



The Drifting Seed

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THE DRIFTING SEED

A triannual *Newsletter* covering seeds and fruits dispersed by tropical currents and the people who collect and study them.

Distributed to more than 20 countries.

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The Drifters are very grateful to SCOTT NORRIS at **KINKO'S®** for his generous support in printing this newsletter.

From Cathie:

Hey, beaners! Look! We now have our own web site thanks to **David Williams** from Midlothian, Virginia.

www.geocities.com/CapeCanaveral/Launchpad/1000

Thanks Drifters!

Thank you all for the wonderful response to our plea for donations. As you can see from this newsletter, we could afford to print extra pages. This special 16-page issue was published to accommodate the abundance of information we've received over the past couple years. We didn't want to get too backlogged. We're realizing more than ever how eager people are to have drift seed information. Also, thanks to the authors of the articles in this issue (and future issues) for their patience in getting printed.

Where are the beans?

The great accumulation of sea beans and beach junk during the Sea-Bean Symposium in Melbourne Beach, Florida last October must have been a gift from the bean gods. Since then, I've received phone calls and e-mails from east coast beaners asking the same question over and over: *Where are the beans?*

That was the question of the year. The surge of drift material that we saw in October abruptly ended right after the symposium. Participants from other states and countries went home with the luxurious impression that Florida is a beachcombers' paradise. (Usually, Florida really *is* a beaners' paradise.) So, now we wonder if we were being humored by a higher power to satisfy our collective (and obsessive) need for beans during the symposium? And should we blame El Niño for the lack of beans following the symposium?

Evidently, El Niño toyed with Florida's normal weather patters through the winter, bringing devastating tornadoes, floods and unseasonably cold weather (and *no* beans). In addition, Florida had to contend with La Niña (El Niño's eastern cousin). Were these two weather systems keeping our beans at bay?

The Beans are Back

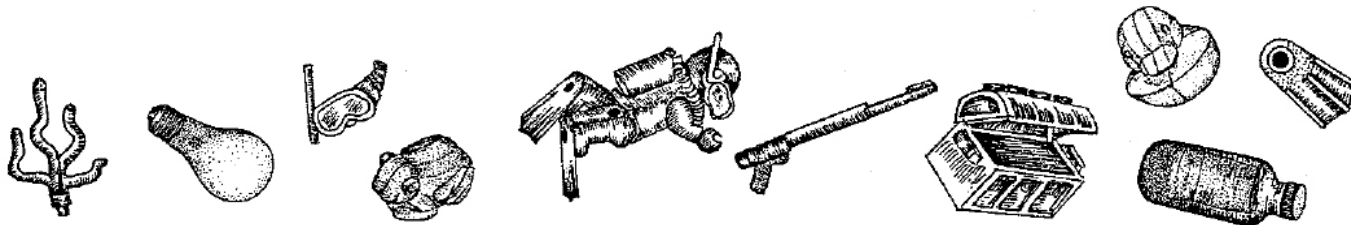
At the end of March after our disappointing no-bean winter, I received several encouraging phone calls and e-mails from beaners. They all said the same magic words: "The beans are back!" Imagine the excitement as word spread up and down the coast within hours of spotting the first fresh clumps of sargassum. Beachcombers who had been hibernating all winter came out of their beanbags to check the beach. Even Defense Attorney Pete Zies left his courtroom early to travel 60 miles to the coast. Beachcombers reported seeing a wild-eyed man in a lawyer costume, tie flapping the in the wind, bent over the wrack.

The Beans are Gone?

Even though this little spring flurry of beans has since stopped (and we probably won't see many more beans in Florida through the summer), I have a feeling we're going to be seeing *lots* of really great drift material on the beach this fall. Will it come in time for the symposium in October? I think so.

Bean Soup

Dr. Curtis Ebbesmeyer of Seattle (also known as "a filter-feeder for information about floating objects") writes: "The literature of things that float on the ocean is so scattered that it doesn't make sense until you compress it all, then it begins to take on a glow, like radium." When I asked Curt, "Why do toys and sea beans arrive at the same time as tar and Portuguese-men-o-war?" He replied: "I think that the gulf stream transports toys, tar, seeds, bottles and myriad other items all intermingled in an immense river of flotsam. Beginning in October, the Stream and the winds push the stream of wrack westward touching Florida's coast, thereby dumping on the sand, dollops of the floating bouillabaisse."



Keep your eyes open, Beaners

According to Curt in *Beachcombers' Alert!*, Florida's coast may receive the contents from several cargo spills. In February, 1997, the *Tokio Express* lost five million tiny LEGO® toys. Ironically, the lost toys include sea creatures, divers, life rafts and diving equipment such as tiny little flippers and masks. And in March of 1997, the *Cita* ran aground on Saint Mary's Island off the southwest coast of England and lost crates of toilet seat lids, hubcaps, car tires, body surfboards, computer mice. Actionman kits, French wine, golf bags, sneakers, dress shoes, and, among many other items, one million plastic shopping bags. The plastic bags, from an Irish supermarket, have this message printed in green: *Help Save The Environment*.

From Bob Gunn:

With very fond memories of our October 1997 meeting and looking forward to our 1998 meeting, I have had to focus my attention of my work with seed-fruit morphology at the family level. Using the Delta computer program system with the much needed guidance of **Joe Kirkbride**, I have finally succeeded in creating a functional character list (CHARS) with 253 character states and 780 items. I have databanked the first 40 of more than 400 families. Because a new family or two may be recognized in the next three years, I will not know the total number of families for at least a year or two.

An e-mail from our first Russia Reader, **Professor A.B. Doweld**, brought to mind one of the last projects that I finished before leaving Annapolis, MD. I have summarized the results of this project in the article below.

An e-mail from another of our newest Readers, **Cathy Yow**, has brought to our attention a new and active member of our group from Texas. Cathy will be visiting Betty and me on May 7, while working with her editor at Lark Publishing of Asheville.

The Book

by Bob Gunn

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Among books, the Christian and Jewish Bibles re outstanding, But have you wondered what is the bible of fruit-seed identification?

Let me introduce this book, because you will likely never see it. In the National Agricultural Library of the United States Department of Agriculture, it is 463.4 G119D (as numbered in the Dewey decimal system). This copy was purchased Dec 31, 1900. This book was published as a two-volume set. Most, if not all libraries, regard it as a rare book; therefore, it is not circulated.

An extraordinary letter and e-mail to me from our new Reader, Professor A.B. Doweld of the National Institute of Carpology in the Russian Federation (our first Reader in the Russian Federation), caused my thoughts to go back to January 20 and 21, 1987. The National Agriculture Library loaned me this rare book for 24 hours so that I could copy it by Xerography. My Laboratory had just purchased new copying equipment, so I copied the book and filed the copy until retirement when I would have time to work with it.

