

a longitudinal median sulcus which coincides with the line separating the two halves of the drawing there may be some trouble. In other cases of median structures, such as setae, there are very obvious ways of avoiding the difficulty.

I am aware that in addition to these objections there is the further one that these drawings are the source of acute mental pain to some because of their "inartistic" appearance. This is a purely subjective difficulty that arises from a very common misconception of the purpose of a scientific illustration. A scientific illustration is not intended merely as a pretty picture and it has nothing to do with art. Its purpose is merely to present in the simplest and most accurate manner the things that it is desired to show and its production involves nothing more than good draftsmanship. If in addition to these qualifications it is also artistic—whatever that may mean—so much the better. But I can point to many entomological illustrations that have completely lost their scientific value in the often labored strivings of their makers to be artistic.

The advantages of these divided drawings are several. In the first place there is the very great saving in the cost of the blocks. Obviously, the presentation of full drawings of each side of an insect would cost just twice what these divided figures cost. I am inclined to believe that no one will disagree with me when I remark that this is not an unimportant factor. In the second place, there is the saving in the time of making the drawings, a saving that amounts to at least one third. I doubt if any one who has not himself undertaken the production of the figures to accompany an extended paper appreciates what this means. There is also the saving of space in printing. There is the convenience of having the two sides of an object so figured that they may readily be compared. Such advantages seem greatly to outweigh any objections that I have thus far seen urged against these figures.

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FOREST DISTRIBUTION IN THE NORTHERN ROCKY MOUNTAINS

J. E. KIRKWOOD, professor of botany in the State University of Montana, has written a book on the "Forest Distribution in the Northern Rocky Mountains," which has appeared as Bulletin No. 247, State University Studies Series No. 2, Missoula, Montana, 1922. It is illustrated with 45 figures, some of which are photographs of forest scenery, some of them are graphs of precipitation, temperature and general humidity, while some are maps and profiles of topography. After an introduction in which the principal

collections and the botanical collectors are mentioned, the author describes the topography of Montana and its climate (with tables and diagrams).

In tracing the sources of the vegetation, Professor Kirkwood refers to the rich flora of the Tertiary Period in giving the past history of the plant life of the region with lists of the principal genera. The migrations of the present day species into the northern Rocky Mountains is considered with some fulness. The author describes the northern element which appears to have moved southward along the Rocky Mountains into Montana. The eastern contingent includes a number of trees and shrubs. The western element he believes is the most conspicuous in the forest flora of the mountainous region, and he gives a list of species which have entered from the west, or northwest. Other details of possible migration are included.

Chapter IV deals with the General Forest Aspects where coniferous vegetation is dominant with yellow pine and Douglas spruce as the prevailing trees over the greater part of the region. East of the divide, the forest is more open, and assumes a more xerophytic aspect. In a number of tables the composition of the forests of its different forest sections is given with the range in altitude of each species. Percentage compositions are included. The forest zones and formations are then presented in some detail. Professor Kirkwood describes the foot hill vegetation, the slide rock succession, the forest of the western valleys, and the forests of the montane, or Canadian belt, where *Pinus contorta*, *P. albicalis*, *Picea Engelmanni* and *Abies lasiocarpa* are the principal species. The sub-alpine zone of the Montana Rockies (the Hudsonian Zone of Merriam) has a few trees, a limited number of shrubs and herbaceous perennials. The forests are broken into limited tracts by meadows, bogs, lakes, rock fields, snow fields, chasms, etc. A summary and bibliography complete this contribution of 180 pages to forest botany.

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QUOTATIONS

SCIENCE AND PUBLICITY

THOUGH the British Association welcomes membership from the general public, it is not too much to say that the presidential addresses, and most of the papers presented to Sections, are intended for audiences of special scientific workers. In the case of a body like the British Medical Association, membership is limited to professionally qualified men, and in the Sections, therefore, no attempt need be made to deal with scientific subjects in popular terms. With its