

attractive to those who are not gifted by nature with the ability to follow abstract reasoning, but who are often very capable of understanding things concrete. They will find also much material for home work.

If the methods here used were more generally introduced into the teaching of mathematics at school, the number of boys declared incapable of learning mathematics would, we feel sure, decrease to an astonishing degree. And indeed the same methods might probably be used in other subjects, and then the science side of secondary schools might lift its head and cease to be the refuge of those who can "neither learn classics nor mathematics."

O. HENRICI.

TRAVELS IN THE INTERIOR OF SOUTH AFRICA.

The New Africa: a Journey up the Chobe and down the Okovanga Rivers: a Record of Exploration and Sport. By Aurel Schulz, M.D., and August Hammar, C.E. Pp. xii + 406. (London: Heinemann, 1897.)

THE principal title of this work can hardly be said to be quite applicable to its contents, seeing that the journey it describes was made no less than twelve years ago, before the "scramble for Africa" had reached its full height. In spite, however, of the length of time which has elapsed since the events recorded took place, there is much in Dr. Schulz's pages which well repays perusal. To the class of readers which looks chiefly for an agreeable narrative of sport and adventure, it offers abundant attractions, while those who prefer more solid matter will find scattered through it a considerable amount of information on the country passed through.

Dr. Schulz, who shortly before his journey had qualified in medicine in Berlin, set out from Natal in March 1884, accompanied by Mr. Hammar, on an exploring expedition into the remote interior of South Africa. Proceeding through the Transvaal and Khama's country to the Zambezi, the travellers next ascended the Chobe, its western tributary, to nearly 17° S. lat., and crossed over to the Kubango or Okovanga (this, and not Okavango, is Dr. Schulz's spelling), the principal feeder of Lake Ngami. This river was followed down to the lake, and Khama's country was reached on the return journey by way of the Zuga. A great part of this route led through country rendered classic by the early labours of Livingstone, and since traversed by a host of sportsmen and explorers; but a certain amount of new ground was broken in the region of the Chobe and Okovanga, and as a careful survey was made by Mr. Hammar, some real addition to our knowledge resulted from the journey.

The whole region stretching northwards from Lake Ngami is so level that the rivers form a complex network, the details of which are even now far from completely understood. The confusion is heightened by the fact that several of the streams flow in one direction, or the reverse, according to the time of year. It has long been supposed that the Okovanga sends some of its waters to the Chobe, some finding the connecting channel in the Mababe just west of 24° E. Dr. Schulz claims to have ascertained the existence of another branch of the Okovanga leading to the Chobe. The point of bifurcation was not seen, but an important channel was found to

enter the Chobe from the west, and native accounts confirmed Dr. Schulz's suspicion that it came from the Okovanga. The route followed by the expedition led through a barren region of sand-belts, in which the travellers suffered from want of water. The sight of the Okovanga—a fine stream 400 yards broad, of the capabilities of which as a water-way the author expresses a high opinion—was therefore most welcome. It was struck at the town of Debabe or Indala (identical, it appears, with "Andara, or Debabe's town," reached by Green in 1856), and although its course hence to Lake Ngami had previously been explored by that traveller, Andersson and others, Dr. Schulz was able to define, more precisely than they had done, at least the western bank of the series of swamps which mark the course of the river. During this part of the journey the travellers were virtually prisoners, being taken for spies of the Matabele, and conducted under guard to Moremi, chief of the country near the lake, whose people retained no pleasant memory of a Matabele raid to which they had nearly succumbed a few years before. The lives of Dr. Schulz and his party were in some danger for a time, but were saved by the testimony of a child who had been vaccinated by the doctor at Shoshong on the way up.

The book abounds with stories of encounters with the wild animals of South Africa, and gives interesting details illustrating their habits. They were especially plentiful near the Chobe, where their numbers had not yet begun to be thinned by the persecution of sportsmen. One valley is described as having seemed a teeming mass of life, troops of every variety of game appearing to view at the same instant. Dr. Schulz has a good deal to say anent the Mosaros, a desert tribe with which he came in contact, and which he considers a fugitive branch of the Hottentots, distinct from the Bushmen proper, though often called by that name. The book is not provided with an index, but contains a map showing the features of the country along the line of route, with some information on the surface geology. Some of the illustrations give a good idea of the types of country and vegetation common in South Africa.

OUR BOOK SHELF.

Contributions to the Analysis of the Sensations. By Dr. E. Mach, Professor of the History and Theory of Inductive Science in the University of Vienna. Translated by C. M. Williams. Pp. xi + 208. (Chicago: Open Court Publishing Co., 1897.)

PROF. MACH has expressed his approval of this translation of his "Beiträge zur Analyse der Empfindungen." For the most part it has been excellently rendered into English; but occasionally there are sentences that read queerly—e.g. "Relatively greater permanency exhibit, first, certain complexes of colours," &c. (p. 2); "Merely its application is not complete" (p. 32); "Different is my opinion with regard to Stricker's views on language" (p. 131); "If the process is over with . . ." (p. 157).

Every one who is interested in psychophysics will welcome an examination of the sensations by a leading physicist, especially when his analysis is so suggestive and his style so delightful as Prof. Mach's. The style is greatly superior to the mode of construction of the book. It would be an exaggeration to say that it is mainly built up of footnotes; but there are three prefaces, two