But I have gotten ahead of myself – the book is *De Fructibus Et Seminibus Plantarum* by Joseph Gaertner (1788-1792). Gaertner was a German physician and botanist, who ultimately called himself a “Privatgelehrter” or an independent scholar. His collection of fruits and seeds, expanded after his death by C.F. Gaertner, is housed at Tübingen (TUB), Germany. Problems in printing after the first volume was issued were likely due to the production of the copper engraved plates. Secondly, there must have been problems in gathering the fruits and seeds and dissecting and drawing them. Using Stafleu and Cowan (1976), but not Brizicky (1960), the publication dates for J. Gaertner are:

Vol. 1 part 1	centuria 1-5	pages 1-384*	plates 1-79	Dec 1788
Vol. 2 part 1	centuria 6-7	pages 1-184*	plates 80-119	Sep-Nov 1790
Vol. 2 part 2	centuria 8-9	pages 185-352	plates 120-156	Apr-May 1791
Vol. 2 part 3	centuria 10	pages 353-504	plates 157-180	Sep-Dec 1791
Vol. 2 part 4		pages 505-520		Jan-Jun 1792

A supplement was compiled by C.F. Gaertner (1805-1807) in one volume:

Fasc. 1 part 1	pages 1-56*	plates 181-190	Jan 1805
Fasc. 1 part 2	pages 57-128	plates 191-202	May 1806
Fasc. 2 part 2 (not 1 or 3)	pages 129-256*	plates 203-225	1807

*Plus introductory pages numbered by Roman numerals.

The Book by Bob Gunn (continued)

The text is entirely in Latin: The introduction covers 181 pages. The descriptions of the seeds and fruits occupy 384 pages, not including the index. It is the detailed copper engraved plates that so brilliantly illuminated this book and the wide range of seeds and fruits that set this book above all others in its field.

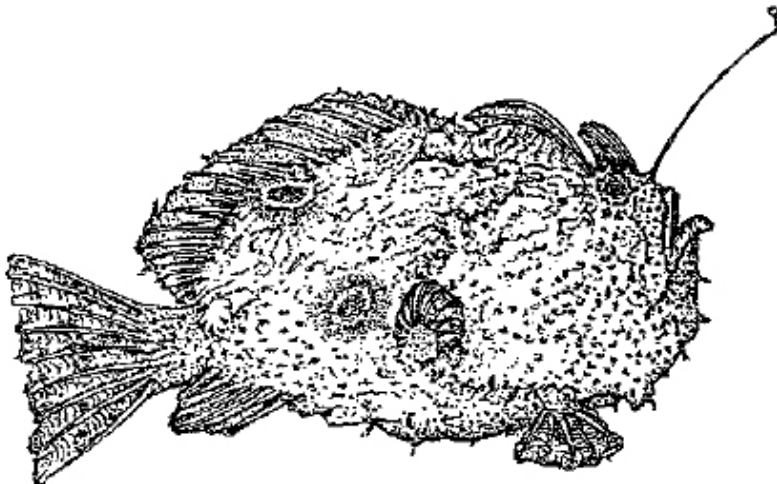
Using these magnificent plates as they were printed for comparison identifications was like working with an unassembled jigsaw puzzle. The plates and the descriptions were on widely separated pages, the families were intermixed, and the families were in no order. The smaller drawings were assembled into plates of up to 12 taxa.

To solve these problems, I reassembled my copy. First, I updated the scientific names using GRIN and related sources and the family names, concepts, and parameters using Cronquist (1981) and Gunn et al. (1992). Then I cut the copied plate and description, and recombined them onto individual generic pages. I alphabetized these pages by family name and within each family by scientific name. The newly assembled pages were recopied. I now have these plates in a rapidly accessible order. These pages are as if they are scriptural in making fruit-seed identifications and in my work with fruit and seed characters at the family level.

If you are interested in buying the originally printed book, I know a book dealer in Germany who has offered a damaged set for \$3,500. And you should know that the classical name of Professor Doweld's Institute is the Gaertnerian Institution.

Literature Cited

- Brizicky, G.K. 1960. Dates of publication of Gaertner's de fructibus et seminibus plantarum. *Rhodora* 62:81-84
- Gaertner, C.F. 1805-1807. *Supplmrmntum carpologicae seu continuati operis Josephi Geartner de fructibus et seminibus plantarum*. C.F.E Richter, Leipzig, Germany.
- Gaertner, J. 1788-1792. *De Fructibus et Seminibus Plantarum*. Vol. 1, Author (Academiae Carolinae), Stuttgart and Vol. 2, G.H. Schramm, Tubingen, Germany.
- Gunn, C.R., J.H. Wiersema, C.A. Ritchie, and J.H. Kirkbride, Jr. 1992. *Families and Genera of Spermatophytes Recognized by the Agricultural Research Service*. U.S. Department of Agriculture, Technical Bulletin 1796, 449 pp. Washington, DC. USA.
- Stafleu, F.A. and R.S. Cowan. 1976. *Taxonomic literature, Vol.: A-G*. Second Edition. Bohn, Sheltema & Holkema, Utrecht, Netherlands.



**“What a trifling difference must determine which shall survive and which perish.”
– Charles Darwin**

Charles Darwin, The Drifter

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I think most people are aware that Charles Darwin had very broad interests. Besides his treatise on *The Origin of Species* (Darwin, 1859), he published books on climbing plants, floral biology, the domestication of plants and animals, and *The Origin of Man*. What is less well known is that Darwin also carried out some experiments on the flotation of seeds and fruits. At that time in 1856 there was much debate in plant geographical circles as to whether diaspores [seeds] could germinate and become established after floating across an ocean. In his book, *Geographie Botanique Raisonnee*, Candolle (1855) had played down the role of currents in plant dispersal. He was of the opinion that man, directly or indirectly, had been responsible for the spread of plants from one continent to another.

As Darwin explained in his paper read to the Linnean Society of London on May 6, the diaspores were placed in bottles of salt water in his cellar at Down House (daily mean temperature of 8-13 degrees centigrade) and out of doors (weekly mean temperature of 2-14 degrees centigrade). No doubt for his wife's sake he was careful to regularly change the water in the cellar, for in the first batch tried out of doors the water which had not been changed for 56 days became putrid and smelt offensively. Because of this, he was somewhat in doubt as to the validity of a number of the trials. Darwin's choice of material was largely based on what was easily available, although he was indebted to Joseph Hooker for certain suggestions. It is therefore no small wonder that most of the seeds and fruits "in accordance with the common experience of gardeners" sank within a few days. The only exception was the fruit of the Common Spindletree (*Euonymus europaeus* L., Celastraceae) which floated for a month. However, he was of the opinion "that some plants might under favourable conditions be transported over arms of the sea 300 or even more miles in breadth." Although many of the seeds were killed by exposure to salt water, those of the Cayenne-pepper (*Capsicum annuum* L., Solanaceae) germinated well (53.5 percent) after immersion of 137 days. Subsequently, in *The Origin of Species*, Darwin described some more experiments on a range of seeds and fruits. He found that many diaspores, which sank when green or floated only a short time, floated a long time when dry.

