Native American Beers

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Although conservative opinion would consider the contended aboriginality of New World distilled liquors as yet undemonstrated, there is ample evidence of the wide distribution both in North and in South America of native undistilled alcoholic liquors, or beers and wines. Since the plant-substances of which these are made vary considerably, and since the usage of terms has sometimes been rather loose, we define these terms before discussing the distribution of the liquors themselves.

Aguardiente (contraction of Sp. agua ardiente, "burning water"), properly speaking a brandy of Spain and Portugal, generally made of grapes; but in Latin America it is applied to various spirituous liquors. In California and New Mexico the name is used for American whisky, in Mexico for pulque, while the aguardiente of the Chiricahua is an undistilled yucca beer.[1]

Algoroba, a South American beer made from the fruits of leguminous plants, Prosopis alba, P. pallida and P. juliflora (mesquite beans).

Asua, a beer of the Quichua-speaking groups and others of mountainous Ecuador, made by boiling and crushing maize, and allowing it to ferment in a sealed vessel.

Atole, atolle (Mex. Sp. from Nahuatl atolli) is properly a mush made of Indian corn, a favorite food in Spanish-American countries; also diluted and used as a drink. On the Colorado and Gila Rivers the bean of the mesquite, Prosopis juliflora DC, containing 25-30 percent sugar, or the screw bean, "tornilo," or P. pubescens Benth. are cooked, pounded, mixed with water, strained, and allowed to ferment into a beer.[2]

Balché, the Mayan name of a plant, extended in usage to a drink made of its bark mixed with wild honey and fermented; the same as pitarrilla.[3]

Cachiri, kaschiri is made of cassava (Jatropha manihot, mandioca, tapioca, Brazilian arrowroot); the starchy juice is pressed out and fermented, or, according to Lewin,[4] it is chewed in the starchy form, which aids the change into sugar. **[225]**

Cangui, the maize beer or chicha of the Avas or Chiriguano of the Bolivian Andes, q.v.

Cauim, a name for cachiri in Brazil; same as pajuarú.

Caysuma, the Ega name for cachiri.

Chanar, a drink made of Gourliea decorticans (a plum-like fruit) by the Pilcomayo tribes.[5]

Chicha (Am. Sp. from the Taino chicha, Quichua chica, Galibi huicú), a beer made of maize, boiled, chewed, put in large pots covered with leaves, and fermented.[6]

Chontarúru, the cultivated chonta palm (Guilielma sp.), bears a fruit from which the Canellos and Jíbaros of Ecuador make a wine; the wild species Bactris and Iriartea are also used.[7]

Colonche is made of the fruit of several species of Opuntia (esp. 0. tuna Mill and 0. Ficus Indica Haw.). The fruit is peeled and pressed, the juice passed through straw sieves, to ferment near a fire or in the sun. The pinkish liquor tastes somewhat like hard cider. Although there are Opuntia spp. available in the American Southwest, colonche appears to be entirely Mexican in distribution.[8]

Haren, a Papago name for sahuara wine, q.v.

Kiwa, a Gran Chaco name for algoroba; Prosopis juliftora beans are chewed and fermented in goat-skins, as the natives chant and beat the drum to drive away evil spirits who would spoil the brew. Only men drink it.

Mazamorro, a drink of the Nicarao and Chorotega of Nicaragua, made of a mixture of honey and ground corn.[9]

