

OUR CHANGING WORLD
THE TARAHUMARA

A Disintegrating Culture
A Cultural Biosphere Needed

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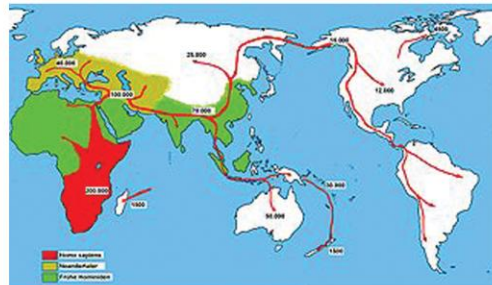
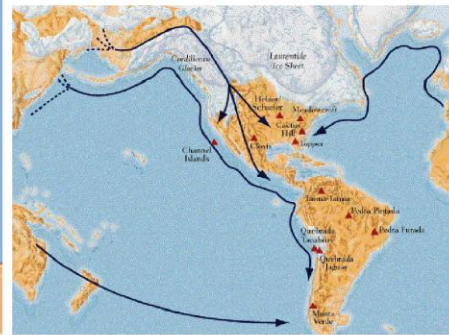
Hubbard Museum of the American West
Ruidoso Downs, NM



1984 - Larry Baron Collecting Mogollon-type pots from Copper Canyon, Mexico

The Tarahumara American Indians of Copper Canyon Mexico are the last most traditional American Indians left in North America. They speak a dialect of the Uto-Aztecan language group. This means they are related to the Hopis, the Utes, and the Aztecs among many other North American Indian tribes. Most certainly, the Tarahumaras are descended in part from the Anasazi Indians especially the group called the Mimbres or Paquime branch of these ancient native peoples. It should be factually understood that any Native American is an American Indian because all of North as well as South America is in the region scientifically defined as the Americas; therefore, the name American Indian or Native American. The Tarahumaras are the last and largest most traditional group of American Indians left on the North American continent. *Richard D. Fisher*, author of "The Puzzle of Oasis America", "Canyons the World", and "Copper Canyon".

Early Man Migration from Africa to the Americas



PERSONAL RESEARCH/NOTES – THE ANASAZI/TARAHUMARA CONNECTION

6/08 – RUIDOSO, NM

BY LARRY BARON

I. PRE-HISTORY

- A. Clovis = 12,000-15,000 into S. America in only 1000 years
- B. Folsom = 10,000 yrs. BC
- C. Corn=5000 BC in Mexico – Found in Coxcatlan, Mexico (McNeish) (5800 BC new dates)
- D. Corn=2000 BC in USA – Found in Bat Cave, NM – Dr. Herb Dick

II. TEOTIHUCAN – Greatest City – 100,000 – near Mexico City

1. Sun & Moon God
2. Destroyed after 650 AD

III. MICROMOVEMENTS

1. Olmec – 1000 BC – Giant basalt heads (up to 44 tons)
2. 330 yrs older than Maya

Olmec – Sterling = Real discover of the Olmec – Smithsonian Institution – bar & dot system

3. Tres Zapotex, LaVenta, San Lorenzo – Olmec Sites
4. Jade Artifacts (Aztecs 1325 – 1519)

A. CONQUEST – 1519 A.D. Cortez

1. 1st Tarahumara – Missionary Jesuit – 1607 – First contact (possibly earlier)
2. 50,000 sq. mile = Tarahumara Territory now ½ territory from 1st European contact
3. 40,000 Indians (new reports – possibly 70,000)
4. Estimated 200,000 Mexicans have moved in (and others)

IV. A VANISHING TRIBE

1. Should create a cultural biosphere in Copper Canyon for the Tarahumara (In Copper Canyon for 2000 years) HBNAI – (see web site for new research on China Biospheres)

Three Major Influences

1. Jesuits
2. Mexican Federal Government
3. Ever increasing Mestizo population & Narco traffickers

Norogachi & Creel & Sisorguichi

1. Religious instruction/Medical

2. Federal Government – Acculturation
3. Reduction of territory
(Lister & Lister 1966: 307)

Tarahumara – Resist influence from other surrounding tribes within prehistoric and historic times (over 4 centuries)

(Pennington 1969: 235-373)

Population: Jesuit survey 1920 = 46,000 Tarahumara

100,000 Non Indians

(Plancarte 1954: 103-105; Mexico) 1930 = 107,000 Non Indians

1940 = 126,000 Non Indians

1950 = 152,000 Non Indians

1960 = 190,000 Non Indians

2009 = over 200,000 (Fisher)

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V. RESISTANCE TO CULTURAL CHANGE

400 Years of Influence

1. Resisted Change – fought Spaniards – retreated in to the Canyon’s – see book “Raramuri”
2. Essentially Unaltered until the 1990’s – some acculturation (1500-2000 Gentiles not acculturated remain)
Fisher 3000-5000
 - a. Affiliation with the Basketmaker Culture of the American S.W.
 - b. In Western Chihuahua for at least 2000 years + Arch.
 - c. Possibly came from Apache Culture to the North and East (Lumholtz 1894: 296)
 - d. Verlarde, a priest – 18 C. (Manje 1954: 223) noted that Apaches living NW of the Gila River were called Tarosoma by the Gila Pima. Tarosoma may be lined with the name Tarahumara.
 - e. Jesuit Expulsion – 1767 – missionary impact is removed
 - f. Missions (Lizasoian 1763; Tamaion and Romeral 1937: 120, 131-134, 140- 149, 169- 174).