Literature Cited

Candolle, A. de. 1855. *Geographie botanique raisonnee*. Pp. 606. V. Masson, Paris.

Darwin, C. 1856. On the action of sea-water on the germination of seeds. *Journal of the Proceeding of the Linnean Society, Botany* 1:130-140.

Darwin, C. 1859. *On the origin of species by means of natural selection*. Pp. 502. J. Murray, London.

[Eds note: Here is part of an e-mail received in December from Professor Robert Hill of The University of Tasmania: "Most of the Southern Hemisphere flora got to where it is more or less when all the continents were joined together as Gondwana. However, it is clear that there has been some long distance dispersal, but the extent and significance of it has been a very hot topic for years. Land masses are so remote from each other that most people considered sea-based dispersal very unlikely. This goes all the way back to Charles Darwin and his experiments on sea flotation of seeds and his debate with J.D. Hooker over the origins of the floras of land at high southern latitudes. The more I look at it the more convinced I become that long distance dispersal was probably very significant. At the extreme end I even had a postdoctoral fellow here who wrote a paper claiming that the entire flora of New Zealand is the result of long distance dispersal, since New Zealand disappeared underwater at least once in the past, long after it was clear of all other land masses. Of course the dispersal we are looking at may not be just based on sea flotation. Wind and animal dispersal may have been even more important."]

Charles Darwin's Lost Theory

by Pete Zies

Mr. Ferguson's piece on Darwin's seed experiments [see previous page] set me to thinking. Dr. Gunn's discussion on the topic, in the *World Guide*, was that "Charles Darwin studied the role ocean currents played in the flora of Cocos-Keeling Islands in the Indian Ocean (Darwin, 1883). His conclusion, first published in 1836, was that most of the endemic vascular flora was derived from drift disseminules. This conclusion was contradicted by experiments which he conducted in England on seeds that were mostly garden species. He concluded that seeds in general did not float well in seawater, and further more, they lost their viability quickly (Darwin, 1855, 1857)." There is much more to it than this however. Isn't it interesting that the man who authored the *Origin of the Species*, postulated survival of the fittest, and who made the Theory of Evolution a household word actually talked himself *out* of oceanic seed dispersal? We have seen the details of the experiments that caused him to cast his theory aside, but let us now look at the experiences that first grabbed hold of his imagination.

Darwin spent five years (1831-1836) on a military bark making whatever natural history observations he could. These were described in his journal and published as *The Voyage of the Beagle* (Darwin, 1836). His ship arrived at Keeling Island on April 1st 1836, and he described it as "situated in the Indian Ocean, and about 600 miles distant from the Coast of Sumatra. This is one of the lagoon-islands (or atolls) or coral formation." He notes that there was very little botanical variety on the island; only 20 species of plants. He theorized that for a particular solitary tree growing near the beach "without doubt, the one seed was thrown up by the waves." A single *Guilandia* (now *Caesalpinia* sp., Nickernut) on one of the islets was also mentioned, which we now know has become pantropic by oceanic dispersal. With all this in mind, Darwin postulated that "As the islands consist entirely of coral, and at one time must have existed as mere water washed reefs, all their terrestrial productions must have been transported here by the waves of the sea."

Not satisfied with making an educated guess, Darwin bolstered his theory with the observations of others. He wrote, "In *Holman's Travels* an account is given ... of the various seeds and other bodies which have been known to have been washed on shore. Seeds and plants from Sumatra and Java have been driven up by the surf on the windward side of the islands. Among them have been found the Kimiri, native of Sumatra and the peninsula of Malacca; the cocoa-nut of Balci, known by its shape and size; the Dadass, which is planted by the Malays; the soap-tree; the castor-oil plant; trunks of the Sago palm; and various kinds of seeds unknown to the Malays settled on the islands. These are all supposed to have been driven by the N.W. monsoon to the coast of New Holland, and thence to these islands by the S.E. trade-wind ... All the hardy seeds, such as creepers, retain their germinating power, but the softer kinds, among which is mangostin, are destroyed in the passage."

A second support cited by Darwin is that "Chamisso, when describing the Radack Archipelago (in *Kotzebue's First Voyage*, vol. III, p. 155), situated in the western part of the Pacific, states that 'The sea brings to these islands the seeds and fruits of many trees, most of which have yet not grown here. The greater part of these seeds appear to have not yet lost the capability of growing.'" Additionally Darwin states, "Professor Henslow tells me he believes that nearly all the plants which I brought from these islands are common littoral species in the East Indian Archipelago." Contemplating all these factors, Darwin surmised that "the seeds, before germinating, must have traveled between 1800 and 2400 miles." His understated summary was that "these facts are highly interesting."

Beyond all of this postulating and anecdotal evidence, Dr. Gunn, in the *World Guide*, describes how Darwin received a number of stranded seeds of *Entada gigas* and *Mucuna urens* from the Azores, and sent them to Joseph Hooker at the Royal Botanical Gardens, Kew for planting. The seeds germinated and produced mature plants (Gunn, *World Guide*, p. 56). Isn't it amazing that, faced with such direct physical evidence, copious first-hand accounts, and his own personal observations, Darwin was able to talk himself out of believing in oceanic seed dispersal? One can only surmise that the passage of two decades clouded his recollections, or that for such a great thinker, maybe he thought about this theory a bit too much!

***Gigasiphon macrosiphon* – A Case of Mistaken Identity**

by Ann Robertson

Malindi, Kenya, East Africa

In 1982 we returned to live on the Kenya coast after several years in Seychelles, and I became interested in collecting drift seeds on the beach below our rented house at Ras Kikadini, south of Mombasa. I planted several of the seeds as I wanted to grow the plants I had become familiar with on the islands. These included *Heritiera litoralis*, *Barringtonia asiatica* and *Calophyllum inophyllum*. I was given a copy of Dr. Gunn's book and began to look more closely at the seeds I did not know, such as the *Mucunas* and *Diocleas*. It got a lot of help from Dr. Verdcourt at Kew.

Among these seeds I found this large, obviously leguminous seed with a wide hilum, which turned out to be *Gigasiphon*. At the time Dr. Verdcourt thought it was *Gigasiphon macrosiphon*. The seeds were fairly uncommon but turned up from time to time. I grew one and eventually planted it in our own garden in Malindi where it has now flowered three times (about 12 years from planting), but not yet set viable seed. The strongly scented flowers are held erect above the canopy and open early in the evening with the one yellow petal contrasting with the others which are brilliant white. It is certainly a candidate for taking into cultivation as an ornamental tree, as apart from the beautiful flowers, which sadly fall the next morning, it has a graceful canopy and copper-coloured new leaves following leaf fall twice a year.

