clear, the reader will readily sense the promise for the early emergence of basic, biochemically defined mechanisms that are conceptually adequate to describe the controlled series of sequential changes occurring in the development and differentiation of animal embryos.

The amount of new information published since this volume went to press speaks for the current vigor of this field of investigation as well as for the limited "timeliness" of a volume published in 1965!

The following statement is from the preface: "The present treatise is, therefore, intended to introduce advanced students already familiar with elementary embryology and biochemistry to various areas of biochemical embryology." Further, it is stated that "In selecting the material, emphasis has been placed on those problems in which research is currently most active and in which a promising contact between experimental embryology and biochemical inquiry has been established." For the most part these objectives have been realized—at least as well as is possible in the current scene of relatively rapid appearance of scientific papers and the relatively slow publication of multi-authored, expensive review volumes.

The need for a greater number of inexpensive paperback reviews of more limited scope, which can be more rapidly published and revised (or discarded!), is urgent to help stem the spate of expensive volumes that are rapidly filling our libraries with rapidly obsolescent information.

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Science in Hungary

The Hungarian word for science, *tudomány*, has a broader meaning than its English equivalent. The concept is more closely related to the German term *Wissenschaft*. Thus, the Hungarian notion of science includes both the natural and social sciences and even some of the humanities. **Science in Hungary** (Corvina Press, Budapest, Hungary, 1965. 348 pp.), edited by Tibor Erdey-Grúz and Imre Trencsényi-Waldapfel, devotes seven chapters to the natural sciences (mathematics, physics, chemistry, agronomy, earth sciences, biology, and medicine) and 12 chapters to the social sciences and humanities (economics, linguistics, ethnography, philosophy, archeology, Oriental studies, musicology, history, political and legal sciences, history of art, and classical and literary scholarship).

The introductory chapter, by T. Erdey-Grúz, describes and analyzes the growth and institutional setting of modern science in Hungary in the period following World War II. It devotes special attention to the Hungarian Academy of Sciences, an institution founded some 140 years ago, which since 1949 has directed the scientific life of the country by coordinating the work of research institutes and learned societies. Each chapter traces briefly the historical development of a particular discipline in Hungary and presents its achievements and problems. Major representatives and publications (books and journals) in each field are enumerated for the period treated.

A more detailed treatment of the role of the universities and learned societies, the traditional centers of science in Hungary, would have made the book more complete. The disproportionate emphasis on the humanities and social sciences is surprising in view of the fact that more than 70 percent of the academicians are active in the natural and exact sciences.

The book does not answer the puzzling question of the "overrepresentation" of Hungary in many branches of modern science. It does not analyze the political and social forces which hampered scientific developments and which resulted in the exodus of a large number of Hungarian mathematicians, physicists, sociologists, and economists during the pre-World War II period. Among the small nations, Hungary has been one of the major "exporters" of scientists to the more advanced countries—for example, John von Neumann, L. Szilárd, E. Teller, E. Wigner, Th. von Kármán, A. Szent-Györgyi, G. von Békésy, G. von Hevesy, R. Bárány, the Polányis, and K. Mannheim. Five of those named are Nobel laureates.

The book shows in some detail recent efforts to broaden the institutional and social base of science, to coordinate research on a national basis, and to make science out of the individual activity of a few dedicated men into an integral part of Hungarian culture. The current momentum in research, reinforced by the widening international contacts and the end of the ideological dogmatism of the Stalinist cast, promises a bright future for science in Hungary.

Science in Hungary is the first undertaking of its kind made available to an international audience. It should assist persons interested in the developments in science and the intellectual history of Hungary. An index would have made the book more useful.

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Theoretical Physics

The essays assembled in this volume, **High Energy Physics** (Gordon and Breach, New York, 1965. 521 pp., $10.50), edited by C. DeWitt and M. Jacob, are the lectures delivered at Les Houches during the Summer School of Theoretical Physics in 1965. With one exception they are devoted to the two most actively pursued methods in the theory of strong interactions of fundamental particles: S-matrix theory and group theory. But the exception is an important one. After the discovery of parity violation in weak interactions of elementary particles in 1956 (to be precise, the parity as defined by strong interactions, for the meaning of discrete symmetries like parity P, time reversal T, and charge conjugation C, depends on the type of interaction), it was generally believed that the time reversal invariance is still an exact symmetry; so is CP, because, on the basis of some very general principles the product, CPT is expected to be an exact symmetry. The experimental discovery in 1964 by Christenson, Cronin, Fitch, and Turlay of the decay of long-lived K_0-meson into two mesons, $\pi^+\pi^-$, indicates that the time reversal invariance, as is used now, must be violated in some of the interactions entering the above reaction. As a result, the possibility of a breakdown of time-reversal symmetry has been reconsidered in all types of interactions. In his lecture, J. S. Bell not only discusses these questions, but also provides an excellent review of the whole theory of weak interactions, including experimental comparison of various phenomenological principles of which this theory has an abundance.

The background of the use of the S-matrix and group theoretic methods in high energy physics has been discussed in detail in *Science* [**144**, 698 (1964)

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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