Mescal (from Aztec mexcalli, "metl [maguey] liquor"). In its primary sense is the fleshy leaf-base and trunk of various species of Agave. It is an important food source among most of the tribes within the plant's range, of diverse linguistic stocks: Mohave, Yuma, Cocopa, Kawia, Southern Diegueno, Walapai, Kaibab Paiute, Havasupai, Chiricahua Apache, etc. The Mescalero Apache derive their name from their use of this food. The American Spanish mexcal, mezcal, or mescal comes from the same Nahuatl root, and refers to a Mexican brandy distilled from agave beer, properly called pulque.
Note that the Aztec lacked the brandy "mescal" in the modern sense, though they had pulque. In its secondary sense of intoxicant, the term mescal has been misleadingly extended to the "mescal" bean (Sophora secundiflora Lag ex DC), a narcotic red bean of the southern Plains, Southwest, and northern Mexico, which was formerly involved in cult use; various Apache groups sometimes mixed it with their mescal or pulque, to strengthen it. Another misleading and widespread extension of the term is to the cactus Lophophora williamsii, the "mescal button" or "mescal bean" of the Plains. The **[226]** "tea" made from the dried top of the cactus is not the drink "mescal" nor does the plant resemble a bean; the confusion comes from the fact that Lophophora williamsii, like Sophora secundiflora, was sometimes used in the Southwest and northern Mexico to fortify agave-beer, i.e., pulque or "mescal."[10]

Mistol is a wine made of the fruit of Tizyphus mistol (which resembles over-ripe grapes).

Nawá, a Huichol name for tesvino.

Paiva or Paiwari, a name for arrowroot beer in British Guiana; see cachiri.

Pajuarú, a name for cachiri in Brazil.[11]

Pissioina is a native beer of the Yuma, prepared by roasting wheat grains over a charcoal fire until light brown in color, pulverizing them, and fermenting the mixed mash with water.[12]

Pitahaya (from a Haitian or Cuban word) is a name applied in the Southwest to the sahuara.

Pitarrilla is the drink made from the balché plant, q.v.

Pulque (Mex. Sp. pulque, of uncertain origin; probably from a Carib source [Cuban or Haitian], but also conjectured to be ultimately a corruption of the Sp. pulpo, flesh, pulp) is agave beer. The maguey or Agave Americana is the commonest source. From time immemorial the maguey has been cultivated for the abundant sap or aguamiel, which collects in the cavity made in the heart of the plant by the removal of the young central leaves. The juice abounds in sugar and muci**[227]**lage when the maguey is about to flower, and is fermented in reservoirs of rawhide. It resembles spruce-beer in the early part of the process, but at the end acquires the putrid odor of the animal matter in the hides. The national drink of the Mexicans, it smells much like half-turned buttermilk, but it is cooling, refreshing, nutritious, and stimulating. It contains three to four per cent alcohol usually.[13]

Sahuara is a name of native origin for the giant cactus Cereus giganteus Englin. from whose fruits a wine is made; variations are saguaro, suwarrow, etc. This is the Mexican pitahaya, which has a fluted column thirty to fifty feet high, crowned in season with handsome pink flowers. The fruit is two or three inches long, full of rich crimson pulp of fine flavor, a great delicacy to the natives of the region. A dear light brown syrup is prepared from it which is used as a substitute for sugar, sad from the syrup a sourish strong beer is made. The still larger and sweeter fruit of the pitahaya dulce of Sonora and Lower California (C. Thurberi Englm.) is used for the same purpose.[14]

Sotol (from Nahuatl zotoli, the ancient Mexican name) is the designation given in the southern United States and Mexico to several species of yucca-like plants belonging to the genus Dasylirion, sometimes called "bear-grass." The fleshy crown at the apex of the stem of D. Texanum and D. Wheeleri is roasted and eaten by the Mexicans and Indians. The watery juice is easily pressed out, and is not unpalatable, but cooking alone sweetens it. As with mescal, the name of the drink derives from that of the plant, though it is sometimes called mezcal de sotol.[15]

Taroba is the cassava beer of the Tapajós region.

Tepache is maguey aguamiel fermented (after the addition of sugar and water) into a pulque-like beverage.

