

BULLETIN

L'ASSOCIATION BOTANIQUE DU CANADA



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EXECUTIVE COMMITTEE

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FROM THE MINUTES OF MEETINGS OF THE EXECUTIVE COMMITTEE HELD ON JUNE 20th and 24th 1971 EDMONTON:

1) N.R.C. support for the C.B.A./A.B.C. Bulletin

It was reported that N.R.C. could not consider financial support for the Bulletin at the present time.

It was also reported that N.R.C. are considering the publication of a "hard cover series" which would include monographs and other items that cannot be handled by journals.

2) Graduate Study in Canada

Dr. Kendrick had agreed to attempt to compile information on graduate programs in Botany at Canadian Universities. In the fall of 1970 he wrote to 47 Canadian Universities requesting information and received 17 replies. He agreed to write again to the remaining 30 Universities and to add any departments that he might have missed. He will try to complete this job by October for publication in that month's Bulletin.

We had received a request for information on graduate study in Canada from Dr. Barbara Palser, Secretary of the Botanical Society of America. Dr. Kendrick has sent all of his information to Dr. Palser with the request that they label their publication "Graduate Study in U.S. and Canadian Universities" and that they list the Canadian Universities in a separate section.

3) S.C.I.T.E.C.

The first annual meeting was held on June 28-29 1971 in Ottawa. Our incoming president — Dr. Ron Eydt was our official delegate.

4) Membership Committee

Dr. Ron Eydt circulated a report from his committee which recommended (a) that active membership be encouraged (b) that we establish a category of Life Member, and (c) that we establish the category of Fellow of the C.B.A./A.B.C. These recommendations were adopted.

It was suggested that the C.B.A./A.B.C. establish Life Memberships with a fee of \$200.00. This suggestion is to be put to the membership via a mail ballot since it includes a change in the constitution and by-laws. The new executive committee is to study the matter of establishing a category for "Fellows".

5) Future Meetings

(a) 1972 Meeting — Dalhousie University — June 19-23

Dr. Gary Hicks reported that President Hicks has formally invited the C.B.A./A.B.C. and the C.S.P.P. to Dalhousie.

— Accommodation and meeting rooms have been booked.

— The local committee for the C.B.A. consists of G. Hicks, A. Chapman, J. Harvey and K. von Maltzah.

(b) 1973 Meeting

It was decided to accept an invitation from the University of Western Ontario.

6) Canadian Journal of Botany

Dr. Stein presented the results of a survey of articles submitted to and published in the Canadian Journal of Botany. This survey indicated that far more papers are published in mycology and physiology (approximately 80% of the total) because far more papers in these areas are submitted. There is not a great difference between fields in the proportion of papers accepted for publication. Dr. Stein suggested that if more people in fields such as Ecology would publish in the C.J.B. this would certainly increase the proportion of the content from that area.

7) Biological Council for Canada (B.C.C.)

It was agreed that representation of C.B.A./A.B.C. members to B.C.C. be for a three year term and that Dr. Hugh Dale would serve until December 1972 and Dr. Ron Eydt until December 1973; the alternative member to be Dr. Taylor Steeves.

8) New Secretary

It was agreed that Dr. James E. Cruise, University of Toronto, be appointed as of July 15, 1971 to fill the unexpired term of Dr. P. B. Cavers.

9) Editor of Bulletin

It was agreed that Dr. J. K. Morton (assisted by Drs. W. B. Kendrick and H. C. Duthie) be appointed to edit the C.B.A./A.B.C. Bulletin and to chair the editorial committee.

10) Committee Memberships

New members were appointed to the various C.B.A./A.B.C. committees as follows:

(a) Editorial Committee

1970/71 — J. F. Alex (Chairman), I. Brodo, W. B. Kendrick, W. Scholfield
1971/72 — J. K. Morton (Chairman), W. B. Kendrick, J. A. Fortin, L. Weresub

(b) Awards Committee

1970/71 — J. Stein (Chairman), H. M. Dale, W. B. Kendrick, Dean Ross, A. R. A. Taylor, P. Morisset.
1971/72 — H. R. N. Eydt (Chairman), J. R. Stein, Dean Ross, Ron Dengler, John Railton, F. LeBlanc.

(c) Nominating Committee

1970/71 — H. M. Dale (Chairman), J. Walker-Shay, L. Cinq-Mars (Cinq-Mars replaced by E. Rouleau in October).
1971/72 — J. R. Stein (Chairman), A. Legault, H. van Groenewoud.

(d) Membership Committee

1970/71 — H. R. N. Eydt (Chairman), R. I. Greyson, A. Cardinal, J. S. Rowe.
1971/72 — T. A. Steeves (Chairman), R. I. Greyson, A. Cardinal, J. S. Rowe.

The vote on the new By-Laws is to be prepared by the out-going chairman.

