

A bibliography for the archaeobotanical identification of seeds from Europe and the Near East

Mark Nesbitt, *British Institute of Archaeology, Tahrir Caddesi 24, Kavaklıdere, Ankara 06700, Turkey*

James Greig, *School of Biological Sciences, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, U.K.*

Summary

Over 350 references on seed and fruit identification, likely to be of use in the identification of ancient charred and waterlogged seeds, are listed.

Introduction

This list is limited to references likely to be of use to the archaeobotanist studying charred or waterlogged macroscopic plant remains. Where the contents of a paper are not obvious from the title, brief annotations have been made. Two classes of literature not included are taxonomic monographs and studies of crop evolution. Taxonomic literature can be found using indexes available in good botanical libraries, and is also conveniently listed by Davis (1965-88). Literature on crop evolution and archaeobotany in general is indexed each year by J. Schultze-Motel, in the journal *Die Kulturpflanze*.

We have not listed references on the vegetative materials included in Delcourt, Davis and Bright's (1979) bibliography: phytoliths, conifer needles, wood and charcoal, and vegetative plant fragments. However a comprehensive bibliography on phytoliths is in preparation by Irwin Rovner of North Carolina University; one on wood has been published by Gregory (1980). However, her bibliography does not include references specifically on charcoal identification.

General reports on ancient plant remains that have especially useful drawings or discussions of identification criteria are included in a separate section. The publications of W. van Zeist are particularly outstanding examples of well illustrated reports, of value to all archaeobotanists. We would stress that although this list of literature may look quite long, the number of really adequate

studies on seed identification is still tiny, and much useful work remains to be done. The need now is less for comprehensive seed manuals; more for detailed studies at the level of genus or tribe.

The authors would be glad to hear of additions or corrections to this bibliography; these should be sent to James Greig.

Acknowledgements

We thank Stefanie Jacomet and Hansjörg Küster for useful comments, and the USDA National Agricultural Library, Beltsville MD, for computer searching facilities on the 'Agricola' database.

References

- Davis, P. H. (1965-88). *Flora of Turkey* 1-10 Edinburgh: University Press.
- Delcourt, P. A., Davis, O. K. and Bright, R. C. (1979). *Bibliography of taxonomic literature for the identification of fruits, seeds, and vegetative plant fragments*. Publication 1328, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee, 84pp.
- Gregory, M. (1980). Wood identification: an annotated bibliography. *International Association of Wood Anatomists (IAWA) Bulletin* 1(1-2), 3-41.

Symbols and abbreviations

* indicates references of outstanding usefulness; copies of these should be to hand in all archaeobotanical laboratories

+ indicates references that we have not been able to check and these may sometimes be incomplete

USDA United States Department of Agriculture

Journals/Series:

BAR *British Archaeological Reports* (Oxford)
MB *Monographiae Botanicae* (Warsaw)
PISTA *Proceedings of the International Seed Testing Association*
SST *Seed Science and Technology*

General references

*Beijerinck, W. (1947). *Zadenatlas der Nederlandsche Flora*. Wageningen: Veenman. [Mededeeling no. 30 van het Biologisch Station te Wijster, Dr., 316pp.]

*Berggren, G. (1969). *Atlas of seeds and small fruits of Northwest-European plant species, with morphological descriptions. Part 2. Cyperaceae*. Stockholm: Swedish Natural Science Research Council [61pp., 39pl.]

* ——— (1981). *Atlas of seeds and small fruits of Northwest-European plant species, with morphological descriptions. Part 3. Salicaceae-Cruciferae*. Stockholm: Swedish Museum of Natural History. [261pp.]

*Bertsch, K. (1941). *Handbücher der praktischen Vorgeschichtsforschung: Früchte und Samen*. Stuttgart: Ferdinand Enke [247pp.]

Brisson, J. D. and Peterson, R. L. (1976). A critical review of the use of scanning electron microscopy in the study of the seed coat. *Scanning Electron Microscopy* 7, 477–96. [Includes an extensive bibliography]

Brouwer, W. and Stählin, A. (1955). *Handbuch der Samenkunde*. Frankfurt: DLG. [656pp. An English translation of the key made in 1980, is available via inter-library loan from the National Agricultural Library, Beltsville, MD., USA. Call number: SB 118.B72.]

+Chitrowo, W. (1914). Atlas von Samen und Früchten der Feldunkräuter aus Mittelrußland. *Bull. Angew. Bot.* 7(3), 181–202.

Corner, E. J. H. (1976). *The seeds of dicotyledons. 1, 2*. Cambridge: University Press. [Mainly anatomical]

Delcourt, P. A., Davis, O. K. and Bright, R. C. (1979). *Bibliography of taxonomic literature for the identification of fruits, seeds, and vegetative plant fragments*. Publication 1328, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee. [84pp. This reference is superseded by the present publication for Europe and the Near East, but still useful for other regions, and other classes of plant material]

+Delorit, R. J. (1970). *An illustrated taxonomy manual of weed seeds*. River Falls, Wisconsin: Agronomy Publications [175pp.]

Dickson, C. (1970). 'The study of plant macrofossils in British Quaternary deposits' pp. 233–54 in D. Walker and R. G. West (eds.), *Studies in the vegetational history of the British Isles*. Cambridge: University Press.

+Dobrokhotov, V. N. (1961). *Semena sornykh rastenii (Seeds of weed plants)*. Moscow: Agricultural Literature. [413pp.]

+Draper, S. R. and Travis, A. J. (1984). Preliminary observations with a computer based system for the analysis of the shapes of seeds and vegetative structures. *Journal of the National Institute of Agricultural Botany* 16, 387–95.

+Farron, C. (1977). The treatment of seed and seedling collections. *Bauhinia* 6, 53–9.

+ ——— (1984). L'intérêt d'une collection de graines: son utilisation au service de la malherbologie. *Schweiz. Landw. Forsch.* 23, 167–70.

*Flood, R. J. (1986). *Seed identification Handbook*. Cambridge: National Institute of Agricultural Botany [72pp. Colour photographs of 180 species]

Gaertner, E. E. (1953). Key to "seeds" of fleshy fruits. *Transactions of the Royal Canadian Institute* 30(1), 33–44. [Includes some European species]

- +Gaertner, J. (1788–1805). *De fructibus et seminibus plantarum*. Four volumes. Stuttgart: Academiae Carolinae.
- +Gassner, G. (1989). *Mikroskopische Untersuchung pflanzlicher Nahrungs- und Genußmittel*. (5th ed.) Jena & Stuttgart: Fischer Verlag.
- Gooch, S. M. S. (1963). The occurrence of weed seeds in samples tested by the Official Seed Testing Association, 1960–1961. *Journal of the National Institute of Agricultural Botany* 9, 353–71. [Not on identification, but a useful guide to likely weed species]
- *Gunn, C. R. (1972). 'Seed collecting and identification', pp. 55–143 in T. T. Kozlowski (ed.) *Seed Biology*. 3. New York: Academic Press.
- + ——— and LaSota, L. (1978). Automated identification of true and surrogate seeds. *Biosystematics in Agriculture* 2, 241–57.
- and Seldin, M. J. (1977). Preparing seed and fruit characters for a computer with discussion of five useful programs. *SST* 5, 1–40.
- +Guyot, L. and Guillemat, J. (1962). *Semences et plantules des principales mauvaises herbes*. Paris: La Maison Rustique.
- Harper, J. L., Lovell, P. H. and Moore, K. G. (1970). The shapes and sizes of seeds. *Annual Review of Ecology and Systematics* 1, 327–56.
- Hayward, H. E. (1938). *The structure of economic plants*. New York: Macmillan. [674pp. Reprinted in 1967 by Cramer, Lehre. Covers the anatomy of 17 new and old world crops]
- +Heinisch, O. (1955). *Samenatlas der wichtigsten Futterpflanzen und ihrer Unkräuter*. Leipzig: Deutsche Akademie der Landwirtschaft-Wissenschaften zu Berlin.
- +Hillman, F. H. and Henry, H. H. (1935). *The more important forage plant seeds and incidental seeds found with them*. USDA Bureau of Plant Industry, Seeds Investigation.
- +Huber, J. A. (1927). *Schlüssel zur Bestimmung der Früchte und Samen der wichtigsten Ackerunkräuter*. Munich: Dattner, Freising [83pp.]
- Iseley, D. (1947). Investigations in seed classification by family characteristics. *Iowa Agricultural Experiment Station Research Bulletin* No. 351, 1–63.
- + ——— and Wright, W. H. (1951). Noxious weeds and their seeds; miscellaneous species. *Proceedings of the Association of Official Seed Analysts of North America* 41, 139–44.
- Jensen, H. A. (1979). Establishment and maintenance of seed collections. *SST* 7, 533–41.
- +Kasahara, Y. (1976). The surface structures of the seeds and fruits of weeds in Japan observed with the scanning electron microscope. *Yokendo* (Tokyo), 1–130. [In Japanese]
- *Katz, N. J., Katz, S. V. and Kipiani, M. G. (1965). *Atlas and keys of fruits and seeds occurring in the Quaternary deposits of the U.S.S.R.* Moscow: Nauka [Academy of Sciences of the U.S.S.R., Commission for Investigations of the Quaternary Period 367pp.]
- (1969). 'The definition of fruits and seeds' [translation of pp. 38–109 of *Atlas and keys of fruits and seeds occurring in the Quaternary deposits of the USSR*, 1965]. British Library Lending Division, Translating Program, RTS 4703, Boston Spa, England.
- +Kiffman, R. (1955–60). *Bestimmungsatlas für Sämereien der Wiesen- und Weidepflanzen des mitteleuropäischen Flachlandes*. Parts A–G. Freising-Weißenstephan.
- +Korsmo, E. (1935). *Unkrautsamen*. Oslo: Gyldendel Norsk Forlag. Grøndahl [175pp.]
- Korsmo, E., Vidme, T. and Fykse, H. (1981). *Korsmos Ugrasplansjer*. Oslo: Landbruksforlaget. [Colour illustrations of arable weeds and seeds]
- Kühn, F. (1971). Identifikation von Unkrautsamen im prähistorischen Material. *Acta Museorum Agriculturae (Prague)* 6(1–2), 75–8. [Second Symposium of the International Workgroup for Palaeoethnobotany. Key to 44 Central European spp.]

