

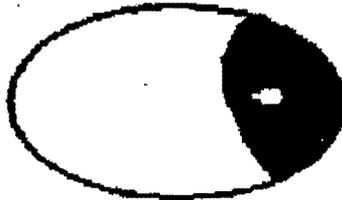
The MARGARETOLOGIST

Super Bead Plants

Most Widely Used



Most Deadly



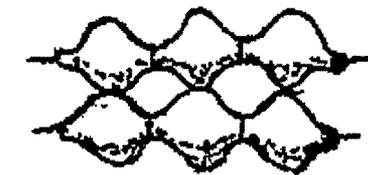
Most Sacred



Plants also serve as models for decoration or bead shapes:



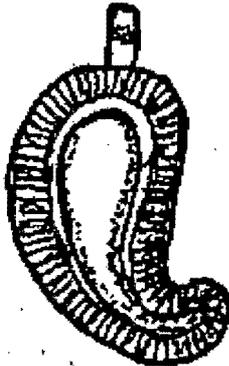
Tulips on Persian seals
2nd to 7th Centuries



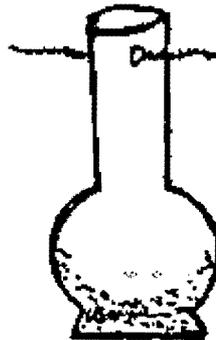
Acacia seed pod beads;
faience and gold, Egypt



Melon bead – used
almost universally



Silver paisley, modeled
on the almond, Iran



Poppy pod; precious
stones or faience, Egypt



Date bead; glass, Egypt

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ISSN 08921 989

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Through the Eye of a Needle

Perhaps because I mostly survive on them (I am a vegetarian, though not a vegan), plants are very important to me. A friend once told me that I was a "rescuer," because I was interested in things like beads and non-flowering plants. Maybe I am.

At least for a long time, beads did not get their due. Among beads, those of precious natural materials get about as much attention as do glass and stone ones, but for most people beads made of seeds or other plant parts receive little notice at all.

I have long been interested in plants used for human adornment. My 1982 booklet, *A Handbook of Bead Materials*, listed over 100 plant species used for beads. In 1984, my paper in *Economic Botany* listed 169 plant species used for human ornament in India alone (and I can add to that now).

Beads fascinate me because they touch so much of human culture. So do plants, especially those used for beads. I am taking this opportunity to expand on several of the most interesting plant beads I know, introducing them as superlatives. This issue is indicative of how widely one can (or should) go when researching beads. It is not about beads, but about how they affect human culture. Plant beads affect us in many ways, because in addition to serving as beads, they feed, poison, entertain, and even wash us. This issue ties in board games and Portuguese poetry, Hindu religious texts and the naming of countries, botany and the jewelry trade. I hope you enjoy reading it as much as I did writing it.

A Couple of Notes

Even in scientific writing, it is not necessary to cite every "well-known" fact if it is something that can be looked up in a standard reference, such as a dictionary, almanac, or encyclopedia. The Internet is be-

coming our collective standard reference. I no longer feel the need to cite every small fact I might retrieve from the Web. I have noted major sites I have used for this issue.

For those of you who get tired of my focus on India, I assure you that it was largely accidental in several cases. I did not begin in India with either the soapberry or the *Caesalpinia* stories; they brought me there. When studying world culture you simply cannot escape India, home to a fifth of the world's people, the oldest books, the oldest religion, and the center of world trade for millennia.

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Super Bead Plants

The Most Widely Used

While there has never been a census, the most widely used plant part for beads must be Job's Tears (Linnaeus named it *Cōix lacryma-jobi*), also called "Mary's Tears," "Adalay," and other names.

There is popular confusion about the part of the plant used for a bead. The tough-shelled unit is often called a "seed," but it is actually the fruit, containing the seed. The plant is a grass, looking rather like corn (*Zea mays*) when it grows. When the fruit is detached from the stem, a weak spot or a hole is left at the place of attachment. There is also a hole at the opposite end to allow the flower to emerge. The seed inside is wrapped in a spiral. Thus, the fruit is naturally perforated or can be perforated with great ease (one of the few such objects in nature) and is ready to be strung with little or no effort.

Job's Tears is eatable and was cultivated on a small scale before rice. Botanists disagree as to its native region, some opting for Northeast India or Indochina (Arora 1977:360) and others for the islands of Southeast Asia (Vavilov 1949/50:29). It is still eaten in some parts of the world; in Chinese-American shops it is often confusingly marketed as "pearl barley," which is a different grain altogether.