It was agreed that we establish a committee to draft terms of reference for resolutions and that this committee submit a report to the October meeting of the Executive Committee.

(e) Resolutions Committee

1970/71 — P. Roberts-Pichette (Chairman), J. Lambert, L. Kennedy, A. Cardinal.

This committee will be J. B. Phipps (Chairman), A. Legault and R. Ogilvie with J. McNeill and A. N. Langford as alternates.

11) Man and the Biosphere (M.A.B.)

Dr. Paul Gorham was asked to represent us on the Canadian National Committee at the present time. He will be given a list of possible participants from the membership of the C.B.A./A.B.C. The secretary agreed to provide Dr. Gorham with our suggestions plus a membership list and to ask him to contact each of these people. He will evaluate any proposals that are made, sending his comments to Dr. A. Desmarais, Chairman of the Canadian National Committee for M.A.B., with a copy of each communication going to Dr. Eydt.

THE EDMONTON MEETINGS

An enthusiastic group of 998 botanists from the A.I.B.S. and C.B.A./A.B.C. attended the interdisciplinary meetings held at Edmonton from June 20 to 24th 1971. Papers on a wide range of topic were presented and discussed. Two of the addresses which set the keynote for the conference are published in this Bulletin. In addition Lawson Medals were presented to two distinguished Canadian botanists —

Dr. Erling Porsild and Dr. Job Kuijt in recognition of their outstanding contributions to Botany. The citations on the medals read as follows:—

ERLING PORSILD

For notable contribution to the advancement
of Canadian Botany
Pour avoir contribue avec distinction
au rayonnement de la botanique Canadienne

The Canadian Botanical Association
L'Association Botanique du Canada
AD 1971.

JOB KUIJT

For a distinguished contribution to the
Knowledge of Botany
Pour une contribution de premiere valeur a la
connaissance de la botanique

The Canadian Botanical Association
L'Association Botanique du Canada
AD 1971

PRESIDENT'S REPORT 1970-71

In the past year the Executive Committee has been busy! If nothing else, we have helped the forestry industry (pulp and paper especially), the Canadian Post Office, the telephone system, the secretarial profession, and the recyclists by the sheer volume of correspondence flowing across Canada. I might add, that most seems to have emanated from Vancouver. Some activities mentioned are discussed more fully in the BCA/ABC Bulletin.

The Executive Committee met in Ottawa in October. As in the past, financial assistance was provided whenever necessary so that all members could attend. Thus the business of the Association/L'Association is based on regions. Plans for the 1971 Edmonton meetings were thoroughly discussed with the General Chairman, W. N. Stewart. The CBA/ABC helped to sponsor field trips, social events, and some speakers. Additional support was received from the University of Alberta, the City of Edmonton, the Province of Alberta, and the National Research Council of Canada. The N.R.C. grant provided an honorarium and some support for invited speakers and guests.

Most abstracts were circulated prior to the meeting. The response from the membership indicates that in addition, a preliminary schedule of papers should be distributed prior to the meetings if possible.

In cooperation with the Botanical Society of America, CBA/ABC has helped provide some information on graduate studies in botany in the United States and Canada that will be published in the CBA/ABC Bulletin later this year.

The Membership Committee, chaired by the Vice-President H.R.N. Eydt, recommended establishment of two new membership categories — Life and Fellow. Both involve changes in the Constitution as well as By-Laws and require majority approval by a mail ballot. The Life Membership as now contemplated will be a one-time payment of \$200. This amount may be changed in future years. Detail concerning Fellow membership, which will honour outstanding botanists, still needs to be settled.

As a result of several years observations regarding nomination procedures, the Nominating Committee chaired by Past-President Hugh Dale, recommends that only two (instead of six) people are needed for a nomination. The Nominating Committee will then secure agreement of the nominee. Approval for this also will be presented in a mail ballot as it is a By-Law change.

The Executive Committee is concerned about membership in two ways — bringing in more members, including graduate students; and how to get active participation by the membership. Offers of assistance are appreciated — CBA/ABC is YOUR Association! It should be noted that in 1970 at Laval, the By-Laws were amended so student members have the same rights and privileges as regular members (except amount of dues).

CBA/ABC is a member of both the Biological Council of Canada (BCC) and the Association of the Scientific, Engineering and Technological Community of Canada (SCITEC). Drs. Dale and Eydt ably represent us at BCC, which in July established a permanent secretariat in Ottawa. One reason for establishment of the secretariat is the sheer volume of work involved in an amalgamation of societies (or any society). It is no longer possible or practical to ask government institutions, universities, etc., to support — in time, money and manpower — these activities. The Executive Committee approved (as authorized by By-Law 6) a requested BCC increase from \$1/regular member to \$3. BCC recently published a career brochure, "Why Biology" that was originally proposed by the CBA/ABC Education Committee. Copies of the brochure, edited by Dr. A.N. Langford, are available through the Youth Science Forum (No. 302 — 151 Slater Street, Ottawa).