- Kuřpa, W. (1974). *Nasionozwawstwo Chwastów*. Warsaw [413pp. A Polish seed flora with neat drawings and keys]
- Macmillan, C. (1902). Suggestions on the classification of seeds. *Botanical Gazette* **34**, 224.
- McClure, D. S. (1957). Seed characters of selected plant families. *Iowa State College, Journal of Science* **31**, 649–82.
- +Maisurian, N. A. and Atabekova, A. I. (1978). *Identification of the seeds and fruits of weeds*. Moscow: Kolos [287pp. In Russian]
- *Martin, A. C. (1946). The comparative internal morphology of seeds. *American Midland Naturalist* **36**(3), 513–660. [Size, shape and relative positions of embryo and endosperm in 1287 genera, worldwide. An important aid to the identification of unknown weed seeds by internal features]
- and Barkley, W. D. (1961). *Seed identification manual*. Berkeley: University of California Press. [221pp.]
- Musil, A. F. (1963). Identification of crop and weed seeds. *USDA Agricultural Handbook* **219**, 1–171.
- +Navchoo, I. A. and Buth, G. M. (1986). Seed and fruit characteristics of some weeds of Kashmir. I. *J. Plant Anat. Morphol.* **3**(1), 21–33.
- + ———, Naryan, A. and Buth, G. M. (1986). Seed and fruit characteristics of weeds of Kashmir. II. *J. Plant Anat. Morphol.* **3**(2), 113–22.
- +Niethammer, A. and Tietz, N. (1961). *Samen und Früchte des Handels und der Industrie*. Den Haag.
- +Parkinson, S. T. and Smith, G. (1953). *Weed seeds as impurities of agricultural seeds*. London: National Federation of Young Farmers' Clubs.
- Rich, T. C. G. and Rich, M. D. B. (1988). *Plant crib*. London: Botanical Society of the British Isles. [Uses fruit/seed characters for taxa such as *Matricaria* and *Oenanthe*]
- Ritter, G. (1910). Die systematische Verwertbarkeit des anatomischen Baues von Früchten und Samen. *Beihefte zum Botanischen Centralblatt* **26**, 132–56. [Anatomical key to family level]
- +Roth, I. (1977). Fruits of angiosperms', in W. Kimmermann (ed.) *Handbuch der Pflanzenanatomie*. X(1). Berlin: Gebrüder Borntraeger. [Anatomy]
- +Schermann, S. (1966). *Magismeret*. I, II. Budapest: Akademiai Kiadó. [Descriptions and drawings of 1800 species]
- Sparke, C. J. and Williams, G. H. (1983). *The identification of seeds in bracken-infested hill soils*. Botany Department, West of Scotland Agricultural College. [11 grass species, 42 other species of bracken-infested land]
- Swarbrick, J. T. (1969). *The morphology, taxonomy and identification of the seeds of British plants*. Unpublished Ph.D. thesis, Faculty of Science, Glasgow University (Scotland). [Copy and voucher set of seeds at the Royal Botanic Gardens, Edinburgh, Scotland]
- (1970). The identification of the seeds and indehiscent fruits of common Scottish aquatic herbs. *Transactions of the Botanical Society of Edinburgh* **41**(1), 9–25. [46 species]
- Travis, A. J. and Draper, S. R. (1984). A computer based system for the recognition of seed shape. *SST* **13**, 813–20.
- Vaughan, J. G. (1970). *The structure and utilization of oil seeds*. London: Chapman and Hall. [Useful for oil-seed crops]
- +von Tubeuf, K. F. (1891). *Samen, Früchte und Keimlinge der in Deutschland heimischen oder eingeführten forstlichen Kulturpflanzen*. Berlin: Springer.
- Wigginton, M. J. & Graham, G. C. (1981). A guide to the identification of some of the more difficult vascular plant species. *Nature Conservancy Council, England Field Unit, Occasional Paper No. 1*, Banbury. [145pp. Some useful seed characters are given]
- Winton, A. L. and Moeller, J. (1906). *The microscopy of vegetable foods*. London: Chapman and Hall.
- * ——— and Winton, K. B. (1932). *The structure and composition of foods, 1. Cereals*,

starch, oil seeds, nuts, oils, forage plants. New York: John Wiley. [Still the major work on the structure of commercially important seeds]

General Archaeobotany and Quaternary Studies

Baas, J. (1971). Pflanzenreste aus römischerzeitlichen Siedlungen von Mainz-Weisenau und Mainz-Innenstadt und ihr Zusammenhang mit Pflanzen-Funden aus vor- und frühgeschichtlichen Stationen Mitteleuropas. *Saalburg-Jahrbuch* 28, 61-87.

— (1979). Kultur- und Nutzpflanzen aus einer römischen Grube in Butzbach und ihr Zusammenhang mit Pflanzenfunden aus anderen römischen Fundstätten. *Saalburg-Jahrbuch* 36, 45-82.

[These two papers by Baas deal with fruitstones in detail]

Behre, K.-E. (1976). Die Pflanzenreste aus der frühgeschichtlichen Wurt Elisenhof. *Studien zur Küstenarchäologie Schleswig-Holsteins, Serie A: Elisenhof Bd.2*. Berne/Frankfurt: Lang. [144 pp.]

— (1983). *Ernährung und Umwelt der wikingerzeitlichen Siedlung Haithabu; die Ergebnisse der Untersuchungen der Pflanzenreste*. Die Ausgrabungen in Haithabu 8, Neumünster: Wachholz [219pp., 33 plates]

Frank, K.-S. and Stika, H.-P. (1988). Bearbeitung der makroskopischen Pflanzen- und einiger Tierreste des Römerkastells Sablonetum (Ellingen bei Weißenburg) in Bayern. *Materialhefte zur bayerischen Vorgeschichte* A61. Kallmünz [99 pp.]

Gregor, H.-J. (1985a). Paläoethnobotanische Untersuchung eines mittelalterlichen Brunneninhaltes in Kelheim. *Documenta Naturae (Munich)* 23, 1-26.

— (1985b). Mittelalterliche Pflanzenreste (Früchte und Samen) aus der Landshuter Altstadt. *Documenta Naturae (Munich)* 23, 27-41.

[Both of these publications by Gregor have numerous photographs of seeds]

Griffin, K. (1988). 'Plant remains', Chapter B, pp. 15-108 in E. Schia (ed.) *De Arkeologiske Utgravninger i Gamlebyen Oslo* 5.

Øvre Ervik: Alvheim and Eide. [Many good photos of seeds from the medieval old town in Oslo]

+Grosse-Brauckmann, G. (1972). Die pflanzlichen Makrofossilien mitteleuropäischer Torfe. 1. Gewebereste krautiger Pflanzen und ihre Merkmale. *Telma* 2, 19-55.

+ — (1974). Über pflanzliche Makrofossilien mitteleuropäischer Torfe. 2. Weitere Reste (Früchte, Samen, Moose u.a.) und ihre Bestimmungsmöglichkeiten. *Telma* 4, 51-117.

*Helbæk, H. (1970). 'The plant husbandry of Haçılar', pp. 189-244 in J. Mellaart, *Excavations at Haçılar, I*. Edinburgh: University Press.

Hjelmqvist, H. (1973). 'Appendix 6. Some economic plants from ancient Cyprus', pp. 231-55 in V. Karageorghis *Salamis 5, Excavations in the Necropolis of Salamis III* [text]. Nicosia: Department of Antiquities.

Hopf, M. (1968). 'Früchte und Samen', pp. 7-77 in H. Zürn *Das jungsteinzeitliche Dorf Ehrenstein bei Ulm*. Veröffentlichungen des staatlichen Amtes für Denkmalpflege Stuttgart, Reihe A: Vor- und Frühgeschichte, 10(2).

— (1978). 'Plant remains', pp. 64-82 in R. Amiran *Early Arad I. The Chalcolithic settlement and Early Bronze city*. Jerusalem: Israel Exploration Society.

— (1982). Vor- und frühgeschichtliche Kulturpflanzen aus dem nördlichen Deutschland. *Kataloge vor- und frühgeschichtlicher Altertümer* 22. Mainz: Römisch-Germanisches Zentralmuseum [108pp., 94 pl.]

+Jacquat, C. (1988). Hauterive-Champréveyres 1: les plantes de l'âge de Bronze. Catalogue des fruits et graines. *Archéologie Neuchâteloise* 7. St Blaise [163pp.]

+Jacomet, S., Brombacher, Ch. and Dick, M. (1989). Archäobotanik am Zürichsee. *Berichte der Zürcher Denkmalpflege Monographien* 7 [329 pp.]

Jacomet, S. (1986). Zur Morphologie subfossiler Samen und Früchte aus postglazialen See- und Kulturschichtsedimenten der neolithischen Siedlungspitze "AKAD-Seehofstrasse" und "Pressehaus" am untersten Zürichsee. *Botanica Helvetica* 96(2), 159-204.

Kislev, M. E. (1987). 'Chalcolithic plant husbandry and ancient vegetation at Shiqmim', pp. 251-79 and 548-63 in T. E. Levy (ed.) *Shiqmim 1: studies concerning Chalcolithic societies in the northern Negev Desert, Israel (1982-1984)*. BAR, *International Series* 356. Oxford. [SEM photographs of weed seeds]

Knörzer, K.-H. (1967). Untersuchungen Subfossiler pflanzlicher Grossreste im Rheinland. *Archaeo-Physika* 2. [107pp., 17 pl.]

* ——— (1970). Römerzeitliche Pflanzenfunde aus Neuss. *Limesforschungen* 10, *Novaesium* 4. Berlin: Mann [162 pp.]

* ——— (1973). Römerzeitliche Pflanzenreste aus einem Brunnen in Butzbach (Hessen). *Saalburg-Jahrbuch* 30, 71-114.

——— (1975). Mittelalterliche und jüngere Pflanzenfunde aus Neuss am Rhein. *Zeitschrift für Archäologie des Mittelalters* 3, 129-81.

* ——— (1979). Spätmittelalterliche Pflanzenreste aus der Burg Brüggel, Kr. Viersen. *Bonner Jahrbücher* 179, 595-610.

* ——— (1980). Subfossile Pflanzenreste aus der Junglatènezeitlichen Siedlung bei Laurenzberg, Gem. Eschweiler, Kr. Aachen. *Bonner Jahrbücher* 180, 442-56.

* ——— (1981). Römerzeitliche Pflanzenfunde aus Xanten. *Archaeo-Physika* 11 [176pp.]

* ——— (1984). Pflanzenfunde aus fünf eisenzeitlichen Siedlungen im südlichen Niederrheingebiet. *Bonner Jahrbücher* 184, 285-315.

* ——— (1987). Geschichte der synanthropen Vegetation von Köln. *Kölner Jahrbuch* 20, 271-388.

——— and Müller, G. (1968). Mittelalterliche Fäkalien-Faßgrube mit Pflanzenresten aus Neuss. *Bonner Jahrbücher* 28, 131-69.