The fruit is not always shaped like a drop. Two other varieties, a globular (var. *monilifer*) and a spindle-shaped one (var. *stenocarpa*), also exist, often obtaining preference in particular regions. The large, globular *C. gigantea*, is also used for beads (Jain and Banerjee 1974:39).

According to the botanist and polymath, George Watt (1889:249), after a few years of cultivation, the outer shell of the fruit becomes white and soft, adding to its appeal as a food. If some fruits escape the

harvest and are allowed to grow on their own again, such feral plants will revert to the hard outer shell. While the proposition could hardly be proven, I have suggested that early agriculturists planted Job's Tears for food. In a few years, they would move to another spot, one that the clan had abandoned 40 to 50 years previously. There they would find feral plants that escaped earlier gathering and would now have hard-coated fruits suitable for beads.

Some Notes on Botanical Names

When Carl von Linné (Linnaeus) systematized all known living things in the mid-18th century he divided them into Kingdoms (plants are one), Phyla, Classes, Orders, Families, Genera and Species (other divisions have been added since). A plant or animal is scientifically called by its Latinized name with the Genus (in capital) letters) followed by its specific name (in lowercase letters). Often the genus is written out in full in the first case, then abbreviated by one letter in subsequent references. When the genus is identified, but not the species, *sp.* (or *spp.* for the plural) follows the generic name.

If you describe a new beetle or flower, you have the right to name it, but not after yourself. Your name will always be associated with it, as it will follow the binomial, often abbreviated; "L." is Linnaeus. Bailey (1949:38) says that it is "seldom necessary, or even in good taste" to cite the authority in popular writing." I shall do so only when it adds interest to the stories here.

Many species have interbreeding varieties (think of dogs). These are indicated by var. followed by a Latinized name

Not only are these names important to biologists, they often tell stories about the species. For example, Linnaeus named the quahog clam *Mercenaria mercenaria* because of its rôle in furnishing the purple shell for wampum beads and their use as money.

Certainly, these fruits have been used as beads for a long time. Glover (1979:18) reported one from the island of Timor in Indonesia dating to before 3000 B.C.,

which he said had been "pierced," presumably to be used as a bead. However, in conversation with him (1991), there was no evidence (wear, stringing material) to show that it had been used as a bead rather than just having been found at that level.

The earliest archaeological discovery to confirm their use as beads is at the Harappan (Indus Valley) site of Nagwada, Gujarat, dated to the late 3rd - early 2nd millennium BC. A small workshop for steatite (soapstone) beads was found and a large number of Job's Tears were recovered from the beadworking area (M.D. Kajale 2000: personal communication).

Job's Tears have been used as beads for at least 4000 years.

Dymok *et al.* (1890: III 573-4) assert that the Aryans were growing Job's Tears soon after they entered northwest India-Pakistan in the mid 2nd millennium B.C. Later, Arab traders took it to the Middle East and introduced it to Europe, from whence it reached the New World. Watt (1889:499) re-introduced it to Europe for the use of beadmakers. Today the plant has a global distribution.

In 1925, Miller said that the fruit cannot be dyed, but she was either in error or newer dyes have been able to be applied to them. The fruits, particularly the white ones, can be dyed even with food dye.

Job's Tears are worn for several reasons. Some consider them lucky, while others believe that they are appropriate for rosaries. Several people give them to babies and children, as they are useful for infants who are teething.

Another important use is in traditional medicine in the Far East. In Japan, the fruit is called *Juzu Dama*, (*Ju* means number, *Zu* is a round object, and *Juzu* a prayer bead [Y. Kawakami 2002, personal communication]). *Dama* is Japanese for gem

or bead. In China, it is called *yi yi ren* (or *yi yi gen* or *gan* or *yun* or *yan*). General Ma Yuen brought it to China in the first century AD after conquering Tonkin (northern Vietnam) (v. Schaaffhausen 1952:217). A soft, striated variety is named *Coix lacryma-jobi* var. *ma-yuan* (Jain and Bannerjee 1974:41) in his honor. In Eastern pharmacopoeia, the fruit is called *semen coicus* (Coix seed).

The Deadliest

This is a bright red seed with a black spot at one end, *Abrus precatorius*. Linnaeus named for its use on rosaries, literally "pretty prayer (beads)." It has many names, including Crab's Eyes, Coral Bean or Seed, and Rosary Pea. It grows in the tropics on woody vines.

