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BULLETIN

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REVIEW OF CANADIAN HERBARIA - Addendum

ST. JOHN'S, Herbarium of Memorial University of Newfoundland (NFLD).

Note: The designation Agnes Marion Ayre Herbarium (Index Herbariorum I, 6th edition, 1974) now applies only to the vascular plant section.

Status: Directed by the University.

Foundation: 1954.

Number of specimens: Algae: 20,000; Bryophytes: 15,000; Vascular Plants (Agnes Marion Ayre Herbarium): 15,000.

Herbarium specialization: Mainly North Atlantic and Arctic-Subarctic.

Important Collections: E. Rouleau, Newfoundland vascular plants; Agnes Marion Ayre collection of 2,440 specimens and 1,890 drawings of Newfoundland plants; comprehensive recent collections of Newfoundland benthic marine algae.

Curators: Dr. Guy R. Brassard (Bryophyte Herbarium)
Dr. Peter J. Scott (Vascular Plant Herbarium)
Dr. G. Robin South (Phycological Herbarium)

Staff: Mr. Robert G. Hooper, Research Associate (Phycological Herbarium)

Loans: In general to recognized botanical institutions.

Exchange: Available: Newfoundland and Labrador algae, bryophytes, and vascular plants; Canadian Arctic bryophytes; the Phycological Section publishes the exsiccata Algae Terrae Novae, some numbers of which are still available on request.

Desired: Specimens of all groups, especially from arctic or boreal regions.

Remarks: The three sections of the herbarium (Algae, Bryophytes, Vascular Plants) are housed in different parts of the same building, and each section numbers and accessions specimens separately. Correspondence or materials should be sent addressed to the curator of the respective section, c/o Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1C 5S7. In addition to dried specimens the Agnes Marion Ayre Herbarium houses a collection of watercolour paintings and photographs of Newfoundland vascular plants (125 paintings by Miss K. Waghorne in the 1870s, 130 photographs by Dr. A.C. Hunter in the 1930s, and 1,890 paintings by Mrs. A.M. Ayre in the 1920s).

BRITAIN'S NEW WILDLIFE CONSERVATION ACT

The Conservation of Wild Creatures and Wild Plants Act 1975 became law on 1 August. The Act makes it illegal for anyone who is not an "authorised person" to uproot any plant without reasonable excuse. An "authorised person" is the owner or occupier of the land in question or anyone who has the permission of the owner or occupier. Twenty-one rare species of plant are specially protected and cannot legally be picked or uprooted by anyone, unless the destruction occurs as an incidental result of good agricultural or forestry practice. The Act does not prohibit the picking of common wild plants, nor does it prohibit anyone digging up weeds in their own garden.

DUTCH ELM DISEASE IN BRITAIN

The British Forestry Commission 1975 survey into dead and dying elms has recently been published. It shows that the disease has continued to spread with a further 1.9 million infected in Southern England (ie south of a line from Chester to the Wash). These were elms in open countryside or urban areas. If an allowance is added for woodland trees, the estimated total is 5.6 million in 1975, almost 2 million more than in 1974. This means that over one quarter of the original elm population of 23 million has been killed since the late 1960's.

The disease is much more severe in English elm (52 per cent dead or dying) than in the Wych (24 per cent) or small-leaved (13 per cent) elms. A new strain of fungus is causing the outbreak and it can be carried by the shared root system as well as the bark beetles. The only way to control the disease is for infected elms to be felled and the bark burnt. It is also possible to inject unaffected elms but this is a costly process and is only justified for trees of high amenity importance.

ARE YOU A GRADUATE STUDENT SUPERVISOR?

If so we would like to hear from you so that we can run a column of Graduate News in the Bulletin, listing new graduate students, their supervisors, and their topic of research. Will you please help by writing to the editor with this information whenever you take on another graduate student who will be working in an area of interest to our membership?

The Plant Kingdom - Evolution and Form by Samuel R. Rushforth. Publ. January 1976 by Prentice-Hall, Englewood Cliffs, N.J. QK47. R913. Cloth, 348 pp., 42 illus.

