynesia by voyagers or storm-tossed fishermen." (Darling 1920:221).

Three potential sources for the initial infestation of the New World inhabitants have been proposed: 1) from Asia by way of the Bering Straits, 2) from Asia or Indonesia across the Pacific, or 3) from Polynesia across the Pacific.

The hypothesis that the New World peoples were first infested with hookworms by way of the Bering Straits must be rejected on
the basis of climate. Generally, hookworm larvae are best suited to moist shaded areas with loose sandy soils or alluvial deposits, in which the average temperature is about 35° - 40°C. (Belding 1942:291). The environment of the Bering Straits would probably have been much too cold for hookworm larvae to have survived, allowing the migrants to "arrive free from hookworm." (Darling 1920:221).

Citing the many similarities of the Shang and Olmec civilizations, Betty J. Meggers has suggested that the archeological evidence implies Precolumbian contacts between Asia and western America. (1975:22). If contact were made, then perhaps hookworm introduction to the New World also occurred at this time — certainly the environments of the Olmec region of Mexico through Panama and as far into South America as the coastal regions of Peru, were conducive to hookworm.

Poor preservation allows little concrete evidence to support the claim that hookworms were present anywhere in the New World during Precolumbian times. However, there has been at least one diagnosed case of hookworm infestation in a Precolumbian American. In a Tiahuanaco mummy dating ca. 900 A.D., Allison described the "first recorded case of hookworm infestation in the Americas prior to the coming of the Europeans." (1974:103-106).
The significance of this case is clear. Hookworms were probably present in the tropical regions of Central and South America prior to any recorded contact from Europe.

Two further questions must be resolved: 1) was the environment of the Southeastern United States, and particularly of the Piedmont region of North Carolina, amenable to hookworm cycle? and, 2) is it conceivable that hookworms arrived in the area by about 1000 - 1100 A.D., the date ascribed to Donnaha.

The geography of the Southeastern United States provides many hospitable environments for hookworm larvae. The climate is generally one of mild winters and warm summers. The Piedmont and Coastal Plains regions of the Southeastern United States have an abundance of creeks and rivers which provide many ideal sites for both hookworm infestation and Middle Woodland villages.

There are no data which provide proof of direct trans-Caribbean contact between the Panama/South American area and the Southeastern United States. James A. Ford has noted however, that the circular villages and ceramic types found both in the area around the Isthmus of Panama and the mouth of the Savannah River suggest that long before 1000 A.D. "a voyage was made on the Atlantic Coast of the Americas...the route probably passed through the straits of Yucatan around western Cuba, through the
Florida Straits, and northward to the mouth of the Savannah River" (1969:185). Despite the lack of concrete evidence, it is conceivable that hookworms were carried into the Southeastern United States prior to the arrival of the European explorers.

The Donnaha site is located in an enviroment which is somewhat marginal for hookworm infestation. The damp sandy loam found in the alluvium at Donnaha provides an excellent environment for the transmission of hookworm from late Spring through early Fall. During Winter in Piedmont North Carolina cold temperatures have prevented the hookworm larvae from developing in the soil (Scott, Bercovitz 1944:794). Since Donnaha is a marginal environment for hookworm, one must ask how a periodic infection would have affected the inhabitants at Donnaha. It has been noted by Scott and Bercovitz that "persons infected with only a few worms have moved to a locality where further infection was impossible, but the eggs continued to appear in the stools for as long as seven years." (1944:793). Hence, in a seasonal environment such as that at Donnaha, one can easily postulate periodic (even yearly) re-infection of the individuals.

The severity of the anemia produced by hookworm infection is primarily based upon three factors: "1) the number of worms harbored by the patient, 2) the length of time he has borne them,
3) and his ability to compensate for their debilitating effects." (Scott, Bercovitz 1944:794). At Donnaha, transmission of hook-worms is impossible throughout the winter months, except by direct contact with feces, leading one to suspect that the number of worms in any individual at Donnaha was usually sufficient to produce only a sub-clinical infection in a healthy individual. Yet, since both iron deficiency and chronic malnutrition are conceivable at Donnaha a periodic infection, no matter how slight, may have been sufficient to produce a severe anemia. Thus, hook-worms may have been a major contributing factor to the high incidence of porotic hyperostosis observed in the 47 individuals at Donnaha.

Iron deficiency studies done among infants and young children have shown that: "By about six months of age, children have depleted the iron stores accumulated in utero and must depend on a sufficient dietary intake of iron to satisfy growth requirements...Factors that diminish the intra-uterine accumulation of iron predispose a child to the onset of iron deficiency anemia in the first six months of life." (El-Najjar, et. al. 1976:484). In any population in which infants are not supplied with the proper amounts of iron, porotic hyperostosis should be widespread.
With the exception of menstrual blood loss and parasitic infection, diet and nutrition should be responsible for the majority of cases or iron deficiency anemia in the New World and as a corollary, porotic hyperostosis. There are two means by which diet may play a role: 1) the diet might simply be insufficient in iron content to meet metabolic requirements, 2) when the diet is sufficient in iron content, something may interfere with the absorption of iron by the body.