Along with castor (*Ricinus communis*) this bean (a member of the legume family) is the most poisonous plant known. It contains abrin, a type of lectin protein that causes the clumping of red blood cells and abnormal division in other cells (Armstrong 1992:27). It can be handled or even swallowed whole without much danger. However, if chewed thoroughly or if one pricks their fingers while stringing it, a single one can kill an adult.

The beautiful Abrus seed is one of the most toxic plants.

Indian farmers sometimes make a dart out of the paste of the bead to poison their neighbor's cattle or even the neighbors themselves (Bhatnagar 1948:2). Many countries now ban its importation; a century ago, it was widely imported into Europe for rosaries.

Yet, it is useful. Jewelers employ its juice as a temporary glue when doing filigree or granulation. The juice holds the wire or ball down onto the piece being

manufactured until it can be bonded onto the finished object. This is still practiced; I have seen it myself, for example, in the making of silver granulated beads in Bali.

Another use of the bean is very old in India, where it is called *rati*, variously spelled. The *Laws of Manu (Manusmriti)*, a compilation of regulations from the 2nd century BC, which, among other things, puts a heavy emphasis on caste (Dandekar 1965:15-16), discusses it. The very large and very small have always fascinated Indians. The smallest unit of weight in Manu's system is "the very small mote which may be discovered in a sunbeam passing through a lattice." Eight of these equals a small poppy seed, and passing through black mustard seeds, white mustard seeds, and barley we come to the weight of a *rati*, equivalent to 1296 motes in sunlight (Yule and Burnell 1989:777).

Many seeds have been used as weights in many cultures.

I am not sure how Manu weighed motes in sunlight, but dealers of precious stones and metals in India have long used the *rati* (or a "double *rati*") as a standard weight, equaling 0.1136 grams. While at one time actual seeds may have been used, they are not that predictable in weight. I weighed seven of them, and they varied between 0.092 and 0.124 g, on average short of the standard *rati* at 0.1046 g.

The use of small seeds as weights is not confined to India. Persia also used the same bean (they called it "Cock's eyes"), as did Malaysia and Indonesia. In modern Iran, weights for precious items are by *nakhod*, or "chickpea," *Cicer arietinum* (both the family of the Roman orator, Cicero, and the city of Homs in Syria are named after this legume).

English speakers also use a seed for weighing precious things. Both the words

"carat," for weighing precious stones, and "karat," for the purity of gold (one karat is 1/24 pure) are derived from carob (*Ceratonia siliqua*). The sticky pulp of the pods of this tree is eatable, and, while usually used for fodder, can be consumed by humans. St. John the Baptist is said to have lived in the desert on "locusts and honey" (Matthew 3:4; Mark 1:6). Among winged insects, only the locust could be eaten in the Jewish religion (Leviticus 11:20-23), but some believe that John did not eat the insect, but carob pulp, giving the tree the alternative name of "St. John's bread."

In the Americas, two seeds might be mistaken for Abrus. One even has a similar specific name, *Rhynchosia precatorea*. They are also toxic, but not as much as Abrus. They are marked similarly, though they are smaller and the attachment scar is in the red part, rather than the black. There is also a larger seed from the "necklace tree," *Ormosia monosperma*. It is more orange and the black patch is on the side rather than the end.

The Holiest

The dried fruit or berry of *Eleocarpus ganitrus* has been used particularly by devotees of Shiva (Siva) in India at least since the 11th century (Bhandarkar 1913:127). Yet, the tree that produces this fruit is not native to India, but to Java, Indonesia. While some are planted along the Himalayan foothills, even today most are imported from Java and drilled at Benaras (Varanasi), India. The process of Hinduization began in Java some 2000 years ago. It seems likely that the fruit had been used as a bead on Java before that; perhaps it was sacred to some pre-Hindu cult.

In India, it is called *Rudraksha* (Rudra is the original name of Shiva, from the Sanskrit *rud*, "to cry," these are Shiva's tears). When fresh, it is an iridescent blue, caused by layers of cellulose that wash off

when submerged in water. This is rare in plants (similar effects are seen on some birds). Diamanti (2001) suggests that it may be why the plant is so venerated.

The Puranas

Pura means "past" in Sanskrit, and "Purana" is usually translated as "that which lives from ancient times." Most of these holy books are devoted to one god or the other, and they are sometimes called the "Vedas of the people" (the four Vedic books, the oldest books in the world, are the foundation of Hinduism). The oldest Purana, the Vayu, probably dates to the 6th century AD, but others may be as late as the 13th or even 16th century. All (except perhaps the last) underwent some later amendments, as all name the other 17.

