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AMERINDIAN USES OF HONEY, WAX AND BROOD FROM NESTS OF STINGLESS BEES

By Eva Crane

Introduction

Stingless bees live in tropical and near-tropical regions, and it seems likely that their nests were a major natural resource of Amerindians from the time these peoples first encountered the bees during their migrations to the south. An earlier paper (Crane 1998) described how Amerindian peoples harvested honey, beeswax and brood from natural nests of stingless bees (Meliponinae) by honey hunting. A few peoples, especially in Mesoamerica, developed from the stage of honey hunting to keeping the bees in hives. Excavations in Yucatán suggest that the Maya made this advance before or during their Preclassic Period.

Schwarz's book *Stingless Bees of the Western Hemisphere* (1948) contains many details about Amerindian usage of bee products on pages 123-166, and is referred to a number of times in this paper.



Figure 1. A Toha man holding up a honey comb from a honey bee nest in north-east Argentina, 1989 (photo: Pablo Grau).

Honey

The first known records of Amerindian uses of bee products were made by early European travellers. In 1492 Christopher Columbus noted 'a variety of wild honey' as one of the assets of Cuba; it was probably from the bee *Melipona beecheii* (Schwarz 1948:123). Ulrich Schmidel, a German who travelled during the 1530s in what is now northern Argentina, wrote in 1599 that the honey there 'could be eaten with bread or other food'; he added that 'if there is nothing else to eat, both Christians and Indians have sufficient food with honey and wild roots found in the woods, without spending time hunting wild animals'. Bishop Diego de Landa's (1566) *Relación de las cosas de Yucatán* repeatedly mentioned honey among tributes paid to the Spanish, probably by Acaxee people. Simón (1626) reported that on the *llanos* of northern South America there was much honey from four or five sorts of bees, and that it had a good flavour (Rivero Orames 1972).

Recent studies on certain Amerindian peoples provide more detailed information about their handling and usage of honey. The Mataco of the Gran Chaco (Alvarsson 1988:174-177) squeezed honey out of the bees' honey cells into containers made from soft skins of rodents or oblong calabashes. If no container was at hand, they made a temporary one from the soft wood of a bottle tree (*Cherisia insignes*). Any honey spilt in the nest was mopped up with a bunch of forest lichens, which was then squeezed over the container. From 1 to 4 litres were obtained from a nest. It was used as a cash crop, the greater part being sold in the market of the nearest town or from door to door. But if a nest contained only a little honey, this was eaten on the spot.

The Mataco had names for 19 species of stingless bees from which they harvested honey. The main honey season was October to June, but in any month the nests of one or more species contained honey. Alvarsson (1988:288-291) has fuller details. He described the nests of six species as being built from paper-like fibres, and those of three species as being suspended, not built in a cavity. These observations suggest that the insects were not bees but honey-storing wasps, many species of which were exploited by Amerindians; Table 13.3A in Crane (1999:100) names 17.

The Kayapó near Rio Xingo in Brazil were studied by Posey (1982) and Posey and Camargo (1985). The Kayapó made containers for honey from layers of banana leaves. A hunter generally took meat and other food to his wife or her mother in the village for distribution, but he himself distributed honey as he pleased; in fact members of the hunting group usually consumed it where they collected it, and it rarely reached the village. The men who shared the honey chewed a thick stalk base of wild ginger until it became an absorbent brush, then dipped it into the honey and pulled it through the mouth. When the container was empty, they took it apart and licked the leaves so that no honey was wasted.

Honey was sold or bartered in many places, both locally and in markets. For instance in 1519, after Cortés reached Temixtitán (which later became Mexico City), he mentioned that both honey and 'wax from bees' were sold in the great market there; see Folsom (1843). In Guatemala a number of Chorti families were occupied with supplying wild honey to the market at Jocatán near the Honduras border (Wisdom



Figure 2. Group of Toha eating combs taken from the nest in Figure 1 (photo: Pablo Grau).

1940). In South America Father Antonio Ruiz de Montoya (1639) reported that Asunción, especially, supplied the inhabitants of Paraguay with honey among other commodities; no one knew how to domesticate the bees, but they bred very well in the mountains. The people on Margarita Island off the north coast of Venezuela sold and bartered honey among other foods.

