several from which I could derive little of interest. However, it is in the nature of a book such as this that rewards come in the most unexpected places. I anticipated rapidly skimming through Bellotti's "Data and information management for a hydrogeologic study of a waste-disposal site". Instead I found a novel use of the histogram capabilities of a standard spreadsheet to produce cross-sections from borehole data.

With other contributions it is less surprising that the applications they describe are of interest to a structural geologist. Habesch describes image processing techniques applied to back scattered electron images of pore-geometry networks that has obvious applicability to microstructural studies. Herzfeld's paper dealing with surface modelling based on radio-echo sounding data from an Antarctic glacier describes techniques that could be applied to the modelling of any surface sampled by line surveys.

In summary, whilst I cannot urge you to rush out and buy this book, if you come across it one rainy afternoon in the library then a browse through it would benefit any potential microcomputer user. In the 1990s that surely includes all of us.

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Computers and exploration geology

Koch, G. S., Jr 1990. *Geological Problem Solving with Lotus* 1–2–3 *for Exploration and Mining Geology. Computer Methods in the Geosciences, Volume* 8. Pergamon Press, Oxford, U.K. 208 pp. plus programs on disk. Prices £35 ($60) hardback; £20.50 ($35) softback.

This book, and accompanying 5.5″ disk, presents some methods for solving problems in exploration and mining geology using the Lotus 1–2–3 spreadsheet. The reader should be familiar with basic statistics and preferably the author's earlier two-volume book (with R. F. Link) *Statistical Analysis of Geological Data* (Wiley, New York). The book also assumes a basic understanding of Lotus 1–2–3, which the reader must have access to on an IBM-compatible machine running DOS. Thus the reader will need to turn to other books and manuals for an introduction to these areas if unfamiliar with them.

The book is in two parts—Part 1, Exploration; Part 2, Evaluation, with seven chapters in each part. Chapter 1 gives an introduction to Lotus 1–2–3; somewhat irrelevant to those familiar with the spreadsheet and not sufficient for those new to it. Chapters 2–5 demonstrate how to use 1–2–3 to calculate confidence intervals, fit straight lines using linear regression, carry out simple analysis of variance and generate summary statistics (frequency distributions, histograms). In each case geological examples are provided in the form of worksheets on the accompanying disk. These examples do little more than state the obvious and printing out of the worksheets in the book, takes up valuable space which could have been better used in discussing the underlying principles of both the statistics and programming of the spreadsheet.

Chapter 6 is entitled *Exploration models*, but simply outlines how to use 1–2–3 to simulate a drilling programme on a square grid—basically the user selects values from a hidden matrix as siting drill holes. Despite the inclusion of some real data, I found this exercise to be extremely simplistic: I wonder what an economic geologist would think! The final chapter in Part 1 presents probability and related calculations and demonstrates how to plot log–log graphs on 1–2–3, not one of the most straightforward features of the basic spreadsheet.

Part 2 deals with 'evaluation' of mineral deposits, particularly the financial aspects. Chapters 8–10 present details of compound interest, depreciation and depletion, and discounted cash flow rate of return. These topics obviously have a wider application than in geology, but are dealt with fairly simply. Chapter 11 shows how to calculate the grade and tonnage of a deposit from data obtained in development workings. Chapter 12 provides worksheets to block ore from drillhole data utilizing quadratic regression equations. These last two chapters were the first to convince me than an explorationist might get something useful from the book, but the methods used are simple and have largely been superseded by geostatistical methods (kriging, etc.). Chapter 13 uses spreadsheets to calculate ore concentration after milling and payments made by smelters for the concentrated products. The book concludes with a spreadsheet version of Peters' model for mineral and property evaluation.

From this brief review of the contents you will see that there is not much in this book of direct interest to the structural geologist, but given the book's title that should not be a surprise. It would be wrong of me to attempt to evaluate the book from the viewpoint of a practising geologist engaged in mineral exploration and mining. I did, however, turn to this book in the hope of gaining some insight into the numerical methods used in this field and was disappointed; I certainly learned more from the earlier books by Koch and Link. I had also hoped that being shown new ways of applying spreadsheets to geological problems, especially with access to these on disk, would provide a stimulus to applications in my own research and teaching; again I was disappointed. Indeed I left this book fairly convinced that, whilst one can do a lot with spreadsheets such as Lotus 1–2–3, there are software packages with greater functionality available for statistical analysis and graphical display of geological data, and a lot to be said for standard programming languages when it comes to more specific applications.

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Oil provinces

Brooks, J. (editor) 1990. *Classic Petroleum Provinces.* Geological Society Special Publication 50. The Geological Society, London, U.K. Price £89.00.

Classic Petroleum Provinces contains 31 papers geographically spread from Brazil, Venezuela, through the U.S. Gulf Coast to Canada and Alaska, then an eclectic group of papers from the Middle East and one from the Niger Delta, followed by five from the North Sea basin and surrounding areas. The book concludes with two papers from Siberia, and one each from Pakistan, Australia and China.