Much Indian literature has been devoted to the *Rudraksha*. The *Siva Purana* and the *Padma Purana* contain chapters on it. The medieval *Siva Purana* (also known as *Vidyasvara Samhita*) says:

Rudraksha is a favorite bead of Siva. It is highly sanctifying. It removes all sins by sight, contact and japas (saying prayers). (from Rai 1989:11; my insertion)

The *Siva Purana* points out that low caste people and even woman (imagine that) may wear *Rudrakshas* (Rai 1989:18). It assigns different colors of the beads to each caste. (The word for both caste and color is *varna*.) White is for Brahmins (the highest caste; priests); red is for Ksatriya (kings and warriors); yellow for Vaisya (merchants); and black for Sudra (laborers) (*ibid.*: 14).¹ The natural color is brown; the other colors are humanly induced.

Even more attention is paid to other aspects. How many beads and where they are worn is detailed in the literature. Even more important are the number of *mukti* (faces or facets) on the beads, caused by

¹ The term "outcaste" refers to anyone outside of this system, including Muslims, Christians, and animists. Mahatma Ghandi called these shunned people *harijans* (God's people). They are now usually referred to as *dalits*,

grooves that run from end to end. Most *Rudraksha* have five grooves (and corresponding facets); four or six are not uncommon. One with a single groove (*ekmukti*) is endowed with incredible power. The *Siva Purana* says that it is Shiva himself and the mere sight of one absolves the killing of a Brahman (Rai 1989:19), the highest crime in the Brahmanical religion.

Despite many claims to the contrary, only one true *ekmukti* has been confirmed (Bushan 1964:45). Many are made by cleverly grinding down the other grooves or cut from the hard Eagle wood (*Aegle marmelos* Corr.), after with a kingdom in Indonesia was named (see 6(2):9, 1993).

The Most Fun

Seeds for beads and toys? Yes: the large, round, hard seed of *Caesalpinia crista*, *C. bonduc* and related species.

The plant is named after the Italian botanist and philosopher Andrea Cesalpino (the botanical name has been Latinized), physician to Pope Clement VIII. In 1583, he published *De Plantis (On Plants)* in which he introduced a system for classifying plants by their sexual structures. It was revolutionary and Linnaeus later gave him credit for it. However, it scandalized his contemporaries. Theologians denounced his ideas. After all, plants were created on the third day and humans and animals – male and female – not until the sixth day, according to the Biblical account in Genesis (Armstrong 1990a:40).

Plants having sex – horrors!

A related species named the largest country in Latin America in a circuitous way. The Portuguese in India learned that the dark red interior of *sappan-wood* (probably from the Tamil *shappu* meaning "red wood," now *C. sappan*) yielded an

excellent red dye. They named the wood "brazil-wood," ultimately from *brasa*, meaning "live coals" (compare brazier). When they later went to South America they found a similar tree, *C. echinata*, and gave it the same name. In time, the commercially valuable wood furnished the name of the area from which it came. The Portuguese historian Joao de Barros said in 1552 that when Pedralvaras (Pedro Alvares Cabral) was about to leave his newly-discovered land in May 1500 he set up a huge cross on a tree, held mass, and named the land *Sancta Cruz* (Holy Cross). However, as soon as brazil-wood was imported from there, Brazil became the name of the land. Luis Vaz de Camoes, author of the great Portuguese historical epic, *Os Lusíadas* (pub. 1572), put it this way:

But here where Earth spreads wider, ye shall claim

realms by the ruddy Dye-wood made renown'd;

these of the 'Sacred Cross' shall win the name

by your first Navy shall that world be found.

(Yule and Burnell 1989:113-114, 794; *Os Lusíadas* trans. by R.F. Burton 1880, cited by Yule and Burnell)

Back to beads, or at least seeds. A common English name for these is "nicker-nuts," "nicker" being British slang for marbles. The seeds are still used for marbles, at least in the Caribbean. Another game played with them is mancala or waurie (many spelling variations and other names). I have played this in West Africa and Indonesia (though not terribly well) and it is even more widespread. It is played on a board with an even number of depressions on two sides and larger ones at the ends. The object is to remove all seeds from your side of the board first; it reminds one of backgammon. The game, perhaps African in origin, is thought by many to be the oldest in the world. "Boards" are

carved into stones around the Great Pyramid and the temples of Luxor and Karnak in Egypt, though when they were made is not known. Blackbeard the pirate is said to have introduced it to Caribbean islands, having brought it from Africa (Armstrong 1990a:44-45). A search for "mancala" on the Internet will link you to many sites where you can play it online.

