

THE BEAN BAG

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Current Research on Legumes

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FROM THE EDITORS. Circulation of a serial publication, the number of subscribers, is usually taken as a measure of the journal's success. On that basis BB at the end of its second year is a modest but successful means for communicating among ourselves. The number of copies duplicated is larger with each issue and the diversity of our readership grows apace. The latter is particularly important, for it is clear that the improved classification we expect to result from preparation for the International Conference on Legumes will be an interdisciplinary achievement. The news items below about that Conference do not suggest the research ferment generated by this first opportunity for legume specialists to bring together data from many sources toward a common objective. We believe BB serves a useful purpose in this regard and are prepared to increase the frequency in the next two years before the Conference, if the volume of information received justifies additional numbers.

We plan now that the May 1978 issue will be a directory of readers with their addresses, titles, and specialties. We thought that a world map on the cover showing readers' location might be interesting. Perhaps some of you will have other ideas for that special number; if so, please include them on the data-collection form enclosed herewith when you return it.

The "Gleanings" column in this issue contains two important items - birth of LENS, published by the Lentil Research Association (see under SLINKARD); and the first announcement of a meeting of specialists on Genistee (see under BISBY).

Finally, we apologize for the late appearance of BB-4, the result of the Editor having been away on official travel during most of November. We wish all our colleagues pleasant holidays and great accomplishments in the New Year ahead.

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INTERNATIONAL CONFERENCE ON LEGUMES. The review conference on the broader aspects of classification and utilisation of legumes to be held at Kew in 1978 has been extended to two weeks, 24 July to 4 August, to give a full week for an agronomic programme.

The objectives of the botanical programme in the first week were outlined in BB3 and various collaborative projects are now well under way. Invitations and programme brochures will be circulated in the first quarter of 1977. Anyone interested in participating and who has not yet contacted one of the organisers is urged to do so. The working parties on critical groups of genera would be particularly glad to hear from more people who can make some special contribution to the many vexed questions under consideration.

Professor A. H. Bunting, Plant Science Laboratories, University of Reading, Whiteknights, Reading, RG6 2AS, England, is organising the agronomic programme in the second week. Sessions will be devoted in part to selected general topics, including growth form, ecophysiology, adaptation and yield, nutritional value (including the significance of antimetabolites and toxins), the nature of resistances to pests and diseases, and nitrogen nutrition and fixation in legume crops, and in part to reviews of selected groups of legume crops (including herbage and fodder legumes) with particular reference to genetic diversity, classification, adaptation and breeding. Further details from Professor Bunting.

Dr. B. A. Krukoff would like to thank the many people who have contributed to the seed bank. Anyone else who can help with this important work is asked to consult directly with him.

J.P.M. Brennan, R.M. Polhill, and P.H. Raven

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MANUAL OF LEGUME CROPS. In anticipation of the projected "Manual of Legume Crops" for the International Conference on Legumes, I am sending out preliminary draft writeups on about 200 economically important legumes. These drafts should be in the mail before Christmas to those who have expressed an interest in criticizing or augmenting them. Specialists in economic legumes are invited to submit treatments of legumes in their specialty, using the following captions for short paragraphs: 1. Uses; 2. Chemistry; 3. Folk Medicine; 4. Description; 5. Ecology; 6. Distribution; 7. Cultivation; 8. Harvest; 9. Biotic Factors (important pests and diseases); 10. Economics; 11. Post-1970 references. I am also experimenting with the feasibility of using xerography for illustrating the proposed manual. If you will provide a freshly-pressed specimen, (8½ x 11) still retaining its color, with your collection label, I will provide a color xerox copy of the specimen in exchange. I am particularly interested in vouchers for seedling studies, and will exchange xerox color copies of vouchers for seed samples. Some of the seed will go into the BARC Seed Collection, with a small aliquot planted for seedling studies.

James A. Duke

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BELTSVILLE SYMPOSIUM II: BIOSYSTEMATICS IN AGRICULTURE

Beltsville Agricultural Research Center (BARC)
Beltsville, Maryland
May 9-11, 1977

For further information, send your name and address to:

Dr. James A. Duke
Publicity Committee, BARC Symposium II
Plant Taxonomy Laboratory
Room 117, Building 001, BARC West, USDA
Beltsville, Maryland 20705

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ADDITIONS TO BEAN BAG READERSHIP. (Please save this list as well as those in BB-1,2,3 for your future use.)