Bierzychudek (1979:76) gives details of stingless bees, and also of a few bumble bees including *Bombus cayennensis*, whose honey was used by the Guaraní in Argentina. He also referred to various types of honey which Amerindians regarded as toxic. In a paper on the ethnobotany of the Maya, Roys (1931) referred to honey as an important component — and often the only palatable one — of many Maya medicines. A number were for disorders of the throat, and others for the skin, eyes and ears. Sometimes honey from a certain bee was specified, and sometimes other ingredients were parts of specific plants (Schwarz 1948:128-133).

The first colonies of honey bees (*Apis mellifera*) in South America arrived in Rio de Janeiro from Portugal in 1839 (Crane 1999:96). In the less tropical areas they nested wild, and some Amerindians took honey from their nests. Figure 1 shows a Toha man with a comb extracted from such a nest, and in Figure 2 a group of Toha are eating the combs.

Alcoholic Drinks Made with Honey

Alcoholic drinks were probably produced by a short fermentation of honey in water, and were more similar to African 'honey beer' than to European mead. Plant materials that lacked sugar could be fermented only if they were first masticated so that an enzyme in the saliva converted their starch into sugar. This was not necessary with honey

combs, since the sugar content of honey is around 80%.

Mesoamerica

The Maya had a regular supply of honey from their hives (Crane 1998), and they made a drink known as *balche* by fermenting a mixture of honey and water to which had been added bark¹ of a

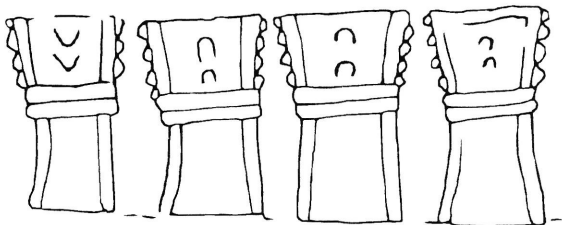


Figure 3. Drawing from page 61 of the *Maya Codex Tro-Cortesianus*, showing vessels which may contain fermenting *balche* (Villacorta & Villacorta 1977, reproduced by Deal 1982).

leguminous tree native to Mesoamerica, referred to as *balche*. The tree, named variously as *Lonchocarpus longistylus* and *L. yucatanensis*, is the source of an alkaloid in the same chemical group as nicotine, quinine, morphine and caffeine, and a *balche* extract was used as a narcotic. Figure 3 shows a drawing in *Codex Tro-Cortesianus* which may represent vessels for fermenting *balche* (Deal 1982). Diego de Landa (1566) said that the Maya ‘make wine skins of themselves, [they have such a] passion for wine that they are lost because of it’. He did his best to stamp out *balche* drinking.

In recent times, the drink *balche* was made by pounding pieces of the bark (or sometimes root) with sticks and adding them to a honey-water mixture. This was tasted after three days to find out whether it was ‘good’; if not, more honey was added, and it was allowed to stand until its colour became golden yellow. *Balche* was regarded as ‘purifying and cleansing’ those who drank it: in fact, it is a powerful purgative and (taken in quantity) caused them to void intestinal worms. Like honey, it was also used for administering unpleasant medicine (Ronnenberg 1978). The ultimate purpose of drinking *balche* was, however, to heighten religious experience and to bring the drinker into closer communion with his gods. McGee (1990) described a religious ‘*balche* ritual’ in 1980, and much *balche* was also drunk at bee ceremonies (Crane 1999:293).

Other Regions

Records from the Lesser Antilles in the late 1600s referred to Caribs mixing honey with water to make a drink (Steward 1963). In South America, the most important materials for alcoholic drinks were maize and manioc (cassava); they were used for instance by the Sirono in eastern Bolivia, who left the drink to ferment for three days, after which it reached the strength of beer. Other materials — mostly sweet plant products or stingless bee honey — were employed only where neither maize nor manioc was grown. Honey was used by a number of the Tupí-Guaraní, southern Gê, Botocudo and Charrua, as well as Chaco peoples. Schmidel (1599) recorded it among the Cario (Guaraní), and there are a few other early references. Lévi-Strauss (1966) quoted a report that the Caingang in Brazil added an infusion of the woody stem of a fern *nggign*, as ‘the honey would not ferment’ without it; they consumed ‘excessive amounts’ of their drink during a funeral ritual. Chaco peoples,

who were very fond of an alcoholic drink made with honey, mixed honey and water in a large calabash and heated it in the sun or by a fire. But they rarely had enough honey to make much (Cooper 1963). Kayapó men liked 'to drink honey until they feel light-headed', and one boy was seen to consume half a litre at a sitting.