Marbles, mancala, and burning your friends's arm – what fun.

The seed is also called the "burning bean." Rubbing it vigorously against clothes makes it hot, apparently from the friction generated by the small concentric fractures around the coat. The "game" is to touch an unsuspecting friend with the heated side (Armstrong 1990a:44).

And as a bead? Yes, it is rather common. Armstrong (1990a:42-44) reports them in Costa Rica, Ecuador, Indonesia, French Polynesia, and Nepal, as well as the Hebrides Islands off Scotland, where they arrive via the Gulf Stream and are worn as an amulet. In India *C. crista* are strung on red silk collars to prevent abortions and *C. bonduc* is used on necklaces, bracelets, and rosaries (Francis 1984:198).

In the region of Lake Toba, Sumatra, Indonesia, an amulet is made with (I believe) *C. bontoc*, a short cylinder of what might be camphor-wood (this region furnishes the world's best camphor), and a slice and a short cylinder of some keratin product (perhaps horn or hoof) in a tight loop. Above these is a ring cowry (*Cypraea annulus* ("cowry" comes from the Hindi meaning simply "seashell") in a larger loop. The string is made from a twist of red, black, and white wool (another keratin). I had a local friend buy this for me, as I did not want to pay too much and when I learned how cheap it was, I went to buy one myself, but the dealer re-

fused to sell it to me. All I could get out of my friend was that it was used for babies.

The Cleanest

Well, it isn't called "soapberry" for nothing. *Sapindu saponaria* produces a brown berry that contains toxic saponins, which especially affect cold-blooded vertebrates and are often used in fishing. In addition, they foam when they are exposed to water and can be used as soap. The bead part is the seed: hard, round, and black and sometimes called "black pearls."

Sapindus mukorssi is native to Asia from Afghanistan to China. It was (probably still is) used as a cleaning agent and was the first to be recognized, as "Indian soapberry." It was later introduced into the USA. Its seeds are used as beads in India, a species I did not list in my earlier work (Francis 1984). The genus name is a combination of *sapon* (soap) and *indus* (India).

The Sapindaceae, that is the "soapberry family" is rather large, with some 2000 species. Among them are eatable fruits, including longan, lychees, and rambutans. Many readers may not be familiar with these Asian tropical fruits, but they are quite delectable. They resemble the soapberry described above, with an outer husk, a pulpy interior (in these cases thin and non-toxic) and a seed at the center.

The Most Traveled

Wayne Armstrong (1989, 1990b) has done considerable studies of seeds carried by ocean currents. This phenomenon has long been observed, particularly with the cocode-mer (*Lodoicea maldivica*), the world's largest seed, up to three feet (about a meter) in diameter. The tree grows only in the Seychelles Islands, but got its scientific name from the fact that they often drift over to the Maldiv Islands. They were considered great treasures when found by

sailors and highly valued in Europe before their source was discovered. To this day, they may not legally be taken out of the Seychelles. But, it is very big and no one makes it into a bead.

Many hardy tropical seeds, including *Caesalpinia spp.*, discussed above, travel the world's oceans. However, I think that the two most outstanding ones are the sea bean (*Mucuna urens*), or "sea hamburger" from its appearance, and the sea hearts (*Entada gigas* and *E. phaseoloides*).

Some plants travel thousands of kilometers on ocean currents.

Both of these beans are hardy because the seed coat is very thick. They can still be viable even after years at sea. If you want to grow one, you must cut through the coat with a hacksaw so that water can reach the seed. Then stand back: they can grow as much as an inch (2.5 cm) a day. Armstrong (1990b:36-37) reports one vine growing up a trellis reaching the ceiling of the greenhouse at Polomar College and another climbing along the curtain rod in his kitchen window. The pods of sea hearts can be six feet (2 m) long, the largest pods in the legume family.

The viability of seeds carried along the ocean's currents has been a point of contention for many years. Charles Darwin, impressed by the spread of tropical plants among islands, thought that many were as a result of drifting seeds, especially the ubiquitous coconut (*Cocos nucifera*). In 1855, he experimented with garden seeds, putting them in seawater for a month and deciding that they would germinate after that time. However, a couple of months later he repudiated the idea because in a follow-up experiment the seeds did not float, and thus could not have been carried to distant lands (Armstrong 1990b:34).

The problem was that Darwin had not

used tropical seeds. Many of them are much better floaters than the usual English garden seeds. There are two schools of thought about how much effect drifting seeds have had on the dispersal of plants. Many plants are apparently dispersed by birds, but it is estimated that around ten percent of the plant species found in the Galápagos Islands, where Darwin was initially impressed by this phenomenon, were as a result of seeds or fruits drifting along the ocean currents (Armstrong 1990b).