VI. DECLINE IN MISSIONARY ACTIVITY

1900 Jesuits return - little influence upon the Tarahumara (Pennington 1963: 16-17)

Spanish Military – 17C. to put down rebellions

1. Spanish Farmers & Cattlemen
2. East Plains, foothill country
3. North portions of the uplands

Tarahumara – Retreat into SW Chihuahua

1. Spanish miners – 17th & 18th C. (Pennington 1963:21) INFLUENCE = MINIMAL
2. Jesuits most lasting

Tarahumara

1. Selected cultural traits appropriate for their rugged life – i.e. Livestock
 - a. Wool
 - b. Manure
 - c. New ag. Plants
2. Formed a blend of two religions (unique interpretations)

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CULTURE

17 Century – Jesuits introduce a native hierarchy

1. Late pueblo level
 - a. Governor – popular vote
 - i. Religious affairs
 - ii. Fiestas
 - iii. Disputes
 - iv. Punishment
 - v. Marriages
2. Assistance – popular vote or appointed by the governor
 - a. Known as
 - i. Major
 - ii. Capitan
 - iii. Tiente
 - iv. Fiscal
 - v. Soldado (Fried 1969: 860-862)

3. Except for murder, state authorities rarely give attention to Indian disputes
 - a. Governor – might order a Tarahumara to go to prison and he would walk to Guachoch and report to the warden and present his sentence (Baron)

Pueblo – Avg. = 15 miles in radius

(Fried 1969: 860)

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VII. TESQUINADAS (drinking parties) – large handmade beer pots similar to Mogollon culture pottery in the American SW

SUBSTANCE

1. Corn
2. Beans
3. Squash
4. All found in pre-Colombian Sites (Cutter 1960: 277-278) (Zingg 1940: 19, 37, 49-50, 54-56)
5. Minor cropping of wheat introduced – Colonial Period – Old World – Missionary influence
6. Sweet & white potatoes occasionally
7. Bottle gourd – Aboriginal times (Zingg 1940: 37, 49, 54-56)
 - a. Utensils
 - b. Rattles – gourd – silkworm cocoon on legs
8. Jobs Tears (seeds) beads
9. Watermelon introduced

VIII. FIELDS

1. Streamway floodway floodways
2. Slopes of upland meadows – canyon
3. Meadow flats
4. Terraced arroyos
5. Canyon slopes – terraced & not terraced (Pennington 1963: 47)

IX. FIELD PLOTS

1. Cleared
 - a. Individually
 - b. Aid from friends who expect reciprocity
 - c. Corrals for goats & sheep
 - i. Moved from place to place spreading of manure
 - d. Wooden plow – usually oak, cut & fashioned in 1 hour (Baron 1984)
 - i. Has changed little since its introduction in the 17th C. (Pennington 1963: 53-54)

- e. Wooden dibble or an iron rod – for making planting holes
- f. Cribs for corn (Animals cannot enter) also in caves in area of Norogachi (1987 Baron)
 - i. Stone
 - ii. Plank
 - iii. Log
 - iv. Once utilized storage cribs that were constructed on the faces of cliffs (ingg 1940: 44)
 - v. Horticulture
 - vi. Wild tobaccos
 - vii. Maize = principal food stuff

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Language distribution

- a. Tiswin – beverage
 - i. Juice from (elote) cornstalks – sprouted corn
 - 1. Boiled
 - 2. Local plants = catalyst
 - 3. Fermentation = 1 or 2 days
 - 4. Cacti
 - 5. Agave
 - (Pennington 1963: 149-151)
 - 6. Also: Antiquity
 - a. Maguey (1662)
 - b. Mescal (1662)

(Figuerora 1853-1857, 3: 219)

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X. BOW & ARROWS

- I. Rarely used in the 1970's
 - A. To 17th Century
 - 1. Probably earlier
 - a. Prehistoric Tarahumara Site *Reed paint container for decorating arrows was found (Zingg 1940:16, 42, 58-59)
 - B. Bows – 9 species of trees
 - 1. Type – notched
 - 2. Bow strings – istle and deer sinew