I thought of opening this review with my best line: but I knew that would be a difficult act to follow, so I've saved it for the end.

Those of us who teach survey courses in the Plant and Fungal Kingdoms have been waiting these many years for a text at once erudite and exciting, readable and 'relevant', literate and lavishly illustrated. Was this newest of botanical textbooks the answer to our prayers? Unhappily not. Most faculty who teach such courses will have received inspection copies by now, and may like to check out the points I discuss below. I was momentarily impressed by the well- designed layout and the profuse illustrations. But I soon noticed that the line drawings were generally very stylized and artificial -- certainly not drawn from life. The drawing of the life-cycle of Puccinia graminis on p. 182 will do as well as any to exemplify this disrespect for realism. The basidiospores germinating on the barberry leaf produce branched, non-septate hyphae. The mycelium growing inside the barberry leaf and giving rise to the pycnia also lacks septa entirely and romifies at will apparently superimposed on leaf tissue that looks like a brick wall. The two cell layers of the pycnium wall have no apparent connection with the mycelium from which (one presumes) they arose, and the worm-like cells which (one presumes) give rise to the spermatia, have no apparent connection with the wall of the pycnium from which (one presumes) they arose. The (now presumably dikaryotic) hyphae which give rise to aecia remain firmly non-septate, and resemble nothing so much as doodles, which often begin and end nowhere. The chains of spherical aeciospores do not show the effects of the packing pressures which normally make them appear polygonal during development (though this can be seen in the photomicrograph, Fig. 15.15B), nor is there any sign of the disjunctor cells also visible in this photomicrograph. Nothing in the diagram celebrates the crucial dikaryotization process. The urediniospores (called uredospores) show no equatorial germ pores. The teliospores are not differentiated from their stalk cells, and have no germ pores. This kind of criticism could be multiplied a hundred fold. To me, many of the drawings are grotesque and distorted caricatures of the beautiful structures I see under the microscope.

If only the author had been able to make all of his illustrative points with photographs! Many of these are SEM pictures. I have a low opinion of the SEM as a research tool, but find that its products make good illustrations for teaching purposes. The four desmid pictures in Fig. 6.21 are good examples of how the SEM can help in three-dimensional visualization of microscopic objects. But SEM pictures sometimes show no more than a light micrograph, and may thus be superfluous, as is Fig. 12.9 (of a Physarum polycephalum fructification - incidentally the peridial pores arrowed in this photograph are not mentioned in legend or text): and the SEM picture of Aspergillus on p. 154 conveys far less information than most light micrographs I have seen of this genus. Most students would find the two SEM pictures of rust uredinial pustules (Fig. 15.16) very difficult to interpret. I also found Figs. 6.22, 11.1A, 15.2, 15.6, 15.11A and 16.5, poor or irrelevant. Nevertheless most of the SEM pictures are helpful as are many excellent TEM pictures. I particularly liked Figs. 2.12, 6.17, 7.7, 9.1, 14.15, 14.21A, 14.22, 21.8, 27.3, and 28.5.

The text is functional but uninspired, and is often repetitive, contradictory or simply and inexcusably wrong, either factually or grammatically: in a word -- sloppy. 'Similar to rusts, smuts are obligate parasites .... However, many species occasionally overwinter saprophytically....'. 'Either or both the haploid or dikaryotic hyphae...'. 'the phycomycete Cylindrosporium' [a Deuteromycete]. 'Penicillium is also beneficial in antibiotic production which undoubtedly has allowed some of the readers of this book to do so.'

The treatment of Ascomycetes opens with seven pictures of Aspergillus, a conidial fungus, and Penicillium and Aspergillus are given as representative Ascomycetes, though the Deuteromycetes (Fungi Imperfecti) are not even mentioned except, strangely enough, in the entry under 'conidium' in the glossary. Fungi aren't even in the index.

The book is also studded with misprints and other oddities: Canatricha (Comatricha); protolast (protoplast); pychium (pycnium); ribocola (ribicola); Eisley (Eiseley); septae (septa); Polyporous [three times] (Polyporus); muclei (nuclei); spore releasal.

