and **152**, 1048 (20 May 1966)]. It is good that the organizers of the Les Houches Summer School have put together general introductory lectures and lectures that cover the latest developments. Thus, on group theory, G. C. Wick's lecture deals with general symmetry principles in quantum theory including the Poincaré group, discrete symmetries and isospin, hypercharge, and baryon number groups, whereas F. Gürsey discusses the recent approximate higher groups combining internal symmetries and spin. And, in the theory of strong interactions, the introductory lectures by M. Froissart and R. Omnès (which contain a large collection of subjects including potential scattering, kinematics of particle reactions, Dirac equation, Feynmann rules, Mandelstam representations, and three-particle interactions) are followed by G. F. Chew's lecture "Analytic S-matrix theory" and by J. D. Jackson's lecture "Particle and polarization angular distributions for two and three body decays," which deal with more recent results. Finally, there are the lectures by R. H. Dalitz on the quark models for the "Elementary Particles." In this approach one assumes the physical existence of the two basic three-dimensional fundamental representations of the SU_3-group which correspond to states of fractional charge and hypercharge and builds up the observed particles from these constituents.

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First International Symposium on Antarctic Geology

Intermittently during the past 60 years, but primarly since the International Geophysical Year (1957 and 1958), geologists have studied the "vast continent of Antarctica cunningly concealed beneath an extensive ice cap." Now we have this large and satisfactory book, **Antarctic Geology** [North-Holland, Amsterdam; Interscience (Wiley), New York, 1965. 778 pp. $32.50], which brings together 76 papers that deal with this immense region.

The volume, edited by Raymond J. Adie, is the proceedings of the First International Symposium on Antarctic Geology, which was held in Cape Town in September 1963, and which brought together most of the geologists now working in Antarctica to confer on mutual problems. In the main the volume is a sourcebook of geological information on Antarctica, and is concerned with data on the rocky continental tips that stick above the ice, on the ice itself, and on inferences from beneath the ice gleaned from indirect geophysical measurements. Although most articles present relatively detailed information on small areas, a few attempt regional and even continental synthesis. The time is now arriving when we will have enough information to possess confidence in the picture that is emerging with respect to the main aspects of the stratigraphy, tectonics, and descriptive geology of the continent. The book attests concretely to the value of the international Antarctica program in which 12 nations participated. We see here again evidence that international cooperation in science is most fruitful, and we cannot but hope wistfully, in paging through the impressive volume, that joint efforts between nations could be equally as successful in other areas of human affairs.

The articles span nearly the whole of the geological sciences: geomorphology, glacial geology, general geology, stratigraphy, mineralogy, igneous and metamorphic petrology, hard-earth geophysics, geochemistry, geochronology, paleontology, structural geology, tectonics, and submarine geology. Papers also deal with the subantarctic islands and with the relationship of Antarctica to other southern continents. Some are as well documented as similar descriptive articles pertaining to regions of far easier access, and others give valuable reconnaissance glimpses into areas and problems from distant and forbidding regions. Although the writing is noticeably variable, the editor has admirably striven for a smooth and uniformly readable style. In fact, for a book of this compass, it is singularly free of annoying small errors, and the photographs, drawings, tables, notes, typography, and format are clear and pleasing.

Several themes run through the book and especially in the interesting "Discussions" that follow most articles, and in the summary transcriptions from the symposium. Again and again, criteria to recognize ancient glaciations, especially Permo-Carboniferous and Tertiary, are discussed. And over all hangs the puzzle of continental drift—did they or did they not? As the data come in, it emerges that the rocks and tectonics are like those found elsewhere on this earth of ours, and that they include types and fossils from regions far less frigid than those in which they are now found. The champions of drift will take heart, for the rocks include sequences quite like those of nearby southern continents.

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Mathematics

Mathematics for Science (Oxford University Press, New York, 1965. 340 pp., $4.50), by W. L. Ferrar, is intended primarily as a textbook for colleges and colleges of advanced technology. The book is written to allow for several different programs of study at different levels, provided the material is appropriately selected.

Topics in trigonometry, analytic geometry, and calculus are covered. The writing style is terse, but the author's extensive teaching experience is evident. The abundantly supplied problems are of the "no-nonsense" type that develop ingenuity, not merely the ability to memorize definitions.

The approach is honestly and honorably old-style by American standards. The author's object is to teach material and technique. The emphasis is on vigor, not rigor. Delta-epsilonics are not mentioned. Many of the arguments would be regarded as strictly intuitive by mathematicians. Still, this approach has been historically more successful in training young students than the more rigorous but pedagogically poorer procedures in vogue in the United States since World War II.

The book, designed for a 1-year course, necessarily skips much calculus normal in a 2-year program. The selection of topics seems good for technical students whose mathematical training would end at this point, and could probably fit in well with a more advanced course for other students.

The typography is good. The author follows a bad British tradition in providing an inadequate index.

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