ARROWS

- 1. Commonly made without heads or foreshafts
- 2. Old world cane – sometimes used in making foreshafts for arrows (Pennington 1969:281)

ARROWHEADS

- 1. Wood
- 2. Obsidian
- 3. Flint
- 4. Hafted with gut, sinew, istle fiber

- C. Arrow poison – No longer used – prepared from a plant, 18th Century (Neumann 1682)
- D. Wristguard
 - 1. Fashioned from skin of the gray fox
- E. Few rifles
- F. Fletching kits, agave, homemade knife, wild feathers (1984 Baron)

XI. DEER, ETC.

- A. Driven off cliffs or run down, snared by 1 indian – 2 days(Bennett & Zingg) usually no less than two days to run a deer down (Bennett & Zingg p.113)
- B. Turkeys and rabbits – run down
- C. Figure 4 traps for small animals and birds
- D. Log traps for coyotes
- E. Peccaries – lance
 - 1. Meat – boiled or roasted

XII. FISH

- A. Hook & line
- B. Funnel-shaped traps
 - 1. Vegetable fiber - agave
- C. Stone walls closed by weirs
- D. Seines
- E. 1 of 29 different species of plants crushed with wood hammer and tossed into slowly moving or quiet water as a pesticide agent (see Pennington 1963: 104-115 for an extended discussion of specifying plants used in fish STUPEFACTION).

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XIII. WOODEN SPOONS

- A. Almost identical to the Pima and Papago
- B. Suggest extensive cultural exchange between the groups following the arrival of missionaries in the area. (Carl Lumholtz 1893)

XIV. LEATHER SANDALS

- A. Collected by Carl Lumholtz 1898 – post contact 18th C. – Steffel 1809-1811, 1.341
- B. Often barefoot – Baron 1989 – can run rocks barefoot

XV. CATTLE

- A. Late 17th Century
- B. Oxen followed
- C. Cows – sacrificial purposes

XVI. SHEEP AND GOATS

- A. Blankets
- B. Sashes
- C. Manure

Burro – pack animal – most important

XVII. PIGS

- A. Food
- B. Fat for cooking
- C. Medicinal potions

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XVIII. DOGS

- A. Pets
- B. Caring for flocks
- C. Hunting small game

XVIX. CATS – some families have them (not many)

- A. Medicine – 50 plant families

BLANKETS

- A. Prehistoric sites – utilized agave fibers – very fine work
- B. As recently as 18th Century – deerskin used in making of clothing (Relacion de Tutwaca 1777; Relacion de Cusihuiriochis 1777; Relacion de Guaguochia 1777)

SANDALS

XVX. BASKETS (simple twilled) – Analogues to prehistoric sites – Zingg (Handbook of N American Indian – Vol. 10p 283) Beargrass

- A. Yucca – Agave
- B. Nolina – Agave
- C. Palm
- D. Flat Baskets – almost identical to Pima & Papago (Bennett & Zingg)

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XVXI. WATERFALL CAVE

- A. Bottle Gourds – prehistoric
- B. Ollas – coiling technique, probably prehistoric
- C. Mano & Metate – prehistoric
 - 1. Without legs
 - 2. Flat rock
 - a. Chipped to form a depression

- b. Abrading stone (agate)
- D. Pestle-like hammer or pounding stone
- E. Stone knives (minor role)
- F. These are analogues of prehistoric stone objects (Zingg 1940: 31, 62)
- G. Elongated wooden bowl
 - 1. Large knots upon roots of species of Aubutus
 - 2. Mexican Elm (easy to work)
 - 3. Knots of the trunk of a species of Platanus (very hard wood – Baron 1984)
 - 4. Soft wood of Populus
- H. Sleeping boards – pine (Pennington 1963:220)

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XVXII. CLOTHING

MALES

- A. Sandals
- B. Headband & sash
- C. Breechcloth – from Spanish soldiers (Manta)
- D. Calyones – adoped near Mestizo settlement – textiles traded for artifacts (Baron 1987) – remote Indians did not want pesos
- E. Blanket – colder months – wool – introduced by Spaniards

WOMEN

- A. Headband
- B. Loose blouse - textiles
- C. Sash - wool
- D. Very wide skirts
- E. Few women possess footgear (Baron saw them running over sharp rocks barefoot – 1989)
- F. Cold weather – extra shirt, blouse or skirt – drape a small blanket over their shoulders

Children seldom wear sandals

BLANKETS & SASHES

- A. Horizontal loom – on the ground beside the house
- B. Antiquity – demonstrated by beautifully made pita (agave) blankets found in prehistoric sites (Zingg 1940-56)

SOAP

- A. Saponaceous qualities of local plants
- B. Crushed roots of yucca, agave, etc.
- C. Soaked and smeared upon blankets or clothing (Pennington 1963: 212)
- D. Once used a red soil as a detergent (Relacion de Tonadic 1777).