[Knörzer gives very clear descriptions of identification criteria, usually with drawings or photographs, and his publications amount to the best information on plant identification from any one author]

*Körber-Grohne, U. (1967). *Geobotanische Untersuchungen auf der Feddersen Wierde*. I (Text: 357pp.), II (Plates: 84 pl.).

Wiesbaden: Steiner. [Deals primarily with waterlogged plant remains]

——— (1981). Pflanzliche Abdrücke in eisenzeitlicher Keramik—Ein Spiegelbild damaliger Nutzpflanzen. *Fundberichte aus Baden-Württemberg* 6, 165-211. [Plant impressions in pottery]

——— (1985). Die biologischen Reste aus dem hallstattzeitlichen Fürstengrab von Hochdorf, Gemeinde Eberdingen (Kreis Ludwigsburg). *Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg* 19 (Hochdorf I) [pp. 85-265]

——— and U. Piening. (1983). 'Die Pflanzenreste aus dem Ostkastell von Welzheim mit besonderer Berücksichtigung der Graslandpflanzen', pp. 17-88 in U. Körber-Grohne, M. Kokabi, U. Piening and D. Planck *Flora und Fauna im Ostkastell von Welzheim*. Stuttgart: Theiss. [Waterlogged plant remains, especially grasses]

*Kroll, H. J. (1983). *Kastanas. Die Pflanzenfunde*. Berlin: Spiess. [176pp. An outstanding report on one of the largest assemblages of eastern Mediterranean charred plant remains (from Greece). Excellent drawings]

——— (1987). 'Vor- und frühgeschichtlicher Ackerbau in Archsum auf Sylt. Eine botanische Grossrestanalyse', pp. 51-158 in G. Kossack et al., *Archsum auf Sylt, Teil 2. Landwirtschaft und Umwelt in vor- und frühgeschichtlicher Zeit*. Römisch-Germanische Forschungen 44. Mainz: von Zabern.

Küster, H. (1985). Neolithische Pflanzenreste aus Hochdorf, Gemeinde Eberdingen (Kreis Ludwigsburg). *Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg* 19 (Hochdorf I). [pp. 18-83]

Meyer, F. G. (1980). Carbonised food plants of Pompeii, Herculaneum and the villa at Torre Annunziata. *Economic Botany* 34(4), 401-37. [A complete cross section of Roman diet, including chestnut, stone pine, almond and garlic]

Piening, U. (1981). 'Die verkohlten Pflanzenreste aus den Proben der Cortaillod- und Horgener Kultur', pp. 69-88 in B. Ammann et al., *Botanischen Untersuchungen. Die neolithischen Ufersiedlungen von Twann* 14. Bern: Staatlicher Lehrmittelverlag.

Renfrew, J. M. (1973). *Palaeoethnobotany. The prehistoric food plants of the Near East and Europe*. London: Methuen [248pp.]

Schlichtherle, H. (1985). 'Samen und Früchte', pp. 7-43 in Ch. Strahn and H.-P. Uerpman (eds.) *Quantitative Untersuchungen an einem Profilssockel in Yverdon, Avenue des Sports 5.4.* Freiburg im Breisgau.

*Schoch, W. H., Pawlik, B. and Schweingruber, F. H. (1988). *Botanische Makroreste, Ein Atlas.* Berne: Haupt [227pp. In German/French/English, this covers 167 species]

Villaret-von Rochow, M. (1967). Frucht- und Samenreste aus der neolithischen Station Seeburg Burgäschisee-Süd. *Acta Bernensia* 2, 21-64.

Wieserowa, A. (1979). Plant remains from the early and late middle ages found in the settlement layers of the main market square in Cracow. *Acta Palaeobotanica* 20(2), 137-212.

*van Zeist, W. (1968). Prehistoric and early historic food plants in the Netherlands. *Palaeohistoria* 14, 41-173.

* ——— (1974). Palaeobotanical studies of settlement sites in the coastal area of the Netherlands. *Palaeohistoria* 16, 223-383.

* ——— (1981). Plant remains from Iron Age Noordborge, province of Drenthe, the Netherlands. *Palaeohistoria* 23, 169-93.

* ——— and Bakker-Heeres, J. A. H. (1982). Archaeobotanical studies in the Levant. 1. Neolithic sites in the Damascus Basin: Aswad, Ghoraif, Ramad. *Palaeohistoria* 24, 165-256.

* ——— (1984). Archaeobotanical studies in the Levant. 2. Neolithic and Halaf levels at Ras Shamra. *Palaeohistoria* 26, 151-70.

* ——— (1984). Archaeobotanical studies in the Levant. 3. Late-Palaeolithic Mureybit. *Palaeohistoria* 26, 171-99.

* ——— (1985). Archaeobotanical studies in the Levant. 4. Bronze Age sites on the North Syrian Euphrates. *Palaeohistoria* 27, 247-316.

van Zeist, W. and Palfenier-Vegter, R. M. (1979). Agriculture in medieval Gasselte. *Palaeohistoria* 29, 268-99.

* ——— (1981/1983). Seeds and fruits from the Swifterbant S3 site. *Palaeohistoria* 23, 105-68.

*van Zeist, W., Smith, P. E. L., Palfenier-Vegter, R. M., Suwijn, M. and Casparie, W.

A. (1984). An archaeobotanical study of Ganj Dareh Tepe, Iran. *Palaeohistoria* 26, 201-24.

*van Zeist, W., Cappers, R., Neef, R. and During, H. (1987). A palaeobotanical investigation of medieval occupation deposits in Leeuwarden, the Netherlands. *Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen, Series B*, 90(4), 371-426.

References by family

ALISMATACEAE

+Melkyan, A. P. (1968). The significance of the characteristics of the anatomical structure of the seed coat for specific taxonomy as exemplified by the genus *Alisma*. *Uch. Zap. Yerevan. Univ. Estestv. Nauk.* 2, 158-61.

AMARANTHACEAE

Kowal, T. (1954). The morphological and anatomical features of the seeds of genus *Amaranthus* L. and keys for their determination. *MB* 2, 162-93. [In Polish with English summary]

ARISTOLOCHIACEAE

Huber, H. (1985). Samenmerkmale und Gliederung der Aristolochiaceen. *Bot. Jahrb. Syst.* 107, 277-320. [130 species from all genera except *Saruma*]

BETULACEAE

Białobrzaska, M. (1964). The influence of various factors on the size and shape of fossil hornbeam fruits. *Acta Palaeobotanica* 5(1), 1-24. [In Polish with English summary: *Carpinus*]

+ ——— and Truchanowiczowna, J. (1960). The variability of shape of fruits and scales of the European birches (*Betula* L.) and their determination in fossil materials. *MB* 9(2), 3-86.

+Jentys-Szaferowa, J. (1960). Morphological investigations of the fossil *Carpinus*-nutlets from Poland. *Acta Palaeobotanica* 1(1), 1-4. [In Polish]

+ ——— (1961). Anatomical investigations on fossil fruits of the genus *Carpinus* in Poland. *Acta Palaeobotanica* 2(1), 1-33.

CAMPANULACEAE

Haridasan, V. K. and Mukherjee, P. K. (1987). Seed surface features of some members of the Indian Campanulaceae. *Phytomorphology* 37(4), 277-85. [SEM studies on 28 species]

Shetler, S. G. and Morin, N. R. (1986). Seed morphology in North American Campanulaceae. *Annals of the Missouri Botanical Garden* 73(4), 653-88. [Includes some European species]

CARYOPHYLLACEAE

Crow, G. E. (1979). The systematic significance of seed morphology in *Sagina* (Caryophyllaceae) under scanning electron microscopy. *Brittonia* 31(1), 52-63. [15 species, worldwide]

Jacomet, S. and Schibler, J. (1985). Die Nahrungsversorgung eines jungsteinzeitlichen Pfynerdorfes am unteren Zürichsee. *Archäologie der Schweiz* 8, 125-141. [*Silene cretica*]

Kowal, T. (1966). Systematic studies on the seeds of the genera *Delia* Dum., *Spergula* L. and *Spergularia* Presl. *MB* 21, 245-70. [In Polish with English summary]

— and Wojterska, H. (1966). Systematic studies on the seeds of the genus *Dianthus* L. *MB* 21, 271-96. [In Polish with English summary]

+Prentice, H. C. (1986). Climate and clinal variation in seed morphology of the white campion, *Silene latifolia*. *Biological Journal of the Linnean Society* 27(2), 179-89.

+Salisbury, E. J. (1958). *Spergularia salina* and *S. marginata* and their heteromorphic seeds. *Kew Bulletin* 41-51.

+Schaper, P. (1936). Beitrge zur mikroskopischen Diagnostik der wichtigsten Caryophyllaceen-Samen. *Landwirtschaftlichen Versuchs-station* 125, 1-100.

Wojterska, H. (1969). Systematic studies on the morphology and anatomy of seeds and fruits of Polish species of the genus *Cerastium* L. *Poznńnskie Towarzystwo Przyjaciól Nauk, Wydział Matematyczno-Przyrodniczy Prace Komisji Biologicznej* 32(7), 1-31.

CERATOPHYLLACEAE

+Backman, A. L. (1943). *Ceratophyllum*

submersum in Nordeuropa während der Postglazialzeit. *Acta Botanica Fennica* 31.

CHENOPODIACEAE

Cole, M. J. (1961). Interspecific relationships and intraspecific variation of *Chenopodium album* L. in Britain. *Watsonia* 5, 47-58. [*C. album* and *C. reticulatum*]

Guinet, P. (1959). Essai d'identification des graines de chenopodes commensaux des cultures ou cultivées en France. *Journal d'Agriculture Tropicale et de Botanique Appliqué* 6(6-7), 241-66.

Kowal, T. (1953). A key for the determination of the seeds of the genera *Chenopodium* L. and *Atriplex* L. *MB* 1, 87-163. [In Polish with English summary]

Matthies, M. (1985). Stadtgrabung 32—Nutzpflanzenfunde des Mittelalters und der frühen Neuzeit aus der Górdelingerstrasse, pp. 215-9 in H. Rötting (ed.) *Stadtarchäologie in Braunschweig. Forschungen der Denkmalpflege in Niedersachsen* 3, 215-19. [*Spinacia oleracea*]

CISTACEAE

Wojciechowa, B. (1969). Seed morphology and anatomy of some *Helianthemum* species. *MB* 29, 121-35. [In Polish with English summary]

COMPOSITAE

Dittrich, M. (1968). Morphologische Untersuchungen an den Früchten der Subtribus Cardueae-Centaureinae (Compositae). *Willdenowia* 5(1), 67-107.

+Gouchu, D. I. (1973). Anatomy of the seeds of the *Centaurea* spp. *Botanicheskii Zhurnal* 58(2), 245-7.

