



THE MAINE GEOLOGIST

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DEVONIAN PALEOBOTANY

An inquiring mind, a strong back and infinite perseverance have made Prof. William H. Forbes of the University of Maine - Presque Isle one of the world's foremost paleobotanists, specializing in Devonian plants. Bill reported on his work of the past decade to the Fall Meeting of GSM at Colby on December 5th, noting that his original interest in the subject was generated by the fact that although numerous fossil plant collections had been made historically both in North America and Europe, no one had ever then studied their materials in sufficient detail to describe whole-plant morphologies or develop meaningful phylogenetic classifications and stratigraphic assemblage definitions. Bill's special procedure is to collect samples by the ton ("Boucotizing") and then to take them apart, grain by grain, with a strong needle and a whole lot of patience.

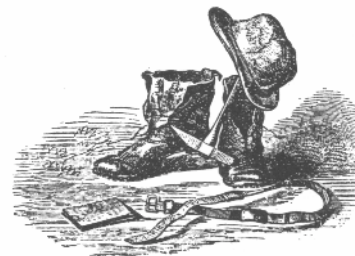
The type locality for early Middle Devonian plants is (literally) in Trout Brook, Baxter State Park, where Bill has identified the most complete assemblage known in the world. The essence of his identification and classification technique involves progressively needling the rock matrix of a sample away from around the carbonized plant while photographing successive horizons down into the dissected sample, in order to make a series of stacked pictures of precisely known "elevations" with which an artist can create an accurate 3-dimensional rendition of the original plant shape, dimensions, branches, leaves and spores. Contrary to the historical (and useless) practice of classifying these plants on the two separate bases of main axes (stems) and spores, by Bill's procedure classification is based on the whole plant, with specific identifications based largely on the reproductive structures (spores). In conjunction with radiometric and paleontologic determinations, quite precise stratigraphic assignments and evolutionary sequences have been made for the various plant assemblages. These in turn have permitted the application of Bill's plants to the continuing effort to define world-wide paleogeography of continental plates for an interesting period in earth history.

Plants of the past were much like plants of today, in the sense that their habitats were restricted by latitude, altitude and climate. Evidence from something like 100 early Middle Devonian plant localities in eastern North America indicates that these plants lived only in estuarine coastal environ-

ments, to the outside of the brachiopod zone of the marine margin. No plants are found in terrestrial environments. Having traced the Devonian shorelines from the southern Appalachians to Newfoundland and beyond, Bill then jumped today's Atlantic and found the same plant assemblages to trend northerly along the ancient proto-Atlantic eastern margin in western Europe and Scandinavia. Similar assemblages and only very gradual paleoclimate changes are seen through this zone which now ranges through about 350 of latitude. Similarity of cell growth patterns of plants throughout this zone suggests that the long, narrow Devonian Atlantic trended roughly east-west along a fairly low latitude.

In Norway, Bill was able to apply his knowledge of Devonian plants, gained by wading the bed of Trout Brook in the State of Maine, to re-define an erroneous regional stratigraphic interpretation and open the door for that country to walk through to successful petroleum exploration and national energy independence.

There could have been no way to guess 10 years ago that Bill's initiation of innovative research, of a very detailed nature in an obscure geologic discipline, might ultimately contribute to the great economic benefits now enjoyed by the people of an entire country. Basic scientific research is so commonly undertaken for no other reason than, like climbing Mt. Everest, "because it is there". While socially desirable results may sometimes or often derive from this research, such benefits most certainly cannot be predicted in advance.



COUNCILOR ELECTED

At the Annual Meeting of the Geological Society of America at Salt Lake City in October, GSM Councilor James W. Skehan, S.J. was elected Chairman of the Engineering Geology Division of GSA. If the job calls for doing paste-ups for the layout of Engineering Geologist, we send Jim our most passionate regards.

GSM MEMBERSHIP

In response to interest expressed at the Mid-Summer meeting of the Society to have our Membership List published for the use of the Members, we do so herewith. The list is undifferentiated as to Regular, Associate and Student classifications, and includes all 1974-75 Members, plus 7 new Members who have joined for 1975-1976. The list is current as of November 24, 1975, and comprises 106 Members, of which 48 have paid dues for the current GSM year.

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GEOLOGY AND PLANNING

The Coastal Planning Group of the Maine State Planning office is doing a study of the aspects of bedrock geology important to state, regional and local planning in Maine. They will be talking with people working with bedrock in Maine, and consulting the literature of Maine and other states, to determine what aspects of bedrock geology are relevant to planners; what information is currently available in Maine; and what type and form of further information is needed. At present, bedrock, hydrogeology, economic deposits, engineering characteristics and hazards, and points of academic interest are being considered. The Coastal Planning Group will welcome the opportunity to discuss this program with all interested persons. If you have some ideas or information which you think might be of some value in this respect, please get in touch with Martha Hewett, State Planning Office, 184 State Street, Augusta 04330; Phone 207-289-3155.

VERMONT GEOLOGICAL SOCIETY

We got a nice notice of our Society formation in the Summer issue of the Green Mountain Geologist, the Newsletter of the Vermont Geological Society, although they seemed unnecessarily amused at our having picked the hottest day of the century for our Mid-summer meeting. The Vermont Geological Society runs on a September-to-September fiscal year, with dues at \$8 for Members and Associate Members, and \$4 for Student Members. Their 1974-1975 membership comprised 47 Regular and 10 Associate and

Student Members. Their mailing address is Box 304, Montpelier, Vermont 05602.

The VGS fielded a couple of very interesting-looking trips for their Annual Meeting held on Oct. 18th, on recently-discovered high-angle faults in west-central Vermont, led by Rolfe S. Stanley; and on effects of stream capture and suburban development, Alder Brook, Vermont, led by Dallas D. Rhodes. At their Annual Banquet on the 18th, Dr. Stanley also discussed implications of his newly-found faults, which are interpreted to have developed during the Mesozoic in conjunction with the early opening of the (last) Atlantic.

NEXT GSM MEETING

The Winter/Spring meeting of the Society is currently scheduled as an after-dinner meeting, to convene at 7:30 PM on Friday, March 19, 1976, at Orono. If March 19th turns out not to be OK for some reason, then the meeting will be held a week earlier, same time, on the 12th. If Orono doesn't work out, then the meeting will be held somewhere in the Bangor area. We'll get it all together eventually, and send you a timely notice.

Nineteen years ago this season, after he had spent the summer collecting information for the Maine Survey's inventory of pegmatite mines and prospects, Dee Caldwell sent us a nice Christmas greeting which we pass along:

MERRYCHRYSOBERYL AND A VERY HAPPY NEWRY

**The Geological Society of Maine c/o
John R. Rand, Cundy's Harbor
RD 2 - 210A, Brunswick, Maine 04011**

THE MAINE GEOLOGIST is published four times a year, more or less in September, late Fall, late winter and maybe June or July, for Members of the Geological Society of Maine, a non-profit, non-incorporated educational society interested in all aspects of the geology of Maine.

Correspondence about this Newsletter or about Membership in the Society may be addressed to John R. Rand, Cundy's Harbor, RD2-Box 210A, Brunswick, Maine 04011.

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