Caribbean lowland peoples, and probably others, added honey when making fermented drinks from various fruits or plant sap. Honey was also sometimes added to give a finishing touch to fermented drinks made from the other materials, in order to sweeten them (Steward 1963). But to the Mataco in the Gran Chaco it was apparently not a palatable sweetener for maté (Alvarsson 1988:176).

According to Cooper (1963) the use of honey in making alcoholic drinks was 'widespread though far from universal in a great crescent belt [of South America], more or less marginal to the southern Amazonian watershed, extending from the south-eastern Brazilian coast' through the Chaco to eastern Bolivia. It is possible that in most areas honey was not plentiful enough for this purpose, but certain Amerindian peoples with access to honey may not have used it to make an alcoholic drink because of a physiological intolerance of alcohol.

Intolerance of Alcohol

The consumption of alcoholic drinks was widespread in the world at large, but indigenous peoples in certain regions did not generally consume alcohol. Human physiology may provide a clue about the reason for this, as follows. Ethanol, the alcohol produced by the fermentation of sugars, is metabolized in the human body by the isozyme (enzyme) aldehyde dehydrogenase, ALDH. The pattern of isozymes is not the same in all human races, perhaps as a result of genetic variation, and if a person with a deficiency of ALDH I consumes alcohol he experiences unpleasant symptoms or harmful effects — which are likely to lead to an aversion to alcohol.

A few human races have been tested for ALDH I. Goedde and Agarwal (1989) found that Caucasian and 'black' individuals tested, and the great majority of North Amerindians, had no deficiency of ALDH I isozyme; it is not known whether these last included any Maya. But the deficiency was shown by between 25% and 53% of individuals tested from five races from east and south-east Asia, respectively, and by just over 40% of three Amerindian populations from the west coast of South America. These results suggest that, whereas native populations of Europe and Africa would be attracted to alcohol consumption, certain others — including some Amerindians in South America — might develop an aversion to it. However, only a few Amerindians were tested, and further research is needed.

Beeswax

Worker bees secrete beeswax. Stingless bees do much of their nest building with a mixture of beeswax and propolis, and the 'wax' harvested from their nests often consists of this mixture. Propolis is a plant secretion or exudation which bees collect; some of it is very dark, so it darkens the 'wax', and in some places the wax has been described as black.

On his 1492 voyage or later, Columbus obtained wax from Hispaniola, the island now divided between Haiti and the Dominican Republic (Schwarz 1948); it is likely to have been from *Melipona beecheii*. Rivero Orames (1972) gave the following further information. In about 1612 Simón described wax from stingless bees in the *llanos* of Venezuela as 'of a good enough quality'. In 1639 Father Antonio Ruiz de Montoya in Paraguay said that he knew of wax from nine or ten different kinds of wild bee. Alvarsson (1988:176) listed 14 species of stingless bees from whose nests the Mataco in Gran Chaco harvested beeswax. One species in Paraguay produced wax that was 'black as pitch, which they call *yetic*, they use it not for candles as we do, but to stop [close] their great Canes, wherein they keep their feathers.' In Venezuela the wax was 'always black'; in recent times some of the people on Margarita Island off the north coast sold it.

Lost-wax Casting by Amerindians

Stingless bees were the Amerindians' only source of wax. If the wax was available in a region where gold was found, the gold was cast by the lost-wax method.² Exquisite gold ornaments and jewellery were made in this way. During the 1500s, Father Bernardino de Sahagún wrote a description, in the Nahuatl language, of the method as used in Mexico, and Saville (1920) translated this into English via a French version.

In South America the most expert gold casting was done in three areas in what is now Colombia: by the Tairona at the foot of the Sierra Nevada de Santa Marta; by the Quimbaya and Calima of the upper Cauca; and by the Sinú in the hills south of Cartagena (Bennett 1963). The Muisca (or Chibcha) had to obtain gold by trading, and their gold casting was not so fine. The art of lost-wax gold casting spread northward, reaching the area which is now southern Costa Rica — which also had gold deposits — by about AD 500; most of the objects found there have been dated to 1000 to 1500 AD. Between about 1350 and 1500 the method was also developed by the Mixtec in the Mexican metallurgical centre of Oaxaca. Father Sahagún relates that the goldsmiths especially esteemed the (stingless bee) beeswax; they removed dirt and other impurities from it by straining, then mixed the clean wax with a resin, white copal, so that it became firm and hardened well.