In the meantime I got involved in coastal forest conservation and making checklists of plants of the forests and came to realise that *Gigasiphon macrosiphon* was one of Kenya's rarest trees. It had in fact not been seen for about 20 years, and was possibly extinct, and I was happy to be growing it from drift seeds, or so I thought.

I found out that seed had been sent from Kenya to the Wamae Botanical Gardens in Hawaii and wrote to ask if they still had specimens. Indeed they had, and they sent seeds and herbarium material which is deposited in the East African Herbarium in Nairobi. I grew one or two of the seeds, but sadly lost the young trees when they were planted out.

So, imagine the excitement when my colleague and I did find *Gigasiphon macrosiphon* in one of the sacred forests we were surveying in 1990, Kaya Muhaka. We then found it again in nearby Gongoni Forest Reserve but were appalled to find the trees were being cut by a contractor supplying firewood to a local lime factory. We managed to get the firewood collecting stopped, as it was illegal, since the contractor was only supposed to take fallen dead wood. I planted several seeds and have a thriving sapling in my garden. It is also being cultivated on the National Museums of Kenya Plant Conservation Programme, and may be used in forest restoration programmes in the future. Along with many other sacred forest patches, Kaya Muhaka is protected as a National Monument under the NMK/WWF Coast Forest Conservation Unit.

At this time I thought my drift seed *Gigasiphon* was *G. macrosiphon*, but following a visit from a botanist colleague, we saw differences in the leaves on the drift seed tree and the Gongoni Forest tree. After a discussion with Dr. Verdcourt, it seems that my drift seeds are in fact *Gigasiphon humblodtianum* from Madagascar.

We did wonder how the seeds from Gongoni and Muhaka got into the sea, although there is a small river flowing along the edge of Gongoni. It also seems strange that the Madagascar species does not establish along the Kenya coast, but then many of the drift seeds do not survive even if they germinate because of the scouring action of the opposing monsoons.

I am now waiting impatiently for the true *G. macrosiphon* to compare the flowers with *G. humblodtianum*. I also plan to find out more about this Madagascar tree and perhaps we can assist with its restoration there.



“The person who is not hungry says the coconut has a hard shell.” – Ethiopian saying



The Lucky Bean

by John Value Dennis, Sr.

P.O. Box 578

Princess Anne, MD 21853

Dandy and Exell (1938) laboriously straightened out the scientific names of three *Caesalpinia* species: Fortunately two of them were the Gray and Yellow Nickernuts. They referred to a seed character in their treatment. For the Gray Nickernut they noted "This is the Grey Nickar, a species with aculeate fruits and leaden-grey seeds...", and for the Yellow Nickarnut they noted, "This is the Yellow Nickar, a species with aculeate fruits and yellow or yellowish grey seeds, usually known as *C. Bonduc* Roxb." The third species they treated was *C. Crista* L., and when used in this sense it is not a synonym of *C. bonduc*. Dandy and Exell noted that *C. Crista* is a "smooth-fruited species usually known as *C. Nuga* (L.) Ait. f." It is an Asian species.

The Gray Nickernet (*Caesalpinia bonduc* (L.) Roxb.), previously known as *C. crista* (L.), *Guilandina bonduc*, and *G. bonducella* among many other scientific names, produces one of the best known and most widely dispersed sea-beans. There are two similar-appearing drift seeds, one is another *Caesalpinia* species and the other is an unknown. The Yellow Nickernut is *Caesalpinia major* (Medikus) Dandy and Exell, and the other seeds are chocolate-brown in color that, except for its color and size, resemble the gray Nickernut. All three are described, discussed, and illustrated in Gunn et al. (1976), but the chocolate brown one still remains unknown. We know that these chocolate-brown seeds drift and are found stranded on beaches on the southeast coast of Florida and from Padre Island, Texas to Yucatan, Mexico (including Veracruz, Mexico).

Bob Gunn and I are indebted to Lt. Col Corrine E. Edwards (retired and deceased), formerly with the Women's Army Corps (WAC), who collected along beaches in the area of Miami, Florida, where she lived as well as the Grand Caymans, and the Pacific coast of Costa Rica. She kindly showed us her Nickernut collection, and several had yellowish exteriors and three were bright yellow. She said the latter were given to her by someone on Elliott Key, Florida, a long sandy strip approximately opposite Homestead and located between Biscayne Bay and the Straits of Florida. She did not know if the yellow seeds were local or foreign in origin, but she did determine that the seeds did not float in sea water.

It is not unusual to find yellowish instead of gray nickernuts on the beach. In April, 1994, Gary M. Williamson and I discovered several nickernut plants at the edge of the Mosquito Lagoon, Merritt Island National Wildlife Refuge, Florida. The plants are of interest for two reasons: 1) They are near the northern range limit of the Nickernut, and 2) they bore distinctively yellow seeds. Chances are that we had discovered seed-bearing plants of the Yellow Nickernut.

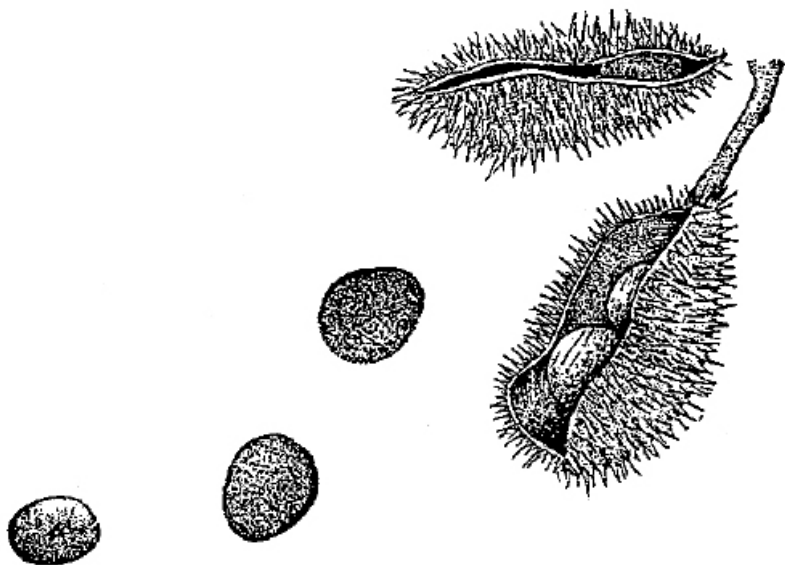
I need help to resolve the questions pertaining to the Nickernuts. Chances of finding yellowish seeds on the beach or on plants are good. But I cannot say the same for the bright yellow or chocolate seeds.

