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F. G. Young

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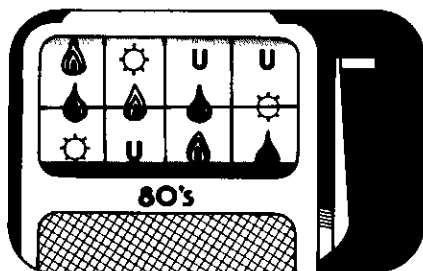
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Conference Reports



Energy Audit of the 80s - CSPG Annual Convention, 1980, Calgary

F. G. Young,
Home Oil Co. Ltd.,
324 - 8th Ave. S.W.,
Calgary, Alberta T2P 2Z5

With Canadian energy supplies in the forefront of the news, as well as the power struggle between Alberta and the federal government currently in full swing, this timely conference got and deserved considerable limelight while it was in progress between September 29th and October 1st. The conference featured an interesting blend of politicians, geological technocrats, and notable scientists active in the field of energy. Both the press and the stock markets paid close attention to the addresses of Alberta Premier Peter Lougheed and federal Energy Minister Marc Lalonde, as well as the messages of senior managers of Chevron Standard and Petro-Canada on new frontier discoveries.

The National Energy Board paper on Canada's energy supply-demand balance unfortunately preceded the important public hearings on this subject beginning in November, and relatively old data and forecasts were offered. Hydro and nuclear electrical power are envisioned to take large slices of the energy pie by 1990 (to 34%), while petroleum, natural gas, and coal are all reduced in relative

importance. Strangely, no mention was made of the contributions of solar, wind, biomass, or geothermal sources of energy, each of which were addressed subsequently in conference papers, providing some of the most technically interesting addresses.

H. R. Wynne-Edwards (Alcan International) also addressed the problem of Canadian energy utilization and development, pointing out that Canadians are "energy junkies" in having the highest energy consumption per capita in the world. To prevent Canada's gradual decline in international trade he calls for a sound national energy policy, and national sovereignty of energy resources. His various calls for government influence in this area, however, seemed at odds with his other plea for individual entrepreneurship. Many independent oil companies well know that the two are generally incompatible.

Perhaps the most entertaining talk was by Dr. F. MacKinnon, who brought the current Constitution debate into the energy picture. Among his many interesting political observations, the most pointed one attacked provincial governments for their history of mismanagement of energy matters. He wondered aloud whether sufficient talent was available for each of eleven governments to staff and manage the power invested in eleven energy authorities. He believes the bureaucratic growths of the four Atlantic provincial governments (which he likened to "jet engines in small wagons") has cost the taxpayers far more money than necessary to manage the needs of the region.

The Geological Survey of Canada provided newly generated estimates of Canada's conventional oil and gas resources, using sophisticated analytical techniques involving Markov Chain analyses of discovery rates and Monte Cristo simulations of parametric/probabilistic data. Of interest are the huge volumes of undiscovered gas believed to exist in the frontier areas: 72 x 10¹² ft³ (Tcf) in the East-coast offshore, 87 Tcf in the Arctic

Islands, and 112 Tcf in the Beaufort Sea (mean probability levels). R. Procter, who gave the talk, said the GSC's mean estimates of oil resources included 9.4 billion barrels in the Beaufort-MacKenzie area, 4.3 billion in the Arctic Islands, and 19.2 billion in western Canada.

A much more optimistic estimate for oil in the Beaufort was provided by D. R. Horn and V. Mroszczak (Dome Petroleum), who claimed there is a 50 per cent chance the area contains 30 billion barrels of oil. Such large discrepancies between various estimates of undiscovered potential are typical, and, as R. Meneley (Petro-Canada) pointed out in his talk, the slow pace of delineation drilling in frontier areas renders characterization of such basins as the Sverdrup basin in the Arctic as gas-prone too premature.

According to Meneley, lack of drilling equipment, an inadequate land tenure system, and environmental and accessibility barriers to exploration in Canada's frontiers preclude counting on these resources as part of our energy inventory for many years to come. For example, drillers off the East Coast average two holes per rig-year, while operators in the Beaufort Sea attain less than one hole per rig-year. As a result, only discoveries made in the next two years will have any chance of helping Canada reach energy self-sufficiency in this decade.

G. G. L. Henderson (Chevron-Standard Ltd.), added a further pessimistic note to the utility of frontier petroleum finds by stating that "Hibernia is totally uneconomic at today's domestic well-head price of \$16.75 a barrel, and won't be a bonanza even at the current world price of \$37.00". However, his confirmation of earlier reports that Hibernia contains probably one billion barrels of recoverable oil, and that the productive capacity of the discovery well is 20,000 barrels per day caused the stocks of Gulf Canada and Mobil Oil to move up considerably the day of his talk.

Several papers dealt with petroleum provinces of emerging importance,

including the Rocky Mountain Foothills, the Deep Basin of Alberta, and the heavy oil deposits of the Cold Lake-Lloydminster area and the oil sands of northern Alberta.