As a member of SCITEC, CBA/ABC was represented by Dr. Eydt at the first annual meeting (called SCITEC III) in Ottawa, June 28-29. SCITEC is presently soliciting individual memberships at \$10 each, and application forms are circulated with the CBA/ABC Bulletin. SCITEC, which also issues a quarterly mimeographed Bulletin, will shortly be considering volume 2 of the Senate Science Report. It also has agreed to undertake a study commissioned by the Science Council of Canada of Scientific Societies. This is, "... to examine the role, impact, current and projected resources and needs of scientific societies." It costs CBA/ABC 10 cents/regular member to belong to SCITEC and \$30/delegate to attend most conferences. The Executive Committee believes that it is important to continue support of SCITEC in its formative years before further assessment be made.

This year, for the first time, two George Lawson Medals in Botany were awarded. The number of nominees and the caliber of credentials was most impressive. The recipients were Dr. A.E. Porsild for his distinguished cumulative service to Canadian Botany and Dr. Job Kuijt for his outstanding single contribution on parasitic flowering plants.

The CBA/ABC Bulletin costs a minimum of \$2/person each year, including primarily printing and mailing (either typeset or offset). This does not include some of the hidden costs nor instances when larger than normal, or extra, timely material is included. Dr. Jack Alex finds it necessary to relinquish his duties as Editor. We appreciate his services during the past 18 months to this very necessary and often thankless job. As you can see, the replacement is by more than one person!

The Executive Committee explored the possibility of external support for the CBA/ABC Bulletin (through NRC) with essentially negative results. Discussion concerning a series of botanical review books (as detailed in an article in March 1971, 4(1) was undertaken, but there is a general lack of interest. A review of articles published in the Canadian Journal of Botany indicates over 75% of the papers submitted and subsequently printed are either physiologically or mycologically oriented. The number of papers submitted by morphologists and ecologists is quite small (less than 20%) and is reflected in the Journal. The possibility of establishing an ecology journal was briefly explored, but does not seem urgent at this time.

Dr. Job Kuijt prepared and presented a brief at the Western National Parks Hearings (Banff, Jasper, Kootenay, Yoho) in April. The recommendations are published elsewhere.

BCC/ABC continues to support the Flora North America Program. The 1 June 1971 issue of BioScience (published by the American Institute of Biological Sciences) contains more information. FNA has asked, on behalf of the American Society of Plant Taxonomists, to survey CBA/ABC with regard to an index on current taxonomic research. The survey will be circulated, with the CBA/ABC Bulletin, to the entire membership.

At times there has been a lack of effective communication between the Sections and the Executive Committee. To overcome this, the Section Chairman and Secretary will each receive minutes of the Executive Committee meetings and mailings. In addition, the Chairman will be invited to attend the Executive Committee meeting held in conjunction with the annual meeting.

The Systematics and Phytogeography Section published their 1970 Symposium. "Endemism in the Vascular Flora of Canada", held at Laval. Dr. Pierre Morisset organized the symposium and publication in *Le Naturaliste Canadien* (Mars-Avril, 98(2), (1971)).

The 1972 meeting will be at Dalhousie University in conjunction with the Canadian Society of Plant Physiologists, June 19-23. It is hoped to have a mid-meeting field-trip — if the tides can be organized.

Dr. Gary Hicks will be the local chairman and Dr. T. A. Steeves (1971/72 Vice-President) will be Program Chairman. An invitation to hold the 1973 meetings at the University of Western Ontario, London, has been accepted.

The recurrent financial theme in this report, indicates the need to raise the CBA/ABC dues. Factors that necessitate the increase are: general costs increase; cost of annual meetings — including charges by host institution; continuation of effective communication throughout Canada; and importance of continued membership and active participation in BCC and SCITEC. Thus the Executive Committee has recommended the 1972 dues be increased by \$10 for regular members and \$5 for student members. Those wishing subscription to the Canadian Journal of Botany will probably continue to pay \$4.50 more, dependent (as always) on N.R.C.

I have enjoyed serving the Canadian Botanical Association/L'Association Botanique du Canada in the past years, and especially during 1970/71. It has given me a much better understanding of botany and of botanists here in Canada. I am sure that the benefits to me will be greater than to the Society, and I thank the entire membership for its support.

Janet R. Stein

BOTANY — CONSTANT AS THE NORTHERN STAR

by Dr. J. C. Ritchie

I feel a certain diffidence about speech-making because we are all too familiar with one of the less felicitous consequences of the electronic revolution — the torrent of words, the rush of rhetoric, the incessant pounding of polemical prose which dulls the mind and affronts the consciousness. Why should one agree to add to it?