**On this question, Charles Darwin
could not make up his mind.**

Finding a sea bean or a sea heart on a beach strikes a sense of wonder in the discoverer. It is said that when Christopher Columbus found a sea heart he was inspired to sail west to look for its origin. In the Azores (Açores; islands colonized by Portugal; Columbus refreshed there) the sea heart is known as *fava de Colon* (Columbus bean). Both sea beans and sea hearts are put to "practical" uses, especially when they land on shores where they cannot germinate. Sea beans are powdered and used as an aphrodisiac in India. In Scandinavia sea hearts are sliced along the thin edge, hinged and used as snuff or trinket boxes. Powdered, they are used to adulterate coffee, as a purgative and a contraceptive, and as a tea to reduce labor pains. Both sea beans and sea hearts are carried as amulets. (Armstrong 1990b:37).

The Most Versatile

As we have seen, many of these plants have multiple functions. *Abrus precatorius*, for example, serves as a weight, poison, and jewelers' glue as well as a bead. However, I cannot think of any seed used as a bead that has a greater variety of uses than the *kukui* or candlenut seed from the

silvery-leaved tree *Aleurites moluccana*.

The *kukui* is the state tree of Hawai'i and the symbol of the Council of Elders of the Nation of Hawai'i. Native to Southeast Asia (note the specific name, suggesting an origin from the Moluccas, now Moluku, or Spice Islands of Indonesia), it was apparently brought to the USA's 50th state by Polynesian sailors early in the colonization of the archipelago.

There is little wonder why they brought it. The tree itself is beautiful and gives cooling shade. The trunk is made into canoes and fishing net weights. The white flowers are strung into garlands and parents chew them to relieve mouth sores in children. The leaves are used in garlands. The sap is good for mouth sores, chapped lips, cold sores, mild sunburns, and as a purgative. The inner bark yields a red dye used for *tapa* (a cloth made from the bark of certain trees) and strengthens and preserves fishing nets. The gum is used to strengthen *tapa*.

Hawai'ians would have to substitute many things for the *kukui*.

The nuts are even more versatile. They get their English nickname of candlenut from the practice of burning them in lamps or torches. Even more commonly, they are strung up on a palm leaf rib and the top one lit at night. It was often the duty of children to keep the "candle" burning.

The nut is a strong purgative and, along with other plants, cures skin ulcers, rheumatic joints, deep bruises and wounds, and perhaps high blood pressure. Roasting neutralizes their slight toxicity and they are eaten as a condiment, flavored with salt and sometimes chili peppers. The soot of burned nuts is used to dye *tapa* black, for tattoos, and to stain surfboards. Roasted kernels are crushed and spread out on the sea surface, forming a "lens" that allows

fishermen to see deep into the water. The proverb, "When the kukui nut is spat on the water, the sea is smooth," is equivalent to "pouring oil on troubled water."

The oil has many uses, and was once an important export from the islands. In the early 19th century, up to 10,000 gallons (37,850 l) were sold principally to the Russians in Alaska to substitute for linseed oil. It is used to varnish and preserve wood, waterproof paper and fishing nets, as a paint oil, in soapmaking, as a substitute for rubber, and as an insulator. Tung oil is extracted from the related *A. fordii*.

Given all this, what else would we expect from the *kukui* tree? Well, the husks of the seeds make wonderful beads. Once the thin, light, soft outer coat is removed, the underlying husk is black, less often brown, or rarely reddish. It is some 3.3 mm (about 1/8 of an inch) thick and will take a high polish and can be carved. They are widely used on garlands (*leis*) by themselves or in conjunction with flowers and leaves. Particularly when Hawai'i was an independent nation, *kukui* nuts were mounted in silver or gold and worn by the royalty and given as presents to other heads of state, including Queen Victoria.

There is even a song about this bead, *Lei Kukui*, literally "*Kukui* Garland," but also known as the *Hawai'ian Anniversary Song*. Victor Rittenband, whose traditional name is Lanakila, composed it.

I'm giving you a kukui nut lei
To celebrate again our wedding day
The years we've left behind us
Always will remind us
The joys and tears, the hopes and fears
We faced them, come what may.

So I'm giving you a kukui nut lei
It means so many things I want to say
It's hope and health and sharing
Warmth and light and caring
And all my love forever and a day.
(Thanks, Barbara Farrell for *kukui* info.)