Tequila is a place name applied to a mescal brandy, precisely as are the terms Scotch, Pilsener, Münchner, Champagtie, Port, etc. This town is in the State of Jalisco and contains modern factories which produce the best brand of mescal.[16]

Tesvino, tizwin, tesgüino, etc. (Mex. texgüino, fr. Nahuatl teyhuinti, "intoxicating") is prepared from corn sprouted, dried, ground and fermented; it is a typical Apache drink, also called tulpi or tulapai.[17]

Toach is a Huichol name for mescal beer. (Compare Nahuatl toloache =datura).

Tshawi is the Tarahumari (and perhaps also the Tepehuane) name for mescal beer or pulque.[18]

Tukspai, tulpi, are Apache names for pulque.

Tusca is a beer of South America, prepared from the Acacia aroma. **[228]**

Ui is a Jíbaro wine made from the fruit of the chonta-palm (Guilielma speciosa, cultivated for the purpose in Ecuador); the chontarúru of the Canellos.[19]

This survey does not pretend to be exhaustive, but it includes the commonest of the native names found in the literature, and most of the other native drinks may be referred to one or another of the types cited. We may now summarize by tribe and area the distribution of native American alcoholic liquors, and indicate some of their uses ceremonially.

With respect to Central and South American intoxicants:[20]
"it is worth noting that at the only part of the American continent, trodden by the foot of Christopher Columbus, namely the coast of Venezuela, the great discoverer observed and recorded the two alcoholic drinks used by the natives; they were the same as in Mexico, one prepared from corn, the other from the Maguey."
Drinks with a basis of maize (boiled, chewed, and put in earthenware pots to ferment) of the chicha type were used from Mexico to Guatemala, Yucatan, and Darien, and to the high plateau of Bogota in the south; they are also found among the inhabitants of the Andes, in Ecuador, Peru, and Chile to Araucania and eastward from the Orinoco, and in Guiana as far as the territory of the Amazon. This maize drink was the national beverage of the Indians of the Guarani group, especially the Abas or Chiriguano, also of the half-civilized Indians of the Andes, the Coroado and Quichua speaking Indians of mountainous Ecuador (asua), the Quichua and Aymará of Peru and Bolivia.

The Aymará and Quichua sacrifice chicha to the earth to promote the increase of the maize crop. At the great arete or drinking-feasts of the Ava or Chiriguano, the aña or spirit of the corn itself was thought to be present. Every important occurrence-marriage, the birth of a child, or death-is celebrated with dancing and excessive drinking of maize-beer, chicha or cangüi.

Another method of manufacturing alcoholic beverages in South America was to ferment the starchy juice of the pressed or chewed cassava (Jatropha manihot). Its use extended southeast from the territory west of Magdalena to about 500 west longitude, north to the Caribbean, and south to the Amazon and the upper reaches of the Tapajós. It was called paiwari or paiva in British Guiana, taroba on the Tapajós, caysuma in Ega, cachiri among the Roucouyenne, and cauim or pajuarú among the aborigines at Brazil. One of the most important feasts of the Jibaro is the noa tsangu or **[229]** "feast of the women,"[21] which has particular reference to the harvest of the manioc and other garden plants.
The paiwari of the Guiana Indians and the kaschiri of Brazil play the major part in religious affairs, especially the death-feasts, in which its consumption is believed to give the drinkers the power of resistance against evil spirits. At the great victory-feasts which the

Jibaro celebrate when the head of an enemy has been taken, manioc-beer is consumed by the warriors; without it the object of the feast could not be accomplished. In Ecuador, as elsewhere in South America, fermentation is brought about by chewing. Karsten writes that "the saliva, which shares the natural magical power of the whole body, is supposed favorably to influence the spirit that is active in the fermented drink."