One might choose to take advantage of the presence of the Honourable Minister to engage in some formal dialectics on Canadian environmental problems, with appropriately strong botanical overtones; however, such an exclusive approach would at best bore and at worst offend our friends from the United States. One might, on the other hand, provide our colleagues from the U.S. with a synoptic view of Canadian botany, so that they might the better both share the communality and sense the distinctness of our respective botanical traditions. Or it might be timely to attempt to measure and predict the tempo and direction of modern botanical endeavours.

None of these objectives is appealing of itself, but perhaps a brief excursion into all might render a reasonable outcome.

What can we claim for Canadian Botany? Has it an identity, a distinctness, a tradition?

One of our foremost historians, Professor W. L. Morton, offers the compelling argument that one of the essential, formative ingredients of the Canadian identity is our northern orientation. He reconstructs for us the outworkings of this northern influence in terms both of our physical geography — the landscapes and climates and plant cover — and our ancient origins as the northern and maritime frontier of Europe. He writes:

"From its deepest origins and remotest beginnings, Canadian history has been separate and distinct in America. Canadian life to this day is marked by a northern quality, the strong seasonal rhythm which still governs even the academic sessions; the wilderness venture now sublimated for most to the summer holiday or the autumn shoot; . . ."

The heartland of the United States is one of earth's most fertile regions, but the heartland of Canada is one of earth's most ancient wildernesses and one of nature's grimmest challenges to man. There, perhaps, is the kernel of an explanation of the widespread ignorance and apprehension among Canadians about their own vast northland; a northland which is in fact all of their land, outside of that attenuated reticulum of settlement and urbanisation linking the St. Lawrence Valley through Toronto, Winnipeg, Edmonton and Vancouver; and perhaps this is why the botany of northern Canada has been pursued largely by non-Canadians, of course with such notable exceptions as Erling Porsild and the late Jacques Rousseau. The short history of Canadian botany, presented by Dr. W.P. Thompson at the 9th International Botanical Congress in Montreal, shows that botany in Canada has been dominated by the pressing economic factors of the country — by the need for hardier, disease-free races of wheat and other important crop plants. Thus our plant breeders, plant pathologist and certain kinds of plant physiologists have flourished, both by good work and through generous, at times indulgent, support; however, what W.P.

Thompson said of Canadian botany just over a decade ago is as true today — he wrote —

"In spite of the great extent of our forests and the great value of forest products in the Canadian economy, botanical contributions to knowledge of our forests are meagre. . . ."

As Thompson also pointed out, almost all Canadian botanists are either employed in government services or work in universities; and all our universities have been or have become almost wholly dependent on government finance. The result has been that, while we can point with pride to our achievements in certain fields of applied botany, we are deluding ourselves if we think that our activities in fundamental, long-term botanical scholarship are adequate. Botanists in Canadian universities suffer from the dollars-and-numbers game which our governments insist our university administrators play out. So, while our colleagues in zoology and psychology can build on the burgeoning numbers of such captive clientele as aspiring medical students, nurses and others, or on the crowded classrooms of some new fad, botanists must content themselves to build slowly, ploddingly but surely.

But there are many reasons surely for the indifferent complexion of Canadian botany. There has been, I suggest, a failure of leadership in our government agencies of applied botany. They have failed to nourish and develop basic botanical researches, in-house or extra-mural, in the central, core compartments of the subject. One result of this myopic influence is that now, in the first flush of the age of ecology, the big science of the IBP finds its chief impediment a crippling dearth of expertise and knowledge in the basic botanical, and other biological area; a shortage of taxonomists to identify the myriad species making up the ecosystems whose metabolisms are being measured and modelled; a staggering lack of information about the nature and extent of the plant cover of our land, so that the representativeness of a Devon Island total ecosystem tundra study remains a subject of insecure optimism. Our Federal Department of Forestry, which is one of the elements in your custody, Sir, seems unable to decide whether to be unequivocally the handmaiden of the forest industry, or to commit itself unabashedly to basic research. It does neither with much distinction.

By sheer ineptitude it fumbled an excellent chance, three years ago, to develop a major, cooperative project in forest ecology, as part of the International Biological Programme. The unhappy sequel is that although we have on the west coast of Canada some of the most productive forests in North America, and although we possess more boreal forest than any country in the world, except the Soviet Union, our only major IBP efforts in production ecology are in the grasslands and the tundra!

These are harsh words, to be sure, and perhaps some of the ineptitude of the department is a function of its bizarre domestic history. In the last decade or two, it has been married and divorced several times, and now it finds itself entering a harem which is called the Department of Environment. Let's hope it won't be the eunuch in the harem, knowing what to do but unable to do it!

This might be the appropriate juncture to turn to a brief examination of the prospects and challenges of the Department of the Environment, noting in passing of course that the final parliamentary birth pains of that remarkable chimera are scarcely over.

How do we — as reasonably informed, thoroughly interested and involved citizens, trained professionally in one central discipline of that amorphous congeries of subjects which comprise environment — how do we view this development?