O. L. Slind (Shell Canada Resources Ltd.) reviewed the long history of exploration in the Foothills, where 14 Tcf of gas are now proven reserves. To find the remaining estimated 20 Tcf will require very expensive wells (currently \$5 to 10 millions each), experienced exploration staffs and drilling teams, and operators who are not easily discouraged.

Continued advances in technology and high prices for natural gas will be needed in order to exploit the large gas resource locked in "tight", fine-grained sandstones of the Deep Basin, according to L. R. Flury (Amoco Canada).

R. D. Orr (Husky Oil) and Don Harrison (Esso Resources) noted that expensive tertiary recovery schemes will be needed to extract a reasonable portion of the 50 to 70 billion barrels of heavy oil contained in the Cretaceous sandstones of the Lloydminster region. Commercial ventures of this type require realistic taxation and fiscal policies, a co-operative political climate, and a large human resource base. Without this support the enlarging shortfall between demand and supply for oil in Canada will reach 700,000 barrels a day by 1985, according to Harrison. Orr claimed that \$19 billion of investment in heavy oil are needed by 1990 to get production rates of 850,000 barrels per day.

Interesting overviews on the potentials of and exploration activity in uranium, coal, hydro-electric power, solar energy, wind, geothermal energy, and biomass resources were also given at this conference.

Canada has pioneered the methodology for delineating uranium provinces, the first step in the resource identification process, according to A. G. Darnley (GSC). The resulting stepped up level of exploration for uranium ores in the Athabasca Basin of northern Saskatchewan has led to the discovery of seven large deposits, while a similar number of new discoveries can be expected through the 1980s, according to Lloyd Clark (Saskatchewan Mining Development Corp.).

Coal and hydro-electric power have considerable room for growth during the 1980s, while the diffuse natures of wind, solar, geothermal, and biomass energy sources will restrict them to specialized, localized, and experimental types of applications, according to the various people who discussed each energy source. However, as the cost of traditional sources of energy increases over the years, the more viable will the alter-

nate energy resources become. The impression left was that these renewable, mainly non-polluting sources of energy will attract an increasingly large following, and that their growth will be subtle and steady. Their future shares of the energy supply mix is unquestionably difficult to assess from the perspective of 1980, a time when our technological world is still dominated by the use of fossil fuels.

MS received October 23, 1980

**Geological Association of Canada
Association Géologique du Canada**

Late Silurian and Early Devonian Graptolite, Brachiopod and Coral Faunas From Northwestern and Arctic Canada

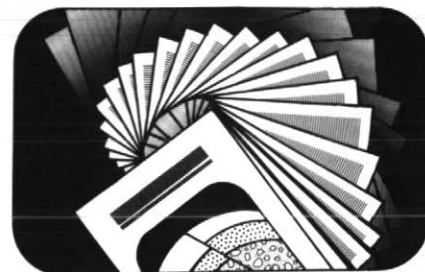
by D.E. Jackson, A.C. Lenz, and A.E.H. Pedder
Geological Association of Canada
Special Paper 17

The work integrates the author's separate and on-going studies of graptolites, brachiopods and corals from northern and Arctic Canada. Much of the importance of the rich faunas from these regions is due to interbedding of graptolite-bearing shales with limestones carrying shelly fossils and conodonts. This and paleoecological aspects of the faunas are stressed by the authors. The volume is 160 pages in length, with four graptolite, ten brachiopod and thirty coral plates. (August, 1978)

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Earth Science Publications - Into the Eighties

Robert H. McNutt
and Maureen Dickson Czerneda
*Department of Geology
McMaster University
Hamilton, Ontario L8S 4M1*

The 14th annual meeting of the Association of Earth Science Editors (AESE) was held in Halifax, October 19-22, 1980 and was hosted by the Bedford Institute of Oceanography. The chairman for the meeting was Michael Latremouille. The AESE Meeting was held jointly with IAMSILIC - the International Association of Marine Science Libraries and Information Centers. In addition to the technical sessions, delegates were treated to a Halifax Harbour Cruise on a typical Maritime day (cold, wind, rain), enjoyed a terrific lobster supper at Hubbards on another typical Maritime day (cold, wind, sun), and enjoyed walking the streets of Halifax on yet another typical Maritime day (warm, no wind, sun). A reception for the delegates hosted by the Government of Nova Scotia was held in the Red Room of Province House.

Reviewers and Reviewing

What is a good manuscript? Who makes a good reviewer? These and other questions were discussed during the first session of this editors' meeting. Vernon Swanson (GSA, Boulder, Colorado) suggested that editors should look for the following characteristics in reviewers: 1) he is willing to review quickly (two weeks is ideal!); 2) she is knowledgeable in her field; 3) he is relatively young (still a tiger!); 4) she knows the rules of grammar; 5) he is familiar with the journal format; 6) she checks all illustration, plates, tables, etc. carefully; and 7) he will reject a manuscript if necessary and give solid reasons why. The bane of all editors is the individual who agrees to review a manuscript, promptly loses it in a pile on his desk, finds it only after repeated reminders by the editor, and then sub-