

The White Flowered Bottle Gourd

Louis O. Williams

Of all the plants useful to man, *Lagenaria siceraria* (Mol.) Standley must surely be one whose usefulness is most obvious from just a glance. Its common English name—bottle gourd—succinctly suggests this usefulness. When the fruit of the plant is functioning as a utensil, it is usually called calabash—*calabaza* in Spanish-speaking countries of America.

In spite of its obvious usefulness, sometimes the plant is not even included in works on economic botany, that branch concerned with the kinds of plants "useful" to man. The whole range of economic plants has been subdivided into categories in about as many ways as there have been authors writing about them. The four categories set up by Dr. Albert F. Hill in his volume entitled *Economic Botany*, for instance, are: Industrial Plants and Plant Products, Drug Plants and Drugs, Food Plants, and Food Adjuncts. The bottle gourd does not seem to fit into any of the four—and indeed it is not mentioned in the book.

We assume that the bottle gourd originated in the Old World, although Linnaeus, when he described the plant in 1753, presumed that it was American. Alphonse de Candolle's *Origin of Cultivated Plants* is still one of the best sources on the origin of useful plants (my copy is the English edition of 1884). De Candolle believed the literature to indicate that the gourd was native to or at least wild in Africa and from there spread to the rest of the tropical world. He did not believe that the plant existed in America before the arrival of Europeans. We know now, however, that it was in America and widely dispersed here long before European man arrived.

Dr. Richard MacNeish has just sent word in a personal communication of much the oldest radio-carbon date for any New World bottle gourd material: "Two pieces of probably wild *Lagenaria* in Ayacucho [Peru] complex, dated 12,200 B.C." This evidence does not



Carved gourd. Yoruba tribe, Oyo, Nigeria. Collected 1970.

of course imply human use, although it is now believed that man may have arrived in Peru at about the same time.

The oldest known New World bottle gourds associated with human use, excavated in the Ocampo Caves in the Mexican state of Tamaulipas, have been dated at about 7000 B.C. by the carbon-dating technique. Both the Old and the New World have yielded evidence from the fourth millennium B.C. Specimens have been found in an Egyptian tomb of the Fifth Dynasty, and Junius B. Bird found abundant material in the Huaca Prieta midden in Peru in strata dated at about 2500 B.C. Thousands of fragments indicated various uses, and intact gourds attached to fishing nets indicated that they had been used for floats, as they still are today.

If as a hunter and fisherman prehistoric man migrated to the New World from Asia across the Bering Sea, which is the present widely held belief, it would have been virtually impossible for him to have brought the bottle gourd, or any other plant, with him. The regions he had to traverse were far too harsh and the time span, measured in human generations, far too long for any plant life to have moved with him, for it would have to have been propagated along the way. The only commensals or companions that could have

accompanied man on this great trek were probably his dogs, which, like man, can sustain themselves on a purely hunting and fishing diet.

When man from Asia did reach an area far enough south to meet the bottle gourd plant in its preferred habitat, no doubt he quickly discovered these fruits which can be such useful containers for many things. And no doubt he—or, perhaps, she—began selecting gourds by shape and size. One for a water bottle, one for a float for a fish net, one to make into a cup, and so on. He may have merely exploited different shapes of the gourd or he may have helped to establish different shapes by his picking and choosing. Most likely, a little of both happened. In any event, we do have many types today, in both the New World and the Old World.

But do we have a single species in the two hemispheres or are two different species improperly covered by the name *Lagenaria siceraria*? To prove the point one way or the other would require a considerable amount of field work and garden cultivation and study.



Group of eight fishnet floats dating from about 1600 B.C. found together with fishnet of cotton cord at Huaca Prieta on the shore at the mouth of the Chicama Valley, Peru. At same excavation site, pieces of same type gourd found at bottom of deposit dated from about 2500 B.C. Photo by Dr. Junius B. Bird courtesy American Museum of Natural History.

No modern scientific study of the systematics of *Lagenaria* has been published. Dr. Alfred Cogniaux, the last and great monographer of the cucurbit family, considered all the bottle gourds to be a single species that were native to tropical Africa and India but were then (1881) found over the rest of the tropical world, either cultivated or growing at the edges of disturbed land. Botanists invariably complain, and I among them, that they never have sufficient material or knowledge about a plant or a group of plants under study. This is especially true of plants used by man.

If two species are involved, they would have arisen independently of one another in the two hemispheres. The improbabilities are enormous that such close convergence would have occurred, though convergence is a well known biological phenomenon—that is, two different and geographically separated lines of evolutionary descent becoming like each other.

It seems to me more reasonable to assume that only one species is involved and that the plant arrived in America a very long time ago. How, then, did it get here from the other hemisphere? There seem to be two possibilities: it drifted across an ocean by itself, or it was carried in a manned or empty canoe.

Mature bottle gourds are very durable, and they are light in weight and float easily. Dr. Thomas Whitaker and Dr. George F. Carter in "A Note on Longevity of Seed of *Lagenaria siceraria* (Mol.) Standl. after Floating in Sea Water" (1961) reported that after they floated bottle gourd fruits for 347 days and then stored them for six years, 24 per cent of the seeds finally germinated. These tests indicate that *Lagenaria siceraria* fruits could have been distributed from continent to continent by oceanic drift. Of course there is still no proof that they *did*.

Whitaker and Carter point out that the bottle gourd is not a strand plant.



Even if gourds had been transported by oceanic drift, they would have to have been carried from the place where stranded to a suitable ecological niche. I would point out that such a "suitable ecological niche" often occurs in the disturbed land right behind a strand.

I like the drift theory better than the transport theory because it seems to me probable that this interesting plant established itself in the New World a very long time before man did. The ocean currents that wash the western side of Africa flow west and wash the eastern side of South America. (The currents on the western side mostly flow outward toward the Pacific basin.) Hence the possibility of gourds drifting over from Africa has existed for perhaps hundreds of thousands of years. It seems to me probable that they did so many times. If they were transported in man-made craft, they could hardly have come over more than 15,000 years ago, and probably a lot more recently. Whatever sea-going craft man might have made that long ago could hardly have sustained the trip.

There is the argument that, if the bottle gourd is so old here, we should find it growing wild. I would reply that much field experience in the tropics

has taught me that it is difficult to look at a plant and be sure whether or not it is "wild." *Lagenaria siceraria* does like disturbed land, such as at the edges of cultivation. But land behind a strand is also disturbed, and not necessarily by human beings. Also, there are several other cucurbits that are useful to man which no one doubts are native to America but which have never, to my knowledge, been seen as "wild" plants. They too are found in archaeological midden heaps.

Thus the category "useful plants," which may be as old as man himself, does not mean that the movement of such plants is necessarily associated with man. One of man's blessings is his imagination—which includes his ability to recognize a good thing when he sees it. The bottle gourd is such an obviously "good thing." It is easy to believe that wherever and whenever he found it, man would soon begin to use it.

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