There is a real need for good textbooks, and it is a shame that this book was not properly vetted before publication. With different drawings (Oh, for the kind of line drawings to be found in Scagel, Bandoni et al.: 'An Evolutionary Survey of the Plant Kingdom', which will be the subject of a later review), and with the glitches removed from the text, it could have been a reasonable choice. As it is ..... Why must publishers rush to press without imposing quality control on contents as well as production?

I will close with this classic: the legend of a picture which opens Chapter 16 - The Lichens.

'Spanish moss (a foliose lichen [sic]) growing on bald cyprus [sic] trees....' If you want your students to be exposed to gems like this, I recommend this book to you.

Bryce Kendrick.

Systematic Botany Resources in America, Part I. Survey and Preliminary Ranking - a report of the Advisory Committee for Systematic Resources in Botany. The report totals nearly one hundred pages, and is addressed principally to the problems of delimiting a list of United States herbaria carrying significant national responsibilities. The Table of Contents includes:

Survey of Resources in Systematic Botany in the United States.

National Resource Collections -- National Resource Center Collections; National Resource Center Nominees from the ACSRB.

Holdings of Herbaria -- Number of Specimens; Types; Exsiccati; Geographical Holdings.
Herbarium Activities -- Loans; Additions and Exchanges; Programs Involving Electronic Data Processing.

The report contains nineteen tables summarizing data on rankings and holdings, and two figures showing the distribution of herbaria in the United States. Four appendices provide a concise list of the more than eleven hundred herbarium addresses, a copy of the questionnaire from which the report data were gathered, a list of acronyms for herbaria cited in the text, and size and ranking data for all full-questionnaire respondents.

Copies are available for $2.00 from Dr. Willard W. Payne, Chairman, ACSRB, Department of Botany, University of Florida, Gainesville, Florida 32611, U.S.A.

The Flavonoids, edited by J.B. Harborne, T.J. Mabry and H. Mabry. Pp. x + 1204. Chapman and Hall Ltd., London. 1975. £27.50.

This book summarizes progress in the study of flavonoids from 1962 to the present day. There are up to date lists of all structures within the flavonoids and of plants in which these are found. It would have greatly helped the research worker had spectral data also been included in the various tables, although this is not essential for understanding the text.

Some new classes of flavonoids, for example, proanthocyanidins, neoflavonoids, as well as other well known ones, are discussed for the first time in one book. Other features include authoritative accounts of the biosynthesis and metabolism of these constituents. Much more is now known about the biosynthetic pathways since a number of intermediate enzymes have been purified. Flavonoid turnover and catabolism in higher plants, which have been neglected in the past, are also discussed.

The book has brought together 25 specialist contributors from all over the world, some chemists, some biochemists, and some biologists. Nevertheless, the editing -- which could not have been easy -- has been such that the book makes good reading in spite of the widely differing backgrounds of the authors.

This book will be very valuable as a reference for organic chemists, biochemists, pharmacologists, botanists and biologists. It may also be used as a text for the more specialised courses at undergraduate and graduate levels.

Crop genetic resources for today and tomorrow, by O.H. Frankel and J.G. Hawkes. International Biological Programme [synthesis volume no. 2] Cambridge University Press, Cambridge, New York, Melbourne [Bentley House, 200 Euston Road, London NW1 2DB], published 25 September 1975, xix, 492 p., ISBN 0-521-20575-1, buckram, price £13.00. [The first volume to be published of the forty or so synthesis volumes which will describe the results of I.B.P. The wealth of data, new methodologies and scientific insights gained by this unique programme will not remain diffused in thousands of smaller publications, but will be presented in synthetic form by a group of the main leaders. The subject of 'gene-pools' requires no further emphasis; it is obviously basic for the future of human welfare. The book comprises surveys by 43 collaborators. Its main parts are: 1. Genetic variation in plant populations; 2. Exploration, 3. Evaluation problems, 4. Conservation and storage, 5. Documentation and information management, 6. Genetic resources centres. The last chapter, by Otto Frankel is entitled 'genetic resources centres - a co-operative global network.']