Yucca angustifolia, Y. glauca, and Y. filamentosa were used by the Jibaros and Canellos of eastern Ecuador, and by the Cholones of the upper Huallaga region. The manufacture of yucca beer was surrounded with ritual, and during the fermentation in earthenware jugs, the women squatted around the vessels singing magic chants to aid the process.[22]

The Indians of Ecuador make chontarúru (Canelios) and ui (Jibaros) of the fruit of the chonta palm, and both its cultivation, preparation and consumption are heavily ritualized. The growth of the tree and the ripening of its fruit is thought to be due to the wakani or soul inhabiting it; and since the wakani of the chontarúru palm is male, it is planted and tended by men. When the fruit is ripening and the beer is being prepared, great feasts are held at which dancing and singing are performed to "hurry up" the ripening and fermentation.[23]

The Matacos, Chorotis, and Ashluslay all make algoroba beer. The Matacos, for example, beat a drum every night for about a month previous to the beginning of the algoroba season (the end of November until early February) to expel the evil demons which would prevent the fruit reaching maturity, and to influence the spirit of the tree directly. The Toba, again, perform a dance to accelerate the ripening of the fruit. The beer of the Chaco Indians is thought to derive its power from the very spirit that animates the algoroba tree and other plants which they use.[24] The seeds are chewed for fermentation in goatskins, and men alone drink it. Other South **[230]** American native drinks are made of the Acacia aroma (tusca-beer), Gourliea decorticans (chanar-wine), and Tizyphus mistol (mistol).

The drinks of the Antillean region appear to affiliate with northeastern South America. Gower writes:[25]
"The popular beverage in the Antilles. . . was a mild intoxicant made with chewed cassava bread or corn. It was imbibed on all festive occasions. . . . Dancing attended all Antillean celebrations. In connection with the dance there was a great consumption of an alcoholic drink made with chewed cassava. The same sort of festivity is frequent in Guiana."
Both the Taino (Arawak) and Island Carib made the drink.

In Central America, the Nicarao and Chorotega of Nicaragua made mazamorro, a fermented mixture of ground corn and honey. The Maya of Yucatan likewise prepared a mead called pitarrilla, consisting of the bark of the balché tree and wild honey fermented in fresh water.[26]

Farther north, in Mexico, we have already mentioned the Aztec use of pulque or "mescal." The Huichol preparation of toach is described as follows:
"The hearts of the [mescal] plant are baked between hot stones in an earth mound; then they are crushed, mixed with water, and left to ferment in cowhides, each of which is suspended between four poles. After the mass has stood in this way us the open for about a week it is ready."
The Huichol also make tesvino or nawá by mashing sprouted corn on a metate, boiling it down, adding more water, and straining it into gourds; after twelve days it is ready to use.

Besides these, they make a "wine" from corn-stalks, another from the juice of the mashed guayabas fruit, and still another from sotol. Tequila or Mexican brandy is also drunk at festivals, for no Huichol ceremony would be complete without intoxicants.[27]

The Tarahumari made a "wine" from corn-stalks, corn tesvino or tesguino, sotol and tshawi (agave pulque), adding the narcotic frijolillo (Sophora secundiflora or "mescal bean") to fortify it. The maize-beer bata-like was of central importance in Tarahumari life. All celebrations, dances, and religious ceremonies required its preparation and drinking; it was given with the mother's milk to the newborn baby, who was also **[231]** "cured" or sprinkled with it. It was applied externally for all diseases as a remedy; it was the means of payment to assistants for the cultivation of the fields, and a sacrifice to obtain rain. Drinking it at feasts marked the turning-points in Tarahumari life: a boy's maturity, a girl's seeking for a husband, at marriage feasts, and at funerals as a sacrifice to the dead. It was even drunk for luck before going hunting or fishing.[28]

The Tarasco, whatever they may have formerly made in the form of alcoholic drinks, now rely on Mexican aguardiente, or sugar-cane rum. The Tlahuiltec use this exclusively, but the Tepecano drink sotol and probably pulque also. The Tepehuane on special occasions use "vino, or mescal," like the Tarahumari tshawi, or agave-pulque, though they do not make corn tesvino. The Comecrudo word afisián is translated by the Spanish terms mezcal, aguardiente or vino. The Cora drank home-made mescal at their puberty rituals.[29]