Iron deficiency anemia resulting from simple dietary insufficiency may occur for one of two reasons: 1) if iron is not available in the environment neither children nor adults can get the necessary amount of iron; 2) cultural practices may restrict the intake of iron by a certain group. For example, infants may be breast-fed for the first several years of their lives simply because that is the easiest way of providing food. Moseley (1961:651), in research done on a three-year-old Puerto-Rican male, concluded that iron deficiency anemia experienced by the child was the result of a diet consisting almost exclusively of milk. Clearly, a diet of this nature will result in severe growth and metabolic problems.

Compounding the problem of cultural preference is an important aspect of nutrition which is often overlooked--the
effect of a diet which inhibits the absorption of certain vitamins and minerals. Wintrobe (1967:585) has suggested the high calcium intake inhibits the assimilation of iron in the human body. Also, it has been shown that the phytic acid present in all varieties of maize inhibits the absorption of whatever iron is ingested. (Reinhold et al., 1973). In an agriculturalist population subsisting primarily on maize, iron absorption is severely restricted. Further, if iron absorption is restricted due to either or both of the above conditions, body growth and development will be severely retarded. El-Najjar, et al. (1976:485) concludes that "in view of the problems of iron absorption in maize dependant diets, iron deficiency may have been fairly common. Women and children, because of their high iron requirements, are expected to show more severe signs of iron deficiency anemia in the form of porotic hyperostosis.

POPULATION SPECIFICS

Of the 47 individuals surveyed, 12 were so severely eroded or so poorly represented as to render them useless in analysis of bone pathologies resulting from anemias. Of the 35 remaining individuals, 65.7% (23/35) showed evidence of skeletal porosis
(see Table I). Included in this sample were eight females ranging in age from 15-45, ten males ranging in age from 1.5-40 years of age, and five individuals of undetermined sex ranging in age from 1.0-40 years of age. In nine of the cases, it was determined that the porosity was probably resorption due to age. The three males of this group yielded a mean age of 36.3 years. The five females of this group ranged in age from 30 years to 45 years of age, yielded a mean of 37.2 years. The individual of undetermined sex was about forty years old.

Among the 14 cases of porotic hyperostosis probably due to anemia, it was determined that 71.4% (10/14) were cases of porotic lesions in a healing stage. The six males represented ranged in age from 18-45 yielding a mean of 29.6 years. The two females were about 20-25 years of age. One individual of undetermined sex was about 20 years old, the other about 5 years old.

In the four cases of active anemia, two individuals were of undetermined sex. One was less than 12 years of age, the other about 1 year old. In the cases of known sex, one was a 15 year old female, the other probably a male between 1.5-2.5 years of age.
DISCUSSION

In the cases diagnosed as active anemia, all four individuals are quite easily explained. Jensen, et. al. (1977:40) state that the average age for the onset of menstruation for females is around 13 (between 10 and 14) years of age. Hence, a girl of 15 should be expected to display some degree of iron deficiency simply in response to her novel and periodic blood loss. It is also reasonable to assume that infants would be suffering from an iron deficiency, particularly if they were restricted to a diet high in calcium (maize gruel) until the age of about 4-6 years, at which time the children could begin to eat substantial quantities of meat and meat fats. (Cook and Monsen 1977). The individual which showed healed porosity at 5 years of age seems to support this idea. It would appear the females about the age of 20, well past the onset of menstruation, had adjusted to the physical changes brought about by adolescence. In effect, their bodies would have attained homeostasis. Generally speaking, it would appear the menstruation in post-adolescent and early adult years is not a great factor, indicating that the adult diet was probably adequate in iron, and generally well-balanced.
CONCLUSION

Many factors must be considered when attempting to explain the high incidence of porotic hyperostosis observed in the skeletons from Donnaha.

Primarily, they are: 1) physiological factors such as age and sex; 2) cultural factors related to age and sex; 3) nutritional factors; and 4) parasitic infection. Each of these factors must be considered possible contributors to the anemias which resulted in the observed lesions. In all likelihood, there was no single cause for this anemia. Rather, the anemia was probably caused by a combination of all the factors. Only with such combination of causes can such a high incidence of anemia be explained.

The model suggested by the Donnaha data is that of individuals of a particular age and sex, and therefore, susceptible to anemia, faced with dietary insufficiencies and possible periodic parasitic infection. Further studies at Donnaha should elucidate the proposed interaction of physiology, diet and disease through the recovery and analysis of more faunal, floral, and human remains from the site.
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**Table I**

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A HISTORY OF LEBANESE CULTURE IN WICHITA

by

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I. INTRODUCTION

The life of man in the cities until fairly recently has been studied solely by the sociologist. However, as peasants began leaving the villages and migrating to the urban centers the anthropologist followed. Thus, the major area of concern in early urban anthropology was to study the rural migrant's adjustment to life in the city. The influx of foreign immigrants to the United States gave rise to another area of research—the ethnic enclave. This paper deals with Eastern Orthodox Lebanese immigrants (and their descendants) to Wichita, Kansas. Its primary focus is on the early history of immigrants to this American community. A brief history of Lebanon, as it relates to stimuli for immigration, will be presented. Also necessary to a full understanding of the culture of the Lebanese immigrants in America is an overview of traditional society in Lebanon. Noteworthy in this regard is that many of the traditional Lebanese values were an aid in the cultural transition of the immigrants. Second, some of the cultural institutions that have been initiated by the
Lebanese community in Wichita will be examined and discussed in terms of how they promote in-group feelings. The last section is devoted to interviews, interpretations and conclusions. The interviews will be cited according to how they reflect dominant values. It is the basic premise of this paper that the Lebanese people in Wichita have succeeded economically, socially and politically because of their strong allegiance of the family group.