Kroll, H. (1990). Safflor von Feudvar, Vojvodina: ein Früchtfund von *Carthamus tinctorius* belegt diese Farbpflanze für die Bronzezeit Jugoslaviens. *Archäologisches Korrespondenzblatt* 20, 41-6.

Kuijper, W.J. 1987. Vondsten van de late Stekelnot uit de romeinse tijd, pp. 141-5 in W. A. B. van Sanden and P. W. van der Broeke (eds.) *Getekend Zand, Bijdragen tot de studie van het brabantse heem* 31. [*Xanthium*]

Matthews, D. (1963). Laboratory identification of seeds of some thistles, *Cirsium arvense*, *Cirsium vulgare*, *Carduus nutans*. *PISTA* 28, 19-26.

+Serbanexcu, G., Sanda, V., Vaduva, I. and Popescu, G. (1970). The anatomical and biometrical study of the epidermal cells and statistical interpretation of the fruit in the species taxonomy of *Taraxacum* in Romania. *Stud. Cercet Biol. Ser. Bot.* **22**(2), 101-9.

+Wynn-Williams, M. (1934). Observations upon the seeds of some *Cirsium* species. *Mitteil. Internat. Vereinig. Samenkontr. Kopenhagen* **6**, 4-10.

CONVOLVULACEAE

Behre, K.-E. (1977). Acker, Grünland und natürliche Vegetation während der römischen Kaiserzeit im Gebiet der Marschensiedlung Bentumersiel/Unterems. *Probleme der Küstenforschung im südlichen Nordseegebiet* **12**, 67-84. [*Cuscuta epilinum*]

Lyshede, O. (1984). Seed structure and germination in *Cuscuta pedicellata* with some notes on *C. campestris*. *Nordic Journal of Botany* **4**, 669-74.

Pals, J.-P. and van Dierendonck, M. C. (1988). Between flax and fabric, cultivation and processing of flax in a medieval peat reclamation settlement near Midwoud (Prov. Noord Holland) *Journal of Archaeological Science* **15**, 237-51. [*Cuscuta epilinum*]

CRUCIFERAE

Behre (1977). [See under Convolvulaceae; *Camelina sativa*]

+Berggren, G. (1960). Beskrivning av vissa odlade och vildvarande *Brassica*- och *Sinapis*-arters frökaraktärer jämte en harpe grundad bestämningenyckel [Seed characters of certain cultivated and wild-growing *Brassica* and *Sinapis* species and a key for the determination of these species in seed samples]. *Frökontrollanstaltens meddelande* **35**. Stockholm.

— (1962). Reviews on the taxonomy of some species of the genus *Brassica*, based on their seeds. *Svensk Botanisk Tidsskrift* **56**, 65-135. [*B. campestris*, *B. carinata*, *B. juncea*, *B. napus*, *B. nigra*, *B. oleracea*, *B. tournefortii*]

+van der Burg, W. J., Vierbergen, G. and Koenders, K. T. (1979). Identification of *Brassica* and *Sinapis* spp. *SST* **7**, 529.

+Buth, G. M. and Ara, R. (1981). Seed coat anatomy of some cultivated *Brassicacae*. *Phytomorphology* **31**, 69-78.

Buurman, J. (1988). 'Roman medicine from Uitgeest', pp. 341-51 in H. Küster (ed.) *Der prähistorische Mensch und seine Umwelt. Festschrift für U. Körber-Grohne* (Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 31) Stuttgart: Theiss.

+Cernohorsky, Z. (1946). Anatomie des graines des espèces tchèques du genre *Thlaspi* L. *Bull. Intern. Cl. Sci. Math. Nat. Med. Acad. Tchèque. Sci.* **47**, 5-10.

+ — (1946). Les grains des espèces tchèques du genre *Alyssum* L. *Csiky Zemed.* **19**, 162-9.

+ — (1947). Graines des Cruciferae des Bohème. *Opera Botanica Cehica* **5**, 1-96.

+Francois, L. (1937). Semences et jeunes plantes des végétaux messicoles: famille des Crucifères. *Annales des epiphyties et des Phytogénétique, Ministère de l'agriculture, Paris* **3**, 8-21.

+Klykhen, P. (1937). Anatomie und Entwicklungsgeschichte des Samen von *Alliaria officinalis*. *Nyt Magazin for Naturvidenskaberne* **77**, 201-15.

Knörzer, K.-H. (1984). Textilpflanzenfunde aus dem mittelalterlichen Aachen. *Decheniana* **137**, 226-33. [*Isatis tinctoria*]

+Kondo, M. (1917). Researches on seeds of *Brassica* species in Japan. *Ber. Ohara Inst. landw. Forsch.* **1**, 123-50.

Latowski, K. (1975). Morphology and anatomy of fruits and seeds of the middle European *Erysimum* L. species. *MB* **49**, 5-77. [In Polish with English summary]

+McGugan, J. M. (1948). Seeds and seedlings of the genus *Brassica*. *Canadian Journal of Research, C*, **26**, 520-87.

*Murley, M.R. (1951). Seeds of the Cruciferae of northeastern North America. *American Midland Naturalist* **46**(1), 1-81. [Includes many species naturalised from Europe]

+Musil, A. F. (1942). Seeds of commercial species of *Brassica*. *Proceedings of the Association of Official Seeds Analysts* **34**, 132-8.

— (1948). Distinguishing the species of *Brassica* by their seed. *USDA Miscellaneous Publication* **643**, 1-35.

+Perino, K. W. (1972). A contribution to the diagnostics of seeds of economically

important *Brassica* species. *Landwirtschaftliche Forschung* 25(3), 272-4.

+Roberts, R. A. and Thomas, J. O. (1933). A study of the distinguishing features of the seeds and seedlings of some farm Cruciferae. *PISTA* 5(2), 113-31.

Steiner, A. M. (1977). Untersuchungen zur Echtheitbestimmung bei Saatgut landwirtschaftlicher *Brassica*-Arten mittels der Oberflächenstruktur der Samenschale. *SST* 5, 41-52.

Stork, A. L. (1971). Seed characters in European taxa of *Malcolmia* R.Br. (Cruciferae). *Svensk Botanisk Tidskrift* 65(3), 283-92. [Deals with 11 species]

— (1972). Samen und Keimlinge von *Malcolmia* sens. lat. (Cruciferae). *Svensk Botanisk Tidskrift* 66, 417-36. [Deals with 37 taxa]

Vaughan, J. G. and Whitehouse, J. M. (1971). Seed structure and the taxonomy of the Cruciferae. *Biological Journal of the Linnean Society of London* 64(4), 383-409.

van Zeist *et al.* (1987). [See under General Archaeobotany; *Brassica/Sinapis/Raphanus*]

Vodak, A. (1971). Eine einfache und sichere Artdiagnose von *Sinapis arvensis* L.- Samen mit Hilfe der Abdruckmethode. *PISTA* 36 (2), 233-8.

— and Pazourek, J. (1965). Eine neue Methode zur Unterscheidung von Samen der *Brassica oleracea* L.- und *Brassica napus* L.-Arten (durch Abdruckmethode). *PISTA* 30 (3), 565-72.

CURCUBITACEAE

Butt, G. M. (1979). 'Seed coat anatomy of some Curcubitaceous seeds', pp. 94-100 in S. S. Bir (ed.), *Recent researches in plant sciences*. New Delhi: Kalyani. [*Cucumis*, *Curcubita*, *Citrullus*, *Lagenaria*, *Luffa*]

Küster, H. (1988). Spätmittelalterliche Pflanzenreste aus einem Brunnen von Deggendorf (Niederbayern). *Vorträge des 6. niederbayerischen Archäologentages*, A, 6(1), 175-99. [*Cucumis*]

+Russell, P. (1924). Identification of commonly cultivated species of *Curcubita* by means of seed characters. *Journal of the Washington Academy of Sciences* 14, 265.

CYPERACEAE

Berggren, G. (1969). *Atlas of seeds and small fruits of Northwest-European plant species, with morphological descriptions. Part 2. Cyperaceae*. Stockholm: Swedish Natural Science Research Council. [68pp, 39pl.]

Kowal, T. (1958). A study on the morphology of fruits of European genera from the subfamilies Scirpoideae Pax, Rhynchosporoideae Aschers. et Graebner and some genera of Caricoideae Pax. *MB* 6, 97-149. [In Polish with English summary]

Marek, S. (1958). A study on the anatomy of fruits of European genera in the subfamilies Scirpoideae Pax, Rhynchosporoideae Aschers. et Graebn. and some genera of Caricoideae Pax. *MB* 6, 151-189. [In Polish with English summary]

*Nilsson, Ö. and Hjelmqvist, H. (1967). Studies on the nutlet structure of south Scandinavian species of *Carex*. *Botaniska Notiser* 120, 460-85.

+Samuelsson, G. (1933). Carices Muehlenbergianae Tuckerman i Norden. *Svensk Botanisk Tidsskrift* 27, 1-31.

Schuyler, A. E. (1971). Scanning electron microscopy of achene epidermis in species of *Scirpus* (Cyperaceae) and related genera. *Proceedings of the Academy of Natural Sciences of Philadelphia* 123(2), 29-52. [Deals with 58 species of *Scirpus* and *Eriophorum*, worldwide]

+Toivononen, H. and Timonen, T. (1976). Perigynium and achene epidermis of some species of *Carex*, subg. *Vignea* (Cyperaceae), studied by scanning electron microscopy. *Ann. Bot. Fenn.* 13, 49-59.

DIPSACACEAE

Knörzer (1984). [See under CRUCIFERAE; *Dipsacus sativus* (*D. fullonum*)]

ERICACEAE

Tallantire, P. A. (1976). Provisional key for the identification of sub-fossil seeds of *Vaccinium* spp. *Folia Quaternaria* 47, 39-40. [5 Norwegian species]

ERIOCAULACEAE

+Nair, R. V. (1987). Taxonomic significance of seed coat morphology in *Eriocaulon* Linn. (Eriocaulaceae). *SST* 15, 297-310.

EUPHORBIACEAE

Krochmal, A. (1952). Seeds of weedy *Euphorbia* species and their identification. *Weeds* 1, 243-55.

Railyan, A. F. (1973). On importance of anatomical structure of the seed coat for the taxonomy of the genus *Euphorbia* L. *Botanicheskii Zhurnal* 58(2), 239-45.

+Rössler, L. (1943). Vergleichende Morphologie der Samen europäischer *Euphorbia*-Arten. *Beih. Bot. Centralbl.* 62, 97-174.

Serwatka, J. (1972). Seed morphology and anatomy of the European species of the genus *Euphorbia* L. *MB* 37, 3-49. [In Polish with English summary]

FAGACEAE

Jørgensen, G. (1977). Acorns as a food-source in the later Stone Age. *Acta Archaeologica* 48, 233-8.