[Eds. Notes: We always wonder if the gray ones are a bit yellow sometime or not? They apparently are not yellowish before they mature. John and all of us need your help in solving these problems. Send information or seeds directly to him.]

Literature Cited

Dandy, J.E. and A.W. Exell. 1938. On the nomenclature of three species of *Caesalpinia*. *Journal of Botany, British and Foreign* 76:175-180.

Gunn, C.R., J.V. Dennis, and P.J. Paradine. 1976. *World guide to tropical drift seeds and fruits*. Quadrangle/The New York Times Book Co., New York.



Drift Seeds from The Netherlands and Gabon

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A tropical seed on the beach of Terschelling, The Netherlands

In the summer of 1991 I attended a students course on vegetation classification on the Dutch island of Terschelling. During this course I found a strange object on the beach of the Boschplaat, a large and empty beach where much drift material may be found, both natural and man-made. At first I was not even sure that it was a seed, but one of my teachers told me that it was a seed of the tropical liana *Mucuna sloanei* (True Sea-bean or Hamburger-bean). For about one year I wondered how the seed came to the beach of Terschelling, then I discovered the *World Guide to Tropical Drift Seeds and Fruits* (Gunn et al, 1976)! My seed germinated in a greenhouse, and it grew to a beautiful liana with trifoliolate leaves. It grew very fast: up to 14.5 cm in one day. I am still amazed that viable seeds may travel on the Gulf Stream across the Atlantic!

Many *Mucuna* spp. seeds may be found on beaches of the east coast of the United States, but on the Dutch coasts these seeds are very rare. My seed is probably the seventh registered find of True Sea-bean seed in The Netherlands. Disseminules of several other tropical plant species also may be found, but there is probably no use searching, because the chance of finding them is rare.

Drift seeds and fruits from Gabon

Therefore, I was lucky to be able to collect drift seeds on a beach in Gabon, Africa, in 1993 and 1994. There were large numbers of seeds and fruits on the beach where I searched (Figure 1). One of these I recognized immediately: *Mucuna* seeds! I also found, of course, the seeds of *Caesalpinia bonduc*, *Entada gigas*, *Dioclea reflexa*, etc. Besides these, I found many seeds and fruits typical of Gabon and Central Africa. I have not yet found evidence of any international origin, let alone intercontinental. Most of the Gabonese seeds were not viable.

Perhaps not all seeds were dispersed by water only. There are several seeds in my collection that are not riverside trees, but are indeed of interest to man, e.g. the Noyer d'Afrique (*Coula edulis*, *Olacaceae*), and the Bush-mango (*Irvingia gabonensis*, *Irvingiaceae*).

There are also many seeds in my collection that are of interest to animals. An example is *Sacoglottis gabonensis*, a riverside and forest tree from West and Central Africa. It is the only African species in the *Humiriaceae*. The endocarps (Figure 2) closely resemble those of *S. amazonica* (Gunn et al, 1976, cf. pp. 116-117). Forest elephants are wild about the fruits. They can smell the ripening fruits over large distances, and they also remember where and when to find groups of fruiting trees. During the fruiting season, many endocarps may be found in elephants' dung. It is possible that endocarps found on the beach were at first dispersed by elephants, and afterwards by rivers and the sea. Footprints of elephants are common on the beach – they sometimes bathe in the sea. Maybe it is possible to separate drift seeds of this and other species into those that were and were not eaten by an elephant?

(Figures 1 and 2 are on the following page.)

Literature Cited

Gunn, C.R., J.V. Dennis, and P.J. Paradine. 1976. *World Guide to Tropical Drift Seeds and Fruits*. Pp. 240. Quadrangle/New York Times Book Company, New York.

“The ax forgets ... the tree remembers.” (African proverb)

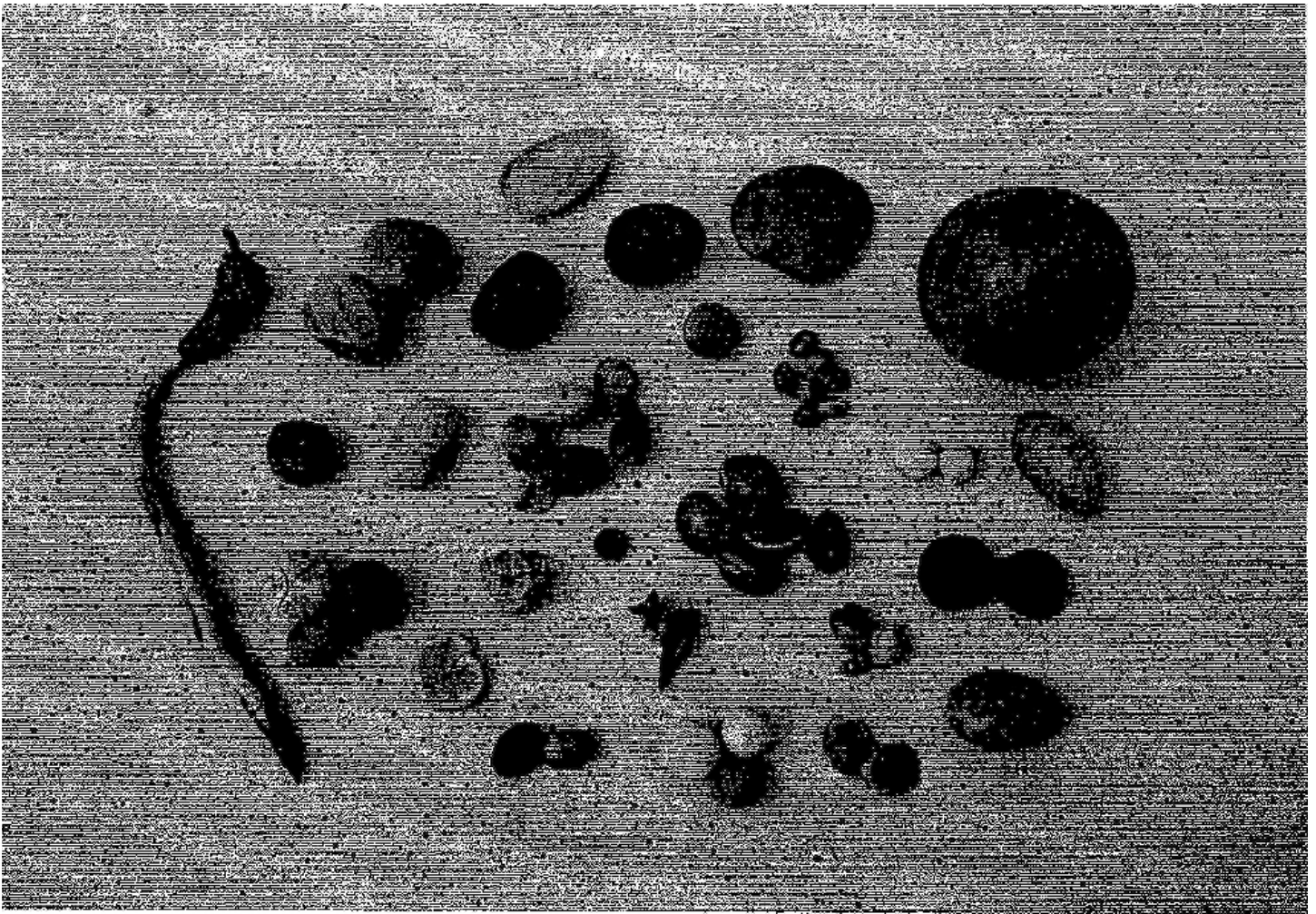


Fig. 1. Drift seeds and fruits on the beach near Sette Cama, Gamba, Gabon, December 1993.