II. BACKGROUND

The country of Lebanon is a mosaic of peoples of various religious and ethnic backgrounds. There are seven major religious groups—four Christian, two Islamic and one Druze. There are also five smaller groups. Almost all Lebanese belong to one or another of these religious communities. The last official census in 1932 indicated that Christians made up about 53 percent of the population; Moslems, 39 percent; and all adherents of other faiths, the remainder. Moslems have probably surpassed Christians numerically since this census was taken. However, for the sake of internal political stability the government takes the position that these ratios still hold true. Religion and politics are closely intertwined. Seats in the legislative body of government, the Chamber of Deputies and the Cabinet are distributed proportionately
among the major religious groups. This policy has become known as confessionalism (Smith, et al, 1974:123).

Although this paper is primarily concerned with Eastern Orthodox Lebanese immigrants, a discussion of the various religious communities will prove helpful in understanding the complex nature of Lebanese history and culture. Among the Christian groups are a smaller number of Roman Catholics; a large number of Roman Catholic Uniates; a substantial number of adherents to the churches of the East, Orthodox and schismatic; and a few thousand Protestants. The Roman Catholics comprise less than 1 percent of the population and are mostly of European extraction. The Lebanese refer to the Roman Catholics as Latins to distinguish them from the Uniate groups; none of which use the Roman liturgy. The Uniate churches are in full communion with Rome and agree with the Holy See in matters of religious doctrine. However, they do not practice the Latin rite. They have retained their own ancient rites in various languages. Uniate groups in Lebanon represent about 37 percent of the population. The Maronites are the largest of the Uniate groups and the largest single religious group, Christian or Moslem, in the country. They are estimated to comprise nearly 30 percent of the population (Ibid:124-5).
The Eastern churches not in communion with Rome include the various Orthodox Churches and several small schismatic churches. Although the Roman Catholic and Orthodox Churches share many of the same elements of the Christian faith, differences have persisted into modern times. Primarily, Orthodox reject the concept of the universal primacy of the Pope and feel that he cannot be infallible in matters of faith and morals. The Orthodox Church also adheres to a somewhat different list of sacraments and to slightly different rituals and customs. Arabic is the liturgical language. Greek Orthodox adherents comprise approximately 10 percent of the population. The community includes people of varying social origins, ranging from urban upper-class families to village peasants. Between these extremes are middle-class persons who have left the village and achieved some measure of success in the urban setting (Ibid:128).

In 1968, official estimates indicated that there were about 1 million Moslems in Lebanon, constituting slightly less than 40 percent of the population. They were almost evenly divided between the two branches of the Islamic faith, Sunni and Shia. Moslems believe in the oneness of God and the prophethood of Mohammed. The Shia Moslems split from the Sunni Moslems in A.D. 632. The controversy centered around whether Ali, a cousin
and son-in-law of the Prophet, should succeed Mohammed. The Shia Moslems supported Ali but they lost the struggle. Sunni Moslems, found largely in the Coastal cities of Beirut and Tripoli, are in all professions and trades. Some are also village farmers. Shia Moslems are nearly all low-income farmers. A few work as unskilled laborers in the cities (Ibid:129-132).

Druzes make up approximately 6 percent of Lebanon's population. They are a close-knit, well-organized community consisting largely of farmers. They share the slopes of Mount Lebanon with Shia Islam. But they do not regard themselves, nor are they regarded by others, as Moslems. They reject the most important article of the Islamic faith--the supreme prophethood of Mohammed. The Druzes have a practice which was probably instituted for survival purposes in a country that is made up of diverse groups and has often been ruled by foreign governments. This custom, called taqiya, permits, and even encourages, an individual, for his own protection, to profess and practice the religion of the ruling group under which he lives (Ibid:132).

Lebanon was constantly ruled by foreign governments from 900 B.C. up until their independence in A.D. 1941 from the French. Only the last several rulers will be discussed here. The Ottoman Turks ruled from 1516-1918 A.D. and the French
Mandate from 1918-1941 A.D. The Turks instituted several programs which have had profound effects on the social and political history of Lebanon. Most important of these was the millet system. The millet originally referred to a religious community that was not restricted to a geographic area but embraced all adherents of a particular faith within the boundaries of the Ottoman Empire. The spokesman for each millet was the religious leader and he had ultimate authority over the faithful in matters of personal law (Christopher, 1966:66-7). The confessional basis of Lebanese political life in the twentieth century is a legacy of the millet system.