TATOO

- A. No longer applied
- B. 17th Century – burned into their faces (Ratkay 1683)
- C. 18th Century thorns – to prick wavy lines upon their foreheads and lips of small girls
 - 1. A round wheel was pricked upon both cheeks & charcoal dust was rubbed into skin
 - 2. A permanent design (Steffel 1809-1811, 1: 330-331)

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COMBS – Pine cone with outer cover removed

NECKLACES

- A. Glass beads
- B. Shell pendants
- C. 1980 – plastic beads replace shells
(above A & B collected by Carl Lumholtz)

SASHES

- A. Narrow version of blanket
- B. Wool fiber
- C. Worn by men & women

SPINNING AND WEAVING

- A. Wool – washed in a stream
- B. Carded by hand
- C. Pulled into loose strands
- D. Rolled into large balls for storage
- E. Spun on wooden spindle & whorl
- F. Blankets
 - 1. Brown background
 - 2. White background

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XVXIII. STRUCTURES

- A. Caves – in prehistoric times – some even now (Baron 1984-2007)
 - 1. Some – several families in large caves (Perez de Ribas 1944; 3: 159)
 - 2. Still occupied – less elaborate (Zingg 1940:46-48)
- B. Rectangular Stone Houses
 - 1. Wooden plank doors – wood jam
 - 2. In the open by communal activity

3. Roofs – pine troughs
 - a. Sometimes covered with stone
 - b. Sometimes covered with earth
4. Hardpacked floor
5. Earthen hearth
6. Chimneys – rare – very smokey inside dwelling
- C. Rectangular log shaped house
 1. Log framed roof with troughs
 2. No door – boards leaned upright against the frame – 1989 began to use doors (Baron)
 3. 17th Century – conical brush huts (Ratkay 1683)

XVXIV. GAMES & MUSIC

- A. Reticence (reserve) broken only during games & festivals
 1. Music – drums, rattles, etc.
 - a. Violin
 - b. Celtic music – introduced by Spaniards in 17th C
 2. Drinking – Corn Beer (avg. 60 parties per year)
- B. Games
 1. Chance – similar to dice with pebbles or sticks
 2. Dexterity
 - a. Kickball – rattler on backside - Bear claws replaced by metal cartridge cases
 - b. Foot Races - runners rattles originally deer hooves or bearclaws tied on backside for long distance racing – 17 miles + 100 mile race
 - c. A crude lacross
 - d. Archery
 - e. Throwing of sticks
 - f. Quoits
 3. 2 By 0
 - a. A hoop race – hoop/carved stick
 - b. 2 chunks of wood tied together by a leather thong or fiber cord
 - c. Must reach a goal
- C. *Ancient Tarahumara – rubber ball game, similar to southern tribes
 - a. Mesoamerican
 - b. Rubber Ball found in cave

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XVXV. MUSICAL INSTRUMENTS

- A. Leather covered drum – deer and goat skin
- B. Reed flute
- C. Musical bow (oldest)
- D. Handled rattles (oldest)
 1. Wood

2. Dried bottle gourds
3. Cocoon rattling belt – now rare
4. Violin – a natural water bulb is used in making the glue to seal the various pieces of wood (older violins)
5. Hand made guitar

XVXVI. TARAHUMARA NAME

- A. From the beginning the only one used for the Tarahumara mission and the converted Indians living on the territory assigned to it. (Pennington 1963: 2)
 1. By Jesuit Juan Fonte
 2. To 3000+ Indians
 3. 1607-1611
 4. S. portion of latter missionary territory
 5. 17 Century included
 - a. W. Sierra Madre between 28° & 33° N. Lat. (perez de Ribas 1944@,3:159-161; For survey see Deimel 1980:31, 1980@:43-44)
- B. Raramuri – they call themselves Rara “foot” or “raramuri” – struck by lightning – also, foot runners of the Barankas

XVXVII. SOURCES

- A. Lumholtz 1902 – from 1880’s travels
- B. Schwatka 1893 – ignored
- C. Basauri 1929
 1. 1925 – 1926 Visits
 2. Little acculturation 1890-1930
- D. Gomez Gonzalez 1948
 1. 1941 travels
 2. Valuable ethnographic data – neglected
- E. Plancartis – 1954
 1. 6 years of residence in S. Chihuahua
- F. Pennington – mid 1950’s
 1. Fieldwork
 2. 1963 – demonstrates persistence of the Tarahumara way of life
 3. Archival materials
 - a. United States
 - b. Mexico
- G. Fried – 1969
 1. Summary of culture
 2. Fieldwork
- H. Kennedy – 1970 @ 1978)
 1. Detailed Tarahumara gentle community
 2. Investigation 1952-1960
- I. By (?)
 1. Traveled widely 1971-1975
 2. Tarahumara ethobotany 1976

