

last century, in which in the younger generation knowledge of English has almost completely disappeared. His description of a country which has nothing to offer in the way of the picturesque is none the less of considerable interest in view of the economic development of a territory once regarded as an arid waste. If the outward journey was not without its incidents, the return, starting from the embarkation on the ice-encircled Lake Argentino, provided them in plenty, and from this point also Mr. Tschiffely is able to incorporate in his narrative episodes from the history of the country, beginning with the Conquistadores and the search for El Dorado down to the ill-fated attempt to develop sheep-farming on the Rio Baker. In describing what he saw of Tierra del Fuego the author tells his readers something of the Yahgan and Ona Indians, not as they are now, but as they were at the beginning of the century, his information being derived from Mr. Lucas Bridges, "the only living authority". His own experiences among the Tehuelche Indians, now mostly 'civilized', included visits to some of those who still live in primitive 'tent-villages', but whose life is sadly circumscribed by the loss of freedom of the land.

The Wandering Lake

By Sven Hedin. Translated from the Swedish by F. H. Lyon. Pp. x+293+30 plates. (London: George Routledge and Sons, Ltd., 1940.) 18s. net.

"THE Wandering Lake", originally published in Swedish, is the third volume which Dr. Sven Hedin has devoted for the benefit of a non-technical public to the activities of the members of his great expedition to Central Asia. On this occasion he deals with the explorations carried out in 1934, of which the most important from the scientific point of view was the examination of the conditions accompanying and arising out of the change in the drainage of the Tarim Basin, which took place in 1921. In that year the waters draining into Lake Kara Koshan were diverted into an ancient watercourse, the Kum-daria, in which water had not flowed for some sixteen hundred years, to form a lake in the Lop-nor depression. Kara Koshan, discovered by Prjevalsky in 1876-77 and identified by him with the ancient Lop-nor, is now becoming desiccated.

The dry ancient watercourse of the Kum-daria had already been traversed by Dr. Sven Hedin at the beginning of the century, when he discovered the ruined city of Lou-lan, and on the basis of his observations of physiographic conditions, ventured to put forward a hypothesis as to the position of the ancient Lop-nor and the physical conditions making it a wandering lake, which the course of events would now appear fully to justify.

Three years before the journey recorded in this volume, two members of the expedition had explored the delta of the Kum-daria where it enters the lake. Here the author records the events of a journey made by canoe with the object of ascertaining how far the stream was navigable. The story is told with the meticulous attention to detail to be

expected from the author, and includes a graphic picture of the lake—a remarkable body of water both in size and character.

MATHEMATICAL AND PHYSICAL SCIENCES

An Introduction to the Calculus

By Prof. K. R. Gungikar. Pp. xiv+341. (London: Oxford University Press, 1938.) 4 rupees.

THIS little volume has been designed as a first course in the calculus for Indian students. The treatment is the outcome of years of experiment and observation and the method followed is, as the author points out, rigorous in the long run. By this is implied that the refinements of modern rigour are gradually developed, as they should be, in accord with the fundamental principles of true teaching. This idea, which is not too frequently apparent in mathematical text-books, as distinct from those written especially for schools, has been well and consistently carried out. After a commendable foreword to the student, twelve instructive chapters follow which should ensure a firm foundation for future study of the calculus. Beginning with limits and continuity, occupying three chapters, the student is led to the derivative itself. The usual standard theorems concerning the differentiation of functions are then considered, together with second order derivatives, maxima, minima and the exponential and logarithmic functions. Integration is next introduced as the inverse of differentiation, its full significance being developed later in accordance with the aim of the writer. The final chapter, after summarizing a few of the more important standard results previously established, proceeds to discuss briefly Taylor's and Maclaurin's series, Rolle's theorem, partial fractions, hyperbolic functions and surface and volume integrals.

The text has been well written and is not only sound but also designed to stimulate the reader's interest. It is excellently illustrated with fully worked-out practical examples as well as with clearly drawn diagrams. Each chapter closes with an appropriate set of exercises for the student, and answers to these are supplied. The book should prove very useful to all mathematical students of this essentially practical subject.

Geometrische Kristallographie und Kristalloptik und deren Arbeitsmethoden

Eine Einführung. Von Dr. Franz Raaz und Dr. Hermann Tertsch. Pp. ix+215. (Wien und Berlin: Julius Springer, 1939.) 18.60 gold marks.

THIS book is suitable for students engaged in a systematic course of formal and optical crystallography corresponding roughly to Part I of the Natural Sciences Tripos at Cambridge in those subjects. All the usual and essential features are included, and an introduction to the manipulation of the Von Federow universal stage will be appreciated by the more advanced worker. The knotty question of the real significance of conoscopic illumination is very ably handled, with a clear diagram to correspond.