Piening, U. (1986). Verkohlte pflanzliche Beigaben aus einem frühromischen Grabhügel bei Büchel, Kreis Cochem-Zell. *Trierer Zeitschrift* 49, 257-71. [*Quercus* fruits -acorns]

FUMARIACEAE

Gunn, C. R. (1980). Seeds and fruits of Papaveraceae and Fumariaceae. *SST* 8(1), 3-58.

GENTIANACEAE

Knörzer, K.-H. (1963). Römerzeitliche Heilkräuter aus Novaesium, Neuss/Rh. *Südhoffs Archiv* 47, 311-16. [*Centaureum umbellatum*]

Küster (1988). [See under CUCURBITACEAE; *Gentiana germanica*]

GERANIACEAE

Bakels, C. C. and van der Hamm, R. J. W. (1980). Verkoold afval uit een midden-Bronstijd en een midden ijzertijd nederzetting op de Hooidonksche akkers, Gem. Son en Breugel, Prov. Noord-Brabant. *Analecta Praehistorica Leidensia* 13, 81-91. [*Geranium pyrenaicum*]

Tokarski, M. (1972). Morphological and taxonomical analysis of fruits and seeds of the European and Caucasian species of the genus *Geranium*. *MB* 36, 5-111. [In Polish with English summary]

GRAMINEAE

Äberg, E. and Wiebe, G. A. (1948). Taxonomic value of characters in cultivated barley. *USDA, Technical Bulletin* 942. Washington D.C. [88pp.]

Banerjee, S. K. and Chauhan, K. P. S. (1981). Studies on the evolution of seed coat pattern in wheat by scanning electron microscopy identification. *SST* 9(3), 819-22.

Bogdan, A. V. (1965). Seed morphology of some cultivated African grasses. *PISTA* 31(5), 789-99. [*Cenchrus ciliaris*, *Chloris gayana*, *Melinis minutiflora*, *Panicum coloratum*, *P. maximum*, *Setaria sphacelata*]

Carson, G. P. and Horne, F. R. (1962). 'The identification of barley varieties', pp. 101-59 in A. H. Cook (ed.), *Barley and malt*. London: Academic Press.

*Charles, M. P. (1984). Introductory remarks on the cereals. *Bulletin on Sumerian agriculture* 1, 17-31.

Colledge, S. M. (1988). 'Scanning electron microscope studies of the cell patterns of the pericarp layers of some wild wheats and ryes—methods and problems', pp. 225-36 in S. L. Olsen (ed.), *Microscopy in archaeology*. *BAR, International Series* 452. Oxford.

Dickson, C. and Dickson, J. (1988). The diet of the Roman army in deforested central Scotland. *Plants Today* 6, 121-6. [Cereal 'bran' identification]

+Dorter, K. (1968). Das Bestimmen der Samen von Gräsern.

Farragher, M. A. (1973). Artificial key for the identification of the fruits of Irish grasses. *Scientific Proceedings, Royal Dublin Society, A*, 5, 37-54 and pl. 4-7. [Mainly deals with floret characters]

Feindt, F. (1977). Die Bedeutung des L/B-Index als ein Bestimmungsmerkmal bei Getreidekörnern aus archäologischen Ausgrabungen am Beispiel von *Hordeum vulgare* L. und *Hordeum vulgare* L. var *nudum*. *Mitteilungen des Instituts für Allgemeine Botanik in Hamburg* 15, 79-96.

Hajnalová, E. (1978). Funde von *Triticum*-Resten aus einer hallstattzeitlichen Getreidespeichergrube in Bratislava-Devin/CSSR. *Berichte der Deutschen Botanischen Gesellschaft* 91, 85-96. [*Triticum dicoccum* and *T. spelta*]

Helbæk, H. (1952). Spelt (*Triticum spelta* L.) in Bronze Age Denmark. *Acta Archaeologica (Copenhagen)* 23, 97–115.

——— (1953). Queen Icetis' wheat. *Kongelige Danske Videnskabernes Selskabs Biol. Meddelelser* 21(8), 3–17. [*Triticum monococcum* vs. *T. dicoccum*]

Hervey-Murray, C. G. (1980). *The identification of cereal varieties*. RHM Agricultural Research and Advisory Services Ltd, Great Dunmow, Essex. [187pp.]

Hillman, F. H. (1916). Distinguishing characters of the seeds of Sudan grass and Johnson grass. *USDA, Bulletin* 406. Washington D.C. [5pp.; *Sorghum halepense* and *S. sudanense*]

Hilu, K. W., de Wet, J. M. J. and Harlan, J. R. (1979). Archaeobotanical studies of *Eleusine coracana* ssp. *coracana* (Finger Millet). *American Journal of Botany* 66(3), 330–3.

Holden, T. (1986). 'Preliminary report on the detailed analysis of the macroscopic remains from the gut of Lindow Man', pp. 116–25 and 202 in I. M. Stead, J. B. Bourke and D. Brothwell (eds.), *Lindow Man: the body in the bog*. London: British Museum.

Hopf, M. (1954). Anatomische Untersuchungen an Weizenspelzen und Körnern verschiedener Polyploidiestufen als Vorarbeit für die Bestimmung prähistorischer Funde. *Der Züchter* 24, 191–3.

——— (1955). Formveränderungen von Getreidekörnern beim Verkohlen. *Berichte der Deutschen Botanischen Gesellschaft* 78, 191–3.

——— (1975). Beobachtungen und Überlegungen bei der Bestimmung von verkohlten *Hordeum*-Früchten, *Folia Quaternaria* 46, 83–92.

Isely, D., West, D. and Pohl, R. W. (1951). Seeds of agricultural and weedy *Bromus*. *Iowa State College, Journal of Science* 25(4), 531–48.

*Jacomet, S. (1987). *Prähistorische Getreidefunde*. Basel: Botanisches Institut der Universität, Abteilung Pflanzensystematik und Geobotanik [70 pp. Cereal identification guide. Now out of print, but English translation available from JRAG]

——— (1988). Verkohlte pflanzliche Makroreste aus Grabungen in Augst und Kaiseraugst. Kultur- und Wildpflanzenfunde als Informationsquellen über die Römerzeit. *Jahresberichte aus Augst und Kaiseraugst* 9, 272–310. [Charred Roman cereals from NW Switzerland]

Jacomet, S., Felice, N. and Füzesi, B. (1988). Teil III. Verkohlte Samen und Früchte aus der hochmittelalterlichen Grottenburg "Riedfluh" bei Eptingen, Kanton Baselland (Nordwest Schweiz), pp. 169–227 in P. Degen, H. Albrecht, S. Jacomet, B. Kaufmann and J. Tauber, Die Grottenburg Riedfluh, Eptingen, BL. Berichte über die Ausgrabungen 1981–1983. *Schweizer Beiträge zur Kulturgeschichte und Archäologie des Mittelalters* 15. [Charred medieval plant remains, including many cereals]

Jacomet, S. and Dick, M. (1986). Verkohlte Pflanzenreste aus einem Römischen Grabmonument beim Augster Osttor (1966). *Jahresberichte aus Augst und Kaiseraugst* 6, 7–53. [Mostly charred cereals]

Jacomet, S. and Schibler, J. (1985). [See under CARYOPHYLLACEAE; charred cereals]

Jacomet, S. and Schlichtherle, H. (1984). 'Der kleine Pfahlbauweizen Oswald Heers — Neue Untersuchungen zur morphologie neolithischer Nacktweizen-Ahren', pp. 153–76 in W. van Zeist and W. A. Casparie (eds.) *Plants and ancient man*. Rotterdam: Balkema.

+Jensen, L. A. et al. (1957). Seed characteristics of certain wild barley, *Hordeum* spp. *PISTA* 1957, 87–91.

Jørgensen, G. (1975). *Triticum aestivum* s.l. from the Neolithic site of Weier in Switzerland. *Folia Quaternaria* 46, 7–21. [*T. aestivum* vs. *T. compactum*]

Keefe, P. D. and Draper, S. R. (1986). The measurement of new characters for cultivar identification using machine vision. *SST* 14, 715–24.

Kislev, M. E. (1984). 'Botanical evidence for ancient naked wheats in the Near East', pp. 141–52 in W. van Zeist and W. A. Casparie (eds.) *Plants and ancient man*. Rotterdam: Balkema.

Knörzer, K.-H. (1966). Über Funde römischer Importfrüchte in Novaesium (Neuss/Rh). *Bonner Jahrbücher* 166, 432–43. [*Oryza sativa*]

Knörzer, K.-H. (1971). Eisenzeitliche Pflanzenfunde im Rheinland. *Bonner Jahrbücher* 171, 40–58. [Key to the millets—*Panicum*, *Setaria*, *Echinochloa*, *Digitaria*]

+Kondo, M. and Kasahara, Y. (1934). Vergleichende Untersuchungen ber Aschenbilder der Spelzen von *Chaetochloa*, *Panicum*, *Echinochloa*, *Saccioopsis* und *Syntherisma*. *Berichte des Ohara Instituts für landwirtschaftliche Forschungen* 4(4), 491–513.

*Körper-Grohne, U. (1964). Bestimmungsschlüssel für subfossile *Juncus*-Samen und Gramineen-Früchte. *Probleme der Küstenforschung im Südlichen Nordseegebiet* 7, Hildesheim: August Lax. [Revised and enlarged edition in preparation]

——— (1977). Mittelalterliche Roggenfunde aus Württemberg. *Fundberichte aus Baden-Württemberg* 3, 579–84. [*Secale cereale*]

——— (1981). Distinguishing prehistoric cereal grains of *Triticum* and *Secale* on the basis of their surface patterns using the SEM. *Journal of Archaeological Science* 8, 197–204.

——— (1987). Federgras-Grannen (*Stipa pennata* L. s. str.) als Vorrat in einer mittelnolithischen Grube in Schöningen, Landkreis Helmstedt. *Archäologisches Korrespondenzblatt* 17, 463–6.

———, Bickelmann, U. and Leist, N. (1988). Saathafer (*Avena sativa* L.) und Flughäfer (*Avena fatua* L.) sowie die Deutung der Zwischenformen in einem prhistorischen Vorratsfund aus dem 1. Jahrhundert n. Chr. im Vergleich mit entsprechenden heutigen Formen. *Fundberichte aus Baden-Württemberg* 13, 279–305.

Körper-Grohne, U. and Piening, U. (1979). Verkohlte Nutz- und Wildpflanzenreste aus Bondorf, Kreis Böblingen. *Fundberichte aus Baden-Württemberg* 4, 152–69. [Charred cereals]

* ——— (1980). Microstructure of the surfaces of carbonized and non carbonized grains of cereals as observed in scanning electron and light microscopes as an additional aid in determining prehistoric findings. *Flora (Jena)* 170, 189–228.