The Turks by establishing the millet system fostered the Lebanese tradition of group loyalty and solidarity within the family, village community and religious sect. It also promoted factionalism and distrust between the various religious communities. The disproportionate distribution of wealth and power also created intragroup tensions. This combination of sectarian and social strife led to the massacres of 1860. Between May and July of that year dozens of villages east and southeast of Beirut on Mount Lebanon were burned by the Druzes. Ottoman troops attacked Christians trying to flee to the towns, and garrisons in the towns disarmed the refugees and let them be massacred.
Estimates of the number slain range from 5,000 to more than
10,000, and the victims included Greek Catholics and Orthodox
as well as Maronites (Ibid:77). This type of Turkish oppression
and uncertain social and economic conditions triggered the first
wave of emigration in the latter part of the 19th century. The
first migrants were peasants who confined their movements to
neighboring regions of Lebanon, Syria and Egypt (Smith, et al,

Wherever the migrants travelled, whether to neighboring
countries or across the world, they retained many aspects of
traditional Lebanese society. The interviews illustrate that
some of these values are still held by the Lebanese people in
Wichita. But first, a view of the culture of Lebanon. The
average Lebanese has traditionally felt himself to be a member
of three communities--his family, his village and his religious
sect. Often, bonds of kinship, language, religion and local
residence coincided creating numerous distinctive and cohesive
groups. These groups tended to maintain separate institutions
and marry within themselves. Occupational specialization made
each group a necessary part of society, and most intergroup con-
tact took place in the field of commerce (Ibid:59).

Every Lebanese is closely affiliated with the family into
which he was born. Most turn to family members for social life and business partners. Even the individual who does not maintain close family ties is judged by the family from which he came. Generally, social relationships within the family are close and long lasting. A relative is often the most trusted choice for a business partner and family businesses are common. Marriages within the family circle are frequent at all levels of society. At higher levels in the society alliances between families through marriage become more common (Ibid:60-61).

An old Arab saying best illustrates the traditional Lebanese' view of the family: "I and my brother against my cousin, and I and my cousin against the alien (Christopher, 1966:138)." This attitude, with its stress on family feuds and tribal rivalries, is still evident in modern Lebanon. The brother, in particular, still acts as the guardian of the family's honor. John Gulick, an American anthropologist, in his study, Social Structure and Culture Change in a Lebanese Village, suggests that Lebanese feelings about the family might be expressed this way:

The strongest tie which binds one person to another is the tie of blood, reckoned in the male line. The only people in this hard world in whom I can put my full trust are my relatives. Therefore, the best people in the world are my relatives--my brother, my father, my father's brothers and their sons, and beyond them, everyone on my father's lineage.
When one marries, one chooses the best person one can find, and the best person is to be found among one's kinsmen--the closer the better (Gulick, 1955:127).

This attitude demonstrates both the closeness within the family group and the general distrust of non-kin.

Whether in Beirut or in a village the social activities of the average Lebanese are focused on such family events as engagements, weddings, baptisms and funerals. Other occasions for family gatherings are religious holidays and the departure or return of relatives visiting or emigrating abroad (Christopher, 1966:140).

This spirit of closeness also underlies the custom that each family takes care of its own, nursing relatives who are ill, providing a home for the aged, and feeding the unemployed brother or nephew. Many families are tied together by family awqaf (charitable foundations) which, although they have an ultimate charitable aim, benefit family members as long as the family continues to exist. Since every family has in effect arranged its own social security, the Lebanese government has been slow to assume the functions of a welfare state (Smith, et al, 1974: 61).

For most Lebanese the local community, village or urban neighborhood is the same as the local segment of a person's
religious community. In the rural setting everyone is also likely to be related, even if only remotely. When local residence, religious community and kinship coincide, the result is a strong and cohesive community. Most Lebanese maintain ties with the village from which they or their families came. Even Lebanese emigrants abroad are sentimental about their native villages (Ibid:62).

Next in importance to the family and local community is the religious community. Because conversion or intermarriage between religious communities is rare, the members of one's family are nearly always in the same religious community. The result, consequently, is that no loyalty conflict exists between the two (Ibid:61).

According to the Ottoman millet system, non-Moslem groups were organized under their own religious heads. This practice institutionalized the religious community as a largely autonomous entity. The sacred and secular aspects of life are closely interwoven, and the influence of religion is pervasive. Religious communities bear the responsibility of education and charity, and they have legal control over marriage, divorce, inheritance, and other family affairs of their members. Religious communal legal institutions create and execute law in the field of personal
status; there is no secular law concerning personal status (Ibid:61-62).

A number of social values are shared by the various religious communities in Lebanon. Such moral virtues as honor, charity, kindness, forebearance and helpfulness to others are taught at home, in the classroom and at church. Other social values include such concepts as hospitality, frugality, and ingenuity in meeting the challenges and hardships of life (Ibid:135).

Honor is the most important quality of the good Christian as it is basic to all others. A man of honor carries out his duties and obligations to others, particularly his kinsmen. Loyalty to the family is one of the areas in which honor is judged. The honorable man is loyal to his family. As a fundamental social unit, the Lebanese family enjoys a solidarity that has resisted the changes of time. The individual derives support from the family, but is expected to give his services and loyalty to it. The sovereignty of the family transcends all other loyalties, the individual is expected to suppress his personal needs and interests if they interfere with those of the family.