The Most Misidentified

There is a double misidentification of these small, dark brown, shiny seeds. Necklaces made of them are common, both in the Americas and Asia. The tiny seeds, some 12,000 to the pound (26,500 to the kg), are immersed in boiling water and then are soft enough to pierce, even with the end of fishing line. They are commonly strung to make small star patterns or larger rosettes by taking advantage of their ovoid shapes. Along with a colorful string of Job's Tears, I used to wear a strand of these in the late 1960s as a mark of my generation.

Is it an apple? Is it a tamarind?
It is neither.

Many people have shown me necklaces of these beads, calling them "apple seeds." While they resemble the small seeds in apples, that is not what they are. Rather, they are the seeds of *Leucaena leucocephala* or *L. glauca*. The former is an American plant now found in Asia. The latter may be confined to Asia. You can eat the fruit and seeds of an apple, but unless you are a cow, sheep, or goat, it is not advised to eat any part of these plants. Monogastric animals (like us, with one stomach) quickly lose their hair if they do, due to the alkaloid mimosine. The effect is similar to selenium poisoning and the seeds do concentrate this rare metal, but it is the alkaloid that causes hair loss (Armstrong 1992:30-31; Chopra *et al.* 1980:55)

In India *L. glauca* is called the "white popinag" or "lead tree." Armstrong (1992:30-31) refers to *L. leucocephala* in the Caribbean context and calls it "wild tamarind." This puzzles me. Tamarind (*Tamarindus indica*) is quite a different plant. The name comes from the Arabic, *tmer-al-Hind*, ("the Indian date"), although the tree is native to East Africa. Tamarind trees

are large and their tiny leaves, which fall off in all seasons, are very acidic so that virtually nothing grows under them (many Indians are firmly convinced that bad spirits live in the branches). Inside the seed pods is a sticky sweet-sour pulp that is the basis of Worcestershire sauce and a common ingredient in Indian cooking. In contrast, the Wild Tamarind is a short shrub and the pods are dry inside (*ibid.*). Only the leaves resemble the tamarind (*ibid.*; lower left picture).

The Most Carved

Many plant beads are carved to enhance their decorative use. The Ata of the Philippines even carve the outer coat of Job's Tears in wave or chevron patterns. Wood, of course, is carved in many ways, but we are not discussing wood in this issue

The seeds that are carved the most are collectively known as "vegetable ivory," from their hard, white interiors. There are several types of vegetable ivories, all members of the palm family. Think of a coconut drained of water and squeezed to the size of a small chicken egg, with the "meat" hardening in the process and you have an idea of what these nuts are like.

The white endosperm (the nutritious part of a seed) is often soft when immature and can be eaten. However, when mature, hemicellulose within the endosperm becomes dense and hard (2.5 on the Mohs scale; ivory is 2.7) and makes a good substitute for elephant tusks (Armstrong 1992:31-32).

Vegetable ivory is derived from a variety of palm plants.

Given the movement to save elephants from extinction, Americans and others have been more attentive of vegetable ivories lately. The one best known grows in

Central and northern South America and is popularly called *tagua* or *corozo*. Its botanical name is *Phytelephas macrocarpa*, literally "big fruited elephant plant."

What many people do not realize is that there are several other vegetable ivories in the Eastern Hemisphere. In India, *Corypha umbraculifera* is cut into beads and sometimes dyed to look like coral (Francis 1984:199). *C. elata* serves the same purpose in the Philippines, where it is known as *buri* (Brown 1951:286). In Africa, particularly in eastern Sudan and northern Nigeria, the *daum* nut of *Hyphaene thebaica* is made into boxes, beads, buttons, balls (Dalziel 1937:507-508), and sometimes decorated by removing some of the outer coat, leaving a brown and white pattern.

Some Final Thoughts

I am sure I have left out someone's favorite plant bead (I can hear someone saying, "What about the Chinaberry tree?"). This issue is not meant to be exhaustive. I have data on hundreds of plants used for beads and human ornamentation, from eucalyptus caps (in both Australia and Mexico) to seeds of the uneatable wild banana.

Unfortunately, archaeology (which often informs us about beads) is virtually silent on the use of plants in the distant past. Job's Tears is an exception, but for the most part, plants do not last long in the soil. I have suggested that, given the widespread use of plants for adornment at least among *adavasis* (tribal people) in India, they may have been the first ornaments (Francis 1997). With the recent discovery of ostrich and marine shell beads on three continents some 40,000 years old, there is emerging a consensus that the first beads were made to distinguish advanced humans from others not so clever at gathering food. If this is the case, the argument that plants were the first adornments is weakened, though it still an (unproved) option.