Despite the geographical spread, the balance of the book does not adequately reflect the promise of the title. Saudi Arabia features in only one paper, against Venezuela's four. This prompts the question: what constitutes a "classic petroleum province"? To include the onshore U.K. Carboniferous Basins and the Gippsland Basin of Australia, but nothing from Indonesia and Burma, and only abstracts from the Niger Delta, seems mildly eccentric. There has been no attempt to group like with like, either on a topic basis or on the basis of basin classification. The Editor, J. Brooks, uses the Bally and Snelson classification scheme as a basis of his own opening contribution, so perhaps this should have been used to arrange the papers in the whole volume.

Classic Petroleum Provinces *should* provide state-of-the-art ideas and data on some of the world's most important hydrocarbon-producing areas. It does contain some potentially useful new contributions from Siberia and South America, and students will be grateful of reviews on the Siberian Basin appearing alongside the U.S. Gulf Coast. However, this is an uneven volume which I cannot recommend for many reasons.

Most of the authors have tried to present reviews or overviews of their "province", or of problems peculiar to their area. I am not sure why a paper on seismic modelling of salt structures finds a place here, although the area to which it has been applied is arguably a "Classic Province". It would be fine if there were other papers on this basin. This paper is a case in point, where structural geologists have much to contribute to the oil industry. There can be no sense in making synthetic seismic models from a geological cartoon section which does not balance in any way. Matters are made worse by having sequential sections at different scales so that they cannot be overlain for comparison.

Most of the review articles provide a good source of the more recent views and literature. However, *The Middle East Basin: a summary and overview* only found three papers of significance in the last 7 years, two written by the author himself and one of these itself a review paper for a similar special volume. References to reports not in the public domain should not have been permitted, particularly where the author cites only one other reference in the last 5 years to support his views on the history and future development of Pakistan. It is additionally surprising in this paper that no-one spotted the author's own name

incorrectly rendered. Unfortunately, this is one of many examples of generally sloppy work in editing and proof reading.

There will always be potential difficulties with papers whose authors' first language is not English, but surely the editors have some responsibility to maintain standards, such that misspellings like "antecline" do not occur. To give just one example, in the conclusions on p. 75, seven slashes have been printed (e.g. "oil kitchens/along the sub-andean belt/have been studied . . ."), and this paper is one of many riddled with spelling mistakes. Those who have had the doubtful privilege of reviewing and editing my own material may smirk, but my point is that producing a journal or a book like *Classic Petroleum Provinces,* does need good hard review and proof reading.

To make matters worse, many of the illustrations in this volume are not very good. Several have clearly been made from coloured originals intended for slide-show presentation, or from Oil Company wall posters, and have been reproduced in monochrome at postage-stamp size. Some of the major plates are unreadable, and I needed a hand-lens to decipher the chronostratigraphy of the Carboniferous in northern England. Everyone likes to see data in books like this, but publishing seismic data with faint squiggles can merely confirm that data and interpretation seem to fit, despite the fact that no-one could really make a valued judgement of the interpretation without having a full-size seismic section on their desk. For an example of the worst aspects of combining artwork and seismic sections, see p. 150. Why on earth did the authors, reviewers and editors not insist on good quality line-drawn section first and foremost? This *Journal* publishes lots, and they are always more helpful than photographs of outcrops, or miniaturized seismic sections. Until we have the science-fiction technology to reproduce full size seismic sections in journal or book format, we should stick to what works best: quality line drawings.

In my view, the Editor should have used the review process to help cut the papers down in length. This would have markedly improved the readability of most of the contributions, as well as giving an opportunity to improve scientific content. I guess that some of the papers would not have survived, and certainly many of the diagrams would have gone. With a shorter text the temptation to over-reduce the diagrams would have been less. In his introduction, Dr Brooks hints at an unseemly haste to get the volume out, but there was no real need for this. The best papers are reviews; none are cracking the frontiers of our science, so another few months in production would have been well worth while.

It will have become clear that this volume annoys me because it has been so sloppily put together that the good and bad are indistinguishable. The series editor and Geological Society editor must share the blame with the volume editor. The Geological Society, in its historic role as Britain's senior 'learned society', has a special duty not to let standards slip. There is a growing tendency for societies and individuals to publish thematic volumes following conferences, and these can be excellent. However, there are a preponderance of poorly edited, poorly conceived and poorly produced high-cost volumes which have little merit, and only serve to bury the few good individual contributions. Conference and special publication volumes should never be an excuse for sloppy editing and refereeing, and presentation of papers at a conference should not guarantee their publication.

So if you are an author, I suggest you submit your work to a good journal. Check that the editor is going to do his/her job properly, that the work will be properly reviewed for scientific content, and that the production and copy editing are diligent. Peer review is imperfect, tedious, at times hurtful and can make mistakes, but it is all that stands between us and scientific death through drowning in an ocean of garbage produced by rogue word processors.

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