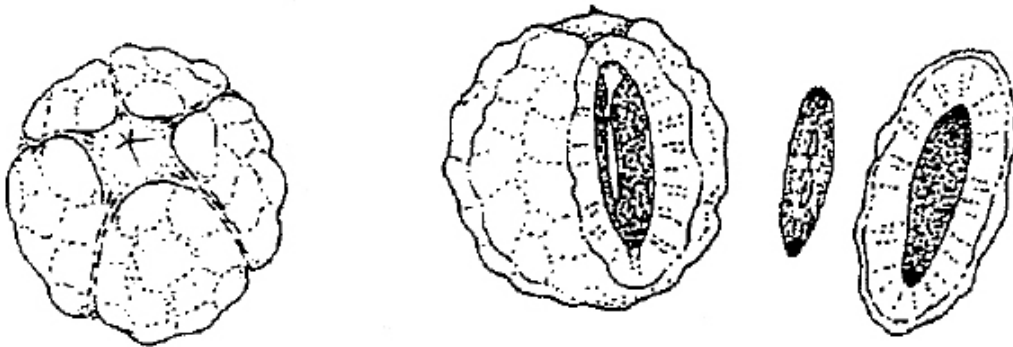


Fig. 2 *Sacoglottis gabonensis*, Humiriaceae: endocarps and seed. Drawn from fruit found in the forests near Gamba (Gabon), not on the beach.



“The creation of a thousand forests is in one acorn.” – Ralph Waldo Emerson

Seed Necklaces

by Ruth Smith

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Many years ago I began collecting seed necklaces because I liked their simplicity, uniqueness, and beauty. I marveled at their colors, textures, lustres, sizes, and shapes. Sometimes I wore them, but usually they remained in a drawer half-forgotten. Coming across this collection about six years ago, I wondered if it was time to pass them on to the Goodwill store. I decided to try and get the seeds identified first.

I approached several botanists in the Washington, D.C. area. To a person they said, "See Bob Gunn at Beltsville. He's the seed man." I was unaware that there was a seed herbarium (The U.S. National Seed Herbarium) at the USDA/ARS facility at Beltsville, Maryland, which has been accessioning seed samples since 1908 (Gunn, 1977). Dr. Gunn is a professional seed taxonomist, and he was the Director and Curator when I made my first visit. He immediately identified several of the necklace seeds, but some had to be sent to botanists in different countries. I am pursuing that suggestion now.

Bob, who has retired to North Carolina, still gives me the benefit of his expertise. Dr. Joseph H. Kirkbride, current Director and Curator of the seed collection, patiently pulls out boxes of seeds from the collection for me to study and match whenever I can.

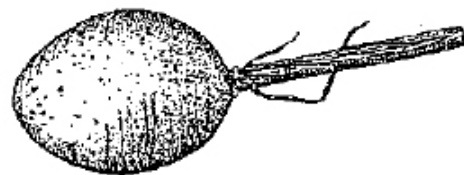
After identifying a seed, I would go to the Library of Congress, a Metro (subway) stop from home, to learn what I could about the plant that produced the seed. Most of the seeds come from trees, shrubs, or vines. I was interested in where these woody plants originated, and if and where they had spread to other parts of the world. Did the plants provide medicine, lumber, food, dye, or other industrial products? Did the plant or seed have cultural or religious significance for anyone? If so, that would help explain the choice of certain seeds for prayer beads, to prevent illness, avert the evil eye, ensure good luck, financial success and healthy children. This quest to learn the stories of seeds has led me down some interesting paths.

The fascinating stories about drift seeds took me figuratively all over the world. Good-luck seeds, *Mucuna* spp., that in the Wet Indies fall into the water, may get carried on ocean currents to shores thousands of miles from their place of origin. The people of Central America believe that if one carries the seed on his person, it will bring good luck. Coincidentally, people who pick up these seeds on the shores of northern Europe also regard them as good luck omens. *Entada gigas* seeds that drifted from the New World tropics to the beaches of England became good luck pieces for young boys likely to go to sea, and furnished their elders with snuff or match boxes when the seeds were halved, hollowed out, and hinged.

Nickernuts, *Caesalpinia bonduc*, drifting from America to northern European shores, served a practical use as buttons and had an equally important function as protection against the Evil Eye, the purveyor of all manner of bad happenings.

Belief in the Evil Eye is widespread. The black spot on the rosary-pea, *Abrus pectoris*, suggests the pupil of the eye to a tribe in Nigeria and wearing the seeds is believed to make one invisible to the "Eye." This beautiful small glossy scarlet and black seed is fatal if chewed and ingested. (Gunn, 1969). So toxic is it and so attractive to small children who are prone to put it in their mouths, that Bob Gunn had the U.S. Government ban interstate commerce and importation of this seed in any form, from live seeds to seed jewelry. They are a common craft material in third world countries.

(continued on next page)



“Though I do not believe that a plant will spring up where no seed has been, I have great faith in a seed. Convince me that you have a seed there, and I am prepared to expect wonders.” – Henry David Thoreau

Seed Necklaces by Ruth Smith (continued)

Trees spread from their place of origin are sometimes adopted in their new homes as that country's official emblem. Royal Poinciana, *Delonix regia*, a beautiful ornamental tree, native to Madagascar now graces many tropical and subtropical avenues in the world and is the official tree of Puerto Rico. Its ¾-inch seeds encircled by dark margins accent necklaces made in Africa and South America.

Of the trees and seeds that are regarded as sacred, the rudraksha, *Elaeocarpus* spp. Commands first place. Hindus originated the practice of counting prayers by fingering beads on a string which they called malas or muttering chaplets and which Christians call rosaries. It is most likely that their earliest prayer beads were the stony endocarps of the rudraksha. The five segments of the endocarp (stone) represent the five faces of Siva and the pitted, warty surface symbolizes the austere life a devotee is expected to lead. Use of these seeds for prayers dates back to the 2nd century B.C.