In the United States, nearly all Southwestern groups save the Pueblos used intoxicants. The Apache of Arizona and New Mexico often preceded their ceremonial drinking of tizwin or tulpi by a long fast, that they might the better experience its effects. The Chiricahua Apache make tesvino or tulpi, sometimes adding other substances to make it more intoxicating; they likewise make a drink of various species of yucca whose fleshy, banana-like fruit contains much sugar. The species most commonly used are Yucca baccaia Torr., Y. macrocarpa Colville and Y. Treculeana Carr. The Chincahua have a Coyote story involving the use of "mountain laurel berries" or "mescal beans" also. The Coyotero make tesvino and recently have begun mixing whisky with it to make it stronger. The Mescalero mix tulipi with the inner bark of a pine tree; the San Carlos Apache make pitahaya wine as well as tulipi, and to their tesvino added numerous other substances.[30] The Tonto make tesvino, which they occasionally "spike" with whisky. Tulapai is made by the Western Apache also. The White Mountain Apache sometimes add the roots of Datura meteloides and other plants to their tulapai.[31] **[232]**

Even today, in the northern part of their reservation, the Papago make a fermented liquor from the fruit of the giant cactus or sahuaro (also called baren, sawado, or saguaro). When the fruit is ripening, the laughingly point at it and say, "See the liquor growing!" and sing songs about it. The liquor was formerly the central feature of their seasonal rain-making ceremonies: "Much, much liquor we made," said a Papago woman, "and we drank it to pull down the clouds." In its preparation the men dance in a great circle around a fire, following a leader with a rattle, and later the women join them so that men and women alternate in the circle. Thus they dance and sing for two nights, while the medicine men make magic with strings of eagle feathers and sprinkle the dancers with eagle down, which symbolizes clouds. Next the liquor is strained through baskets and a gourd is passed around until all the liquor in the council house is consumed. Then they visit from house to house and drink the liquor which each woman has brewed and buried in the ground with the injunction, "Do you ferment and let us get beautifully drunk." No family may drink its

own liquor lest the house burn down, but they drink at other houses, vomit, and go on to visit others and sing songs. The Papago also manufactured corn tesvino, and sometimes mescal, or got it and sotol from Mexico.[32]

The Otomi, like the Mazahua, drank pulque, while the Opata used corn tesvino as well as drinks made of native grapes and a number of cacti. The Pima and Manicopa prepare sahuara wine, and the Pima make agave pulque in addition. The Manicopa lack both pulque and tesvino, but they gathered the cactus fruits near the Yavapai country in mid-June. They boiled a large number of pots of the juice, and in fermenting mixed them so that all would be ready at about the same time two days later. Manicopa custom dictated that the guests must have become drunk before the host may partake, after which friends of the invited guest might drink. The custom was rigidly formalized.[33]

The xatca or "wine" song, performed at no other time, was part of the drinking festivities. An informant of Spier's said of the Manicopa that "when they were drunk they thought of war." The song told of "red water," i.e., blood, and how it was made (though the drink is blood-red in color, the name of the song means neither "blood" nor "red water"). It told how the enemy had come to drink with them: they had joined in battle, and now **[233]** they would drink together. The intoxication and incitement of the song commonly ended in a decision to go on a raid, for at the time the sahuaro was harvested the Yavapai were camping in the mountains not far distant, not as in winter, in isolated caves. The same song is recorded for the Halchidoma, who say the Pima got it from them, and the Maricopa from the Pima, though Dr Spier notes verbally that the indicated direction of diffusion is not too probable. The man who had first dreamed the song had heard the enemy singing it. In connection with this reference to war, Cremony writes:[34]
"It is upon [sahuaro] liquor that the Pinoos, Maricopas, and Yumas get drunk once a year, the revelry continuing for a week or two at a time; but it is also a custom with them to take regular turns so that only one-third of the party is supposed to indulge at a time, the remainder being required to take care of their stimulated comrades and protect them from injuring each other or being injured by other tribes."
The Gila River Vuman trait of making a fermented drink from the fruit of the giant cactus or sahuaro, according to Kroeber, is lacking among the Colorado River Yumans. The Havasupai, Walapai, Mohave, Cocopa, Navaho, and Ute, like the Pueblos, lack native alcoholic intoxicants.[35] However, Park reports for a region much farther north that the Paviotso made a "fermented drink from a reed-like plant," and a number of tribes in California are said to have made a cider from manzanita berries, which was fermented. The pissioina liquor of the Yuma, made of wheat roasted until brown, pulverized, and fermented in water, is not aboriginal, at least as far as its basis is concerned.

