

Urban Geology of Edmonton

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Glacial Till

Edited by R. F. Legget
Royal Society of Canada Publication
 No. 12 (National Research Council),
 1976, 412 p.
 \$20.00

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The opening statement by the editor as to the vast amount of work done and knowledge that has been accumulated on tills is apparent to all who have tried to follow the literature. The opportunity to develop some new approach to the subject through the conference and volume of proceedings seems to have been lost to a large extent as my reaction to both was that this was more of the same material that has been discussed elsewhere. This does not detract from the quality and interest of the presentations which are a most useful selection indicating the wide ranging concern with till (Glacial by definition) and the types of problems arising in the many fields which have to work with the material. The big gap, and probably the way in which research should be developing, is in the understanding on the physics of deposition of the material from a study of the active environment and from glaciological modelling. This approach contrasts with studies which infer depositional conditions from the character and structure of the deposits. The variability of the material makes such inference particularly difficult. Boulton's work which discusses the physics of deposition is the most thought provoking paper in the volume.

Looking at each of the sections of the book in more detail. *The Geology of Tills* adds little that is new mainly because it is dominated by the excellent researchers, Driemanis, Scott and Karraw who have been responsible for bringing the state of knowledge to its present high level but who are not now developing any fundamentally new approaches. *Pedology and Tills* strongly underlines the complexity brought about by pedogenic processes acting on a heterogeneous material like till. This section suggests that the concept of till

as one type of material is a problem when studying soil development. *Mineral Exploration and Till* presents some of the recent uses of techniques of exploration but emphasizes that these are again inhibited by the far from complete understanding of the mechanisms of deposition.

Geotechnical Aspects of Till offers in parts of the most stimulation as it starts to dig into concepts of conditions of deposition necessary to produce certain properties of these materials. There is still an undercurrent which suggests the need for greater work to be done with present day glaciers, for example, p. 271, "It is assumed that particles were released from the ice by basal melting". How many of our conclusions are erroneous if based on assumptions?

Therefore, although there is the presentation of a large amount of very absorbing material, the conference and the volume were disappointing in not bringing out sufficiently the need for new avenues of approach to the subject.

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Urban Geology of Edmonton

C. P. Kathol and R. A. McPherson
Alberta Research Council
Bulletin 32, 61 p., 1975.
 \$10.00

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The Foreword to the *Saskatoon Folio* (Christiansen, 1970) records the hope that "it will prove to be the precursor of many similar studies elsewhere in this country. . . (showing) what is desirable, if not indeed essential for all the urban areas of Canada. . . as they face the complex problems associated with the doubling of their populations before the end of the century."

News that a new report on the urban geology of Edmonton was to be published by the Research Council of Alberta was therefore most welcome. An earlier modest treatment, admirable in its brief but adequate contents, also issued by the Council, was titled "Part I" and so gave promise of a commendable but more complete publication (Bayrock and Berg, 1966). Spence Taylor's excellent, privately produced, atlas of the old coal workings under Edmonton showed how necessary a comprehensive guide was to the subsurface of the rapidly growing capital city of Alberta.

Bulletin No. 32 is now available. It is comprehensive, dealing with the geology of an area of 288 square miles, including the city of Edmonton. In one way it is too comprehensive. One hopes that the authors will not have cause to regret their inclusion of three maps showing the "suitability of the Edmonton area for deep sewer construction", an unwarranted intrusion into the practice of civil engineering judgement.

Unfortunately, its very "comprehensiveness" makes it the most awkward publication to handle that the reviewer can ever remember having in his hands. It consists of a quarto sized white plastic binder, almost three inches thick, in one pocket of which is a 61-page pamphlet and, in the other, 24 maps, tables, and sections, in a variety of sizes, folded to

different sizes and in different ways. Numbering of the illustrations is consecutive but some are with the text, some are separate in the pocket. With plates numbered separately, four of the illustrations carry the designation "Figure 1".