Those who worship Visnu regard tulsi or holy basil, *Ocimum tenuiflorum*, as their most sacred plant. It is from the stems of tulsi that their beads are made into malas.

Seeds strung into necklaces were worn to denote widowhood in some cases, and in others motherhood. In Algeria a new mother wears a necklace of cloves, *Zyzygium armomaticum*, for 40 days after giving birth (Opper, 1900). A widow weighted with grief might wear up to 50 pounds of Job's tears, *Coix lacryma-jobi*, in Papau New Guinea, removing one string at a time until the period of mourning is over (Lewington, 1990).

What determines the choice of a seed for ornament? Perhaps it is hardness, color, texture, pattern, size, or availability. In some cases it may be the plant's association with religion, sorcery, or witchcraft.

Where have I gotten my botanical beads? From my travels, my friends' travels, yard sales, museum shops, bead bazaars, and a few from seeds that I have collected, drilled, and strung. It is gratifying to track down the identity of a seed and learn something about its pedigree. I have several seeds that as yet are unidentified. One, the "Phoenix-eye," from Nepal, is much used in prayer beads but has no other identity. Many palm seeds are ground and shaped into beautiful beads, but with all the alterations such seeds undergo, it is next to impossible to make identifications.

My quest for seeds used for ornamentation and their identity continues. I would be happy to correspond with anyone interested in botanical beads.

Literature Cited

Gunn, C.R. 1969. *Albrus peregratorius*: A deadly gift. Garden Jour. 19(1):2-5.

Gunn, C.R., Chairman, 1977. Systematic collections of the Agricultural Research Service. U.S> Dept. Agr. Misc. Pub. 1343. 84pp.

Lewington, A. 1990. Plants for people. Oxford University Press, New York, NY.

Opper, M.J. 1990. Scented magic beads in Africa. The Author, Alexandria, VA.



“I think Evolution, so far as man was concerned, was a great mistake. It would have been better had there been only plants, and a few botanists to enjoy them.”
– Professor Goebel in a letter to David Fairchild

Update from Pete Zies

An update to the reprinting of *World Guide to Tropical Drift Seeds and Fruits*:

Detailed and intense talks with one publisher brought us to the brink of a commitment that would have had the book in print in time for our '98 Symposium, but their vision of the finished product and ours differed. We want a timely reprint, but we also want to provide it at a price that all our members can afford! Alternate publishers have been contacted. More news soon!

Gunn Collection Curator's Report:

It has taken over three months to completely sort through the 1700 specimen containers in the collection, but it has been done! The collection is especially rich in Pacific Island material, but could be enhanced by donations of African and South/Central American material. Several submissions have been identified using the collection, and a few of the collection's unknowns have been identified as well. Seed donations are encouraged and gladly accepted!



Beachcombers' Spotlight

I've received a package from Val Northcutt of Plantation, Florida. His job sends him around the world, and he was recently in Gabon on the west coast of Africa. He found necklaces in the native market with strange seeds in them that the locals said were collected on the beach, so he went beachcombing near Cape Lopez, and on a seven-mile stretch collected 264 sea purses, 70 hamburger beans, sea hearts, nickernuts, and a few rubber tree seeds. He even found an intact sea purse seed pod. Since the seeds were so plentiful over such a short stretch, and were also fresh and clean without marine growths on them, it is highly likely they came from local vines growing along river banks. The rivers would send them downstream and out onto the beaches, rather than the seeds coming from a far off place. A quick check in an atlas showed Gabon has a large river system that empties near Cape Lopez. Val says he can't wait to beachcomb his next exotic port of call.



It would take about 1.5 trillion sea beans to circle Earth.

News and Notes from Readers

Welcome to our latest Drifter from the Russian Federation, **Professor A.B. Doweld**. [See Dr. Gunn's message on page 3.]

We're delighted that **Cathy Yow**, a medical researcher at the University of Texas Health Science Center at Houston, discovered The Drifters through Dr. Gunn. She has since brought her beachcombing expertise to our group, contributing valuable information about drift seeds on the eastern coast of Texas. Cathy has been a serious beachcomber on Galveston beaches since childhood, collecting sea beans, drift material and specimens for her aquariums. She is the author of *Life at the Sandy Edge* and *Jewelry from Nature* (to be published this year by Lark Books). Cathy also studied at the Interlochen Arts Academy in Brevard, NC (coincidentally, Dr. Gunn's new hometown). Dr. Gunn and Cathy are planning a meeting in May. Cathy will attend the 1998 International Sea-Bean Symposium and will show her jewelry made from natural materials, including sea beans. We're all eager to hear about her other interests which include photography, birding, woodworking, quilting, writing and making crafts from nature. [See the Collectors' Gallery on the next page.]

Thanks to **G.D. Pike** and **G.J. Leach** from Australia for donating their wonderful book, *Handbook of the Vascular Plants of Ashmore and Cartier Islands* to The Drifters. A section describing drift seeds collected from the beaches of Ashmore is included with beautiful illustrations. The book will be available to look at during the 1998 Sea-Bean Symposium in Melbourne Beach, Florida. Anyone interested in information about this book can write to G.D. Pike, Parks Australia North GPO Box 1260, Darwin, NT 0801, Australia.

Welcome to **Silja Swaby** from Cornwall, England. "When I get the opportunity I look for sea beans in the southwest of England including the Isles of Scilly." We're hoping Silja will attend the 1998 Symposium and share her beachcombing experiences. [The Isles of Scilly received lots of cargo from the overboard spills that Curt Ebbesmeyer described in *The Beachcombers' Alert!* and mentioned here on page 2.]

And welcome to **Professor Robert Hill**, Head, Department of Plant Science at the University of Tasmania, who wrote a couple of observations about Tasmania ... While you will find some bizarre things on the beaches here you won't find such an abundant and obvious sea bean flora as you do on your local beaches. The ocean currents around the west coast of Tasmania come directly from South America and that is a long way off. On the east coast there is probably a chance of material coming down from mainland Australia. Nevertheless there are effectively untouched beaches here by the hundreds of kilometers so who knows what might be out there." [Eds note: See Professor Hill's comment on page 5].

Danille Pierce won a huge ribbon for Best of Show at the Science Fair at St. Mary's School in the Third and Fourth Grade Division. Her project was about sea beans and comparing different waters for growing them. Danielle's science exhibit was also entered at the County Science Fair. Congratulations, Danielle!

Glenn Bertiaux of Indian Harbour Beach donated his ambergris (found on Ambergris Cay) to The Drifters for viewing (and smelling) at the next Sea-Bean Symposium. Ambergris is a waxy substance that comes from the intestines of sperm whales. Overseas perfume manufacturers use this expensive substance as an additive to perfumes. Glenn says the wonderful musky aroma is like "how the woods smell after a rain."