The Spanish found and appropriated enormous quantities of gold objects in both South and Central America. For instance Captain Francisco Cesar reported from the middle Cauca valley: 'Digging in a certain place they found a *valut* ... [containing] many pitchers full of jewellery of very fine gold, all of it of 20 or 21 carats. It amounted to over 40,000 ducats' (Bennett 1963).

There are many other such records. Bernal Díaz del Castillo (1632) described Aztec treasures that Emperor Montezuma presented to Cortes; they included '20 ducks made of gold, very natural looking, and some dogs of the kind they have, and many pieces of worked gold shaped like jaguars, lions or monkeys'. There are many thousand examples of lost-wax gold ornaments in the Gold Museum in Bogotá, Colombia, and the Pre-Columbian Gold Museum and National Museum in San José, Costa Rica. In Costa Rica, and perhaps elsewhere, larger gold ornaments were

made on a core which was later removed, because they would otherwise be too heavy to wear. The Spanish chronicler Simón (1626) said that, in general, 'they were ornaments exclusively for men, just as among us they are for women'.

Other Uses

Beeswax had an especially important symbolic significance to the Kayapó people in Brazil. They believed that it was their only material continuity

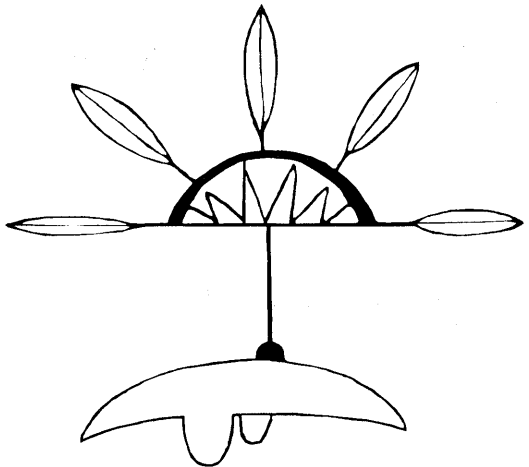


Figure 4. Me-kutom, ceremonial hat of the Kayapó in Brazil, made of beeswax (Posey 1983).

with their most ancient ancestors, who had lived above the sky and lowered themselves down to earth bringing the wax with them (Posey 1981). The *me-kutom* (Figure 4) was a beeswax hat worn by a young man when he received his ceremonial name. It was made for him by a male relative, using a ball of wax that was inherited, and stored under the earthen floor of the house until needed. The form of the hat was highly symbolic. In Figure 4 (placed for a wearer facing right), the front and back were the poles of the morning and evening sky (east and west). The two 'legs' below were equivalent to north and south; patches were painted on them to represent the idealized geographical relationship between the village (*nipók*), a raised hump in the centre, and the fields around. A stick inserted into the top of the *nipók* was ornamented at the upper end with a woven arch of bamboo and cotton, from which red and blue macaw feathers radiated; this superstructure represented the sky, and the stick symbolized the ancestors' woven cotton rope that stretched down from the sky to the earth (Posey 1983).

Recent field studies have brought to light a wide variety of Amerindian uses of beeswax. For instance the Mataco used the wax from a stingless bee known as *burro* for treating diarrhoea. The wax of another bee, *nosoytaj*, was also saved, 'for tea, though that may be drunk for diarrhoea.' The Tupinamba at the mouth of the Amazon hunted for the bees' nests mainly because 'wax was important in their industries' (Steward 1963). Also in South America, the Guayaki made whistles from the wax, and the Canella 'moulded wax into fairly accurate effigies of rheas, armadillos, tortoises, etc.' (Steward 1963). Aborigines in Australia made rather similar models of animals from wax of stingless bees (Crane 1999:526-527). Yukpa people in Venezuela/Colombia used the wax when making many objects, for instance stunning-arrows and hatchet-flutes, and they also shaped it into balls for storage (Ruddle 1973).

Beeswax was certainly important as an adhesive. The Ethnographical Department of the British Museum has a number of artefacts whose components are fixed together with beeswax, and the unpublished

catalogue includes the following from South America:

- Colombia: flute and other musical instruments, ceremonial mask, snuff containers, spear, arrow for birds, quiver, dart and blowgun.
- Brazil: axe, quiver, whistle and feather mask.
- Bolivia: gouging tool made from a wild boar's tooth.