J. ETC – see pages 288-289 of Handbook of North American Indians – Vol. 10

XVXVIII. SOCIAL ORGANIZATION

- A. BILATERIAL
 - 1. Equally related to the kin of both parents
 - 2. Nuclear family
 - 3. Live together
 - 4. "arranged marriages"
 - 5. Catholic Church does not recognize the marriages
 - 6. Polygamy – does occur
 - 7. Polyandry – does occur
- B. MARRIAGES
 - 1. + 10 years older than another not uncommon
 - 2. Divorce
 - a. Not rampant
 - b. Once children are born the majority of couples remain together until one dies
- C. Extended families common (Kennedy 1978: 176-179)
- D. Cooperative Farming
 - 1. Free access to another's possessions, except clothing
- E. Specific ownership of property
 - 1. House
 - 2. Fields
 - a. At death
 - b. passes to individual heirs
 - c. usually to the children rather than the spouse – spouse, sons & daughters share equally
- F. Movement – Winter residences
- G. Tesquino (Spanish) Bataro or Sugi Tarahumara

XVXIX. SOCIAL, POLITICAL, RELIGIOUS ORGANIZATIONS

- 1. Dispersed/scattered settlements
 - A. Considerable variation
 - 1. Language
 - 2. World view
 - 3. Ritual
 - 4. Settlement patterns
 - 5. Subsistence strategies
 - 6. Dress
 - B. From upper pine forest to subtropical canyon bottoms
 - C. They address and refer to all their cousins with the same terminology – (Neo – Hawaiian) (Murdock 1949; Bennett & Zingg 1935; 220-223; Passin 1943; Kennedy 1970: 176-187)
 - 1. Bilateral – a person equally related to the kin of both parents

- 2. Nuclear Family
- D. Foci around social life
 - 1. Individual participates
 - a. 40-60 parties per year
 - b. 100 days preparing tesquino***10 gallon – 100 gal of tesquino**
 - c. Recovering afterward
 - d. “the tesquino network” (Kennedy 1963:625-626)

XVXX. POLITICAL ORGANIZATION

- A. Ranchos – at European contact time
 - 1. Judicial
 - 2. Governmental
 - 3. Ceremonial
 - 4. War captains (Fried 1977: Bennett & Zingg 1935:372)
- B. Supplanted by more complex and central pueblo organization – colonial period by Spanish officials and Catholic missionaries (Bancroft 1886-1880, 1:346, 689; Spicer 1962: 371-395)
- C. Church – administrative & religious
- D. Population sometime mixed, but only Tarahumara participate in the pueblo political organizations.

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XVXXI. GENTILES REFUSED CATHOLIC SACRAMENT

- A. Gentiles, heathens (Spanish)
- B. Gentile – Tarahumara
- C. Cimarrones – “wild people”
- D. Simarone – Tarahumara (Kennedy 1970-1978)
- E. Less formal – drinking parties = gout (Kennedy 1963: 621, 626-627, 1978: 181-200)
- F. Never an effective inter-pueblo political organization (Passin 1943: 336; aguine Beltran 1953: 85; Leon Pacheco 1974: 8-9)
- G. Cabochis – the others
 - 1. Relationships – superficial
 - 2. Each has a negative stereotype of the other
 - 3. Inter-marriage discouraged
- H. World View & Religion
 - 1. Blend
 - a. Indigenous beliefs
 - b. 17th Century influence
 - c. Missionary impact
 - d. Jesuits 1607-1767
 - e. 19th Century – Franciscans (expelled) decline & abandonment
 - f. 1900 – Jesuits return (160 years)
 - g. Pre-contact interpretations of Catholic rituals and theological notions

- h. Still continues today (Dunne 1948; Almada 1955; Spicer 1962; Ocampo 1966; Sheridan and Waylon 1979)

XVXXII. COSMOGRAPHY

- A. Universe – 7 levels
 - 1. Underside of each = sky of the one below
 - 2. Flat – surrounded by water & inhabited by people, plants & animals
 - 3. God = Sun – highest place
 - 4. Devil = lowest
 - 5. Earth = middle (Merrill 1981: 90-130; Bennett & Zingg 1935: 322)
 - 6.