This is all most regrettable since if engineers, architects and planners are to be persuaded to use guides to local geology – as they must be – a first requirement is that the guides must be attractive to them and easy to handle, certainly with no more than one of two folded maps, preferable none. A well printed, concise publication, large in page size if necessary, that will lie flat on a desk or drafting board (such as the *Saskatoon Folio* and Spence Taylor's *Atlas*, to mention just two local examples) is the ideal.

Format, however, is not the only poor feature of this much-needed publication. The authors seem to have little idea of how to present geological information to the layman. Their text is such that they need a seven-page glossary of geological terms, some in common usage, many not. There is no geological section of Edmonton's subsurface in the text; such sections are essential for ensuring that non-geologists do appreciate the three-dimensional nature of geological studies.

A clue to these unfortunate features is provided by the list of references given by the authors. Of 43 publications listed, all but seven are Albertan, either published in the province (25) or descriptions of some aspect of provincial geology (18). This is an example of provincial loyalty carried to a really remarkable degree. The prowess of Alberta in many fields is known and respected but even its most ardent admirers would hesitate to suggest that the province is the repository of all necessary knowledge on urban geology.

The *Saskatoon Folio* – pioneer Canadian publication in this field, from the adjacent province – is not even mentioned. The seven "foreign" references are: the *Concrete Manual* of the U.S. Bureau of Reclamation, a reprint from the *Canada Year Book on Climate*, Selwyn's 1874 Report, three papers on refuse disposal sites, and a review paper on geology and planning from the *Quarterly of the Colorado School of Mines*.

In view of the vast amount of work that has clearly gone into the preparation of the Bulletin, it is not pleasant to have to point out these shortcomings. But this publication is a dis-service to the cause of developing a wider appreciation of geology in urban development, that is so vitally necessary. If the authors would do some general reading, they could usefully present the essential parts of the information they have assembled in an entirely different form that could make a real contribution to that wider understanding of the importance of urban geology which they so clearly have at heart.

References

- Bayrock, L. A., and T. E. Berg, 1966, *Geology of the City of Edmonton Part I: Central Edmonton: Research Council of Alberta, Report 66-1, 30 p.*
- Christiansen, E. A., ed. 1970, *Physical Environment of Saskatoon, Canada: Saskatchewan Research Council with National Research Council, 68 p.*
- Spence Taylor, R., 1971, *Atlas: Coal mine workings of the Edmonton area: Privately published by author, 33 p.*

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Depositional Sedimentary Environments

By H. E. Reineck, and I. S. Singh
Springer-Verlag, 439 p., 1973.
 \$47.85 (Hardcover)

Reviewed by Carl L. Amos
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Depositional Sedimentary Environments is a text-book of descriptive sedimentology. It is a well-written, well-illustrated compendium of sedimentary structures and textures which occur in a wide variety of depositional environments.

The catholic scope and in-depth description of the various sections of this book make it a useful source of reference to the professional as well as being of general interest to any "enthusiasts".

The first part of the book contains a comprehensive compilation of physical and biological, primary sedimentary structures. The genesis of these structures are discussed and the characteristic features demonstrated by means of one or more of the 579 illustrations or plates. In many cases, actual field examples are presented. In defining each structure, Drs. Reineck and Singh describe the micro-features such as grain shape, size, and internal laminations, through to macro-features such as lithological units and regional settings where the described features are considered to evolve.

Classifications of the sedimentary structures are presented, and ambiguities arising from contrasting terminologies between North American and European researchers are clarified.

The second part of this book is devoted to descriptions of sedimentary features as they occur within varying modern environments such as: aeolian, lacustrine, brackish, nearshore marine, continental shelf-slope, and deep-sea. The examples of depositional environments presented cover such climatic settings as: glacial, temperate, mediterranean, arid and tropical. Though virtually every climatic and physical setting is described, the book's forte is in the description of nearshore