In each working session of the conference, discussion was initiated by the presentation of one or two position papers. The text of these papers is not given in the book but each chapter contains a summary which is followed by an account of their presentation. This merges well into the general discussion and avoids focussing too much attention on the position paper, which could be the case if the full text was included.

The book is interesting in that it brings together information and views from a variety of different social, political and technological standpoints. To quote, 'the book is intended as a contribution to the need to build energy and environmental policies on a sound basis of scientific knowledge and informed public opinion'. It is without doubt a very useful and informative contribution.

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Tidal Power and Estuary Management: R. T. SEVERN, D. DINELEY and L. E. HAWKINS
(John Wright and Sons Ltd., Bristol, 1979, 296 pp., £20)

This book contains the Proceedings of the 30th Symposium of the Colsten Research Society which was held at the University of Bristol in April 1978. It comprises some thirty one papers together with a short resumé of the main points raised in discussion. The Symposium was organised by the Departments of Botany, Civil Engineering and Geology of the University of Bristol and the topics covered reflect the interests and concerns of these disciplines in the development and exploitations of tidal energy.

As one might expect, the Bristol Channel and the Severn Estuary figure prominently but possible and projected tidal power schemes in many parts of the world are also well covered by the papers. The engineering aspects dealt with range from the modelling of estuaries and tidal barrages to a description and appraisal of La Rance tidal power station which has now been in existence for more than ten years and is the only significant scheme for which operating experience exists. Other papers deal with the harnessing of the Nile and Indus rivers and the design and selection of hydraulic machinery for low head applications.

Although not a book which will have a general appeal to electrical engineers, there is much of value for one with an interest in energy policies. For him it could form a useful reference, bringing together in one volume as it does, the many aspects and consequences of the exploitation of tidal power.

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Underground Power Transmission: The Science, Technology and Economics of High Voltage Cables: P. GRANEAU
(John Wiley, 1979, 515 pp., £19)

Power cable technology has made great advances in the last twenty years and this comprehensive treatment of the subject is timely. It fills a gap in the coverage of power systems and does so admirably. The author has spared no pains in the preparation of this book which benefits from his very thorough knowledge of the subject.

The treatment of fundamentals is detailed and is consistent with the author's declared intention of improving education in power cable technology so as to impart a greater appreciation of the potential that exists for underground transmission. A thorough explanation is given of basic processes of conduction in cable materials at ambient temperatures, including the possibilities for sodium, and of materials that may be used in cryoresistive or superconducting cables. Insulating media are also dealt with and electrical breakdown processes are summarised in gases, vacua, solids and liquids. This section has some value as a reference independently of power cables. Although the book does not place any great emphasis on mathematics, sufficient analysis is included to deal comprehensively with the calculation of cable impedance in the presence of sheaths and steel pipes. The calculation of transient and steady-state temperature rise of cables is dealt with more briefly.

In his capacity as President of the Underground Power Corporation the author has an obvious professional interest in the costs of alternative types of underground cable and their relation to the costs of overhead lines. This aspect of the subject therefore becomes a notable feature of the book.

The costs of power and energy losses have been combined with capital charges to allow total costs to be compared. Readers may be surprised to find that self-contained oil-filled cables for 138 kV are shown to have a lower total cost than the equivalent double circuit overhead lines. At 500 kV the total costs shown for various types of cable are about twice the corresponding costs for overhead lines. Less controversially, self-contained cables are shown to have significantly lower total costs than pipe-type cables and very much lower costs than compressed-gas insulated cables. Of course calculated costs, like statistics, cannot just be taken at face value but should be viewed with caution until all the assumptions have been validated. Many comparisons presented in the book are for a load factor of current-dependent losses in transmission circuits exceeding 0.6. This is a very high figure bearing in mind that newly-commissioned circuits frequently have low loadings for some time and that many circuits are never called on to carry the design full load current. The fairest comparison between overhead and underground transmission costs would be presented if the optimum current density were taken for conductors and the optimum operating voltage selected for a given transmission capacity, consistent with using a permissible conductor operating temperature. In practice the nearest standardised parameters would have to be used. However, existing overhead lines probably use cross-sectional areas smaller than the economic optimum and at the same time a virtue is perhaps being made in this book of the larger cross-sectional areas that designers are forced to use in cables due to the severe limits on the permissible operating temperatures of the insulant. Reliable performance data and costs are no doubt hard to come by and the author has had to extrapolate from data sometimes 5 to 15 years old. Furthermore, technical developments have recently decreased costs, for instance much more compact 138 kV overhead line supports are now available, lower dielectric losses are achieved in 500 kV cables and the use of voltages above 500 kV for overhead transmission has become commonplace. The considerable scope for XLPE cables at 138 kV and above also alters the perspective.

Notwithstanding these remarks, the author is to be commended on adopting a practical approach to cables by discussing service failures as well as costs. Indeed one or more sections devoted specifically to cable failures and their various causes would be particularly valuable inclusions in any future edition of the book. I doubt if anyone concerned with power transmission will be disappointed with this work which contains many things of interest, some perhaps controversial.

It is a useful book to have readily available for reference and one that advanced students will benefit from, due to its comprehensive coverage of the subject.

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Underground Transmission of Electric Power: B. M. WEEDY
(John Wiley, 1980, 294 pp. £16.75)

The modern high voltage underground cable is the result of a considerable amount of research and development and it is a little surprising that more books have not been written on this topic. The present book is therefore a welcome addition and not only states the present position but looks forward to future developments.

The book is obviously intended primarily for the user since it makes no attempt to describe the intricacies of cable manufacture. The worked examples and problems make it a suitable text for students on postgraduate courses in the power systems field for whom it could form a useful introduction to the topic.

The first chapter is a general introduction to the subject and gives some historical background. This is followed by chapters dealing with high voltage insulation and the problems of cooling in which the calculations of temperature and heat flow is adequately covered. Using these chapters as a foundation, conventional a.c. cable systems and cables for d.c. transmission are dealt with in the next two chapters. Future developments are covered by chapters on the application of SF6 insulation and cryogenic cables and the book concludes with a useful chapter dealing with costs.

The coverage of the book is broad and if there are short-comings they are that some topics do not receive sufficient attention. One would like to have seen more space devoted to crossbonded cables and cable covering protection units. Paper-lapped gas-filled cables hardly receive a mention, the bias being heavily towards the oil-filled cable. Some confusion could be caused by incon-