Kroeber says the Gila is the northwestern limit of alcohol, but the problem remains as to why the sedentary grain-growing Pueblos lacked fermented liquors when many of their nomad neighbors had them. Havard would make this largely a question of geography, involving the historical accidents of a possibly late diffusion of the trait. Beals, more plausibly, admits a possibly late diffusion, but suggests that there may be something in Pueblo ritual and belief antagonistic to the spread of the trait. The explanation by differential diffusion gains weight when it is recalled that the jimson-weed cults of northern Mexico are found in southern California as far north as San Francisco Bay, and not in the Pueblos; and that, similarly, **[234]** the peyote cult of northern Mexico affected only one Pueblo, Taos,[36] besides such Southwestern nomads as the Mescalero, before jumping northeastward to run riot in the Plains clear up to beyond the Canadian border.

The heavily institutionalized and ritualized religions of the Pueblos evidently found little place in them for such orgiastic experiences as the California datura-intoxication, the Yuman alcoholic or dreamed vision, or the individualistic Plains peyote-vision.[37]

Notes

1 - V. Havard, Drink Plants of the North American Indians, Bulletin, Torrey Botanical Club, Vol. 23, No. 2, 1896, p. 37. This writer (p. 34) sums tip the general opinion on precolumbian alcoholic liquors: "The discovery, in some parts of Mexico, of crude stills constructed of native material, has led some authors to think that distillation may have been practiced on this continent before the coming of Columbus, but there is no ground for such belief in the accounts of the first explorers nor the Indian traditions."

2 - L. Lewin, Phantastica, Narcotic and Stimulating Drugs (New York, 1931), p. 169 (asua); Havard, Drink Plants, p. 37 (atole).

3 - M. H. Saville (ed.), Reports on the Maya Indians of Yucatan, etc. (Indian Notes and Monographs, Vol. 9, No. 3,1921), pp. 151-52; glossary, p. 217.

4 - Lewin, Phantastica, p. 169 if.; R. Karsten, The Civilization of the South American Indians (New York, 1926), pp. 312-15.

5 - Karsten, Civilization, p.311.

6 - Havard, Drink Plants, pp. 34-35; etymology from the Century Dictionary.

7 - Karsten, Civilization, pp. 304-305.

8 - Havard, Drink Plants, pp. 36-3 7.

9 Oviedo, cited by S. K. Lothrop, Pottery of Costa Rica and Nicaragua (Contributions, Museum of the American Indian, Heye Foundation, Vol. 8, 1926), Vol. 1, p. 34. They also made a wine of plums (p. 54).