XVXXIII. ORIGIN OF UNIVERSE

- A. God & his older brother, the Devil
 - 1. Present day earth = most recent
 - 2. The 4th level (now)
 - 3. 3rd world = destroyed by flood
 - 4. Never ending succession of worlds (Lumholtz 1902, 1:296; Merrill 1977-1981)p.297
- B. From God: Ramaruri – all native Americans in a more general sense – God’s People
- C. The Devil: Cabochi = All others (cabochified now) psychological stress
 - 1. Example: (adopted Spanish) Gringo
 - 2. Aleman = German
 - 3. Chino=Chinese
- D. Caboci = literally = “whiskered ones”
- E. The Devils Plane
 - 1. Not unpleasant
 - 2. Represents the Cabochis equivalent of Heaven. (See p. 297 for details)

XVXXIV. HOLY WEEK

- A. Pharisees
 - 1. Smear bodies with white pigment
 - 2. Carry wooden swords
 - 3. Wear hats covered with turkey feathers
 - 4. Leg by flag bearer
 - 5. Erect a Judas figure on a pole
- B. Soldiers
 - 1. Unpainted
 - 2. Bear wooden staffs tipped with bayonet’s
- C. Principal Events
 - 1. Mounday Th.
 - 2. Good Friday

3. Drums & flutes - Played exclusively during Easter season
4. Judas - Destroyed
- D. God and his wife
 1. In a weakened state
 2. Vulnerable to Devil's attack
 3. Devil could destroy the world
 4. Activities intended to protect and strengthen God and his wife (Merrill 1977-1981)
- E. Fiestas – see p. 302-303

XVXXV. DEATH

- A. Body - Into clay
- B. Souls
 1. Independent existence unless they are destroyed because of hash misdeeds committed during life. (i.e. murder)
 2. Continue to inhabit the same universe as the living
 - a. Perceptions are reversed
 - b. Night is day and day is night
 3. Believe themselves (the dead) to be alive and the living dead (Bennett & Zingg 1935:251)
 4. They believe that Heaven is no more or less a paradise than any other levels of the universe.
- C. Christian Notions (Do Not figure In)
 1. Repentance
 2. Salvation
 3. Eternal damnation
 4. Suffering

BEST LONG DISTANCE RUNNERS IN THE WORLD (Leadville, Colorado) competed against 300 worldwide runners!

1991 – 1st runner to win the 100 mile run

1992 – 1st

1993 – 55 years old

1994 – 1st

1995 – 1st

(Poster in Creel)

XVXXVI. ANASAZI

- A. Mimbres – 4000 population – beautiful pottery
 - 1. Geometrics
 - 2. Realistic figures
 - 3. Abruptly disappeared
- B. U.S. societies
 - 1. Smaller than Maya
 - 2. Very advanced like the Maya
- C. Maya
 - 1. Kings
 - 2. Writing – Peru hydrographic – 2nd and only culture to invent an independent writing
- D. Anasazi
 - 1. Large stone buildings
 - 2. Tallest in N. American until Chicago steel girder skyscrapers in 1880's
 - 3. Can be dated to within a year
 - 4. Not just one but whole series of collapses
 - 5. Mimbres – 1300
 - 6. Mesa Verde; Kayenta Anasazi, Mogollon 1400 – 15th Century
 - 7. Hohokam – elaborate irrigation
 - 8. Did not vanish as a people (assimilated)
 - 9. ie. Hopi, Zuni – 5000 year old language – HBNAI Smithsonian (Anasazi probably spoke an uto-Aztecan language – Baron 2011)
 - 1. Environmental damage
 - 2. Drought
 - 3. Warfare
 - 4. Cannibalism
 - 10. * U.S. SW = fragile & marginal environment for agriculture
 - 1. Low/unpredictable rainfall
 - 2. Quickly exhausted soils
 - 3. Low rates of forest regrowth
 - 4. Impressive that they developed such complex farming as they did
 - 5. Collapsed after attaining peak population number and power
 - 11. Paleo Botanist – reconstruct changes in local vegetation
 - 12. Archaeologist – date building sites
 - 13. ie. Tree ring dating –dendrochronology
 - 14. To nearest year
 - 15. Radiocarbon = good to 50,000 years old
 - 16. Trees preserved for 1000's of years - S.W. – Excellent for dendro (Greek – Dendron tree /roots / chromos – time) Rings – reconstruct climate

XVXXVII. AGRICULTURE

- A. Cotton – 3200 BC
- B. Corn = 2000 BC – Bat Cave, NM – Dr. H. Dick – Harvard Graduate
- C. Squash = 800 BC
- D. Beans = 400 AD
- E. Turkeys – debate - 1st domesticated in Mexico

- F. Rainfall – higher elevation, more rain
 - 1. Ground water close enough to surface for plant roots to extend down into the water table (canyon bottoms) – Chaco Canyon
 - 2. Water collected from run off in ditches or canals
 - a. Hohokam
 - b. Chaco Canyon – 1000 years
 - G. All except one succumbed to environmental problems caused by human impact or climate change!
-