The importance placed on proving oneself trustworthy to relatives and carrying out personal responsibility to them is
reflected in the political and economic life of the country. Every individual learns to think and behave in terms of improving and protecting the interests of his family and, beyond that, his religious community. In seeking political office, any man expects the support of his kinsmen, who willingly give it since, if he is successful, they also benefit. One of the important expectations of family loyalty is finding employment for relatives.

The man who fails to meet his family obligations can expect to be reproached by those who do. They will say he is a man without sharaf (family honor). Lebanese, in general, are highly sensitive on this point and make every effort to avoid being accused of ayb (family shame) (Ibid:136).

Other values which seem relevant in terms of easing the transition of the Lebanese immigrant to this country include frugality, adroitness and ingenuity. Frugality is not only a necessity but also a traditional virtue. The Lebanese also pride themselves on being clever talkers and living by their wits. The businessman who takes a small amount of money and builds a successful business is greatly admired. Lebanese often say of such an individual: "He is a man who can make a wine cellar from one grape (Ibid:139)".
Education is highly valued in Lebanon. The country has a literacy rate of 86 percent and functions as the educational center for the Arab world. Respect for learning permeates the society. The educated man is respected and each step up the academic ladder brings added prestige. Education is a means for enhancing family honor and one's social position but it does not usually bring wealth and success in Lebanon. Because education is not linked to material betterment there is a greater emphasis on the study of liberal arts. Law is also favored as an aid to a career in politics. Technical or vocational training is generally regarded with disfavor, especially by urban groups (Ibid:110).

III. THE LEBANESE IMMIGRANTS

It has often been stated that more Lebanese reside outside of Lebanon than in the homeland itself. Unfortunately, this claim cannot be substantiated, since estimates of the number of emigrants range from 150,000 to 2 million. The larger figures undoubtedly includes not only the emigrants but their children and grandchildren as well. Another complication arises from the fact that before World War I Lebanese immigrants in the United States were not identified separately but were counted
together with the Syrians. Thus, many of the "Syrian" merchants of early twentieth century America were actually Lebanese (Christopher, 1966:156).

Emigration from Lebanon, as stated earlier, began in the latter part of the nineteenth century and resulted from the massacres of 1860, in which many Christians were slain. Other waves of emigration followed as a consequence of Turkish oppressions before World War I and famine, epidemics and strict military rule during the war years (Ibid:157). As with other migrant situations, the "push-pull" effect is apparent. The push was Turkish oppression, religious persecution and starvation. The pull was wider economic opportunities and greater religious and political freedom. Emigration was heaviest between 1900 and 1914, amounting to an annual mean of 15,000, most of these emigrants travelled to the United States, South America, especially Brazil, and West Africa. Emigration fell off sharply during the years of World War I. Between 1921 and 1939, about 4,400 Lebanese left each year but about 1,400 returned, making a net annual emigration of only 3,000 during the time period (Smith, et al, 1974:47).

The characteristic occupations of the emigrants were, on the one hand, the professions and skilled trades--medicine, journalism,
teaching, engineering and others—and, on the other, business. Business enterprises run the gamut from peddling wares to operating international trading firms (Christopher, 1966:158).

In general, the government of Lebanon is greatly concerned with the welfare of emigrants because they make an important contribution to the economy of the homeland. Remittances by emigrants to their relatives in Lebanon help to pay for Lebanon's imports. These gifts of money from Lebanese abroad to their relatives are estimated to average about $40 million a year (Ibid:133).

The first group of migrants to Wichita arrived around 1895. Most of the Lebanese people who have settled in Wichita came from the village of Marj'Uyun in South Lebanon (see map, Appendix A). One of my informants had done some research on his family origins and found that, not only had his family lived in Marj'Uyun for centuries, but that the families in the village were all once part of a single tribe. In a book by a nineteenth century Arab historian, George Zaidan, he came across this account of the tribe of Ghasan. The following quotation is taken verbatim from the elderly gentleman's notes on Zaidan's book.

They originally dwelt in the southeast part of Arabia around 200 A. D. The reason they were called Beni Ghasan is because a dam burst in part of Yemen, and they had to leave that
country and come as immigrants to the western part of Syria. They settled in the land of Hauran, which lays south of Damascus. They arrived west from Arabia, and camped around a spring called Ghasan Spring—thus the name Beni Ghasan. The people were called Christian Arabs back to 200 A.D. Some of the families settled in Merjyoun, including Hourani, Jabara, Gholmia, Bayouth, Razook, Andeel, Rashid, Naifeh, Barkat, Farha, Hamara, Rahal, Theeba and Mady (Interview with Jim Cohlmia).

Mr. Cohlmia still refers to large family reunions as a gathering of the tribe. He also stated that one must marry within the tribe. The significance of this quotation to Mr. Cohlmia was in identifying how long his family had been known to be Christians, "back to 200 A.D."