AWE, E. A., Agricultural Library, Ministry of Agriculture & Lands, Central Farm, Cayo, Belize, Central America.

BÄSSLER, M., Museum für Naturkunde, BR Botanik u. Arboretum, an der Humboldt-Universität zu Berlin, Spatkstrasse 80, 1 195 Berlin, DDR. (Lathyrus).

BAUDET, J. C., Faculté des Sciences Agronomiques de L'État, 5800 Gembloux, Belgium (Classification of genera and origin of cultivated grain legumes in Phaseoleae).

BROICH, S., 13 Agronomy, Iowa State University, Ames, Iowa 50010 USA.

DONSELMAN, H. M., University of Florida, Institute of Food and Agricultural Science, 3205 S. W. 70th Avenue, Fort Lauderdale, Florida 33314 USA.

DOYLE, J., Department of Plant Sciences, Jordan Hall 138, Indiana University, Bloomington, Indiana 47401 USA. (Origin and evolution of Andean Lupinus mutabilis.)

GLADSTONE, J. S., Western Australia, Department of Agriculture, Jarrah Road, South Perth, Western Australia 6151 (Lupinus).

GOMEZ SOSA, E., Instituto de Botanico Darwinion, Labarden 200, San Isidro, Buenos Aires, Argentina (Taxonomy of Astragalus in Argentina).

GONZALEZ, R. G., Universidad Autonoma Metropolitana - Iztapalapa, Mexico City, Mexico (Mimosa).

HAQ, M. N., Biology Department, Bldg. 44, University, Southampton, England SO9 5NH (Development of embryo sac, endosperm, and embryo in Phaseoleae.)

HEYN, C. C., Department of Botany, Hebrew University of Jerusalem, Jerusalem, Israel (Annual Medicago).

HIJWEGEN, T., Dept. of Phytopathology, Agricultural University, Wageningen, The Netherlands (Legume susceptibility to fungi).

HOLMGREN, N., New York Botanical Garden, Bronx, New York 10458 USA (Floristics Western US).

LEFFEL, R. C., Room 111, Bldg. 005, BARC-West, Beltsville, Maryland 20705, USA (Rhizobium).

MAESEN, L. J. G. van der, International Crops Research Institute for the Semi-Arid Tropics, 1-11-256 Begumpet, Hyderabad - 500016 A.P., India (Germplasm - Atylosia, Cajanus, Cicer).

MISRA, A., Bela Road, Darbhanga 846004 India (Medicinal legumes).

MOZARRO, A., INTA, Depto. de Botanica, Villa Udaondo 1712 Castelar, Buenos Aires, Argentina.

MURTHI, A. N., ICRISAT, 1.11.256 Begumpet, Hyderabad 500 016 A.P. India (Cajanus cajan germplasm).

NICHOLLS, K. W., Department of Botany, University of British Columbia, 2075 Wesbrook Place, Vancouver, B. C., Canada V6T 1W5 (Chemotaxonomy of Lupinus).

PLITMANN, U., Department of Botany, Hebrew University of Jerusalem, Jerusalem, Israel (Cytology, flavonoid-chemistry, isozymes -- Lupinus, Lathyrus, Vicia and other genera).

SLINKARD, A. E., Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0 (Breeding Pisum and Lens).

SMARTT, T., Department of Biology, Bldg. 44, University, Southampton, England SO9 5 NH (Pulse crops, esp. Phaseolus and Arachis hypogaea.)

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CHANGE OF ADDRESSES - You may wish to record these changes in BB-1,2,3 as indicated after the address.

MARECHAL, R. C., Chaire de Phytotechnie des Régions chardes, Faculté des Sciences Agronomiques de l'État a Gembloux, 5800 Gembloux, Belgium. (3)

OHASHI, H., Botanic Gardens, Koishikawa, Faculty of Science, University of Tokyo, Hakusan 3-7-1, Tokyo 112, Japan. (1)

WESTPHAL, E., Ecole Nationale Supérieure Agronomique, B.P. 138. Yaoundé, Cameroun. (3)

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GLEANINGS FROM DATA COLLECTING SHEETS. For addresses see readers lists in BB-1 with supplements in BB-2,3 and 4.