Well of course we can only rejoice that Mr. Davis and his colleagues appear to be recognizing the gravity and urgency of environmental problems. We can only applaud when Mr. Davis asserts that he wants. .

"Canadians to insist on strict effluent standards set at the factory fence" . . . and we should feel some assurance when he states publicly, as he did a few months ago, that:

"I don't expect our ecologists to provide us with a lot of answers in the short run", and "We still know very little about ecology. We are still groping in the dark".

And we salute you, sir, with enthusiasm, when you informed your party faithful in March this year that "the environment has an engineering facet, an economic facet, and an ecological facet. . . . but it is the ecological determinant that must be right".

Now if Mr. Davis were not a seasoned and adroit politician, as well as an accomplished scholar in his own right, one might hesitate to fire missiles at this new government edifice, especially when it has barely been shuffled and bolted and nailed into position. But it might be

appropriate to express a few misgivings about the whole conception which appears to underlie this new department. You may protest of course, and with justification, that the department is so new, so virginal and unsullied that it has no conceptions. Let me concede that point then, and reformulate my remarks to the effect that I will question and doubt the validity of current orthodox views of what are called "problems of the environment". And in doing so may I stress that there is nothing picayune or carping about these comments, but they stem from the roots of concern which we all share.

One could of course ask you sir, some specific, pointed questions — why, for example, if, as you have said, you don't expect answers from ecologists in the short run, why has your government, through one of the many, often conflicting cabinet ministerial statements of last winter, asserted that only one or two more summers of research are needed to decide on the Mackenzie Valley oil pipeline? We find this hard to accept, by any reckoning. Whether Canada has neglected research into its northern environment is a question of judgement, but few would doubt it; but the assertion that we are abysmally ignorant of much of our northern ecosystems is unassailable. The knowledge needed to provide a firm basis for a political decision about a major development, such as an oil pipeline, simply cannot be hustled out of Nature in a year or two. A few scrambled, sporadic studies by University-based consultants, hungry for the money to employ graduate students, equip laboratories, and generally live out this deadening syndrome of academic careerism, will do nothing but swill some more taxpayer's money down the drain. If we are to confront the central environmental issues of the day with reason and honesty, we must above all be fully informed and the requisite data base for a decision on a 1200 mile pipeline from tundra to prairie is vast indeed.

But my concern is not with these specific flaws and inconsistencies in the visible complexion of your government's approach to environmental problems. Rather my misgiving is with the central philosophy, or lack of philosophy, of much of the contemporary outcry about pollution and what is called environmental quality.

May I formulate one or two underlying propositions, because they are the basis of my central thesis. May we agree that the first requirement of any forward momentum in environment policies, or any other for that matter, is the informed consent of the electorate. The corollary of this, of course, in the words of Gunnar Myrdal, is:

"The principal constraint on social progress is inadequate popular understanding".

I shall return to this theme shortly.

And secondly, we can agree with at least this central assertion of McLuhan that the electronic revolution has exposed us, everywhere, instantaneously, to the crackle and thunder of, among other issues, the pollution debate. Every statistic or pseudostatistic of chemic contamination, or air pollution or oil spill is flashed before us as soon as it occurs. Before we have time to digest and assess the import of these bewildering facts a new report, or another interview with a white-coated, barely articulate University expert, assails our receptors. The problem, when it reached us, seems so easily and so often seen as, the conservationists versus the robber barons; or the local naturalists versus the exploitive industrialists; or in the months ahead, the Department of Environment versus the factory owner.

Now of course there is a compelling case for rapid introduction and enforcement of effective legislation to curb the direct pollution of aquatic and terrestrial landscapes by industrial and urban influences. And to the extent that the Department of the Environment will grapple realistically with the problems of pollution abatement, we support and endorse its aims. And who would deny the importance of developing rational policies for the use of renewable resources? But the concept environment has both a larger scale and additional dimensions. The scale is global and the dimensions beyond the physical and biological elements of the environment, are economic, ethical, esthetic and mythological. Whether we embrace or disavow, as I do, the view of some that the imminence of the global apocalypse, can be measured in a few decades, there can be few among us who doubt that the only long-range hopes for our ecological-technological civilization rest with the possibility of globally conceived, internationally agreed approaches.

The danger is in the concept, widely espoused and almost unconsciously promulgated by the media, that the environment is two-dimensional; that the environment can be equated with the "natural world" or the "great outdoors" or the wilderness and semi-natural areas of the world; and that environmental quality refers primarily or exclusively to the maintenance of the natural Biosphere. It has been pointed out by several scholars, notably Professor Northrop Frye, more recently and

cursorily by Dr. Lynn White, that this view of nature is an extension of the basic Judaeo-Christian myth that man and nature are separate; and that while man of course has conquered nature, we must somehow protect the natural world from abuse and despoliation. (My reference to myth is not in the popular, detractory sense, but in the true sense that the mythology of a society is the expression of, in the words Frye, "its past, present and future, its relation to its gods and its neighbours, its traditions, its social and religious duties and its ultimate destiny".)