Ed Perry, Environmental Park Ranger at Sebastian Inlet State Park, Florida, has provided us with an abundance of bean and beach information since we met at the 1997 symposium. Ed sent this e-mail to us in December: "...I was very lucky to find a Mary's bean about two weeks after the symposium! I found it on the Sebastian Inlet Beach about 10 minutes before it would have been too dark to see it! ...I jumped up and down several times and did something similar to a victory dance, I was so inspired ...I find it touching that I found this at the same time we planned to start trying to have a family." [Eds note: Guess what, Beaners!! Ed Perry and his wife **Beth Sinclair** are expecting their first child in September!]

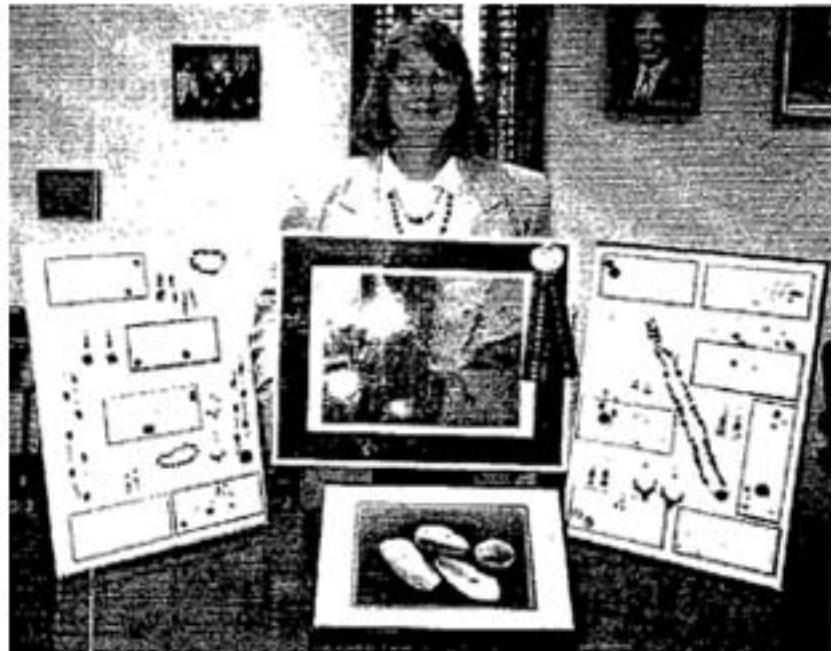
Another e-mail from Ed Perry in April: "Beth ('a hamburger bean nut') caught some native fish in Peru this last summer that ate hamburger beans when they fell into the water. They are called Pacu, sort of like a bigger, vegetarian piranha." Ed and Beth will share their beaning experiences at the 1998 Symposium.

Late breaking news from **Curt Ebbesmeyer**: Sea beans have been found on the Pacific northwest beaches!

Collectors' Gallery



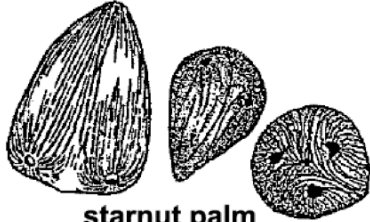
Above: Danielle Pierce with Dr. Bob Gunn. Below: Rhonda Theobald and Cathie Katz. Top right: Ann Robertson of Malindi, Kenya. Right: Cathy Yow of Houston, Texas.



Simple Guide to Common Drift Seeds
 (Illustrations by Cathie Katz and Pamela J. Paradine)



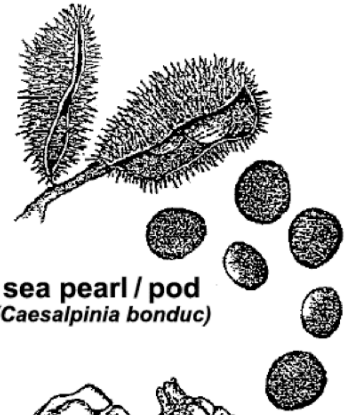
hamburger bean
(Mucuna spp.)



starnut palm
(Astrocaryum spp.)



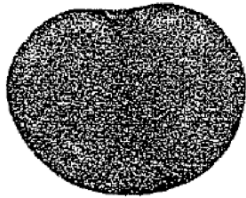
country almond
(Terminalia catappa)



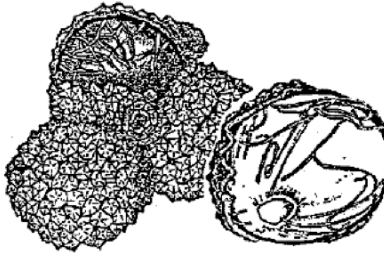
sea pearl / pod
(Caesalpinia bonduc)



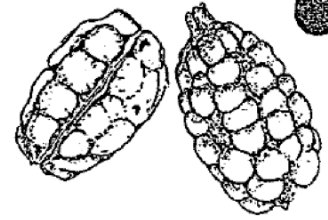
bay bean / pod
(Canavalia rosea)



sea heart
(Entada gigas)



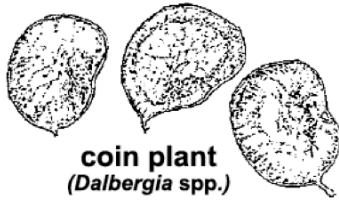
golfball / pod
(Manicaria saccifera)



hand grenade
(Sacoglottis amazonica)



Mary's bean
(Merremia discoidesperma)



coin plant
(Dalbergia spp.)



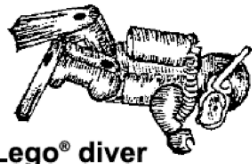
sea purse
(Dioclea reflexa)



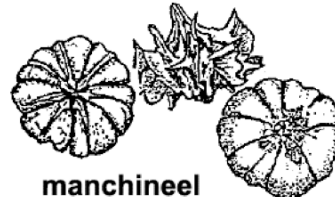
hog plum
(Spondias mombin)



porcupine seed
(Caryocar microcarpum)



Lego® diver
(Aquanautium legoii)



manchineel
(Hippomane mancinella)



white / black / red mangrove
(various genera)

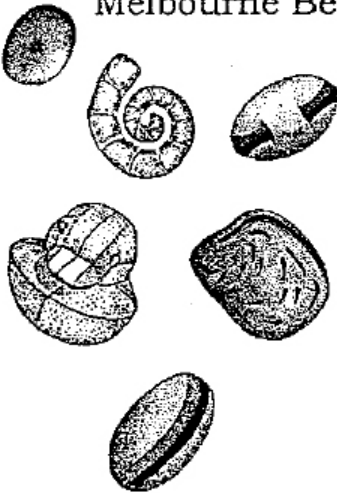


The Drifting Seed

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 Melbourne Beach, FL 32951



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