Nemetallah Farha and Samuel M. Stevens were two of the first immigrants to establish in Wichita around the turn of the century. Four Cohlmia brothers arrived in 1898. The original family name was spelled Gholmia, but two of the brothers, S. L. and F. I., decided that this would be too difficult for Americans to spell. Jim Cohlmia, the gentleman who related this information to the author, also stated that the "G" at the beginning "sounded Jewish and we want everyone to know that we are Christian." Consequently, the name was changed to its present spelling. The other two Cohlmia brothers took one of their first names, Farris, and used it as a last name. Thus, almost all of the Parrises are actually a branch of the Cohlmia family. Most of these early immigrants
were peddlers of dry goods and household items. S. L. and F. I. Cohlmia set up a wholesale dry goods business for peddlers in 1898, as did N. F. Farha. Few of these early immigrants knew English or were educated beyond the third or fourth grade. However, they did speak Arabic and, occasionally, Russian.

Several immigrants arrived in Wichita in the late 1910's and early 1920's, and later became prominent businessmen here. Among these were Ellis George Stevens and Philip F. Farha. Mr. Stevens established E. G. Stevens Tobacco Co. in Wichita and married Minnie Shadid in 1918. Philip F. Farha arrived from Marj'Uyun, Lebanon in 1920 and went into business investments. His brother, William F. Farha, arrived in Wichita in 1930 and founded F & E Wholesale Grocery Co. He was married to Victoria Barkett in 1934 (Baldwin, 1929:188; Drowatzky, 1963:73-74).

The map in Appendix B shows the distribution of Lebanese households in Wichita for the years 1925 and 1949. This information was obtained by matching a list of Lebanese surnames with those listed in the Wichita City Directory for the respective years. This list of names included Farha, Jabara, Kouri, Razook, Rashid, Cohlmia, Elkouri, Ablah, Farris, Husson, Zakoura, Bayouth, Andeel, Stevens, Laham, Azar, Namee, Shadid, Naifeh, Barkett, Nemr, Ayesh, and Ammar. There is no doubt that this is not a
complete list of all the Lebanese families in Wichita, but it includes the larger and more prominent ones.

The following family names were found listed in the 1925 City Directory: Ablah, Bayouth, Cohimia, Elkouri, Farha, Farris, Jabara, Laham, Razook, Shadid and Stevens. Referring to the map of residence patterns in Appendix B, it is evident that the migrants were first clustered in an area of West Wichita with the following boundaries: Sycamore Street on the East, Charles Street on the West, Central on the North and Maple Street on the South. Settlement patterns of migrants are usually dictated by the availability of modest-priced housing that can accommodate a large household, usually an extended family. Not only does this type of research give an indication of residence patterns, but also of the number of working adults per household and their occupations. Most of the households in 1925 contained three to four working adults and several also included a widowed woman.

By 1925 several of the Lebanese families were established in their own businesses. Among these were Ablah Wholesale Grocery Co., Bayouth Market, F & E Wholesale Grocery Co., owned by the Farha family and the Shadid's also owned a retail grocery. The Jabaras were retail grocers and the Stevens' family operated a dry goods store. Those who did not own their own businesses
worked for those who did or as unskilled laborers.

The author then checked the *Wichita City Directory* of 1949 to see how residence patterns and occupations of the Lebanese people had changed in a twenty-five year period. A comparison with the aforementioned list of surnames indicated that all but five families -- Ammar, Azar, Kouri, Husson and Nemr -- were present. Ninety-five separate households were tabulated, as compared with twenty-two in 1925. Residences had become more dispersed throughout the city. This dispersion was probably due to economic prosperity and a need to locate businesses in other areas of the city besides the West side. There was still some concentration of Lebanese households in the West part of the city, particularly the Riverside area. Several of the residences listed in 1925 continued to be occupied by the same family in 1949.

Most of the Lebanese still operated small retail businesses or worked as unskilled laborers. Ablah Hotel Supply was established during this twenty-five year period, as was Bayouth Printing, Latham Jewelers, Wichita Tobacco and Candy Co. and U-Select-It Candy Service, Inc. Prejudice against the Lebanese people was probably the worst during this time period. Jeannie Ablah told the author that the Lebanese people were called "Westside
Indians" in the 1940's and were accused of not having any culture.

The Lebanese people in Wichita did establish many social traditions. These were often held in conjunction with the Orthodox Church since nearly everyone in the Lebanese community was a member. When the first Lebanese immigrants came to Wichita they had a strong religious background in the Syrian Antiochian Orthodox Church. There was no church building or priest in Wichita. Consequently, services were held in someone's home when a visiting priest or Bishop came through Wichita. This custom continued until 1918 when a church building located at 218 S. Handley was purchased. This purchase was made for the group by Jabour Ablah, Shaker L. Cohlmia, and Nemetallah Farha, as trustees.

