

THURSDAY, FEBRUARY 25, 1875

## A GERMAN MANUAL OF SCIENTIFIC INQUIRY

*Anleitung zu wissenschaftlichen Beobachtungen auf Reisen mit besonderer Rücksicht auf die Bedürfnisse der Kaiserlichen Marine.* Edited by Dr. G. Neumayer. (Berlin, Oppenheim; London, Trübner, 1875.)

IN estimating the merits of a work like this German Manual, we must bear in mind that ordinary treatises are not what a traveller asks for. These are primarily written for the use of students, not for that of investigators, and the stand-points of the student and of the investigator are wholly different. The student takes a position in the very heart of the great continent of established knowledge, and his aim is to familiarise himself with what is already known, but the investigator places himself on the frontier of that continent, and is always directing his thoughts into the illimitable regions of the unknown. It is therefore obvious that the books needed by a traveller must be composed in a different spirit to those intended for students. They must summarise, so far as possible in the small space that is available, the most advanced knowledge of the several sciences; they must dwell at length upon what is *not* known, and they must explain how processes, commonly carried on at a table, with abundant appliances, may be undertaken in the open air, amid the manifold discomforts of a journey and in the isolation to which every traveller is necessarily obliged to submit. The satisfactory combination of these three requirements is hard to accomplish, while it is scarcely possible for anyone who has not himself been a traveller to do justice to the last of them.

Dr. Neumayer informs us that the present work, of which he is the editor and to which he has himself contributed an important and well-illustrated memoir on Hydrography, took its origin in a meeting of scientific men at Berlin. They recognised the merits of the English "Admiralty Manual of Scientific Inquiry," which appears to be much appreciated by German navigators, but they felt that a more elaborate work might advantageously be supplied, having special reference to German culture and needs. The result of the conference has been the production of this volume. It contains contributions from twenty-eight men, all experts in what they write about, many of them of the highest distinction, and many of them travellers. It is therefore impossible but that such a compendium should be of sterling worth. Unfortunately it is equally impossible for us, in a short review of so encyclopædic an undertaking, to give more than a partial idea of it.

The authors, as we might expect, have treated their subjects in very different ways, so that there is much individuality in their writings, and perhaps some disproportion in the spaces allotted to the several subjects. Again, some of the best memoirs are on topics where one would have least hoped to meet with interesting matter; thus, Dr. A. Meitzin has drawn up an exceedingly instructive memoir on Political Geography and Statistics, and Dr. Friedel one on Medical Science. There is a masterly and original treatise by Dr. Koner on the

unexplored parts of the world and on geographical features generally; and Kieppert contributes an article on Flying Surveys. Von Richthoven, of Chinese celebrity, writes a memoir on Geology, throughout which the special turn of mind of an accomplished traveller is conspicuous; and the African explorer, Schweinfurth, gives one on the collection and preservation of plants; while Dr. Günther, of the British Museum, writes upon reptiles and fish. In short, all the branches of zoology and botany are excellently represented. Dr. Steinthal has contributed a very instructive paper on linguistic inquiry, showing, among other things, the sort of conversation that a traveller should encourage in order to procure synonyms and nice distinctions of words; also to obtain correct ideas of construction. Thus he has pages of such words or phrases as these: "The sky; clouds; the sky is clear, is cloudy. Wind, the wind blows; storm; whirlwind. The sun is risen, is set, burns hotly. The moon, new moon; there is no moon; stars; comet; meteor," &c. This ought to afford an excellent guide to persons desirous of compiling vocabularies of hitherto unwritten languages. The only paper to which exception might be taken is that on fixing geographical positions; for, however sound it may be, it is written from the point of view of a University professor, and omits the matters connected with the carriage and manipulation of instruments under the difficulties inseparable from rough travel, which are precisely those about which the traveller most needs information.

The volume contains almost seven hundred pages, large octavo, in a rather small but readable type. Thanks to its being issued on paper that is neither thick nor heavy, it forms by no means an unwieldy book. There can be no doubt that it will become a standard work for all travellers who can read German. It wants an index, because, although it is divided into twenty-eight sections, it is by no means easy to hunt out a required passage, especially as the memoirs necessarily encroach upon the provinces of one another; if the book be translated into English, this want ought to be supplied. Again, it is only to some of the memoirs that a list of special works of reference is appended. These lists are extremely useful to persons preparing for a journey, and all the memoirs should have been furnished with them. If such lists should ever be compiled, and if the works to which they refer were freely added to the libraries in the capitals of the various colonies, they would be of the greatest assistance to travellers, temporarily resident, while completing their preparations for a start, or in putting their materials into order in the interval between two journeys.

In concluding these remarks, attention may serviceably be directed to a desideratum, not only of scientific travellers, but of all who, having been well grounded in science, occupy themselves occasionally in scientific research; namely, a book that shall contain the principal constants and formulæ of every branch of science, each accompanied by a short reminder, as it were, of the method by which it was obtained. Such a book, suitable to the state of knowledge at the bygone time when it was written, is actually in existence, namely, Carr's "Synopsis" (published by Weld). The condensation, elegance, and precision of its style are worthy of the highest commendation. It was a *vade mecum* of the late Mr. Babbage, to

whom the writer of these lines was first indebted for a knowledge of its existence, but it is now out of date. It is sincerely to be desired that a band of scientific professors to whom the necessary formulæ are familiar would be disposed to co-operate in producing a work similar to Carr's "Synopsis," but extended to all branches of science, and in accordance with the most advanced state of knowledge of the day.