ARORA needs seeds of Atylosia, Crotalaria, Desmodium, Dolichos, Phaseolus, Stylosanthes, Vigna, Zornia for a study of urease in seeds. Will be collecting in India and may be able to supply legume seeds.

BISBY sends this notice: Working Party on Systematics of the Genisteeae. An international meeting of workers involved in the systematics of the Genisteeae will be held at Southampton University, England 9-10 June 1977. Attention will be focused on critical generic problems in the Genista - Cytisus complex in the hope of preparing clearly presented alternatives or even a consensus system for the International Conference on Legumes to be held at Kew, July 1978, see Bean Bag - 3 and above).

On the first day, recent advances in systematic information from phytochemistry, cytology, and plant-insect relationships will be studied. The second day will be devoted to systematic synthesis with attention being given to details of critical problems and to the clarification and comparison of the taxonomic systems being proposed.

Further details are available from F. A. Bisby, Biology Department (Building 44), University, Southampton, England, SO9 5NH.

CORBY needs viable leguminous seeds and associated rhizosphere [Ed. note: misspelled "rhizospore" in BB-3] soil for study of nodule shapes (write for details) and has seeds to exchange. Also needs viable seeds (20-30 of each) of Alysicarpus longifolius and Vigna owahuensis.

DOYLE, a second year graduate student with C. B. Heiser, Jr. (Indiana University), wants seeds of Andean Lupinus spp. (esp. Peru and Bolivia) and plans to have surplus L. mutabilis seeds.

DONSELMAN has completed his Ph.D. dissertation "Geographic variation in eastern redbud (Cercis canadensis L.)"; work underway on Cercis ecology.

GOMEZ SOSA is conducting a taxonomic study of Astragalus in the Patagonian region of Argentina and plans to monograph the genus for Argentina and then South America. She needs Astragalus seeds and fruits and flowers (in preserving liquid) with vouchers, if possible. (Write for details). Has Astragalus spp. for exchange. Also would appreciate reprints or citation of literature on embryology, anatomy of fruit, or ontogeny of Astragalus or Galegeae. She hopes to collect in Patagonia (Mendoza, San Juan, and La Rioja).

GUNN and Barnes completed a study of Erythrina seeds that will be issued with at least five other Erythrina papers in a future issue of LLOYDIA. Each BB reader receives with this issue a want-list of missing or poorly represented legume genera in his legume seed-fruit survey. Only 5-15 viable or non-viable seeds and fruits are needed. He urges all to support the broad-based appeal of KRUKOFF, because he also benefits from this distribution.

KRUKOFF continues to coordinate a collection of legume seeds from all parts of the world that are distributed to various specialists for obtaining data on chromosome numbers (Raven), seedling morphology (DUKE), seeds and fruits (GUNN), alkaloids in seeds and seedlings (SMOLENSKI), etc., as well as to those who confine themselves to the study of a specific group of legumes. The collection received as of the end of June, 1976, totals 302 genera, represented by several thousand samples. Small samples are welcome, but those of up to 30 grams are preferred. Such samples may be sent either to B. A. Krukoff, c/o New York Botanical Garden, Bronx Park, Bronx, New York 10458 USA, or to P. H. Raven, Missouri Botanical Garden, 2315 Tower Grove Avenue, St. Louis, Missouri 63110 USA. Krukoff also reports that H. G. Baker and Associates are starting on a study of Erythrina pollination including amino acids in nectar.

LASSETTER is studying the karyotypes of New World Vicia spp. (See Plitmann).

MAESEN reports interest in Cicer, Cajanus, and Atylosia and can supply limited quantities of seeds.

MARECHAL has completed studies of interspecific hybrids of Phaseolus lunatus x P. ritensis Jones and P. lunatus x P. polystachyus B.S.P. and with the International Institute of Tropical Agriculture the genetics and cytogenetics of P. lunatus. He and J. Miegé, University of Geneva, and Mlle. Stainer, University of Louvain, have started a numerical taxonomy study of species in Phaseolus-Vigna and related genera. He will annotate species of these genera. He offers seeds of wild species of Alepidocalyx, Minklersia, Phaseolus, Macroptilium, Ramirezella, Vigna, Vatovaea, Condylostylis, Dolichopsis, Dysolobium.

