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will rarely be matched for its realism, perception and judgement, Andy Baillie pinpointed the pitfalls of prosperity. Effective petroleum geologists today have to synthesise a vast amount of data much of which is indirectly derived. This requires experience and judgement considerably beyond what is now acquired in B.Sc. programs. In Universities, curriculum changes to capitalise on recent advances have been made at the cost of basic science and interdisciplinary courses, so that the emerging undergraduate tends to be a successful listener and exam passer rather than the possessor of well developed analytical capabilities. Entry to industrial exploration at the M.Sc level is much more desirable, but the buoyant job market pulls most geology students out of University with only B.Scs. Baillie did not see signs of improvement on the horizon. Few University professors have much experience in the oil industry so there is little federal funding for petroleum oriented research, field experience is on the wane, and no initiative is being taken to effect transfer of personnel through senior industrial fellowships, added to which even company courses these days do not emphasise problem solving. Thus, in a conference which opened with Halbouty's call for Initiative, the closing talk forecast an intellectual drought.

The final afternoon was devoted to AAPG-style workshop sessions on drillsteam testing, sandstone diagenesis, gravity and magnetic surveying and seismic modelling. All were well attended, as was the nostalgic display of historical photos which chronicled the history of hydrocarbon exploration in Canada. In retrospect, this reviewer feels that the papers presented at "Exploration Update '79" revealed no major insights or significant technical breakthroughs, but they did provide a useful overview of Canadian oil industry activity and gave glimpses of what may lie ahead.

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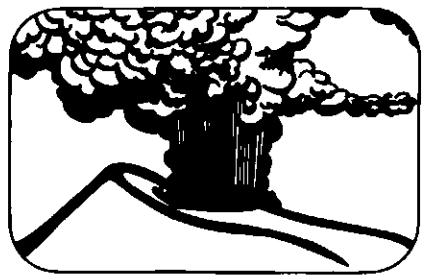

Early Precambrian Volcanology and Sedimentology in the Light of The Recent

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The first meeting of IGCP Project 160: Precambrian Exogenic Processes, was held in Quebec City (May 23-25, 1979) during the annual meeting of the Geological Association of Canada. This was the first symposium entirely devoted to the physical volcanology and sedimentology of the Early Precambrian, a subject of research that has long been neglected but where now rapid and significant progress is being acheived. The objective of the symposium was to present models of Archean volcanism and sedimentation in the light of Holocene analogs. In order to stress the uniformitarian approach of the symposium, most major subjects were introduced by a speaker who synthetized relations in the Holocene, followed by speakers describing relations in the Archean and Proterozoic. The symposium documented significant progress in several fields, and only its highlights, not the whole program, will be discussed below.

In the first morning, Gary Wells, Michael Jackson, Laszlo Imreh, Erich Dimroth and A. F. de Rosen-Spence developed models of the flow of mafic and acidic lavas under the sea and the resulting distribution of facies (pillowed lava, massive lava, flow beccias) within flow and eruption units. These models are based on detailed mapping of the facies distribution of Archean subaqueous flows and on their interpretation in the light of lava flows observed at the shore-line of Hawaii. The models now permit us to reconstruct the paleogeographic evolution of Archean volcanic terrains.

Facies analysis of pyroclastic rocks should also add significantly to our knowledge of the paleogeographic evolution of Archean volcanic sequences. This session was introduced by a lucid account of Holocene submarine pyroclastic rocks (Hans-Ulrich Schmincke). Pyroclastic rocks are particularly significant in the last stage of the growth of some Archean volcanic complexes, when volcanic islands formed. Phil Thurston, Lorne Ayres, and Bill Padgham described subaerial pyroclastic rocks from several localities in Canada.

Paul Robinson then discussed the low temperature alteration of ocean floor basalts. Generally speaking, one can distinguish a pervasive alteration and an alteration related to primary porosity (fractures, inter-pillow spaces, inter-particle porosity, vesicles). The latter type of alteration takes place at strongly oxidizing conditions and results in strong chemical exchange between sea water and the volcanic rock. Dimroth then summarized the relict textures in Archean basalts and rhyolites due to sea-flow alteration.