- A. Higher elevations – strategy
 - 1. Mogollon
 - 2. Mesa Verde
 - 3. Pueblo I Phase
- B. Hohokam
 - 1. Constructed the most extensive irrigation system in the Americas outside Peru and 100's of miles of secondary canals branching off a main canal 12 miles long, 16' deep and 80' wide
- C. Mimbres
 - 1. Areas – reliable spring
 - 2. Groundwater tables
 - 3. Population doubled what the flood plains could support
 - 4. Collapse
- D. Complex system – redistribution
- E. Hopi & Zuni – succeeded for more than 1000 years
 - 1. Live near permanent or dependable sources of water
 - 2. Landscape benches above the main floodways
 - 3. Diverse economy
 - 4. Exploit ecologically diverse zones
 - 5. Self sufficient

XVXXVIII. NATIVE AMERICAN FARMERS

- A. Chaco Canyon
 - 1. 600 AD
 - 2. Underground pit houses
- B. Chaco Anasazi
 - 1. Out of contact with North American (“A Black Hole”)
 - 2. Built structures of stone
 - a. 1000 miles to the south – sites found (A connection with the Tarahumara?)
 - b. In Mexico
- C. Pueblo Bonito
 - 1. 2 stories
 - 2. Largest (in US)
 - 3. 5-6 stories in next 2 centuries with 600 room
 - 4. Roof supports – logs, 16' long, 700 lbs
- D. Chaco Canyon reached their apogee
 - 1. Environmental oasis within NW New Mexico

- a. Narrow canyon caught rain runoff
- b. Many side chanel
- c. Soil renewal – high
- d. 50 miles radius – support high population
- e. Diversity of plant & animals – high
- 2. Piñon/Juniper = logs/firewood
 - a. Corn
 - b. Beans
 - c. Squash
 - d. Piñon nuts = 75% protein
 - e. Deer – high amount
 - f. High alluvial groundwater (table)
- 3. Water
 - a. Began diverting into channels for irrigation
 - b. Concentrated water runoff
 - c. Cleared vegetation for agriculture – 900 AD
 - d. Water level fell below field levels – ground water dropped – wiped out protein base
 - e. Agriculture base - affected
 - 1. Groundwater – impossible until arroyos filled up again
- 4. Arroyo cutting – can develop suddenly
- 5. Deforestation
 - a. Packrat Midden analysis
 - 1. Sticks
 - 2. Plant fragments
 - 3. Dung
 - 4. Food remains
 - 5. Discarded bones
 - 6. Own feces
 - 7. Urinate in nest - sugar and other

XVXXVIV. PALEONTOLOGISTS – Packrat Middens

- A. “A Dream” for archeologists
- B. A Time Capsule
- C. Reconstruct a snapshot of vegetation
- D. Zoologist
 - 1. Fauna remains
 - a. From insects
 - b. Vertebrate remains
- E. Radiocarbon – dating the midden
- F. Piñon Pines
 - 1. Not there today
 - 2. Furnished early phases of Pueblo Bonito (Julis Betoncort & Tom Devenden p. 146)
 - 3. C-14 dates = 1000 years old
- G. Middens – can last 40,000 years in SW (Ice Age)

- H. 50 PR Middens dated 600-1200 AD
 - 1. Reconstructed vegetation change
 - 2. Before AD 1000 piñon & juniper needles
 - 3. Chaco Canyon Anasazi settlements initially constructed in a piñon/juniper woodland
 - 4. Substances crystallize from their urine as it dries out, cementing the midden - *old midden does not decay!
- I. Chaco
 - 1. Deforested quickly
 - a. Dry climate
 - b. Rate of tree regrowth on logged land – slow – can not keep up with rate of logging
 - 2. To mountains 50 miles away
 - a. Elevations several thousand feet higher than Chaco
 - b. No draft animals
 - c. 200,000 logs used
 - d. 700+ lbs carried by human muscle power alone
 - e. Long distance, well organized network for the Anasazi capital of Chaco Canyon
 - f. Population increase 1029
 - g. 5000 est. population
 - h. Radiating regional network
 - i. 100's of miles of road
 - j. Surplus = to feed others
 - 3. Chaco = “Black hole”
 - a. Imports
 - b. No exports
 - c. All late period pottery imported
 - d. Firewood exhausted – could not fire pots within the canyon itself
 - e. Stone tools (NM)
 - f. Turquoise (NM)
 - g. McCaws (Hohokum & Mexico) (Meso-American contact)
 - h. Shell jewelry (Hohokum & Mexico) (Meso-American contact)
 - i.
 - j. Copper bells
 - k. Food imported – corn – 50 miles to the west (as land productivity decreases)
 - 4. Well fed elite – mini empire
 - 5. Peasantry
 - 6. Regionally integrated
 - 1. 3-step pecking order
 - 2. Great houses – chiefs
 - 3. Great houses beyond the Canyon
 - 4. “Provincial Capitals” Junior Chiefs
 - 5. Small houses – peasant houses
 - 7. Pueblo Bonito
 - a. Burials of 14 individuals
 - b. 56,000 pieces of turquoises
 - c. Thousands of shell decorations
 - d. One necklace of 2000 turquoise beads

