Meetings

Geology along the North Atlantic: Gander Conference

Geologic relations on opposite sides of the North Atlantic Ocean do not prove the theory of continental drift but most of them support the hypothesis. This was the informal conclusion at an international conference held 24–31 August 1967, at Gander, Newfoundland. More than 50 papers were presented to 114 participants, of whom 40 came from the United States, 31 from Great Britain, 30 from Canada, and 13 from other countries. Several field trips were made before, during, and after the formal programs.

The papers fell into two main categories. Many were informative or discursive, describing the details of geologic relations and rocks in Great Britain, the maritime provinces of Canada, northeastern United States, Greenland, and the islands of the North Atlantic. Other papers were advocative or argumentative, noting pertinent comparisons or contrasts within or between the several geographic regions, or pressing for specific interpretations of structure or geologic history. Still others dealt with such particular processes as faunal relations, oceanographic and geophysical findings, and geotectonic matters. A large volume of detailed data was laid before the conference, in part summarizing known information and in part suggesting new lines of research for additional study.

The program commenced with several papers on the PreCambrian of Scotland, Ireland, Newfoundland, and New England, with emphasis on the radiometric age, structure, and metamorphism of such rocks as the Lewisian, Torridonian, Grenville, and early Dalradian series. This discussion was followed by similar regional analyses of the Cambrian and Ordovician rocks around the North Atlantic, with special emphasis on their similarities, geologic and faunal histories, magnetism, and tectonic structures. Differences were discussed between the so-called Atlantic and Pacific provinces of Newfoundland and Britain. Intercontinental correlations of Cambro-Ordovician rocks and graptolites were suggested.

Other sessions dealt with Silurian, Devonian, and Carboniferous systems of the North Atlantic region; transcurrent and other faulting, including the thrust sheets of western Newfoundland; the relation of specific formations, such as the Old Red Sandstone and various other conglomerates, to general tectonic history and to particular structures; Arctic lands; geophysical and oceanographic relations; and the synthesis of all of these details into a composite pattern.

The subject of continental drift was a common thread running through most of the papers. Evidence bearing upon drift fell into five types: (i) paleogeographic evidence based on intercontinental similarities during a single time span; (ii) structural comparisons of historical events during extended time periods; (iii) the physical congruence of Atlantic coasts or the jigsaw types of continental fit; (iv) specialized interpretations such as polar wandering, magnetic reversals, seismic and sea-floor data; and (v) faunal and radiometric similarities. In general it was agreed that the Canadian Maritime Provinces and the British Isles are remarkably alike in many geologic respects, with differences being less prominent than their similarities. At the same time there was some sentiment that Newfoundland is more like Ireland than Labrador or the American mainland, while Ireland resembles Newfoundland more than it does Scotland. There was no strong anti-drift sentiment, although some items supporting drift were questioned and many speakers took no stand pro or con.

The suggestion was made that the term "continental drift" no longer represents the whole of the tectonic process involved, and that a better term might sharpen the further study of these matters. It was also suggested that geologists on both sides of the Atlantic should standardize or integrate their use of such broad terms as Taconic, Caledonian, Appalachian, and others, so that all schools of geology would have a common understanding of the time and geographic significance of these terms. A portion of the last session was devoted to such a synthesis and some of its inherent problems were discussed without producing any interregional agreement.

A number of unresolved problems emerged in the course of the conference, such as the precise age of the Dalradian rocks of Ireland and northern Britain; the cause of certain anomalous radiometric dates, whether related to subsequent cooling or produced by the overprinting of subsequent events; the whereabouts of the American Grenville rocks in the British Isles; the nature of the crust under Newfoundland; the proper integration of American Taconic deformation with European Caledonian events; and the possible consanguinity of the Old Red Sandstone with the American Catskill formation. Other matters inviting more study were the great rifts described in eastern Greenland and the general dissimilarity of its geologic history with that of the rest of the North Atlantic province; the possibility of residual scars on the ocean floor resulting from the former stand of vagrant continental blocks; some revision of the reputed age dates of various Atlantic islands; and a suggested correlation of the extinction of certain foraminiferal genera with epochs of magnetic reversals.

One speaker discussed the need to analyze the types of evidence for continental drift, suggesting that a linear variable which could be identified on one side of the Atlantic and continued on the other might be more impressive and convincing than mere physical resemblances which could arise from a common history without requiring actual proximity.

The field trip to New World Island, 40 miles north of Gander, was attended by most participants who examined Ordovician and Silurian sedimentary and volcanic rocks that were strongly folded, variously intruded, thrust faulted, and subsequently broken by steeply dipping faults many of which showed transcurrent movement. One of the latter is the Lukes Arm fault which can be suspected of being a trans-Atlantic continuation of one of the

analogous transcurrent faults of the Scottish Highlands.

The conference was arranged by Marshall Kay (Columbia University) with support from the National Science Foundation and the participation of the Geological Society of Canada.

The proceedings of the Gander Conference including both papers and their discussion will be published in a symposium volume shortly to be issued by the American Association of Petroleum Geologists.

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Calendar of Events

National Meetings

December

28–30. Archaeological Inst. of America, Boston, Mass. (C. Grandjouan, Archaeological Inst. of America, 100 Washington Sq. East, New York 10003)

28–30. **Econometric** Soc., annual mtg., Washington, D.C. (Administrative Assistant, The Society, Box 1264, Yale Station, New Haven, Conn.)

29. **Scientific Research** Society of America, New York, N.Y. (D. B. Prentice, 155 Whitney Ave., New Haven, Conn.)

January

4–6. **Human Factors in Automotive Engineering** Design, Ann Arbor, Mich. (Society of Automotive Engineers, Continuing Education Program, 485 Lexington Ave., New York 10017)

7–12. American **Chemical** Soc., New Orleans, La. (Meetings Manager, 1155 16th St., NW, Washington, D.C. 20036)

8–9. National Specialists Symposium on **Orbital Resonance**, Redondo Beach, Calif. (G. S. Gedeon, Systems Group, TRW, Inc., One Space Park, Redondo Beach 90278)

8–12. Automotive **Engineering** Congress and Exposition, Detroit, Mich. (W. I. Marble, Soc. of Automotive Engineers, Meetings Div., 485 Lexington Ave., New York 10017)

9–11. **Chemical Marketing**, Hopatcong, N.J. (Saul Gordon Associates Center for Professional Advancement, P.O. Box 66, Hopatcong 07843)

10–13. National Soc. of **Professional Engineers**, winter mtg., Washington, D.C. (P. H. Robbins, NSPE, 2029 K Street NW, Washington, D.C. 20006)

14–18. Society for **Cryo-Ophthalmologists**, Miami Beach, Fla. (J. G. Bellows, Executive Sceretary, 30 N. Michigan Ave., Chicago, Ill. 60602)

15–16. **Medical Library** Board, Washington, D.C. (Medical Library Assoc., Inc., 919 N. Michigan Avenue, Chicago, Ill.)

15–17. **Noise Measurement and Control**, Hopatcong, N.J. (Saul Gordon Associates Center for Professional Advancement, P.O. Box 66, Hopatcong 07843)