Plant Chromosomes, Askell Löve and Doris Löve, J. Cramer, FL-9490 Vaduz, Germany; available in USA from ISBS, Inc. 10300 S.W. Allen Blvd., Beaverton, Oregon 97005, pp. 184, DM 36; US $15.

Cytological observations on chromosomes continue to play an important role in the advancement of knowledge in such fields as biosystematics, cytogenetics, evolution, mutation, and plant breeding, where for example, studies of karyotypes and chromosome pairing may elucidate relationships between taxa.

The book Plant Chromosomes by Askell and Doris Löve is designed to aid a beginning student to understand the role of chromosomes and the way in which cells are prepared for the observation of chromosomes by light microscopy. The book consists of six parts, two appendices and an index. Part I, the Cytological Background consists of a brief outline of mitosis and meiosis to which the student could refer quickly when examining slides in order to determine a particular stage. Also, included are discussions on aneuploidy, asynapsis, basic number, karyotype, pollen mitoses, sex chromosomes, meiosis in structural hybrids, apomicts and polyploidy. The terms of hemiauto- and hemialloploidy and panauto- and panalloploidy coined by the authors (Löve and Löve, 1949(have not gained wide acceptance for the classification of polyploids, but may be found useful in discussing the various types of polyploids. The authors derive all of the common cytological terms and name the author who first coines the word, for example, euploid (Greek eu - true, Tackholm, 1922). The authors have also emphasized the use of n and 2n for the gametic and somatic chromosome numbers and x for the basic number. Part II concerns the Material for Cytological Study and makes recommendations on the selection of tissues for obtaining chromosomes.

Parts III and IV deal with Basic Equipment and Techniques on Observation. Part V on Cytotechnology, gives information on squashing, sectioning and miscellaneous procedures. A section on Hydrolysis or Maceration does not mention the use of enzymes, such as pectinase, now widely used to soften tissue so that cells can be readily spread. Part VI is a brief page on Publishing the Result. Appendix I lists some standard recipes of fixation, staining and mounting. An oddity in Appendix II, a Bibliography which is quite extensive, is that the city is given where a book was published, but not the publisher.

In the reviewer's opinion, a far wider audience would have been served if techniques on autoradiography, cytochemistry, microdensitometry, and fluorescent and Giemsa banding had been included. As a result, the book is restricted to elementary classical light microscopic techniques which are well covered. With this in mind, it should fill the purpose as intended for the beginning student.

W.F. Grant

Index to Plant Distribution Maps in North American Periodicals Through 1972. Compiled by W. Louis Phillips and Ronald L. Stuckey of Ohio State University. Published by G.K. Hall and Co., Boston.

This Index is the result of a systematic search of 268 North American periodicals of botanical, biological and natural history societies; academies of science, colleges and universities; museums, herbaria, botanical gardens and arboreta. Approximately 29,000 entries are arranged alphabetically by taxa with like taxa arranged chronologically. Maps spanning the entire plant kingdom are indexed together without regard to the different plant groups. Each entry contains the name of taxon mapped, periodical reference, type of map, geographical distribution, and author of the article. Periodicals searched through 1972 are listed alphabetically, giving the volumes, years, and number of maps found.

October 1976, 10 x 14, estimated 29,000 cards, 1 volume. Prepublication Price: U.S. $85.00, Outside U.S. $93.50. After October 31, 1976: U.S. $110.00, Outside U.S. $121.00.

Genera File of Fossil Spores, by J. Jansonius and L.V. Hills, Special Publication - Department of Geology, University of Calgary, 1976.

The File consists of about 3300 standard 5 x 8" (12.7 x 20.3 cm) filing cards. It provides a complete listing of all generic names known to the authors for fossil spores in a wide sense (microspores, megaspores, gymnospermous and anglospermous pollen, fungal spores). Invalid or illegitimate names have been identified as such, usually with indication of the reason for their inadequacy. Each card is headed by the generic name and the original or validating author and year of publication. The second line gives an abbreviated bibliographic reference to the book or periodical and page number where the genus was first described. Next is given the name of the type species, with author and date. For new combinations, the basionym is given, with a bibliographic reference including the figure number of the holotype. Each valid and legitimate genus has a line drawing of this holotype. Each entry contains a full generic diagnosis, usually given as a direct quotation from the original publication (or 'protologue'). Relevant emendations by subsequent authors are presented in a similar manner. A description of the type species, its measurements, as well as its geographic and stratigraphic occurrence are given in abbreviated, generalized form. Additional nomenclatural remarks may be included.