Kosina, R. (1980). Statistical analysis of the grain morphology of the present and fossil cereals. *Acta Societatis Botanicorum Poloniae* 49(3), 321–37. [On the effects of charring]

——— (1984). Morphology of the crease of wheat caryopses and its usability for the

identification of some species. A numerical approach', pp. 177–91 in W. van Zeist and W. A. Casparie (eds.) *Plants and ancient man*. Rotterdam: Balkema.

Kowal, T. and Rudnicka-Sternwa, W. (1969). Fruit morphology and anatomy of the *Bromus* L. species of Poland. *MB* 29, 19–67. [In Polish with English summary]

Kühn, F. (1971). Identifikation von Weizenarten im prähistorischen Material. *Acta Museorum Agricultrae (Prague)* 6(1–2), 67–72. (Second Symposium of the International Workgroup for Palaeoethnobotany).

Lorenz, K. (1977). Proso and foxtail millets—scanning electron microscopy and starch characteristics. *Lebensmittel-Wissenschaft und Technologie* 10, 324–27.

Marschall, F. (1965). Beiträge zur Sortenbestimmung am Weizenkorn. *PISTA* 30(3), 625–36. [Kernel measurements for identifying varieties]

Matsutani, A. (1986). Identification of italian millet from Esashika site by means of Scanning Electron Microscope. *Journal of the Anthropological Society of Nippon* 94(1), 111–18. [SEM studies on *Setaria italica*]

Matthies, M. (1985) Stadtgrabung 32—Nutzpflanzenfunde des Mittelalters und der frühen Neuzeit aus der Gördelingerstrasse. *Stadtarchäologie in Braunschweig. Forschungen der Denkmalpflege in Niedersachsen* 3, 215–19. [Rice grain and chaff (waterlogged)]

Musil, A. F. (1944a). *Seeds of grasses cultivated for forage or occurring incidentally with crop seeds: the genus Panicum*. USDA Agricultural Research Administration, Bureau of Plant Industry, Beltsville, MD. [7pp., 2 pl.]

——— (1944b). *Seeds of grasses cultivated for forage or occurring incidentally with crop seeds: miscellaneous species*. USDA Agricultural Research Administration, Bureau of Plant Industry, Beltsville, MD. [5pp., 1 pl.]

——— (1944c). *Seeds of grasses cultivated for forage or occurring incidentally with crop seeds: the genus Setaria*. USDA Agricultural Research Administration, Bureau of Plant Industry, Beltsville, MD. [4pp., 1 pl.]

——— (1946). *Distinguishing species of Avena from their seed—a study of cultivated oats, the fatuoids, and certain wild species of economic interest*. USDA Agricultural Research

Administration, Bureau of Plant Industry, Beltsville, MD. [9pp., 6 pl.]

— (1948). *Distinguishing seeds of ryegrass, Lolium spp. and the large seeded fescues, Festuca elatior and varieties.* USDA Agricultural Research Administration, Bureau of Plant Industry, Beltsville, MD. 5pp, 5 plates.

[This series of pamphlets by Musil mostly uses lemma and palea characters, but is still of interest to archaeobotanists. Obtainable on inter-library loan from the USDA National Agricultural Library, Beltsville, MD]

Nesbitt, R. M. A. and Summers, G. D. (1988). Some recent discoveries of millet (*Panicum miliaceum* L. and *Setaria italica* (L.) P. Beauv.) at excavations in Turkey and Iran. *Anatolian Studies* 38, 85–97.

Pammel, L. H. (1898). The histology of the caryopsis and endosperm of some grasses. *Transactions of the Academy of Science of St. Louis* 8, 199–220 and pl. 17–19. [Anatomy]

Piening, U. (1986). Verkohlte Nutz- und Wildpflanzenreste aus Großsachsenheim, Gem. Sachsenheim, Kreis Ludwigsburg. *Fundberichte aus Baden-Württemberg* 11, 177–208. [*Triticum monococcum*, *T. durum/turgidum* described]

Rost, T. L. and Lersten, N. R. (1973). A synopsis and selected bibliography of grass caryopsis anatomy and fine structure. *Iowa State Journal of Research* 48(1), 47–87.

*Rothmaler, W. (1955). Zur Früchte-morphologie der Weizen-Arten (*Triticum* L.). *Feddes Repertorium* 57(3), 209–16.

Rudnicka-Sterna, W. (1972). Systematic studies on the morphology and anatomy of the caryopsis of the *Poa* L. species in Poland. *MB* 37, 51–135. [In Polish with English summary]

+Schel, J. H. N., Stasse-Wolthuis, M., Katan, M. B. and Willtemse, M. T. M. (1980). Structural changes of wheat bran after human digestion. *Mededelingen Landbouwhogeschool, Wageningen*.

Schiemann, E. (1951). Emmer in Troja. Neubestimmungen aus den trojanischen Körnerfunden. *Berichte der Deutschen Botanischen Gesellschaft* 64, 155–70.

— (1954). Einkorn im alten Aegypten? Untersuchungen zur Unterscheidung von

Einkorn und Emmer (*Triticum monococcum* und *dicoccum*). *Der Züchter* 24(4/5), 139–49.

Steiner, A. M. (1984). Die Grösse der Spelzfrüchte bei Arten und Sorten von *Poa* als Merkmal zur Echtheitsbestimmung; eine kritische Nachprüfung. *SST* 12, 913–18. [Floret characters for 6 species]

Stewart, R. B. and Robertson, W. (1971). Moisture and seed carbonization. *Economic Botany* 25(4), 381.

+Sutton and Sons Ltd. (1960). *The identification of grass seeds.* Sutton's Grass Advisory Service, Reading.

Tsubasaka, K. (1988). 'Appendix: material related to the plant remains from Hokkaido University campus site', pp. 1–11 in *Material related to early agriculture in Hokkaido II* Hokkaido University, Department of Literature, Anthropology Laboratory. [In Japanese; good SEM pictures of *Echinochloa*, *Panicum*, *Setaria*]

Villaret-von Rochow, M. (1971). *Avena ludoviciana* Dur. im Schweizer Spätneolithikum, ein Beitrag zur Abstammung des Saathafers (*Avena sativa* L.). *Berichte der Deutschen Botanischen Gesellschaft* 84(5), 243–8.

GUTTIFERAE (HYPERICACEAE)

+Bahadur, B., Farooqui, S. M. and Narsaiah, G. (1985). Seed and seed coat characters in some species of *Hypericum* L. (Guttiferae). *Indian Bot. Rep.* 4(2), 209–12.

Reynaud, C. (1985). Étude des téguments des graines de quelques *Hypericum* (Guttiferae) méditerranéens observés au M.E.B.I. *Adansonia*, B, 7, 85–96.

JUNCACEAE

*Körber-Grohne, U. (1964). Bestimmungsschlüssel für subfossile *Juncus*-Samen und Gramineen-Früchte. *Probleme der Küstenforschung im Südlichen Nordseegebiet* 7, Hildesheim: August Lax.

LABIATAE

Buurman (1988). [See under Cruciferae; *Origanum vulgare*]

Carmiggelt, A., van Gangelen, H., Kortekaas, G. and van Zeist, W. (1987). Plantenresten uit twee beerputten in Groningen. *Uitgeput Huisraad (uitgave van de Stichting Monument en Materiaal)* 65–74. [*Hyssopus*]

+Fabre, G. and Nicoli, M. (1965). Sur la morphologie des akenes de quelques Labiées de la flore de France. *Bulletin de la Société Botanique de France* 112, 267-71.

Jacomet, S. (1988). Pflanzen mediterraner Herkunft in neolithischen Seeufersiedlungen der Schweiz', pp. 205-12 in H. Küster (ed.), *Der prähistorische Mensch und seine Umwelt*. (Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 31) Stuttgart: Theiss. [*Melissa officinalis*]

Kuijper, W. J. (1984). Plantenresten uit romeins Maastricht. *Archeologie in Limburg* 21, 3-8. [*Nepeta cataria*]

Wojciechowska, B. (1958). Taxonomy, morphology and anatomy of fruits and seeds in the genus *Salvia* L. *MB* 6, 3-55. [In Polish with English summary]

—— (1961a). Fruits of the middle European species of some genera of the subfamily Stachydoideae (fam. Labiatae). *MB* 12, 89-120. [In Polish with English summary]

—— (1961b). Fruits of the middle European species of the genus *Prunella* L. (fam. Labiatae), their morphology and anatomy. *MB* 12, 49-87. [In Polish with English summary]

—— (1966). Morphology and anatomy of fruits and seeds in the family Labiatae with particular reference to medicinal species. *MB* 21, 3-243. [In Polish with English summary]

—— (1972). Fruit morphology and anatomy in *Scutellaria*, *Chaiturus*, *Galeobdolon*, and *Sideritis* of the family Labiatae. *MB* 37, 137-69. [In Polish with English summary]

LEGUMINOSAE (see also MIMOSACEAE)

Butler, A. (1986). 'Studies in the seedcoat of *Lathyrus*', pp. 25-38 in A. K. Kaul and D. Combes (eds.), *Lathyrus and Lathyrism*. New York: Third World Medical Research Foundation.

—— (1988). 'The scanning electron microscope and seed identification with special reference to the Viciae', pp. 215-24 in S. Olsen (ed.) *Scanning electron microscopy in archaeology*, BAR, *International Series* 452. Oxford.

—— (1989). 'Cryptic anatomical characters as evidence of early cultivation in the grain legumes (pulses)', pp. 390-407

in D. H. Harris and G. C. Hillman (eds.), *Foraging and Farming*. London: Unwin Hyman. [SEM studies on *Lens*, *Lathyrus*, *Pisum*, *Vicia*]

+Capitaine, L. (1912). *Les graines des légumineuses; étude sur la morphologie externe, essai d'application à la systematique*. Paris: Larose.

+Corner, E. J. H. (1951). The leguminous seed. *Phytomorphology* 1(1,2), 117-50.

+Dudyk, N. M. and Kondratiuk, I. M. (1970). *Atlas plodiv i nasinnia bobovykh pryrodnoi flory URSR* [Fruit and seed atlas of Leguminosae of natural flora in the Ukrainian SSR]. Kiev: Naukova Dumka. [213pp. In Ukrainian]

Gunn, C. R. (1970). A key and diagrams for the seeds of one hundred species of *Vicia* (Leguminosae). *PISTA* 35(3), 773-90.

* —— (1971). Seeds of native and naturalized vetches of North America. *USDA Agricultural Research Service, Agriculture Handbook* 392, 1-42.