MASLIN is completing a revision of Acacia biflora R. Br. and its allies and is working on a revision of the Uninerves - Racemosae L. (genus Acacia) of western Australia. He will annotate western Australian Acacia spp.

OHASHI has stated a critical study of Himalayan Phaseoleae (s.l.) and Indochina and Thailand Desmodium and allies for area floras. Needs seeds of Desmodium glutinosum, D. nudiflorum, and D. pauciflorum.

PLITMANN has completed a cytological and flavonoid - chemistry study of Lathyrus section Cicercula and is starting a comparative study (karyotypes, isozymes) of annual and perennial Vicia species. The latter research is with K. Yamamoto, Takamatsu, Japan. Needs seeds of annual lupines and New World Vicia (See LASSETTER). Has seeds of annual lupines for exchange. Suggests floral biology and chemotaxonomy of Old World wild lupines as a suitable project for graduate student.

REID has prepared a brief report about CSIRO, Davies Laboratory for Tropical Agronomy. The Laboratory is concerned primarily with the introduction and evaluation of tropical pasture legumes, particularly in the monsoonal and dry tropical areas. Reid states "We have here in Townsville, a large (and ever increasing) collection of legumes from all over the world and most have been collected in the wild. These are evaluated for their pasture potential but many of course do not have the characteristics that we are seeking. However, many do, I am sure, have potential as grain legumes, oil seeds, ornamentals, green manure crops and revegetating crops. We

are particularly strong in Stylosanthes, Macroptilium, Centrosema, Galactia and Teramumus."

SLINKARD in his work with Pisum sativum has noted overwhelming evidence that protein content is of low heritability, and that strict precautions would have to be taken to prevent a yield reduction in high protein lines. Needs seeds of Lens spp. other than L. culinaris for exchange. He is co-editor of LENS, an annual publication of Lentil Research Association, which involves information exchange among lentil researchers. Annual dues are \$2.00 per year.

SMOLENSKI with N. R. Farnsworth, University of Illinois, has grown 92 legume species for analysis of their alkaloid content. Seeds for this survey are obtained from the KRUKOFF seed distribution program.

STIRTON has completed a revision of Dipogon and Bolusafrsa (both monotypic) and has available a bibliography of chromosome numbers in the Phaseoleae (s.l.) He is starting a survey of naturalized (weedy) papilionate legumes in South Africa, Lesotho, Swaziland, Botswana, and South West Africa that pose a threat to human activity. Suggests revision of Indigofera in South Africa as a suitable project or projects for graduate students.

VIDAL has revised Dialium, Crudia, and Saraca for Indochina and Thailand and has started with S. Hul Thol and Mrs. Cerceau anatomical, ontogenetical, and palynological studies of Caesalpinaceae, tribe Caesalpinieae. Needs viable seeds of Acrocarpus, Caesalpinia, Delonix, Gleditsia, Gymnocladus, Mezoneuron, Parkinsonia, Peltophorum, Pterolobium, Wagatea.

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IDENTIFICATIONS. Following are names of specialists who have expressed willingness to identify legumes and the groups they will accept. Arrangements should be made directly with them, in advance of shipment, using addresses in BB-1,2,3,4.

ARORA. Atylosia, Cajanus, Cicer, Clitoria, Crotalaria, Cyamopsis, Desmodium, Dolichos, Pisum, Pueraria, Rhynchosia, Smithia, Vigna, Zornia.

KRUKOFF. Erythrina

MAESEN. Atylosia, Cajanus, Cicer.

OHASHI. Asian Desmodium and allies

SLINKARD. Lens

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RECENT (POST 1975) LEGUME LITERATURE. When preparing a citation of your published legume paper or legume papers of general interest, please follow the form used in this BB. Use additional key words when needed to supplement the title. Major publications may have brief reviews. For additional information or reprints write to the author or authors whose names are fully capitalized. Their addresses may be found in BB-1, -2, -3, or -4.