10 - F. W. Hodge (ed.), Handbook of American Indians North of Mexico (Bulletin, Bureau of American Ethnology, No. 30, 1907-10), Part 1, p. 846; E. W. Giiford, The Cocopa (University of California Publications in American Archaeology and Ethnology, Vol. 31, No. 5, 1933), p. 267; L. Spier, Southern Diegueno Customs (same series, Vol. 20, pp. 297-358, 1923), p. 335; A. L. Kroeber (ad.), Waiapai Ethnography (Memoirs, American Anthropological Association, No. 42, 1935); E. Sapir, Field notes on Kaibab Paiute (ins.); L. Spier, Havasupai Ethnograpby (Anthropological Papers, American Museum of Natural History, Vol. 29, Part 3,1928), pp. 105-106; L. Hooper, The Cahuilla Indians (University of California Publications in American Archaeology and Ethnology, Vol. 16, No. 6, 1920). Cf. Hodge, Handbook, Part 1, p. 282; also Part 1, p. 846: "So far as known mescal was not fermented by the Indians to produce an intoxicating drink before the coming of the Spaniards" (Hough). This statement is questionable if it refers to the simple fermented beer, for Havard (Drink Plants, p. 34) states: "The historian Sahagun says that long before the conquest, the use and abuse of pulque were so general that one of the Aztec kings forbade the sale of it and punished drunkenness with death. The Mexican liquor, mescal, manufactured by the distillation from the baked, pounded and fermented heads of several

species of Agave, was unknown to the Aztecs, who like other American aborigines were ignorant of distillation, an art introduced from Europe. They only knew the first part of the process." C. Lumholtz (Unknown Mexico, New York, 1902, Vol. 1, pp. 182-86) would argue for the aboriginality of the Cora, Huichol, and Tarasco distillation process, but his case would be stronger if further examples from the same area could be found.

11 - Lewin, Phantastica, p. 169 if.

12 - W. C. Farabee, in A. Hrdlicca, Physiological and Medical Observations among the Indians of Southwestern United States and Northern Mexico (Bulletin, Bureau of American Ethnology, No. 34, 1908), p. 28.

13 - Havard, Drink Plants, p. 34; and others.

14 - Havard, op. cit., p. 36.

15 - Ibid., pp. 43-44.

16 - Lumholtz, Unknown Mexico, Vol. 2, p. 182. Tequila is prepared from the roasted agave. For a full account of the preparation of pulque and tequila see W. Hough, The Pulque of Mexico (Proceedings, United States National Museum, Vol. 33, pp. 57792, 1908).

17 - Hrdlicka, Physiological and Medical Observations, pp. 27-28; Havard, Drink Plants, p.35; Jules Henry, Cult of Silas John Edwards (ins.).

18 - Lumholtz, Unknown Mexico, Vol. 1, p. 125.

19 - Lewin, Phantastica, p. 169 if.; Karsten, Civilization, pp.304-305.

20 - Havard, Drink Plants, p. 36. The following paragraph is based on Lewin and Karsten.

21 - Karsten, Civilization, p. 315. Many South American groups attribute sex to plants: big and hard species of trees and plants with strong properties are male, while manioc, sweet potatoes, carrots, beans, pumpkins, etc. are female. Cf. Karsten, op. cit., pp. 301, 304-306, 319-20, 323-24.

22 - Karsten, in Lewin, Pkantastica, p. 159 if.

23 - Karsten, Civilization, pp. 304-305. Chonta wood and thorns are used in war, hunting, and sorcery also.

24 - Karsten, op. cit., pp.311-12.

25 - C. D. Gower, The Northern and Southern Affiliations of Antillean Culture (Memoirs, American Anthropological Association, No. 35, 1927), pp. 25,40, 50.

26 - Lothrop, Pottery of Costa Rica and Nicaragua, p. 34; Saville, Reports on the Maya Indians, pp. 151-52.

27 - C. Wissler, The American Indian (2nd ed., New York), p. 244; Lumholtz, Unknown

Mexico, Vol. 2, pp. 13, 31, 186, 253, 278; also C. Lumholtz, The Huichol Indians of Mexico (Bulletin, American Museum of Natural History, Vol. 10, Art. 1, 1898), p. 11; Hrdlica, Medical and Physiological Observations, p. 28.