- e. Political & religious centers
- 8. Complex interdependent Society
 - a. Could no longer revert to their original self-supporting mobile little groups (like the 4000 year old Tarahumara)
 - b. Filled up area – population (exploded)
 - c. Deer – declined and other sources for protein
 - d. Replaced by small game
 - 1. Human coprolite – mice beheaded and popped in whole – at the end of the civilization
 - e. Strife – began to close rooms
 - f. 1117 AD – last bean cut
 - g. Cannibalism existed towards the end
 - h. Steep cliff dwelling far from fields and water
 - 1. Easily defended
 - i. 1250 – warfare evident – intense
 - 2. Proliferation of defensive walls, moats and towers
 - j. Civil unrest & warfare
 - k. Cannibalism
 - 1. Broken pots w/residues of the human muscle protein hemoglobin on the pots inside
 - 2. Human feces – containing human muscle protein
 - 3. Victims consumed
- 9. 1130 AD Drought
 - a. ++ populations
 - b. More dependent on theocracy?
- J. No land left
 - 1. Ground water below level where it could be tapped by plant roots
 - 2. Could not support agriculture
 - 3. Stored corn – 2-3 years -modern times
- K. Lost faith in Chauca Priest
 - 1. Prayers for rain – unanswered (theocracy begins to crumble)
 - 2. No food deliveries
- L. Model = 1680 Revolt against the Spaniards – Pueblo Indian Revolt
 - a. Taxed food
 - b. Tolerated until drought left them short of food supply (provoked a revolt)
- M. 450 AD Beginning – 1150-1200 Chaco abandoned
 - a. Navajo sheep headers reoccupied 600 years later
- N. Chacoan Inhabitants
 - a. Starved to death
 - b. Killed each other
 - c. Fled to other areas in the SW
 - d. Area of modern Zuni Pueblos
 - 1. Rooms similar
 - 2. Chaco style pottery
 - 3. Dates around time of Chaco's abandonment
- XVXXVV. KAYENTA ANASAZI**
 - A. Long house valley – NE Arizona

- B. 800 AD – 1350 (completely abandoned)
- C. Could support 1/3 of peak population
- D. Population decreased to the point that it could no longer maintain institutions that citizens consider to be essential for maintaining a civilization
- E. Other SW Societies – all underwent collapses, reorganizations, or abandonments AD 1100-1500
- F. Mimbres
- G. Mesa Verdeans
- H. Hohokum
- I. Mogollon
 - a. Fragile and difficult environments
 - b. Did survive 600 years – Chaco
 - c. Longer than the duration of European occupation anywhere in the New World since 1492

Richard Fisher – Why Did the Anasazi Abandon Chaco? – Personal Notes

Anemia

- A. Iron deficiency anemia
 - a. No red blood meat

		Children	Adults
1.Chaco – CE 800-1150	83.30%	65%	
2.Canyon de Chelly CE 700-1300	88.00%	45%	
3.Black Mesa CE 800-1150	85.40%	89.30%	
4.Inscription House CE 1250-1300	63.60%	46.20%	
- B. The Scarlate McCaw Clan (research) by Fisher

ZUNI

July 7, 1540 CE – Conquistadores (Coronado) arrive – 7 Cities of Gold

THE PUZZLE OF OASIS AMERICA and Copper Canyon– Book by Fisher

- A. New Ideas

Transhumance

- A. Combining established archaeological evidence relating to:
 - a. Paquine
 - b. New Sky Island
 - c. Current Tarahumara lifestyles
 - 1. Grow corn/higher elevation
 - 2. Transport to the canyon
 - 3. Move from one established seasonal home to another
 - 4. Not nomadic – moving between two specific home sites
 - 5. 10 to 40 miles now
 - 6. 3000-7000 – more rain
 - d. Preindustrial and Pre-colonial reality

- i. Harmony
- ii. Respect for others

ANASAZI

Around 1200 BC – 1200 AD – During the Basket Maker II Culture

Golden Age – 900-1150

1350 – Completely abandoned

1450 – Paquine abandoned

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See Page 383 from the Tarahumara Indian Tribe of Northern Mexico, Published 1935 by Bennett & Zingg “The Tarahumara have proved a valuable group for study because a simple American Indian culture still functions among them in a large tribal entity. Super-imposed on this native culture is a thin veneer of Spanish-Indian elements which can be separated with considerable certainty from the pre-Spanish elements.” See page 88 – Bennett & Zingg – The twill work of the Papago suggest historical affiliations with Tarahumara basket weaving. This theory is strengthened by the geographic proximity and the genetic linguistic relationship of these tribes. For more information on the Basket-Makers and the Cave-Dweller phases of Tarahumara Indians see page 89, Bennett & Zingg.