The File will be invaluable for systematic palynologists and teaching purposes, as it provides the only single comprehensive source of all generic names for fossil spores together with their circumscription. The line drawings of the types are mostly new and clearly show the morphological structure. This permits sorting by morphology and provides a ready means of ascertaining whether or not a suitable name already exists for a new form. The File also provides a means to check for earlier homonyms, and as such will be indispensible to all palaeobotanical taxonomists.

Future updates, including new and overlooked genera as well as revised or enlarged entries for earlier genera, will be offered at cost at irregular intervals, whenever deemed necessary. All subscribers will be notified individually of future issues.

SYMPOSIUM ON THREATENED AND ENDANGERED PLANTS IN THE AMERICAS

A symposium on the status of threatened and endangered plant species was held at the New York Botanical Garden on May 10-13, 1976. The conference was attended by 159 botanists and zoologists representing 14 countries of the Americas and Europe. Forty papers were given including a report on the status of threatened plants in Canada by Dr. George Argus of the National Museum, Ottawa. Guelph, McGill and Waterloo were also represented at the conference.

The general conclusion of participants was that habitat preservation is the best means of preserving the greatest number of threatened species. Throughout North and South America habitat destruction is taking place at an increasing rate due to population pressures and the desire to develop natural resources. Evidence was presented by several speakers indicating that tropical forests will reestablish themselves to some extent provided several hundred years of undisturbed growth are permitted. Population increases will prevent such reforestation. In some countries such as El Salvador very little undisturbed vegetation remains, yet efforts to preserve what is left are beginning. In several other countries pride in the uniqueness of the national flora is resulting in the establishment of national parks and reserves, often at the local level. Mexico has undertaken a large education program to instill pride in and understanding of the uniqueness of its tropical forests. Participants agreed that more cooperation between botanists of different countries is needed. Dr. Grenville Lucas of the Royal Botanical Garden, Kew, U.K. represented the IUCN and spoke about the need for professional botanists to become more involved in preparation of threatened species lists. He indicated strongly that botanists have a responsibility to help in the efforts to preserve threatened and endangered species of plants, since it is we who have the knowledge and the expertise to do the work necessary.

Conference members were stunned by the sudden fatal heart attack of Dr. Carlos Munoz Pizzaro (Universidad de Chile, Santiago) while giving his report on extinct and endangered plant species of Chile. Dr. Munoz was a leading figure in the conservation movement in Chile and his death is a serious loss to the botanical community of the Americas. It was agreed by all that the published symposium report be dedicated to the memory of Dr. Munoz. The report including papers, discussion and resolutions will be published in book form as soon as possible.

John C. Semple

CONFERENCES

The VII International Congress of Essential Oils

The 7th International Congress of Essential Oils, will be held in Kyoto, the ancient imperial city of Japan, from October 7th to 11th, 1977.

The Congress program will include the most complete and latest reports on scientific developments in essential oils (fragrance materials), essential oil chemistry, essential oil agronomy and related scientific topics. Technical and scientific achievements based on original research work in the field of essential oil technology will be presented. For further information write to:- Mr. Yasumasa Kato, Secretary General, VII International Congress of Essential Oils, c/o Kyoto International Conference Hall, Takara-ike Sakyo-ku Kyoto, 606 Japan.

International Environmental Education Programme UNESCO-UNEP

The 1976 North American Regional Seminar on Environmental Education will be held in St. Louis, Missouri, from October 5th through 8th, 1976. Emphasis of the Seminar will be focused on environmental education needs in Canada and the United States.

Five central themes will run throughout the 3-day meeting: (1) Non-Institutional Environmental Education (in the community, business, industry, and government); (2) Environmental Education Through the Media; (3) Environmental Education for Colleges, Universities, and Adult Education; (4) Environmental Education for Grades K-12; and (5) Action Strategies to Improve Environmental Education.