In 1921, the St. George Syrian-Greek Orthodox Catholic Society of Wichita, Kansas was established to oversee the activities of the Church. The Society ruled under the following twelve directors: Shaker L. Cohlmia, William Jabara, Aziz Farha, Bashara David, Joe Wolf, Jacob Bayouth, Nemetallah Farha, Albert Razook, Abe Swyden, Abraham Farha, Mike Jabara and Albert Farha. One of the first duties of the directors was to find a resident priest for the parish. He was Father Elias Kouri, who served from 1921 to 1925. After this time the Church was served
by several different priests who came for short periods of time. In 1934, the Reverend Father George Cohlmia was ordained a priest in the old St. George Church, and was assigned to this parish as priest. Father George remained at St. George Orthodox Church until his death December 1, 1947. During Father George's service to the parish, the Society was re-incorporated in 1941 with the following thirteen directors: Adeeb Andeel, Ellis Bayouth, George S. Cohlmia, Lee Cohlmia, Eid Elkouri, B. F. Farha, Naseem Farha, N. F. Farha, William Farha, Ralph Jabara, Thomas Laham, B. E. Samra and Harry Taylor.

Through the years the congregation, priest and trustees had been looking for a new location for the Church. In 1945 definite plans were made and a fund was started to cover construction costs. Work on the new church building began early in 1948. The summer of 1948 a new priest, Father Anthony Woolf, was found to replace Father George Cohlmia. The new St. George Orthodox Church at the corner of Walnut and Texas Streets was finished in time to be blessed and used for the first time on Easter Sunday, 1949.

In the mid-1930's St. Mary's Orthodox Church at 344 S. Martinson was founded. Today both St. George and St. Mary cooperate on many activities and projects. Many of the people in the
Lebanese community alternate attendance between the two churches. Father Paul Nemr is the current priest at St. George Orthodox Church and Father Anthony Sabbagh is the priest at St. Mary's Orthodox Church. Although most of the services were once conducted in Arabic, English is now used for about 98% of the liturgy. Father Nemr estimated that he has between five and six hundred active members. Father Sabbagh stated that he had about 150 active members at St. Mary's.

Many of the social activities of the Lebanese community are centered around the family and the church. Open house teas are held by the St. George Ladies Society in honor of new babies, engagements and other family events. As one informant stated, "anything that reflects honor on the group as a whole is celebrated." As the size of the Lebanese community increased celebrations were consolidated. So now there is a large Open House each year for all new babies born that year and another Open House for high school and college graduates of that year.

By far the most well-known tradition is the annual Lebanese dinner at St. George Orthodox Church. The fund-raising dinner was initiated in 1918 shortly after the congregation purchased its first church building in Wichita. Until 1947, when the current church was built, dinners were held at the YWCA.
But since the beginning, the menu has remained the same. The traditional Lebanese dinner includes a tossed salad, Kibba, cabbage rolls, a green bean dish served over rice, and baklava. Kibba is a main meat dish, consisting of layers of ground meat, cracked wheat, spices and onion filling. Baklawa is the traditional dessert. It consists of many layers of paper-thin pastry, with butter between the layers and nuts, sugar and syrup poured over the top.

Approximately 2,000 people attended the annual dinner held October 3, 1976. The dinner is a project of the junior guild of the church, but whole families participate. It is an extremely well-organized endeavor, as it must be to feed 2,000 people in the space of four hours. Mrs. Florence Kouri, general chairman of the annual dinner, states, "'It's a family affair. It is such a part of the life of the people in the parish, that we all look forward to it and plan for it months ahead (Wichita Beacon, Sept. 27, 1976)." The proceeds from the 1976 dinner helped to ensure that there would be no foreclosure on the church mortgage this year (Wichita Eagle, Oct. 4, 1976).

Another event that is held annually maintains contact between the Lebanese people in Wichita and those in other cities in the central part of the country. This event is a Labor Day
gathering and was initiated after World War II. The gathering was conceived by several young women to reestablish ties that had been broken off during the war years. Interrelated families from Kansas, Oklahoma, Nebraska and Texas would assemble in one town or another. The event was strictly social and some marriages did evolve out of it. It gave cousins in different towns a chance to get to know each other. Traditional Lebanese folk dancing was featured, often with two or three generations participating. The Labor Day gathering is held in a different city each year. Jeannie Ablah explained the attitude behind this as one of trading-off so that each city could enjoy sponsoring the gala.

The family within the Lebanese immigrant community is still very close-knit. All elderly people are called aunt or uncle out of respect. Godparents also play an important role and are treated as special people. They have a moral responsibility to teach a child the desirability of bringing honor, not disgrace, to the family. Disgrace is felt not only by the immediate family but reflects on the whole Lebanese community.

Marriages within the Lebanese community are encouraged. Marriages were once arranged, but only in the sense that the families would discuss the proposed marriage. Then the parents consulted the couple to see if they approved of the family's
choice. If anyone was dissatisfied with the proposed union, the marriage did not take place. All the parties involved were primarily interested in producing an amicable marriage. First cousin marriages are prohibited by the Orthodox Church, as well as by law in some states. In Lebanon they can take place by making a special appeal to the Bishop. Second and third cousin marriages are very common. Marriages of Lebanese to non-Lebanese individuals do take place as more young people date and find mates without the assistance of their families. But many of the old traditionalists frown on these marriages because they feel:

If a Lebanese boy likes Lebanese cooking and he marries an American girl it would take a long time to teach her and maybe she would learn and maybe she wouldn't. Well, if he married a Lebanese girl she would start cooking right off the bat just like his mother did. Its easier for them to get along (Interview with Jim Cohlmia).