28 - Hrdlicka, op. cit., pp. 27-28; C. Basuri, Monografta de los Tarahumaras, (Mexico, 1929), p. 68; Lumholtz, Unknown Mexico, Vol. 1, pp. 125-27; also C. Lumholtz, Tarahumari Life and Custom, (Scribners Magazine, Vol. 16, No.3, 1894), p. 299, and Tarahumari Dances and Plant Worship (idem, No. 4), pp. 438, 442.

29 - Hrdlica, op. cit., p. 28; Lumholtz, Unknown Mexico, Vol. 1, pp. 125-26, 460-61, 510; A. Gatschet, Ms. in Bureau of American Ethnology; Hodge, Handbook, Part 1, p. 34g.

30 - E. g., "crazy medicine" (root of Lotus Wrightii), "make noise" (Cassia Couesii, root), "medicine sticks" and aromatic root or roasted seeds of Canotia holocantha (Ilrdlicka, op. cit., pp. 2 7-28).

31 - Havard, Drink Plants, pp. 35-37; Hrdlicka, op. cit.: M. E. Opler, Autobigraphy of a Chiricahua Apache (ins.); Henry, op. cit.

32 - R. Underhill, The Autobiography of a Papago Woman (Memoirs, American Anthropological Association, No. 40, 1936), pp. 2, 10, 45-47; C. Lumholtz, New Trails in Mexico (New York, 1912), p. 47; Hrdlicka, op. cit., p. 28; Havard, op. cit., p. 35.

33 - Hrdlicka, op. cit.; Hodge, Handbook, Part 1, p. 408; A. L. Kroeber, The Sen (Southwest Museum Papers, No. 6, 1931), p. 46.

34 - Cremony, in Havard, Drink Plants, p. 36 (species used are Cereus giganteus and C. Thurberi); L. Spier, Yunan Tribes of the Gila River (Chicago, 1933), pp. 56-58, 105,146, 162, 258,262, 269; W. Park, Paviotso field notes (ins.).

35 - Hrdlicka (Medical and Physiological Observations, p. 27) says wine is made from grapes at Isleta.

36 -Again, Taos-perhaps the most Plains-like of Pueblos-Was the only one which the Ghost Dance excitement affected. Another marginal Pueblo, Zuñi, which also had the somewhat orgiastic urine-dances, was the only one which used datura ritualistically.

37 - Kroeber, Seri, p. 46; Havard, Drink Plants, pp. 35-36; R. L. Beals, The Comparative Ethnology of Northern Mexico before 1750 (Ibero-Americana, No. 2,1932), p. 133. Beals Tables 31 and 138 show virtual identity in the distribution of intoxicating liquors and ceremonial drunkenness. This writer suggests a connection of the intoxicating liquors of the South-west with the "black drink" (Ilex cassine) of the Southeast. F. G. Speck (Catawba Texts, Columbia University Contributions to Anthropology. Vol. 24, 1934, p. 61) reports that the Catawba made a beer of the flat pods of the black locust, but the ilex purgative-drinks appear rather to affiliate with northeastern South America and the Amazon Basin via the Antilles. Nevertheless, it is highly probable that such drugs and drinks as the middle American native beers, the "black drink" and other ilex teas, peyote, the mescal bean (Sophora secundiflora), the narcotic mushroom teonanacatl of Mexico, datura (of northwestern Mexico, southern California, and northwestern South America), coca-chewing, the South American "deathvine" drink (aya-huasca, Banisteria caapi),

marihuana (Cannabis indica) in Mexico, pasta guarana (Paullinia cupana) of South America, cohoba snuff (Piptadenia peregrina) of the Antilles and South America, chocolate (Theobrorna cacao, which contains the mildly stimulating alkaloid theobromine), and yahé (Haemadictyon Amazonicum Spruce) of South Amena, as well as tobacco, may have had considerable importance in the development of the basic New World religions of the visionary type. All produce physiological and psychic disturbance of greater or lesser degree, which would promote the vision-experience.