It was also used to fill cracks in pots, and as a waterproof lining for baskets and honey containers (Crane 1999:533).

When and where Christianity was introduced into different regions, many candles were required for burning in the churches, and the Christian Church became one of the main users of beeswax. It was assumed that bees did not mate, and their wax was regarded as a symbol of the Virgin Mary. Several contemporary reports (Schwarz 1948:136-137) said that Amerindians did not use beeswax for illumination, and had to be taught by the Spanish how to make candles for the churches. In Brazil, the Patacho took great balls of beeswax to a settlement to trade there, and many other Amerindian peoples made beeswax candles to sell to Europeans for use in their churches and in 'Indian missions'; these included the Camacan and Tapuya (Wied Neuwied 1820/21).

Bee Brood

Insects were widely welcomed as food by hunter gatherers in the tropics, especially when meat from mammals was scarce. The larvae in a bees' nest were a succulent source of protein and fat, neither of which is present in honey. They were eaten adventitiously along with honey and other contents of a nest, and also harvested specifically for food.

In his travels through the part of Mexico that had been under Aztec rule since the 1100s, Father Sahagún said in the late 1500s that the people 'ate wild honey whenever they could obtain it, and that it was often consumed together with the bee-maggots' (Kent 1984:128).

There are many recent observations sustaining this theory. For instance Schwarz (1948:131-133) referred to the use in medicine of the larvae of specific stingless bees by the Chorti in Guatemala. Chagnon (1968:30) wrote of the Yanomamo who lived round the upper Orinoco River on both sides of the Brazil-Venezuela border: 'they gorged themselves on the larvae-filled combs.' To the Yukpa, a Carib people on the Venezuela-Colombia border, bee brood was an even more important food than honey (Ruddle 1973); the honey was drained from the brood combs, and the combs then passed 'rapidly through a fire in order to kill the larvae without losing too much of the cerumen'. Alvarsson's observations on the Mataco (1988 Appendix 3) make it clear that the larvae of certain insects — which may well have been wasps, not bees — were a special delicacy to these people. A number of other Amerindian peoples also set a high gastronomic value on wasp larvae (Crane 1999:101). Much of the food of wasp larvae is likely to be from animal sources, whereas that of bee larvae is derived from pollen and nectar, so wasp larvae may be more tasty to humans.

The Mataco also used larvae as fishing bait (Alvarsson 1988:281-282).

Conclusion

To Amerindians, honey and brood from nests of both stingless bees and honey-storing wasps were greatly valued. Honey was used to make an alcoholic drink by some Amerindian peoples — but not by all, for reasons that are discussed.

Stingless bees build their combs from beeswax which they secrete, and this wax was important to Amerindian peoples who used lost-wax casting to produce exquisite gold ornaments and jewellery, many of which can still be seen in museums. It also had many other uses.

Notes

1. According to an 1864 translation, Diego de Landa's *Relación* of 1566 referred to *balche* root, but in 1941 Tozzer amended this to bark.
2. In this method, a model was first sculpted in beeswax, and coated with pliable clay or another suitable material to form a mould. This was hardened by drying in the sun or by some other means. Next, the whole form was heated so that the wax of the model melted and was drained out or 'lost' through one or more vents. (In all other casting methods, the mould had to be opened to remove the model.) To make the casting, molten metal — usually copper, bronze, brass or gold — was poured in through an opening at the top of the mould and allowed to solidify, after which the mould was chipped away and discarded.

References

Alvarsson, J-Å.

—1988, *The Mataco of the Gran Chaco*. Stockholm: Almqvist & Wiksell International.

Bennett, W. C.

—1963, The archaeology of Colombia (in:) Steward, J.H. (ed.). *Handbook of South American Indians*, p.823-850. New York: Cooper Square Publishers.

Bierzchudek, A.

—1979, *Historia de la apicultura Argentina*. Buenos Aires: H.J. Mattone.

Chagnon, Napoleon A.

—1968, *Yanomamö — The Fierce People. Case Studies in Cultural Anthropology*. New York: Holt, Rinehart & Winston. 1/21

Cooper, J. M.

—1963, Stimulants and narcotics (in:) Steward, J.H. (ed.). *Handbook of South American Indians*, p.525-558. New York: Cooper Square Publishers.