Thus, marriages within the Lebanese group are encouraged and are thought to be the best possible choice for a young person.
IV. INTERVIEWS, INTERPRETATIONS
AND CONCLUSIONS

This final section is an attempt to tie all the preceding information together and apply it to the Lebanese immigrant community in Wichita, Kansas. Specifically, discussing those aspects of traditional Lebanese culture that were still found to be vibrant forces as revealed in the interviews. The author relied largely on one informant, Mr. Jim Cohlmia, because it was possible to develop a rapport with him and he was more than willing to discuss any aspect of Lebanese life. Mr. Cohlmia was a valuable informant, not only for his knowledge of early immigrant history in this area, but also for his expression of many traditional values in the recitation of his own life history.

Mr. Jim Cohlmia came to the United States in 1909, at the age of 16. He came on a boat with 75 other Lebanese emigrants. He was accompanied to Wichita by a first cousin, Charlie Cohlmia, his future son's mother-in-law and a friend. Jim attended the Eastern Orthodox schools in Lebanon through the eighth grade and learned the Arabic, Lebanese and Russian languages. He then attended the Presbyterian school for a year and a half to learn English. His father, who was a peddler, died when Jim was 10 years old. Since he had no brothers, only five sisters, he
began working in a rock quarry at the age of 13 to support the family. At the age of 16 he was eligible to be drafted into the Turkish army. According to Mr. Cohlmia he would have been sent to fight in Yemen and no one ever came back alive from there. Three of his sisters had married and emigrated to the United States and were living in Wichita. The other two lived in Brazil. So, to avoid being drafted into the Turkish army, he emigrated to this country in 1909.

Mr. Cohlmia emphasized the need to have a relative to help you get established in a foreign country. Of course, he had his friend, "There was another young man who came here and stayed with us a year or two and then went to Argentina. He didn't do no good here, see, 'cause he had nobody to help him. But he had a sister in Argentina." In addition, Mr. Cohlmia stated that it was a common practice to help your relatives to emigrate here by sending them money. It was expected that you would help a friend or relative until they could make it on their own. This usually included finding employment for the new immigrant. No payment was expected in return, only that they do the same for other people under similar circumstances.

From 1910 to 1920, Jim worked with his brother-in-law on the farm that he had homesteaded near Woodward, Oklahoma and
in the small store that they operated in Quinlan, Oklahoma.

In 1920, Jim opened his own store in Buffalo, Oklahoma. He stayed there until he was 77 years old.

Jim was married in 1915 to Rose Farha. At that time there were only two or three young women of marriageable age in Wichita. His aunt told him about a girl and arranged a meeting with the girl's parents.

The girl brought us drinking water first, and then fruit and things like that. When they treat you so nice like that it means that they're agreeable. Well, everything went fine and I told my aunt that she looked real good and I'd be happy to have her. So she talked to her mother and father and they said, we'll see. So they talked to her, she was agreeable also see. So, naturally I told my family and we had a big engagement. And when the time came to get married we had a big wedding here...if they didn't like me or had something against me they'd treat us fair but they'd let you know that you're not wanted or not acceptable to their daughter. It's just an old custom but that's the way it is back home, see?

Jim was married in St. John Episcopal Church in Wichita. Then he and his bride returned to Oklahoma. Within six months after he was married he brought his mother over from Lebanon. For fifteen years he had his mother and his wife's parents living with him.

In 1922 Jim had his first and only child, a boy named Tommy. Tommy served in World War II and was wounded, "...but he made it
in fine shape and he came back. He wouldn't even take pension
or compensation from the government. We didn't need it. I
made alot of money." So Jim set his son up in his own department
store in Wichita. But it was soon evident that Tommy could not
do the work because of his war injuries. They sold out the
business and Jim kept working until he was 77 years old so he
could send his grandchildren to college.

But when my son got sick... I stayed in
business 15 years or more longer than I
would have otherwise in order to educate
his children. His daughter I sent to Colo-
rado Women's College. The two boys, I
educated them, both of them are dentists.
Well, that cost alot of money and my son
didn't have it. So it was up to me and
I stayed right in there and worked.

This quotation clearly illustrates several traditional Lebanese
values. The most obvious of these is Jim's suppression of his
own personal desire to retire in favor of the long term needs
of the family. In this case a good education for his grand-
children was considered most important for improving the in-
terests of the family. The value placed on education, as a
means to greater prosperity in the family, is also evident.
Also interesting is Jim's son's refusal of government compen-
sation. The family honor dictated that they get along on their
own resources.

Thus, it is apparent that many of the traditional values of
frugality and ingenuity helped the Lebanese immigrants to survive in this country. They have been successful in adapting to the dominant culture because of the supportive nature of the group and the traditional value system. This success is evident in all areas of endeavor--economics, politics and social affairs.

Residence patterns, religious ties and family loyalty all work together in the Lebanese immigrant community in Wichita to produce a strong, cohesive group. This group has remained alive and resistant to change because the various spheres of Lebanese life are interlocking and mutually supporting. In-group values and traditional behavior thus remain forceful in this type of atmosphere.
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APPENDIX A

MAP OF LEBANON*

*Adapted from Smith, et al, 1974:11.