- BAUDET and MARECHAL. 1976. Signification taxonomique de la présence de poils uncinules chez certains genres de Phaseoleae et d' Hedysareae (Papilionaceae). Bull. Jard. Bot. Nat. Belg. 46: In press.
- BERGLUND, O. Brucher, and H. Brucher. 1976. The South American wild bean (*Phaseolus aborigineus* Burkart) as ancestor of the common bean. Economic Botany 30: 257-272.
- BRUMMITT and ROSS. 1976. The relationship of *Bauhinia petersiana* and *B. macrantha* (Leguminosae - Caesalpinioideae). Kew Bull. 30 (4):593-595.
- BRUMMITT and ROSS. 1976. A note on *Tylosema* from Southern Africa (Leguminosae - Caesalpinioideae). Kew Bull. 31(2):219-220.
- BRUMMITT and ROSS. 1976. A reconsideration of the genus *Adenolobus* (Leguminosae - Caesalpinioideae). Kew Bull. 31(2):399-406.
- COWAN. 1976. A taxonomic revision of *Elizabetha* (Leguminosae-Caesalpinioideae). Proc. Kon. Ned. Akad. van Wetensch., Ser. C, 79(4):323-346.
- EVANS, L. E. and SLINKARD. 1975. Production of pulse crops in Canada. In Oilseeds and Pulse Crops in Western Canada - 1975. Modern Press, Saskatoon, Sask., Canada. pp. 287-324.
- FREITAS DE SILVA. Revisão taxonomica do gênero *Peltogyne* Vog. (Leguminosae-Caesalpinioideae). 1976. Acta Amazonica, 6(1) (Suplemento): 1-61. [This is a modern treatment of an important genus of timber trees ranging from Mexico to southern Brazil, undertaken for the Master of Science degree in the post-graduate program of the Instituto Nacional de Pesquisas da Amazonia and the Fundação Universidade do Amazonas. Included is information on history, ecology, palynology, and phytogeography of the species, in addition to a key that "works." Indices of the taxa, of common and scientific names, and of exsiccatae make this a laudable product of an indigenous educational program which itself is a most significant development in Amazonia.]
- GLADSTONE. 1974. *Lupinus* of the Mediterranean region of Africa. Dept. Agr. Western Australia Tech. Bull. 26. [Monograph, distribution maps.]
- GOMEZ SOSA. 1976. Three new species of *Astragalus* (Leguminosae). Darwiniana 20:213-224. Figs. 6. [Description and limits of 3 new species according to carpological, floral, and vegetative characteristics.]
- GUNN and J. Kluge. 1976. Androecium and pistil characters for tribe Vicieae (Fabaceae). Taxon 25: 563-575. [Terms illustrated.]
- Hu1 Tho1, S. 1976. Contribution à la révision de quelques genres de Caesalpinioideae représentés en Asie. Thesis, 209 p., fig., phot. (mimeogr.). Laboratoire de Phanérogamie, Museum, Paris. (Revision by classical and numerical methods of *Pterolobium* (general), *Caesalpinia* including *Mezoneuron* (continental Asia), *Peltophorum* (Indochina), *Wagatea* (India); macromorphological and palynological characters are considered.)

