great value as a practical guide. As such, it takes what is, in some respects, a new departure: it rejects the familiar notion that as storms are mere derangements of the system of winds, they deserve, in a systematic study, nothing more than an incidental notice; and it puts prominently forward the idea that, on the contrary, they ought to be studied in very full detail; because, as it argues, the derangements are rather exaggerations than alterations of the system, and are thus capable of serving as a microscope for the student's clearer instruction. It is an idea which has been well and fully worked out; and with a care and industry which supply the reader with an exhaustless mine of illustration and example.

J. K. L.

MUIR'S "PRINCIPLES OF CHEMISTRY"

Principles of Chemistry. By M. M. Pattison Muir, (Cambridge University Press, 1884.)

DURING the last two decades chemistry has made, possibly, its greatest strides, and has unquestionably drawn to itself a greater following of students in this country than in any previous period. One result of that has been a multiplication of text-books such as perhaps no other science can show. This is only as it should be in the case of a living and progressing science like chemistry. But if one musters the style of text-book produced during this period it becomes painfully doubtful whether they as a whole have kept abreast of the mental capacity which should have been, and undoubtedly has, developed during this period.

Chemistry is certainly a practical science, and that in a very full acceptation of the term; but at the same time it has a history as a practical and especially as a theoretical or mental study second to none, and the unsatisfactory part of the majority of the text-books of modern date is that this growth and development, and the invaluable effect of this as a mental training, have been almost completely ignored.

As mathematical men have been heard to say when going through a course of chemical drudgery, "there seems to be nothing but a lot of isolated facts to learn up." And one cannot be surprised at the remark. The text-books may be roughly divided into two sorts—those of a dictionary character and those intended as an introductory or elementary teacher; the former fulfil their intention, which can scarcely be said of the latter, in which the points of principal theoretical interest are "atomicity" and "atomic and molecular combination," and various ways of writing "formulæ."

It is much to be feared that the teaching of the past few years in this country in chemistry has assumed such an intensely "practical" form that philosophical chemistry has been left very much out in the cold. The numerous examinations in which practical work is required has raised up, unfortunately, an army of "test tubers" and crammers whose theoretical knowledge is of the slenderest. Without in the least wishing to underrate the value of practical work, it does certainly appear, looking only at the chemical literature of the past few years, that theoretical chemistry has to a great extent receded from view in favour of practical, and that of a not very thorough kind.

In the present book Mr. Muir has made up for the lacking in our text-books, and has certainly rendered a real service to the English student who aspires to be something more than a mere test-tuber and writer of graphic formulæ.

As the author informs us, the book is intended for students who already have some elementary acquaintance with the science, and is meant to give "a fairly complete account of the present state of knowledge regarding the principles and general laws of chemistry." And in this the author has certainly succeeded; for it may with certainty be said that we have not a more comprehensive work of the kind in the language. For although it does not pretend to the rank of a Kopp, still it quite fills the place in English chemical literature that Lothar Meyer's "Modernen Chemie" does in the German, which latter work, the author tells us, he has made "free use of."

The subject-matter of the book is necessarily extensive, and has been divided into two main parts—Chemical Statics and Chemical Kinetics. The historical method of treatment adopted cannot fail to be appreciated by the real student who aspires to be something more than a mere recipient of dry facts.

The chapter on Atomic and Molecular Systems and on the Application of Physical Methods to Questions of Chemical Statics, as well as that on Affinity, are condensations from all the most recent works on the subjects, and are, as a rule, clear and concise. The references to originals, &c., &c., are numerous, and the mechanical errors throughout the work are surprisingly few.

The book should be very useful to students training for teachers, and who may not have the advantage of reference to original literature on the numerous subjects treated of.

OUR BOOK SHELF

Eine Weltreise. Plaudereien aus einer Zweijährigen Erdumsegelung von Dr. Hans Meyer. (Leipzig: Verlag des Bibliographischen Instituts, 1885.)

THIS handsome volume is something more than the work of a "globe-trotter," even of a very amusing "globe-trotter." Dr. Meyer sailed down the Danube to Constantinople, thence to Athens, Syria (where he visited Smyrna, Beyrout, Damascus, and Jerusalem), Egypt, and by the Red Sea to Bombay. He then travelled through Northern India to Calcutta, and from Madras through Southern India to Ceylon. The journey in the Far East included Singapore, a considerable portion of Java, the Philippines, Hong Kong, Shanghai, and Japan. Thence he reached the United States, through a large part of which he travelled, Mexico, Cuba, and so back to Europe. The journey was more extensive than the usual modern journey around the globe; Java appears to have been thoroughly visited, but the only place in which the work displays any mark of originality is in the Philippines. The scenes and experiences by the way are described with much liveliness, but soon after his arrival in Manila he made a journey into the northern mountainous regions of Luzon, for the purpose of studying the Igorrotos and other tribes having their habitat there. The story of the journey, which occupied about three months, is full of interest, and the ethnology of these tribes is discussed in a special appendix. Prof. Blumentritt, the Austrian scholar, who has devoted many years to the study of the archipelago, especially to the vast Spanish literature of the seventeenth and eighteenth centuries relating to it, comes to the following conclusions on its