F. G.

### THE SANDWICH ISLANDS

*The Hawaiian Archipelago. Six Months among the Palm Groves, Coral Reefs, and Volcanoes of the Sandwich Islands.* By Isabella J. Bird. With Illustrations. (London: John Murray, 1875.)

WE fear there are few who have any definite idea of the situation of the Sandwich Islands, or indeed of any of the other numerous groups that bestar the blue Pacific.

The Sandwich Islands lie upwards of 2,000 miles southwest of San Francisco, and consist of fifteen islands, of which only eight appear to be inhabited, viz., Hawaii, Maui, Lanai, Kahoolawe, Molokai, Oahu, Kauai, and Niihau. The total area is about 7,000 square miles, and the native population is under 50,000. There are besides upwards of 5,000 foreigners, the Chinese being more largely represented than any other nation, Americans and British coming next. There is, however, a large native white population, descendants of American missionaries and others who settled in the islands years ago; most of the Government offices—for the Sandwich group has a Constitutional Monarchy—being filled by whites of this class. The islands have for many years been professedly Christian in religion. They extend from  $18^{\circ} 50'$  to  $22^{\circ} 20'$  N. lat., and from  $154^{\circ} 53'$  to  $160^{\circ} 15'$  W. long. Their official designation is the "Hawaiian Islands." "Their climate for salubrity and general equa-

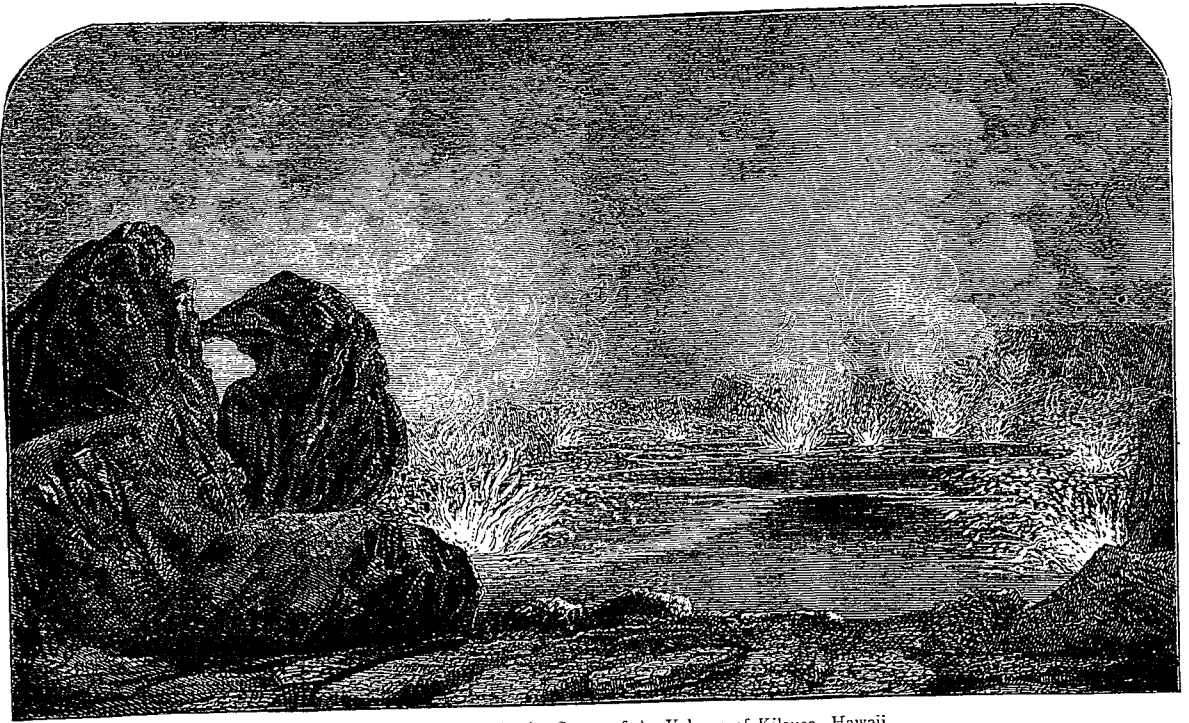


FIG. 1.—A Night Scene in the Crater of the Volcano of Kilauea, Hawaii.

bility is reputed the finest on earth. It is almost absolutely equable, and a man may take his choice between broiling all the year round on the sea level on the leeward side of the islands at a temperature of  $80^{\circ}$ , and enjoying the charms of a fireside at an altitude where there is frost every night of the year. There is no sickly season, and there are no diseases of locality. The trade winds blow for nine months of the year, and on the windward coasts there is an abundance of rain, and a perennial luxuriance of vegetation."

So says Miss Bird, whose delightful book we recommend to all who wish for a full and graphic account of the present condition of the Sandwich Islands and islanders. She spent seven months of the year 1873 on the islands for the sake of her health, rode and sailed

and climbed about fearlessly everywhere, using her eyes to the very best advantage. The result is, that in less than 500 pages she gives a panoramic picture of the various phases of nature and life in the Sandwich Islands, which leaves little to be desired.

The largest of the islands is Hawaii—its area is 4,000 square miles—but the capital, Honolulu, the headquarters of one of our Transit expeditions, is on Oahu. Hawaii Miss Bird calls a huge slag, and the same, we fancy, may be said of most of the other islands; everywhere there are unmistakable signs of the fiercest volcanic outbursts, and every now and again are the inhabitants reminded of the instability of the foundations of their lovely dwelling-place. Nevertheless, nobody in Hawaii troubles himself with the thought