However, I hope you have had some fun, been amazed or educated. The topic is just one other example of how much one can learn when one sets out somewhat serendipitously (from an old name for Sri Lanka) to discover the beads of the world and the people who deal with them.

REFERENCES

Websites useful for this issue:

hindunet.com – much information on the world's third largest religion.

medicineatyourfeet.com – Eastern herbalism.

waynesworld.palomar.edu – Wayne Armstrong's fascinating site.

Arora, R.K. 1977 Job's Tears (*Coix lacryma-jobi*) – A Minor Food and Fodder Crop of Northeastern India. *Economic Botany* 31(3):358-362.

Armstrong, Wayne 1989 Flora Flotilla. *Zoonoos* 62(4):17-18.

--- 1990a Nickernuts: Travelers of the Open Sea. *Pacific Horticulture* 51(4):39-45.

--- 1990b Seed Voyagers. *Pacific Discovery* 45(3):32-39.

--- 1992 Jewels of the Tropics *Terra* 30(3):26-34.

Bailey, L.H. 1949 *Manuel of Cultivated Plants*. New York: Macmillian. (11th printing, 1969)

Bhandarkar, R.G. 1913 *Saivism and Minor Religious Systems* Gundriss III.6 Strassburg: Karl J. Trubner.

Bhatnagar, S.S. (ed.) *The Wealth of India, Raw Materials Volume 1*. Delhi: Indian Council of Scientific and Industrial Research. (10 vols.)

Brown, William H. 1951 *Useful Plants of the Philippines, Vol. 3*. Report of the Philippines Department of Agriculture and National Resources Technical Bulletin No. 10. Manila: Bureau of Printing. (3 volumes)

Bushan, J. B. 1964 *Indian Jewellery, Ornaments, and Decorative Designs*. Bombay: Taraporevala.

Chopra, R.N., L.C. Chopra, and B.S. Varma 1980 *Supplement to the Glossary of Indian Medical Plants*. New Delhi: Council of Scientific and Industrial Research. (reprint; orig. 1969)

Dalziel, J.M. 1937. *The Useful Plants of West Tropical Africa*. London: Secretary of State for the Colonies.

Dandekar, R.N. 1965 *Post-Vedic Literature* Publications of the Centre of Advanced Study in Sanskrit A(2). Poona: University of Poona.

Diamanti, Joyce 2001 More about Rudraksha. *The Bead Society of Greater Washington Newsletter* 18(2): 6.

Dymock, William, C.J.H. Warden, and David Hooper 1890 *Pharmacographia Indica*. Karachi: Institute of Health and Tibbi Reseach (1972 reprint; special issue of *Hamdard* XV-1-12).

Glover, Ian C. 1979 Prehistoric Plant Remains from Southeast Asia, with Special Reference to Rice, pp. 7-37 in Maurizio Taddei, ed. *South Asian Archeology 1977*. Naples: Istituto Universitario Orientale.

Francis, Peter, Jr. 1982 *A Handbook of Bead Materials*. Lake Placid: Lapis Route.

--- 1984 Plants as Human Adornment in India. *Economic Botany* 38(2):194-209.

--- 1997 An Interdisciplinary Approach to the Question of Early Human Adornment in India, pp. 218-231 in V.D. Misra and J.D. Pal, eds. *Indian Prehistory: 1980* Allahabad: Allahabad U.

Miller, S.C. 1925 Job's Tears and Other Beads. *Nature Magazine* 6:240.

Jain, S.K. and D.K. Bannerjee 1974 Preliminary Observations on the Ethnobotany of the Genus *Coix*. *Economic Botany* 26(1):38-42.

Rai, Suhas 1989 *Rudraksha: Properties and Biomedical Implications*. Varanasi: Gangotri.

v. Schaaffhausen, Reimer 1952 Adlay or Job's tears – A Cereal of Potentially Greater Economic Importance. *Economic Botany* 6(3):217-226.

Vavilov, N.I. 1949/50 The Origin, Variation, Immunity and Breeding of Cultivated Plants. *Chronica Botanica*. 13(1-6):1-364.

Watt, George 1899 *A Dictionary of the Economic Products of India*. Calcutta: Superintendent of Government Publications. (6 vols.)

Yule, Henry and A.C. Burnell 1989 *Hobson-Jobson: A Glossary of Colloquial Anglo-Indian Words and Phrases, and of Kindred Terms, Etymological, Historical, Geographical and Discursive*. Calcutta: Rupa. (reprint of 1886 edition)

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