Cortés, H.

—1843, *The Despatches of Hernando Cortes, translated, with an introduction by G. Folsom*. New York & London. e ?

Crane, E.

—1998, Amerindian honey hunting and hive beekeeping. *Acta Americana* 6(1):5-18.

Crane, E.

—1999, *The World History of Beekeeping and Honey Hunting*. London: Duckworth.

Deal, M.

—1982, Functional variation of Maya spiked vessels: a practical guide. *American Antiquity* 47(3):614-633.

Díaz del Castillo

—1632, *Historia Verdadera de la Conquista de la Nueva-España*. Madrid.

Folsom, G.

—1843, *The Despatches of Hernando Cortes, translated, with an introduction and notes*. New York & London.

Goedde, H. W. & Agarwal, D. P.

—1989, *Alcoholism: Biomedical and Genetic Aspects*. New York: Pergamon Press.

Kent, R. B.

—1984, Mesoamerican stingless beekeeping. *Journal of Cultural Geography* 4(2):14-28.

Landa, Diego de

—1566, *Relación de las cosas de Yucatán*. Published (1864) with French translation by B. de Bourbour. Paris: Arthus Bertrand.

Lévi-Strauss, C.

—1966, *Du miel au cendres*. Paris: Plon. Also 1977; *From Honey to Ashes*. London: Cape.

McGee, R. J.

—1990, *Life, Ritual and Religion among the Lacandon Maya*. Belmont, CA: Wadsworth Publishing Co.

Posey, D. A.

—1981, Wasps, warriors, and fearless men: the cultural ecology of the Kayapó Indians of central Brazil. *Journal of Ethnobiology* 1:165-174.

Posey, D. A.

—1982, The importance of bees to Kayapó Indians of the Amazon jungles. *Florida Entomologist* 65(4):452-458.

Posey, D. A.

—1983, Keeping of stingless bees by the Kayapó Indians of Brazil. *Journal of Ethnobotany* 3(1):63-73.

Posey, D. A. & Camargo, J. M. F. de

—1985, Additional notes on the classification and knowledge of stingless bees (Meliponinae, Apidae, Hymenoptera) by the Kayapó Indians of Gorotire, Para, Brazil. *Annals of the Carnegie Museum* 54(8):247-274.

Rivero Orames, R.

—1972, *Abejas criollas siu aguijón*. Caracas: Monte Avila Editores.

Ronnenberg, H. W.

—1978, Honey wine of the Mayans was a New World 'first'. *Wines and Vines* 59(4):38-39.

Roys, R. L.

—1931, The ethno-botany of the Maya. *Middle American Papers, Tulane University. Publication No.2*.

Ruddle, K.

—1973, The human use of insects: examples from Yukpa, *Biotropica*. 5(2):94-101.

Ruiz de Montoya, A.

—1639, *Conquista espiritual*.

Sahagún B. de

—1892, L'orfèvrerie des anciens Mexicains et leur art de travailler la pierre et de faire des ornements en plumes. *Comptes rendues, 8 Congrès International des Américanistes*: 401-418, Paris, 1890.

Saville, M. H.

—1920, The Goldsmith's Art in Ancient Mexico. *Indian Notes and Monographs, Heye Foundation, Miscellaneous Series No.7*:123-142.

Schmidel, U.

—1599, *Viaje al Rio de la Plata*. Nuremberg.

Schwarz, H. F.

—1948, Stingless bees (Meliponidae) of the Western Hemisphere. *Bulletin of the American Museum of Natural History*. No.90.

Simón, P.

—1626, *Noticias historiales de las conquistos de terra firma en las Indias occidentales*, ed. M. Rivas, Bogotá, 1882.

Steward, J. H. (ed.)

—1963, *Handbook of South American Indians*. New York: Cooper Square Publishers.

Tozzer, A. M.

—1941, Landa's Relación de las cosas de Yucatán. *Papers of the Peabody Museum* 18.

Villacorta C., J. A. & Villacorta, C. A.

—1977, *Codices Mayas reproducidos y desarrollados*. Guatemala, 2nd ed.

Wisdom, C.

—1940, *The Chorti Indians of Guatemala*. Chicago.

Wied Neuwied, M. A. P. zu

—1820-1821, *Reise nach Brasilien in den Jahren 1815 bis 1817*. Frankfurt am Main.

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