We may grasp the inadequacies of the orthodox view of environment if we ask ourselves what do we know of the environment of everyman, in North America, far less the rest of the world. As a group, we are so atypical of everyman. We find ourselves in that self-perpetuating elite, who have enjoyed enormous opportunities, if not privileges, of extended formal and self-education. We are members of that rare, happy but hedonistic breed who are actually paid for doing what gives pleasure and intellectual satisfaction! Many of us travel through the world's ecosystems fairly freely, the wilderness ecosystems and the highly urban and technological ecosystems, extending and enriching our experiences and exploring new environments. What do we know of the real environment of man — of every man? Of those, the vast, largely silent majority, who have been unlucky enough to have to accept a stultifying, routine job, 48 weeks a year, 5 days a week, nine to five; whose awareness of the world has been narrowed and dulled, not just by chance, but by the overwhelming, enforced uniformity of the technological environment; whose consciousness has been repressed by the incessant noise and clamour and pressure of the Industrial-Corporate State. Whose intellectual aspirations have been extinguished by the mindless, maudlin madness of the media.

These are also problems of the environment. It is against this degraded social and intellectual environment that youth is, in revolt, catalysed and united into a universal homogeneity and stereotype by the electronic revolution, the extension, or is it rediscovery, of awareness, by clothes, speech, music, drugs, life styles and tribal associations is the nature of the beginning of their revolution.

I suggest, respectfully, that the Department of the Environment, any department of environment, will ineluctably circumvent the central environmental issue, which is the understanding and stabilizing of that complex system of interactions involving human societies and the rest of the biosphere. I suggest that it would be more accurate, but of course rather *gauche*, to name your department that of renewable resources management and pollution abatement. The inviability of the concept of the Department of the Environment is aggravated by the fact that the basic currency of man-centered ecosystems — energy, the non-renewable energy of fossil fuels — lies outside entirely the bailiwick of the Department! And the social and political ramifications of the concept 'environment' seem beyond the competence of any government agency.

What I am suggesting, and of course I claim not a shred of originality in the proposition, is that we live in two worlds, and I suppose they are roughly what Max Nicholson has called the biosphere and the technosphere. The first is the world of nature, our objective environment, and the second is the world of our aspirations — the civilization we are trying to fashion. The former is rooted in the conception of nature, the latter in the conception of art. What I am suggesting is that the study of man's environment cannot be restricted to the biosphere. The study of man's environment, in the words again of Frye, "must invade the structures of concern, studying human mythology in the same spirit that they study nature".

Reduced to its rudiments, the basic framework of mythology of our western culture is the Judaeo-Christian myth. It does seem that western democracy is now in the throes of a crucial period when the basic mythology is being discarded and dismantled and a new mythology sought. Indeed, Whyte has suggested that the roots of the ecological crisis lie in the inadequacies of the Judaeo-Christian mythology.

Now there is no question that Mr. Davis is aware of these aspects of the issue and that he labours under no delusions about the limited thrust and reach of his department. What is of consequence is that the slow but essential process of popular education is arrested and distorted by this image of the environment; the widely held view that problems of environment resolve themselves into conservationists and eco-freaks against capitalists and robber barons is reinforced. And the necessary ingredient of social progress — a popular acceptance and mandate — seems even more embedded in inertia.

Here, I believe, we can find the clue for botanists. If we are to contribute significantly to the development of this new or modified mythology, it will not likely be by the explosive evangelism of Reich in his "Greening of America", no matter how much concordance we find

in such compelling but simplistic expositions. I suggest rather that we have a significant and inescapable role in what Frye calls the "educational contract"...the continuing process by which the arts and sciences create a free authority. This contract is what universities in particular are all about. I suggest that the way in which we, as botanists and as scholars in general, have been fulfilling this contract has been woefully inadequate and further that this is the nub of the environmental crisis.

Let me illustrate the point quite directly with two examples.

Our official host, the Province of Alberta, has on hand a pet project whose acronym is PRIME — Prairie Rivers Improvement Management and Evaluation. Now it should be said that the Province is currently rather sheepish, or at least uncommunicative about PRIME, to the extent that they seem no longer too keen to circulate much information about it. PRIME, we are told, is an all-encompassing plan in which all waters within Alberta should be developed to an optimum degree, apparently for purposes of irrigation, power, recreation and water storage. Alberta has decided, unilaterally, to pirate by diversions and dams the watersheds flowing to the Arctic and to Hudson Bay. Already the delta of the Athabasca has suffered seriously from a neighbouring parochial power play. Now there has been, properly, an outcry against this scheme, or at least a barrage of pointed, searching questions, and the essence of the protest is that the engineers and hydrologists who are responsible for the technology of the scheme are not to be trusted; in the sense that they simply do not appreciate and comprehend the complex ramifications of the systems involved. This is probably largely true, but who educated these engineers? Who designed their curricula? Why do they have this narrow and insufficient view? The answer is simply that our universities have mis-educated them!