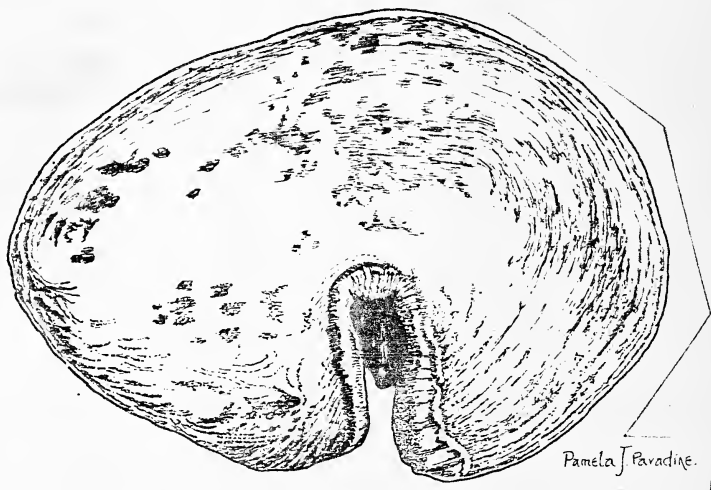
- KRUKOFF. 1976. Notes on the species of Erythrina VIII. *Phytologia* 33:342-356.
- KUPICHA. 1976. The infrageneric structure of Vicia. *Notes Royal Bot. Gard. Edinburgh* 34:287-326. [Characters of greatest taxonomic significance are evaluated for entire genus with 2 subgenera and 22 sections recognized (9 of 22 sections are new).]
- LESINS. 1976. Alfalfa, lucerne, pages 165-168. In: N. W. Simmonds, *Evolution of crop plants*.
- MARECHAL and BAUDET. 1976. Position taxonomique de la lentille de terre; transfert de Kerstingiella Harms à Macrotyloma (Wight & Arn.) Verdc. *Bull. Jard. Bot. Nat. Belg.* 46: In press.
- MASLIN. 1976. Studies in the genus Acacia (Mimosaceae) - 4. A revision of the Series Pulchellae. *Nuytsia* 1(5):388-494.
- MASLIN. 1976. Studies in the genus Acacia (Mimosaceae) - 5. Miscellaneous new phyllodinous species. *Nuytsia* 2(2):96-102.
- MASLIN. 1976. Studies in the genus Acacia (Mimosaceae) - 6. Miscellany. *Nuytsia* 2(3): In press.
- MASLIN. (See also TINDALE and MASLIN.)
- OHASHI. 1975. Nomenclatural changes in several Himalayan Leguminosae. *Journ. Jap. Bot.* 50: 305-309. (Several new combinations made in Shuteria, Vigna, Trigonella, and Cassia.)
- OHASHI and Y. Tateishi. 1975. The genus Hedysarum (Leguminosae) in the Himalayas. In OHASHI, (ed.), *Flora of Eastern Himalaya*, 3rd report, pp. 363-392. (A revision of the Himalayan species of the genus with recognition of 9 species, 1 subspecies and 2 varieties.)
- OHASHI and Y. Tateishi. 1976. Mucuna macrocarpa and M. gigantea (Leguminosae) in Japan and Formosa. *Journ. Jap. Bot.* 51: 161-168. (Treated M. irukanda, M. irukanda var. bungoensis as new synonyms of M. macrocarpa and M. tashiroi as a subspecies of M. gigantea.)
- POLHILL. 1976. Genisteae (Adans.) Benth. and related tribes (Leguminosae). *Botanical Systematics* 1:143-368. [Sorry, no reprints available].
- ROSS. (See also BRUMMIT and ROSS).
- SALEH and M. S. Ishak. 1976. Anthocyanins of some Leguminosae flowers and their effect on colour variation. *Phytochemistry* 15: 835-836.
- SLINKARD. 1975. Breeding pulse crops in western Canada. In *Oilseeds and Pulse Crops in Western Canada - 1975*. Modern Press, Saskatoon, Sask., Canada. pp. 223-228.

SMOLENSKI, H. Silivis, and N. R. Farnsworth. 1976. Alkaloid screening. *Lloydia* 9: in press. (Sixth article in the series. See also *Lloydia* volumes 1, 3, 4, 6, and 8.)

Stafleu, F. and COWAN. 1976. *Taxonomic Literature*, second edition, volume 1: A-G. Bohn, Scheltema & Holkema, P.O. Box 13079, Utrecht, The Netherlands, 1136 pages, \$100 or Dfl. 270. (Personal copies are \$80 or Dfl. 220 if ordered directly from publisher with check accompanying order.) [A four volume work with a volume issued every two to three years extending coverage of first edition 5 - 10 times. Standard abbreviations of over 2200 books important to plant taxonomy, as well as standard citation forms for authors, new to this edition. Data on biographies, bibliographies, location of herbaria, precise dates of publication included for all plant groups, cryptogams to fossils.]

TINDALE and MASLIN. 1976. Two new species of Acacia from Western Australia. *Nuytsia* 2(2):86-92.

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The largest dicotyledonous seed (shown above at X1) is Mora oleifera (Triana) Ducke. This seed contains the largest embryo of any plant species. The trees, which may attain a height of 25 m, inhabit tidal estuaries along the Pacific side of tropical America, from Costa Rica to western Colombia. The seeds drift in ocean currents. (Taken from Gunn, Dennis, and Paradine, 1976, *World Guide to Tropical Drift Seeds and Fruits*, page 156 and Figure 63. See page 9 of BB-3 for details about book.)

One reader notes: "The Bean Bag is faba-lous!"