—— (1981). Seed topography in the Fabaceae. *SST* 9, 737-57.

+Hillman, F. H. (1933). Distinguishing characters of seeds of *Vicia villosa* and *Vicia dasycarpa*. *USDA*. [3pp.]

Isely, D. (1947). Seed characters of alfalfa and certain other species of *Medicago*. *Iowa State College, Journal of Science* 21(2), 153-9. [Key and drawings of 4 Eurasian *Medicago* species]

Kislev, M. (1985). Early neolithic horsebean from Yiftah'el, Israel. *Science* 228, 319-20. [*Vicia faba*]

Kislev, M. E. and Hopf, M. (1985). 'Food remains from Tell Qasile', pp. 140-7 in A. Mazar, Tell Qasile. *Qedem* 20. [Separating *Lathyrus cicera* and *L. sativus* using SEM]

Knörzer, K.-H. (1979). Verkohlte Reste von Viehfutter aus einem Stall des römischen Reiterlager von Dormagen. *Rheinische Ausgrabungen* 20, 130-7. [*Coronilla varia* (and other grassland plants) in Roman fodder]

+Kopooshian, H. A. (1963). *Seed character relationships in the Leguminosae*. Unpublished Ph.D. thesis, Iowa State University, Ames (Iowa, USA).

—— and Isely, D. (1966). Seed character relationships in the Leguminosae.

Proceedings of the Iowa Academy of Science 73, 59-67.

LaSota, L. R., Link, C. B. and Gunn, C. R. (1979). SEM in the study of comparative testa morphology. *Scanning Electron Microscopy* 1979(3), 231-6. [10 species of *Ononis*]

Lazaro, F. B. (1966). *Semillas y plantules de leguminosas pratenses espanolas*. Madrid: Ministerio de Agricultura. [Drawings of 55 species]

+Leokene, L. V. (1966). Morphological seed variations of common vetch species. *Bulletin of Applied Botany, Genetics and Plant Breeding* 38(1), 32-49.

Lersten, N. R. (1981). Testa topography in Leguminosae, subfamily Papilionoideae. *Proceedings of the Iowa Academy of Science* 88, 180-91. [SEM study of testa patterns]

— and Gunn, C. R. (1981). Seed morphology and testa topography in *Cicer* (Fabaceae: Faboideae). *Systematic Botany* 6(3), 223-30.

* — (1982). Testa characters in Tribe Viciae, with notes about tribes Abreae, Cicereae and Trifolieae (Fabaceae). *USDA Agricultural Research Service, Technical Bulletin* 1667.

Lhotska, M. and Chrtkova-Zertova, A. (1975). Beitrag zur Samenmorphologie der Familie Fabaceae. *Folia Geobotanica et Phytotaxonomica (Prague)* 10, 209-10. [Gives a standard terminology for the features of legume seeds]

McEwen, T. J., Dronzek, B. L. and Bushuk, W. (1974). A scanning electron microscope study of fababean seed. *Cereal Chemistry* 51, 750-7.

Perrino, P., Yarwood, M., Hanelt, P. and Polignano, G. B. (1984). Variation of seed characters in selected *Vicia* species. *Kulturpflanze* 32, 103-22.

Piening, U. (1982). Botanische Untersuchungen an verkohlten Pflanzenresten aus Nordwürttemberg. *Fundberichte aus Baden-Württemberg* 7, 239-71. [*Vicia ervilia*]

Puri, H. S. (1979). 'Evolutionary tendencies in the fruit and seed morphology of *Trigonella* spp.', pp. 154-8 in S. S. Bir (ed.), *Recent researches in plant sciences*. New Delhi: Kalyani.

+ — and Hardman, R. (1975). Scanning electron microscope studies of the seed coat of fenugreek. 35th International Congress of Pharmaceutical Sciences, Dublin. [Cited by Puri (1979); *Trigonella foenum-graecum*]

Roti-Michelozzi, G. and Serrato-Valenti, G. (1981). Seed characteristics in Italian species of genus *Vicia* section *Ervum* and their diagnostic value. *SST* 14, 391-402.

Rowlands, D. G. (1959). A case of mimicry in plants—*Vicia sativa* L. in lentil crops. *Genetica* 30, 435-46. [*Vicia sativa* with *Lens culinaris*-shaped seeds]

+Sinha, S. C. (1973). Fruit and seed morphology of *Acacia nilotica*. *Caribb. J. Sci.* 13(1/2), 125-9.

Werker, E., Dafni, A. and Negbi, M. (1973). Variability in *Prosopis farcata* in Israel: anatomical features of the seed. *Botanical Journal of the Linnean Society* 66, 223-32.

Zertova, A. (1962). Ein Schlüssel zur Bestimmung der Tschechoslowakischen Arten der Gattung *Vicia* L. nach den morphologischen Merkmalen der Samen. *Acta Horti Botanici Pragensis* 113-18.

LILIACEAE

Kruse, J. 1984. Rasterelektronenmikroskopische Untersuchungen an Samen der Gattung *Allium* L. *Kulturpflanze* 32, 89-101.

Küçüker, O. and Çelebioğlu, T. (1988). Micromorphological and anatomical structure of the seed-testa of some *Colchicum* (Liliaceae) species. *Candollea* 43, 129-38. [SEM studies on *C. chalcedonium*, *C. lingulatum*, *C. turcicum*]

LINACEAE

Boesewinkel, F. D. (1984). A comparative SEM study of the seed coats of recent and of 900-1100 years old, subfossil linseed. *Berichte der Deutschen botanischen Gesellschaft* 97, 443-50.

LORANTHACEAE

Bakels, C. C. and Rousselle, R. (1985). Restes botaniques et agriculture du néolithique ancien en Belgique et aux Pays-Bas. *Helinium* 25, 37-57. [*Viscum album*]

MALVACEAE

Buurman (1988). [See under CRUCIFERAE; *Malva sylvestris*]

Chowdhury, K. A. and Buth, G. M. (1971). Cotton seeds from the Neolithic in Egyptian Nubia and the origin of old world cotton. *Biological Journal of the Linnean Society* 3, 303-12. [*Gossypium arboreum* and *G. herbaceum*]

+Kumar, P., Tuteja, S. C. and Singh, D. (1987). SEM studies on seed coat patterns in some taxa of Ureneae (Malvaceae). *Acta Bot. Indica* 15(1), 123-6.

MENYANTHACEAE

Truchanowiczowna, J. (1964). Fossil seeds of the genus *Menyanthes* in Eurasia. *Acta Palaeobotanica* 5(1), 25-69. [In Polish with English summary]

MIMOSACEAE (LEGUMINOSAE)

Gopal, M. and Thapliyal, R. C. (1971). Seed identification of 35 forestry species of family Mimosaceae. *PISTA* 36(2), 203-13.

MOLLUGINACEAE

+Sivarajan, V. V. and Gopinathan, M. C. (1985). Seed coat micromorphology of Caryophyllales: observations on some Molluginaceae. *Proc. Plant. Sci. Indian. Acad. Sci.* 94(1), 51-7.

NAJADACEAE

+Durno, S. E. (1958). Identification of fossil fruits of *Najas flexilis* in Scotland. *Transactions and Proceedings of the Botanical Society of Edinburgh* 37, 222-3. [Numerous other papers on this genus are cited by Delcourt, Davis and Bright (1979, 33)]

OLEACEAE

Knörzer (1966). [*Olea europaea*—for reference see under GRAMINEAE]

ONAGRACEAE

Berggren, G. (1974). Seed morphology in some *Epilobium* species. *Svensk Botanisk Tidsskrift* 68, 164-8.

Skvortsov, A. K. and Rusanovitch, I. I. (1974). Scanning electron microscopy of the seed-coat surface in *Epilobium* species. *Botaniska Notiser* 127, 392-401. [Deals with 19 species]

ORCHIDACEAE

Clifford, H. T. and Smith, W. K. (1969). Seed morphology and classification of Orchidaceae. *Phytomorphology* 19, 133-9.

OROBANCHACEAE

+Abu-Shakra, S., Miah, A. A. and Saghir, A. R. (1971). Morphology and anatomy of branched broomrape (*Orobanche ramosa* L.) seed. *PISTA* 36(2), 251-3.

PAPAVERACEAE

Conolly, A. (1976). Use of the scanning electron microscope for the identification of seeds, with special reference to *Saxifraga* and *Papaver*. *Folia Quaternaria* 47, 29-38.

Fritsch, R. (1979). Zur Samenmorphologie des Kulturmoehns (*Papaver somniferum* L.). *Kulturpflanze* 27, 217-27.

Gunn, C. R. (1980). Seeds and fruits of Papaveraceae and Fumariaceae. *SST* 8(1), 3-58.

— and Seldin, M. J. (1976). Seeds and fruits of North American Papaveraceae. *USDA Technical Bulletin* 1517. Washington, D.C. [96pp.; 70 species, many Eurasian]

Knörzer, K.-H. (1971b). Prähistorische Moehnsamen im Rheinland. *Bonner Jahrbücher* 171, 34-9. [*Papaver somniferum*]

+Lestiboudois, T. (1923). Sur le fruit des papaveracées. *Recueil Trav. Soc. Sci. Lille* 181-94.

Swarbrick, J. T. and Raymond, J. C. (1970). The identification of the seeds of the British Papaveraceae. *Annals of Botany* 34, 1115-22.

PINACEAE

Paliwal, D. P., Thaper, H. S. and Paliwal, G. S. (1984). A simplified seed identification key for nine species of *Pinus* on the basis of morphological and anatomical characters. *J. Tree Sci.* 3(1/2), 134-9.

Schlichtherle (1985). [See under General Archaeobotany; *Pinus cembra*]

PIPERACEAE

Kücan, D. 1984. Der erste römerzeitliche Pfefferfund—nachgewiesen im Legionslager Oberaden (Stadt Bergkamen). *Ausgrabungen und Funde in Westfalen-Lippe* 2, 51-6. [*Piper nigrum* (black pepper)]

PLANTAGINACEAE

Swarbrick, J. T. and Raymond, J. C. (1970). The identification of the seeds and achenes

of the British Plantaginaceae. *Annals of Botany* 34, 1123-9. [*Plantago*, *Littorella*]

POLYGONACEAE

Jensen, H. A. (1979). Key to and description of the fruits of some *Rumex* species. *SST* 7, 525-8.