The second example, The Canadian Federal Department of Indian Affairs and Northern Development is responsible for the environment among other things, north of latitude 60° — in passing we might note this curious arbitrary boundary which the Department of Environment has to contend with! And its Northern Economic Development Branch has particular responsibility and authority for Arctic Land Use Regulations, and for administering research which relates to problems of land use and environment in the north; current emphasis is with the impact of oil exploration and development on the environment. There has been, and remains, widespread apprehension and scepticism in the scientific community about this agency of the government, not simply because it lacks any in-house ecological expertise, but because there is a basic lack of trust of the economists and engineers who direct this agency. They mean well, it is said, but they simply don't understand the complex biological and social problems of the environment. Now such criticism is not always well founded, to be sure, but sometimes it is. Any why? Once again, because the university has failed. Because the universities have mis-educated these applied scientists.

I would suggest to my university colleagues who carry the banner of ecology into the forum, who probe pollution publicly and who berate the government mercilessly when they seem to be soft with industries which degrade and rape our environments, I would suggest to them that while their motives are correct, the direction of their assault is in error. They should in fact be looking inward at their own institutions for it is here that the root of the malaise is to be found. I contend that the universities have unwittingly accelerated the process of environmental degradation, of urban sprawl and squalor, by ENSURING THAT APPLIED SCIENCE IS SEPARATED FROM THE STUDY OF THE CIVILIZATION IT SERVES.

Now it is scarcely appropriate here and now to engage in an inquiry into the problem of academic curricula. But may I simply suggest that we recognize and accept fully the fact that only a very small proportion, less than 25%, of the students we teach will go on to become professional botanists. And the large majority of all our students, at least in Canada, will never become professionally specialized. But our old discipline-centered curricular traditions, splendid of course for the specialist, and far be it from me to suggest we weaken them one whit, are of little value for the student who comes to us with the simple and legitimate request that we help him cultivate a social awareness for the entire enterprise of life. The crushing truth of the current state is that our so-called general students emerge after three years, less equipped to confront and comprehend the world than when they began university!

Now there is no easy way to solve these problems; contrived curricular innovations, born in committees and councils, usually produce colossal academic disaster areas; we have seen several such debacles in Canada. Change, if it is to happen, begins in the grass-roots, with a few faculty and students. I hope that some of us are moving in these

direction, bringing about these essential confluences of viewpoint which will be necessary.

May I therefore exhort you as botanists, that while our loyalty and singleminded pursuit of the mainstream of our discipline must remain and grow, we should grasp more imaginatively the broader role demanded of us by the times; but always, of course, we remain botanists, and in the next few days we shall be intensely and perhaps at times ecstatically botanical. Perhaps our view of our subject is like that of a lover, who reverses and relishes the whims, subtleties and endlessly seductive charms of a woman. And that is why I inscribe our discipline, Botany, in the words of Romeo for Juliet — "constant as the northern star."

EXTRACTS FROM A BRIEF RELEVANT TO THE PROVISIONAL MASTER PLANS OF BANFF, JASPER, KOOTENAY, AND YOHO NATIONAL PARKS

Presented on behalf of the Canadian Botanical Association/L'Association Botanique du Canada by Drs. J. Kuijt and J. Krajina.

In making this presentation on behalf of the Canadian Botanical Association/L'Association Botanique du Canada we wish to make clear, first of all, that our viewpoints are not purely botanical ones, nor do we feel that they should be. The purposes of National Parks far transcend those of any one interest group, and comments on the proposed Master Plans can therefore be meaningful only if more general account is taken of the total biological and physical environments within these Parks. It is in this spirit that we offer the following biological commentary, not only on the proposed plans, but also on the difficulties which we foresee in implementing any Master Plan under present conditions. Our comments are followed by a few more detailed points of criticism, and by more general recommendations.

Recommendations

(1) We call for an end to the tyranny of automobiles and other vehicles in the minds of those who plan the future of our Parks. We implore planners to **plan for vehicles rather than be planned by them**, before the point of no return is reached.

(2) National Parks, by their purpose and legislation, are **environmental monuments**. We recommend, therefore, that the National Parks Branch be transferred to the proposed national Department of the Environment as soon as the latter is formed. We feel that the logic of such a move is inescapable. We also feel that this transfer may have the extremely beneficial effect of an infusion of more reliable scientific expertise and opinion at various administrative levels.