For further information contact Ms. Edith Carter, Canadian Commission for Unesco, 222 Queen, Ottawa, Ontario K1P 5V9

PERSONALIA

Dr. G.R. South, Dr. A. Whittick, and Mr. R.G. Hooper of the Biology Department of Memorial University of Newfoundland attended the annual meeting of the British Phycological Society held January 2nd and 3rd at Westfield College of the University of London. A. Whittick and R. Hooper presented a paper entitled: "The distribution and reproductive biology of Antithamnion cruciatum at its northern limits in the western Atlantic". Dr. South spent periods at the Plymouth Laboratory consulting with Drs. M. Parke and P.S. Dixon, and at the Liverpool Museum.

Peter J. Scott

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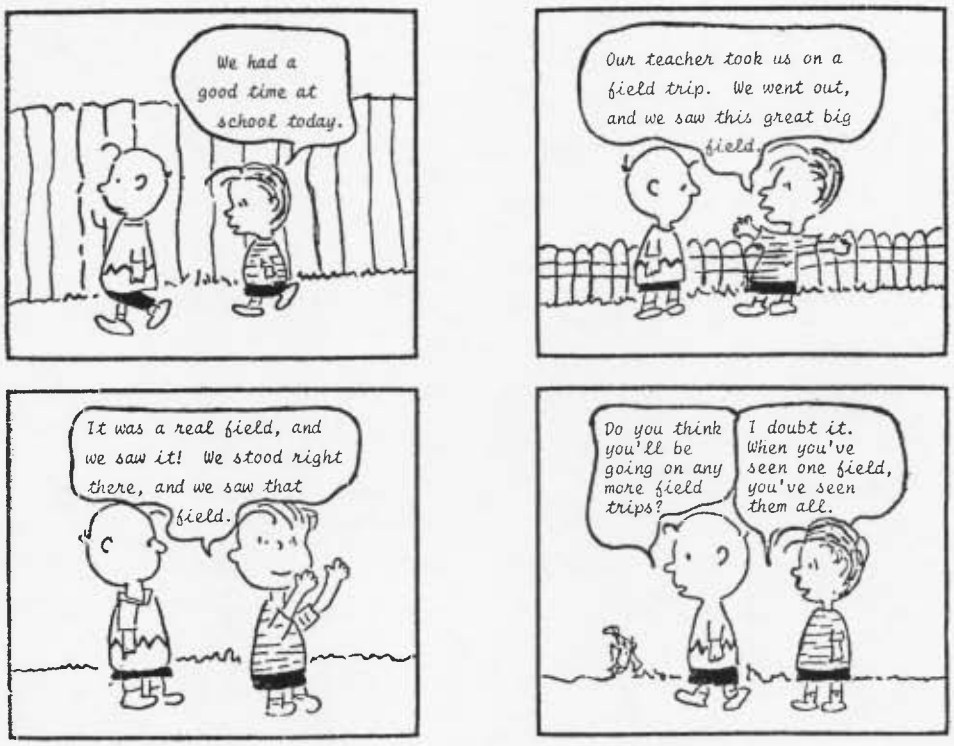

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POSITION AVAILABLE

University of Waterloo - Applications are invited for a faculty position in the Department of Biology. The appointment will be at the assistant or associate professor level. Current starting salary of $15,900 and $20,600 respectively. The successful candidate will be required to develop a program of teaching and research in plant morphology/morphogenesis, and to undertake teaching in other areas of biology. Applications, citing three referees, should be sent to Dr. J.K. Morton, Chairman, Department of Biology, University of Waterloo, Waterloo, Ontario, N2L 3G1, Canada before July 30th, 1976.

To ensure prompt delivery of the Bulletin please notify the Editor of any change of address as soon as possible.

Enquiries about membership of the CBA/ABC should be addressed to the secretary of the association:- Dr. Janet R. Dugle, Environmental Research, Whiteshell Nuclear Research Institute Pinawa, Manitoba R0E 1L0