Lousley, J. E. and Kent, D. H. (1981). Docks and knotweeds of the British Isles. *Botanical Society of the British Isles Handbook* 3, London. [Illustrations and descriptions of fruits and perianths]

Knörzer (1979). [See under General Archaeobotany; *Fagopyrum* (buckwheat)]

Marek, S. (1954). Morphological and anatomical features of the fruits of genera *Polygonum* L., *Rumex* L. and keys for their determination. *MB* 2, 77-161. [In Polish with English summary]

— (1958). European genera of Polygonaceae in the light of anatomical and morphological investigations on their fruits and seeds. *MB* 6, 57-95. [In Polish with English summary]

+Schmidt, E. (1930). Beiträge zur mikroskopischen Diagnostik von Früchten und Samen der wichtigsten *Polygonum*-Arten. *Landwirtschaftlichen Versuch-station* 111, 169-259.

Styles, B. T. (1962). The taxonomy of *Polygonum aviculare* and its allies in Britain. *Watsonia* 5(4), 177-214.

Timson, J. (1965). Fruit variation in *Polygonum persicaria* L. *Watsonia* 6(2), 106-8.

PORTULACEAE

Danin, A., Baker, I. and Baker, H. G. (1978). Cytogeography and taxonomy of the *Portulaca oleracea* L. polyploid complex. *Israel Journal of Botany* 27(3/4), 177-211. [SEM pictures of seeds of *P. oleracea* subspecies]

Kowal, T. (1961). Morphology and anatomy of the seeds in Portulacaceae Rchb. *MB* 12, 3-47. [In Polish with English summary]

POTAMOGETONACEAE

Aalto, M. (1970). Potamogetonaceae fruits. I. Recent and subfossil endocarps of the Fennoscandian species. *Acta Botanica Fennica* 88, 1-85.

Jessen, K. (1955). Key to subfossil *Potamogeton*. *Botanisk Tidsskrift* 52(1), 1-7. [Deals with 23 European species]

+Madalski, J. 1949. Morphological characteristics of the endocarps of the European species of *Potamogeton* (Tourn.) L., with a key to the identification of their Pleistocene remains. *C. R. Soc. Sci. Wroclaw* 4, 1-13.

PRIMULACEAE

Nasir, Y. J. (1985). Seed studies in the *Androsace* L. (Primulaceae) species found in Pakistan. *Candollea* 40, 403-8.

— (1986). Seed studies in the *Primula* species (Primulaceae) found in Pakistan with special reference to taxonomy. *Willdenowia* 15, 475-83.

PUNICACEAE

Küster, H. (1988). Granatäpfel (*Punica granatum* L.) im mittelalterlichen Konstanz. *Archäologisches Korrespondenzblatt* 18, 103-7. [*Punica granatum* (pomegranate)]

RANUNCULACEAE

Cappelletti, E. M. and Poldini, L. (1984). Seed morphology in some European Aconites (*Aconitum*, Ranunculaceae). *Plant Systematics and Evolution* 145, 193-201. [SEM studies on nine taxa]

d'Olivat, H. J. P. and Pals, J.-P. (1974). Determination tables and descriptions of the seeds and fruits of the Ranunculaceae occurring in the Netherlands. *IPP-Publicatie* 149. Amsterdam: Institute for Pre- and Protohistory, University of Amsterdam.

Trifonova, V. I. (1984). Morphology of seeds and anatomical characteristics of the seed-coat in some representatives of the genus *Consolida* (Ranunculaceae). *Botanicheskii Zhurnal* 69(9), 1199-1205.

Wojciechowska, B. and Makulec, J. (1969). Seed morphology and anatomy of some *Aconitum* species. *MB* 29, 137-63. [In Polish with English summary]

ROSACEAE (i) *Prunus*

Baas (1971; 1979). [See under General Archaeobotany]

Behre, K.-E. 1978. Formenkreise von *Prunus domestica* L. von der Wikingerzeit bis in die frühe Neuzeit nach Fruchsteinen aus Haithabu und Alt-Schleswig. *Berichte der Deutschen Botanischen Gesellschaft* 91, 161-79.

Kroll, H. (1978). Kirschfunde aus dem 13./14. bis 16. Jahrhundert aus der Lübecker Innenstadt. *Berichte der Deutschen Botanischen Gesellschaft* 91, 181-5. [*Prunus avium*, *P. cerasus*]

+Lindebein, W. (1963). Die im Samenhandel befindlichen Steinkerne der Gattung *Prunus* L. Sektion *Euprunus* Koehne. *Saatgut-Wirtschaft* 12, 357-61.

Röder, K. (1940). Sortenkundliche Untersuchungen an *Prunus domestica*. *Kühn Archiv* 54, 1-132.

Stika, H.-P. and Frank, K.-S. (1988). 'Die Kirschpflaume: Systematik, Morphologie, Verbreitung, Genetik und archäologische Funde', pp. 65-71 in H. Küster (ed.) *Der prähistorische Mensch und seine Umwelt* (Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 31). Stuttgart: Theiss. [*Prunus cerasifera* (cherry-plum)]

+Werneck, H. L. (1958). Die Formenkreise der bodenständigen Pflaumen in Oberösterreich. Ihre Bedeutung für die Systematik und die Wirtschaft der Gegenwart. *Mitteilungen Klosterneuburg B, Obst und Garten*, 59-82.

+Werneck, H. L. (1961). Die Wurzel- und kernechten Stammformen der Pflaumen in Oberösterreich. *Naturkundliches Jahrbuch der Stadt Linz 1961*, 7-129.

ROSACEAE: (ii) other taxa

+Gabrielyan, E. T. (1975). Anatomy of the seed coat of Asiatic species of the genus *Sorbus* in connection with their taxonomy. *Biol. Zh. Arm.* 28(4), 15-22.

Jørgensen, G. and Fredskild, B. (1978). 'Plant remains from the TRB Culture MN V', pp. 189-92 in K. Davidson (ed.), *The final TRB culture in Denmark. Arkæologiske Studier* 5. [*R. idaeus*, *fruticosus*, *caesius*]

Knörzer (1984). [See under General Archaeobotany; *Fragaria vesca* and *F. cf. chiloensis*]

Kowal, T. and Krupinska, A. (1969). The diagnostic characters of the fruits and seeds of *Geum* L. species. *MB* 29, 69-119.

Schweingruber, F. H. (1979). 'Wildäpfel und prähistorische Äpfel', pp. 283-94 in U. Körber-Grohne (ed.) *Festschrift Maria Hopf* (*Archaeo-Physika* 8). Bonn.

Villaret-von Rochow, M. (1969). 'Fruit size variability of Swiss prehistoric *Malus sylvestris*', pp. 201-6 in P. J. Ucko and G. W. Dimbleby (eds.) *The domestication and exploitation of plants and animals*. London: Duckworth.

RUBIACEAE

Lange, E. (1979). 'Verkohlte Pflanzenreste aus den slawischen Siedlungsplätzen Brandenburg und Zirzow (Kr. Neubrandenburg)', pp.191-207 in U. Körber-Grohne (ed.) *Festschrift Maria Hopf* (*Archaeo-Physika* 8). Bonn. (Key to Rubiaceae 'seeds', especially *Galium* and *Asperula*]

SAXIFRAGACEAE

Conolly, A. (1976). Use of the scanning electron microscope for the identification of seeds, with especial reference to *Saxifraga* and *Papaver*. *Folia Quaternaria* 47, 29-38.

Kaplan, K. and Strohschneider, M. (1984). Mikromorphologische Untersuchungen an Samenoberflächen in der Gattung *Chrysosplenium* (Saxifragaceae). *Bot. Jahrb. Syst.* 104(4), 469-82. [SEM studies on 22 species]

SCROPHULARIACEAE

+Sutton, D. A. (1977). *A revision of supraspecific classification in the tribe Antirrhineae (Scrophulariaceae) with particular reference to seed morphology*. Unpublished Ph.D. thesis, Department of Botany, University of Reading (England).

Thieret, J. W. (1955). Seeds of *Veronica* and allied genera. *Lloydia* 18, 37.

SOLANACEAE

Gunn, C. R. and Gaffney, F. B. (1974). Seed characteristics of 42 economically important species of Solanaceae in the United States. *USDA Agricultural Research Service, Technical Bulletin* 1471. Washington, D.C. [33pp.]

Wojciechowska, B. (1972). Systematic studies on the seeds of the Solanaceae Pers. family. *MB* 36, 117-97. [In Polish with English summary]

TAMARICACEAE

Quaiser, M. (1987). Studies in the seed morphology of the family Tamaricaceae from Pakistan. *Botanical Journal of the Linnean Society* 94, 469-84.

TRAPACEAE

+Gams, H. (1959). Beitrag zur Variabilität der Früchte von *Trapa natans*. *Veröff. Geol. Inst. Rübel Zürich* 33.

UMBELLIFERAE

Buurman (1988). [See under CRUCIFERAE; *Apium*]

Heywood, V. H. (1968). Scanning electron microscopy and micro-characters in the fruits of the Umbelliferae—Caucalidae. *Proceedings of the Linnean Society of London* 179, 287–9.

— and Dakshini, K. M. M. (1971). 'Fruit structure in the Umbelliferae—Caucalidae', pp. 215–32 in V. H. Heywood, (ed.), *The biology and chemistry of the Umbelliferae*. London: Academic Press.

Jacomet (1988). [See under LABIATAE; *Anethum*, *Apium*]

+Klan, Z. (1947). Comparative anatomy of the fruits of umbelliferous plants in the area of the Czechoslovak Republic.

Kowal, T. (1975). Fruit morphology of some *Heracleum* L. species. *MB* 49, 111–37. [In Polish with English summary]

Tutin, T. G. (1980). Umbellifers of the British Isles. *Botanical Society of the British Isles, Handbook* 2. London. [Drawings of umbellifer 'seeds'. Out of print, but new edition in preparation]

VITACEAE

Facsar, G. (1970). Habitus studies on seeds of *Vitis vinifera* L. sorts. *Acta Agronomica Academiae Scientiarum Hungaricae* 19, 403–6.

— (1975). Agricultural-botanical analysis of the medieval grape seeds from the Buda Castle hill. *Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften* 4, 157–73 and pl. 46–54.

Logothetis, B. (1970). *The development of the vine and viticulture in Greece*. Thessaloniki.

Schiemann, E. (1953). *Vitis im Neolithikum der Mark Brandenburg*. *Der Züchter* 23, 318–27.

Stummer, A. (1911). Zur Urgeschichte der Rebe und des Weinbaus. *Mitteilungen der Anthropologischen Gesellschaft in Wien* 41, 283–96.

ZINGIBERACEAE

Matthies, M. (1988). 'Kardamom (*Elettaria cardamomum* L.) Maton und *E. major* Smith)—ein indisches Gewürz aus dem Mittelalter Braunschweigs', pp. 191–200 in U. Körber-Grohne (ed.) *Archäobotanik. Dissertationes Botanicae* 133.

Manuscript and electronic version received:
5th December 1989