(3) We submit that there are three major factors with regard to the Rocky Mountain Parks which, when taken together, contain an urgent challenge. The first factor is the dearth of scientific information for this vast area. Secondly, we maintain that the scientifically informed personnel of the parks is at a woefully low level, both numerically and educationally. The third factor, the burgeoning human use of the parks, will overwhelm the facilities and the essential qualities of the parks, unless somehow controlled or diverted. Clearly, this combined challenge can be confronted only with an unorthodox solution, a solution which goes beyond the scope of the present Master Plans.

It is recommended, therefore, that there be formed at the earliest opportunity a semi-autonomous "Rocky Mountain Commission", consisting of knowledgeable representatives from relevant Departments of the adjoining Provinces and of the Federal Government, plus representatives from relevant academic Departments of institutions of higher education in these two Provinces. The major functions of such a Commission would be:

(a) To coordinate existing and proposed research pertaining to the entire Canadian Rocky Mountain area; to serve as a clearing house for Rocky Mountain science; and to collate and publicize research facilities available in the area.

(b) To encourage and initiate scientific research in the Canadian Rocky Mountain area, and to define the major projects most urgently in need of execution.

(c) To serve as a granting agency in support of Rocky Mountain research, drawing funds from Federal, Provincial, and possibly municipal and private sources.

(d) To serve in an advisory capacity to governments at Federal, Provincial, and Municipal levels, to Park Administrations, and to private

concerns, on matters relating to the natural environment of the Rocky Mountain area.

(e) To attempt to establish a system of buffer zones outside the boundaries of Rocky Mountain National and Provincial Parks, and to define what activities in such buffer zones are compatible and incompatible with adjacent park areas.

(f) To serve in an advisory capacity to Park Administrations as to what uses are compatible with the purposes of accepted zones; and to determine what uses constitute violations of such zones.

(g) To evaluate, and advise on academic preparation of those Parks Officers whose primary responsibilities are with the management of the natural environment; and to make recommendations for the training of future officers holding such posts.

COMMISSION ON UNIVERSITY RESEARCH

The board of directors of the Association of Universities and Colleges of Canada has approved the establishment of a commission which will examine certain aspects of university research in Canada and will propose means for the rationalization of university research efforts.

The commissioners who have agreed to undertake this study are Dr. J.A. Corry, former principal, Queen's University and Dr. Louis-Philippe Bonneau, vice-rector, Laval University.

"To study, report and make recommendations on the mechanisms, structures and processes required to ensure that research undertakings in the universities of Canada can be planned to serve, without undue duplication, both the advancement of knowledge, and provincial, regional and national development."

The commission will begin the investigation in July 1971 and will end its work in June 1972. Public release of the report will be made shortly afterwards.

The commissioners will be assisted by an advisory committee composed of representatives of the various sectors of the university community and also of the regions of Canada.

Inquiries and correspondence concerning the commission should be addressed to Dr. L. F. Michaud, director of research, AUCC, 151 Slater, Ottawa, Canada K1P 5N1.

CCRM DIRECTORY OF PEOPLE

Earlier this year, the Canadian Council of Resource Ministers sent a questionnaire to over 5,000 people interested in resource management and related fields, as a first step in complementing its existing general and selective mailing lists, building a comprehensive directory of key persons and organizations concerned in the environment, and provide the users of such a directory with a professional, educational and experience profile of the above. The directory, broken down by regions, specializations or areas of interest, is available to those who have answered the questionnaire for a price yet to be determined. When requesting a copy of the directory or a partial list of people, please specify your purposes and the single or various uses you intend to make of it. Further information on this directory may be obtained from the Secretariat, CCRM, 620 Dorchester Blvd. West, Room 830, Montreal, 101.

PUBLICATION NOTICE

ECOLOGY OF WESTERN NORTH AMERICA. Editor: V.J. Krajina. 1970, Volume 2, No 2: THE SUBALPINE MOUNTAIN HEMLOCK ZONE — Subalpine Vegetation in Southwestern British Columbia, its Climatic Characteristics, Soils, Ecosystems and Environmental Relationships. By Robert C. Brooke, E. B. Peterson, V. J. Krajina. Pages 148-349, including Appendix of Environment and Vegetation Tables, and Plant Species List. Published by the Department of Botany, University of British Columbia. Price: \$13.00.

The previous Number (No. 1, pages 1-147) of Volume 2 appeared in 1969, and contains: ECOLOGY OF FOREST TREES IN BRITISH COLUMBIA, by V.J. Krajina.

MATERIAL FOR THE BULLETIN

CBA members and others are invited to send material in the form of short notes, news items and announcements which are likely to be of interest to CBA members to the editor: Dr. J.K. Morton, Department of Biology, University of Waterloo, Waterloo, Ontario. The Bulletin appears four times a year — in January, April, July and October. Material should be received not later than the end of the first week of the month prior to publication. The lateness in appearance of the present issue is regretted. It is intended that the October 1971 issue will appear in early November and the January 1972 issue on schedule.