Discussion of Archean sedimentary environments followed (Roger Walker, Michel Rocheleau, John Wood, Roy Shegelski, Ken Erikson, Alan Bailes, Thomas Reimer). Generally, basins are steep-sloped and deposits of high-gradient streams (braided stream, piedmont form) grade directly into turbidites without intervening shelf sediments. In general, the basal sediments are volcanogenic and grade upwards into sediments of volcanic plutonic derivation, thus indicating uplift and erosion of a volcanic source terrain containing shallow level batholiths. Such environments are found in some recent island arcs described by Hakuyu Okada. In some cases, steep-sloped basin margins are transformed into shelf-rise sequences with more usual shelf sequences due to progradation of turbidites (Ken Erikson).

Thus, the margins of the Archean volcanic belts generally appear to be steep and lack a shelf. The few shallow marine sediments which are presently known from the Archean are (in

general) intercalated between volcanic sequences. They are carbonate rocks partly preserved, but largely replaced by silica or by silica and barite (Don Lowe, Paul Knauth and John Dunlop). Lowe and Knauth classified Archean carbonate rocks and presented sedimentological and chemical criteria permitting one to differentiate primary carbonate sediments from carbonate veins and replacement carbonates. Both Lowe and Dunlop stressed that most Archean charts are derived from carbonate rocks and from tuffs and are the product of silicification.

The most significant aspect of the symposium was, perhaps the strong evidence for digenetic oxidation on land and under the sea. Dimroth presented relict textures of Archean sea-floor metamorphism: palagonitization and carbonization. Palagonitization took place under strongly oxidizing conditions, and oxide crusts probably formed where pillows were exposed to sea water for prolonged periods. The textures produced by Archean sea-floor metamorphism correspond exactly to the petrography of the sea-floor alteration of Cenozoic ocean basalts described by Paul Robinson.

Roy Shegelski documented in detail the petrography and chemistry of Archean red beds. Dave Grandstaff described the soils below the Huronian: the reduced soils are podsols (as has originally been predicted by J. F. Pettijohn) and formed in poorly drained depressions; oxidized podsols formed on well drained slopes but, of course have a lower preservation potential since they are more easily eroded. Mike Kimberley pointed out the similarities of alteration patterns associated with the Huronian uranium deposits at Blind River and with the Mesozoic Uranium deposits of the Colorado Plateau. Silicified sulphate evaporites (John Dunlop) are present in the Archean. This evidence suggests that concentrations of reactive components (oxygen, carbon dioxide, sulphate) in ocean and atmosphere did not change drastically during the last 3000 millions years.

On the whole, speakers refrained from geotectonic speculation. The symposium documented a trend away from "Archean megathink" toward a re-examination of the evidence preserved in the rock record. This is a healthy trend since a geotectonic interpretation of Archean volcano-sedimentary belts must be based on a synthesis of their paleovolcanic and paleogeographic evolution, structure, metamorphism and geochemistry. The first major synthesis based on all these features should not be too far off.

The symposium was preceded and was followed by a five-day field trip to the classical Archean area at Rouyn-Noranda, Québec, led by E. Dimroth and five of his students. The outcrops shown (and many more) are extensively described in a 200-page guidebook. The symposium and field trip were a great success. Speakers represented nine countries, and seven nationalities were represented at the fields trips. The proceedings of the symposium will be published as a special volume of the journal "Precambrian Research".

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Sixth Annual Meeting of Canadian Geophsical Union

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During its brief history, the Canadian Geophysical Union (CGU), has held its annual meetings all across Canada. After the inaugural meeting in St. John's in 1974, when CGU was launched as the joint division of the GAC and the Canadian Association of Physicists (CAP), it went all the way to Vancouver (1977) only to find itself back east; this time in the picturesque setting of U.N.B. in Fredericton. The early June weather was cooperative and thus contributed to the natural suitability of the U.N.B. campus to make for an enjoyable conference.

Last year, the CGU had its first solo meeting in London, Ont., held in conjuction with neither of its parent organizations. It was an unqualified success with an unexpectedly high number of participants. With Fredericton being "much less centrally located", there had been some concern if viable attendance would materialize. Once more, the CGU has shown signs of maturity and close to 150 geoscientists turned up including a significant number of participants from the U.S., Mexico and other countries.

The meeting that took place on June 4-6, served several functions: (1) There were the business-like get-together of some of the informal groups that make the CGU; (2) there was the annual plenary session of CGU, with all the usual trimmings of a business gathering of this kind; (3) there were social events - as ever the most popular part of the meeting - featuring Dr. Allan V. Cox, the