

Ray Theory And Gaussian Beam Method For Geophysicists

By **Mikhail
Mikhailovich Popov**

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Salvador-BA, Brazil,
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Reviewed by **Brian
Kennett**

This short book, developed from lecture courses given in Salvador-Bahia with the support of Petrobras, provides an introduction to the mathematical development of ray theory, starting with the wave equation and culminating in a treatment of isotropic elastic media. The final chapters treat localised solutions around rays through Gaussian beams.

The treatment is thorough and in the early part of the book care is taken to provide all the critical steps in the development. The presentation, with mathematics produced with TeX, is very clear and the quality of the English is very high for a book produced in Brazil with a Russian author.

Popov is a well-regarded figure in the development of ray methods and Gaussian beams and his mastery of the material is clear. Unfortunately his treatment stops short of any actual examples of the use of ray theory and its extensions, which limits its usefulness for geophysical applications.

The book would provide a useful introduction for students interested in seismic modelling and provide a useful background for tackling the much larger (722 pages) volume "Seismic Wave Theory" by V. Cerveny published by Cambridge University Press in 2001.

The Insider's Guide To Investing In Australian Mining And Resource Stocks

By **Allan Trench and
Thomas Judge**

Wrightbooks (an
imprint of John Wiley
& Sons, Australia),
Milton, Qld., 2002
214 pages, paperback
ISBN 0 7016 3691 2
Price \$30

Reviewed by **Ted Lilley**

Described on the front cover as "50 ways to select the right shares (and avoid choosing the wrong ones!)" this book is written in a popular style, and is not a scholarly work. It gives 50 tips for buying Australian mining shares, rather as one might give 50 tips for betting on horse races (look at track record, study breeding, take handicap into account, etc.). The 50 tips are each discussed in a brief chapter, with the book divided into four parts: "An Introduction to Resource Sector Investments", "Investments in Mineral Exploration Companies", "Investments in Mining Companies" and "Valuation and Financial Risk Management in Mining". The first author has ten years experience in the Australian resources sector; the second author is Chicago-based.

For newcomers to the stock market, who want to have a flutter, the book should make rewarding reading. It makes clear that much of the funding of exploration geophysics depends on commerce and venture capital.

Amongst professional geophysicists, I expect that those on the financial side (exploration managers, etc.) will already largely know the commercial content in the book; just as those who practise field geophysics will know the technical content. For members of the ASEG it should thus be light and amusing reading, with the enjoyment that comes from a familiar topic.

In some respects the book is valuable for what it is not. The geophysical methods mentioned such as aeromagnetism have long-sustained development histories, and by no means have resulted from a somewhat glib approach to the funding of exploration which the book at times conveys. To help put in balance the long-term science upon which the Australian mining industry is based, and from which investors in mining shares can now profit, I would add four books to the bibliography:

"History and Role of Government Geological Surveys in Australia" by R.K. Johns (ed.), Government Printer, Adelaide 1976.

"Discovery: Stories of Modern Mineral Exploration" by Alan Trenchove, Stockwell Press, Melbourne 1979.

"Rocks to Riches: The Story of Australia's National Geological Survey" by Rick Wilkinson, Allen and Unwin, Sydney 1996.

"Geophysics in the Affairs of Mankind: A Personalized History of Exploration Geophysics" by L.C. Lawyer, C.C. Bates and R.B. Rice, SEG, Tulsa 2001.

I received the book to review shortly after a certain federal Labor politician advocated wider share ownership by Australians. The response in the Canberra Times was a marvellous cartoon by Pryor, showing the poker-machine room deserted at the Leagues Club, with all the players down at the stock market! It is a relevant point, that playing the stock market makes more sense than playing poker machines, which are designed to inexorably keep the money put into them; i.e. they are a classical sink of personal wealth. Mining, in contrast, is a classical source of wealth (but buy the right shares!).

An enquiry to a local bookstore produced a quote of \$30 for the book. It is an unusual book, written with flair, and entertaining to dip into. Presumably quite a moderate successful flutter on the market would cover its cost comfortably.

