by the radiant heat of the sun. For their best development there must be a prolonged period with the temperature below freezing, low humidity and strong sunshine, together with an abundance of clear snow with surface irregularities. As these conditions are found as a rule only at high altitudes, the nieves penitentes are rare at or near sea level. The direction and angle of inclination of the pinnacles is a function of latitude. North of the equator they point south, south of the equator they point north, while on the equator they are vertical.

Their unusual size was due in part to the fact that they were formed in March. On March 21 Boston receives 1.3 times as much heat from the sun as it does on December 21. Assuming the necessary temperature conditions, low humidity and sunshine, it would take approximately 1.3 times as long to form nieves of any given size in December as in March. Although insolation would be still stronger in April, it is almost impossible to have snow and freezing conditions for more than a few days at this time. Hence large nieves are not to be expected in Boston in April.

It was estimated from the number and size of the pinnacles that as much as ¼ of this snow-fall wasted away by evaporation. If this condition was general over Massachusetts and New England, the loss of melt water due to this evaporation must have been considerable.

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LANGUAGE DIFFICULTY

AMERICAN scientists, linguistically provincial, often have an apprehension about going to Europe to confer or conduct research in the scientific laboratories because of the "language difficulty." During the past year I had the occasion to converse with the directors (or persons in charge) of 66 biological field stations in 16 European countries (including Russia). In my experience, two thirds of the scientists interviewed spoke understandable English (universally, in Denmark, Sweden and the Netherlands), and of those who did not speak English, 80 per cent. spoke French, and the others German. There are good assurances, therefore, that if an American scientist does go to Europe on business, he can make himself understood scientifically, although there is no evidence that the percentage of political understanding is that high.

HOMER A. JACK

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BOOKS AND LITERATURE

BIOLOGY

General Biology. A Textbook for College Students. By PERRY D. STRAUSBAUGH and BERNAL R. WEIMER. xi + 555 pp. 284 figs., including 13 colored plates. John Wiley and Sons, Inc., New York. 1938. $3.75.

To the writing of text-books on general biology there seems to be no end. The urge undoubtedly reflects the growing trend of formal instruction away from general botany and zoology toward general biology. This trend has been marked during the past two decades in America. It is noted in the high schools as well as in the colleges and universities. In fact, it probably began in the secondary schools. Such a trend is a phase of the larger movement toward general science courses. And the latter is a phase of the still larger movement toward the orientation course, the general college and what have you. Many teachers of science feel that all these movements tend to debase science. They tend to force higher educational interests to bow to more and more secondary and even elementary objectives. Maybe so, maybe not. At any rate the general biology course is with us. It will be with us for a long time. We must accept the challenge and set out to solve the associated problems. These are about the first major problems related to biological teaching that we have faced for a third of a century. Will the older generation of botanists and zoologists in our universities forget their prejudices and background, dig into a new batch of meristem and do this important job that society demands of the schools? That is the real challenge.

Literally dozens of authors have given us new books in the hope that they would supply an important aid in the above evolutionary movement. The most of such books are poor. Some are downright bad, or almost silly. Some are so extremely dilute as to challenge only the "man on the street." Others are so complex and technical as to stump a Nobel prize winner in biology. Some are so broad and general as to embrace the universe. Others are so restricted and specialized as to be worthless for this job. Many such books are of value merely to throw light upon the narrow point of view and limited experience of the authors. Others only emphasize the author's specialties.

It seems to us that the new book by Strausbaugh and Weimer more nearly represents the proper point of view and more nearly furnishes the material for a good course in introductory biology for colleges and universities than any book we have seen. The book is fairly well balanced. That alone is a real accomplishment. The pedagogy and style are fitted to the undergraduate student. Fundamental phenomena and conceptions are not completely buried in technicalities.

The physics and chemics of biology are extremely simplified, but that is necessary for hosts of students who have never studied physics or chemistry even in high school. The fundamental aspects of the structure, function and life history of organisms constitute major threads for the presentation. The classification of organisms and the major groups of the two kingdoms are given adequate and discriminative space and treatment. The brevity of treatment of such broad topics as variation, evolution, genetics, environmental relations will disappoint specialists in those phases. But the same reaction will follow the examination of the book by special workers in other lines of research. We simply must let ourselves down to the level of the audience which presents itself for instruction in *general* biology. Eight out of every ten of that group have never taken any other course in science. Less than that number will ever take additional courses in the more specialized sciences. The authors of this book seem to have caught the significance of this situation and have tried to select their material and to treat it so as to fit the audience. It is apparently with a keen understanding of the limitations of their audience that the authors assumed this important task. A constant emphasis upon the essential and the usable features of general biology clearly reflects this point of view.

There are several unfortunate blunders and lesser errors in the book. We need not enumerate them here. These may all be corrected in a second printing. We do not favor the inclusion of lists of "selected references," as is generally done after each chapter in the book. Mighty few students even look *at* them, much less look them *up*. In fact little time is available for this extra work. The value of such inclusions is to the teacher only. Few teachers ever use such values. The etymology and definition of many terms and words are given, as a rule, where they are first used. A formal glossary is omitted. Our experience teaches us, however, that numerous students use and benefit from a carefully prepared glossary. The book is well manufactured. The typography is well selected for the student and teacher. Many of the plain figures are new, generally well done and of great value. The colored plates are certainly welcome.

On the whole this book is admirable for a two-semester course. It should go a long way to aid teachers and administrators to solve the difficult problems associated with the presentation of so general a topic in the curriculum of higher education. We are using it with success.

RAYMOND J. POOL

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SEDIMENTARY PETROGRAPHY

Manual of Sedimentary Petrography. W. C. KRUMBEIN and F. J. PETTIJOHN. 549 + xiv pp., 265 figs. D. Appleton-Century Company, New York, London, 1938. Price, $6.50.

UNTIL recently, petrographers have neglected the study of the sedimentary rocks, as they were considered uninteresting and it was believed that their study would lead to few results of general interest. However, in the last two decades interest in these rocks has grown rapidly and now sedimentary petrography is an active and well-developed science. It is actively contributing to the precise correlation of strata; to our knowledge of diastrophism, the location and character of old land masses, the source of the materials of the sediments, the former climatic conditions and many other problems.

The excellent book under review shows how far the new science has developed; in some respects its methods are already more quantitative than are those used in the study of the igneous rocks. As stated in the introduction, "The purpose of the book is to present theories and methods of examining sediments, from the field sampling to the final graphic and statistical analysis."

The first part by Krumbein discusses the collection and preparation of samples, the principles, methods and graphic presentation of mechanical analyses, statistical methods as applied to the data of sedimentary rocks and orientation analyses of sediments. The second part by Pettijohn treats of the shape and surface textures of grains; preparation of samples for mineral analyses, such as disaggregation and clarification of grains; separation methods by heavy liquids, the electromagnet and other methods; optical methods; mineral description and determinative tables; mineral frequencies; chemical methods; and the mass properties of sediments, such as color, density and porosity. The final chapter deals with equipment, reference books, etc.

The book is clearly written and well organized; it covers its field admirably and includes the latest developments in a rapidly progressing science. It should become a widely used text and reference book.

ESPER S. LARSEN, JR.

HARVARD UNIVERSITY

SOCIETIES AND MEETINGS

SPECIAL RESEARCH CONFERENCES ON CHEMISTRY

THREE research conferences on chemistry have been organized by Dr. Neil E. Gordon, secretary of the Section on Chemistry, which will be held at Gibson Island, Maryland, between July 10 and July 28, under the auspices of the American Association for the Advancement of Science. These conferences follow a