SCIENTIFIC BOOKS

Comparative Meteorology, Manual of Meteorology, Vol. II. By SIR NAPIER SHAW, with the assistance of ELAINE AUSTIN. Royal 8vo, 225 illustrations. pp. xl + 446. Price $10.00. Cambridge University Press. Macmillan, Agents in United States.

WHEN Sir Napier Shaw retired from the directorship of the Meteorological Office he set himself the task of preparing four volumes covering the general field of what we now call *Airgraphics*. This volume, although numbered as the second, is the third to appear; and, good as the others were, we are inclined to think this much better. Encyclopedic is the proper term to describe it. There is to begin with a dictionary of technical terms from "absolute" and "adiabatic" to "vortex" and "waves"; and those of us who teach thank him for such an aid to memory. Under "Lest We Forget" are definitions of symbols; and Heaven be praised a given letter stands for one and the same quantity throughout.

Furthermore, conversion tables are given in convenient places, for example, in entablatures with the maps. The result is that a student clearly visualizes the layout; and then, with systematic units, can proceed to tackle his problem without cluttering his desk with an armful of reference books. Will not future text-book writers take the hint? Before one undertakes to prepare a text-book, he should have a clean-cut conception of the physical quantities and processes that are operative. An indiscriminate use of symbols not only baffles the student, but may often trap a tired teacher. The detail of the auxiliary conversion tables deserves much credit. For example, if one wants to know the equivalent in a twenty-eight-, twenty-nine-, thirty-, thirty-one-day month of an annual rainfall of 70 mm., it is given to the third decimal place. Or if one wants at a glance the swing of the pressure over the northern hemisphere, the fine-print heading the chapter on pressure and wind explains a graphic integration of monthly charts of normal pressure; and one easily grasps the situation as a sine curve which follows the curve of total power of solar radiation over the hemisphere with a lag of twenty-seven days. Thus a generalized representation of what otherwise would require a treatise is given in a few lines. Subject to a correction of not more than five per cent. for air displacel by mountains, the mass of air on the Northern Hemisphere varies from its mean value by

Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	
+0.1	1.7	4.2	5.1	4.4	1.7	0.3	metric ton $\times 10^{12}$
May	Jun.	Jul.	Aug.	Sept.			
−1.6	4.2	5.1	4.1	2.5			

This is just one of many such treatments. The book is full of condensed data, the meat of each nut without much shell. Because of this new volume, reference books on a five-foot shelf within reach will no longer be consulted by this reviewer, as of yore. In his opinion it enables one who lacks easy access to a large library to meet on equal terms those who are thus fortunate. It may or may not have occurred to Sir Napier and to those who helped him (it was of course impossible for any one man to compile, assemble and analyze all the data which of necessity had to be licked into shape; and Sir Napier fully acknowledges the services of many coworkers, especially Austin, Harding, C. E. P. Brooks, Captain Brunt, Commander Garbett and the staffs of various official organizations) that they have laid the corner-stone of a coming all-important applied science. It is a strange thing that college presidents, with few exceptions, have been sound asleep concerning the need and value of instruction in *airgraphics*, heretofore rather disjointedly called meteorology, climatology, aerology, or physics of the air. Surely no college graduate can regard himself as an intelligent member of society, if he does not know something of the major circulations of the atmosphere and a little about minor circulations and the physical processes involved in the "endless making and unmaking of weather," to borrow from Professor James. Our college presidents concern themselves greatly with modern methods in education and talk at much length of this, that and the other need; but it seems never to have occurred to them that a chair of *airgraphics* is now much more needed than any existent chair. To say nothing of constant application to all phases of human industry, such a course of study would offer the student a tremendous intellectual stimulus. For the field is developing at an astonishing rate. To-day "the air's the thing!" and man is mastering his environment. He realizes at last that while he walks on the ground and sails the seas, he *lives in the air*. Here is high adventure for both brain and hand. So, then, every instructor in any of the sciences dealing with man in relation to his environment, must, if he would keep abreast of the times, read and profit by the information contained in this manual.

Needless to say, the University Press at Cambridge has done its best on this volume. The type work, the legends, the distribution of matter on the page, are all such as might be expected from master craftsmen. Doubtless the text came to them in excellent shape; but it lost nothing at the hands of those who gave it permanent form and dress.

Sir Napier Shaw must feel a large measure of satisfaction as he nears the completion of a work that is truly monumental. What younger man of our generation could have carried on so valiantly?

ALEXANDER MCADIE

BLUE HILL OBSERVATORY,
READVILLE, MASS.