

part of the work before us—namely, the investigation of the causes of disease. This medical portion of the volume may, as the author fears, “prove too technical for many readers”; and, perhaps we should add, critics. The student of such statistics must bring much knowledge in order to carry away much. The need of this requisite may be illustrated by one of Mr. Longstaff’s examples. Certain of the curves which he traces show a remarkable correspondence between the outbursts of diphtheria and a group of other diseases, amongst which are croup and cynanche maligna. And yet between the two latter diseases and diphtheria the correspondence at some dates is not so close as the suggested theory desiderates. Diphtheria in 1859 rose enormously, while the other diseases did not rise simultaneously, or even fell. But, as we understand the matter, the theory is saved by the surmise that many cases previously ascribed to croup and cynanche maligna, were put down to diphtheria in 1859 and afterwards, when the stir created by letters in the newspapers had excited the attention of observers to the “new disease.” This is one of those explanations of figures which an outsider would probably not even have thought of, and the importance of which he is little qualified to estimate.

The “ætiology” of the subject must be left to the expert. The general reader, if he cannot penetrate to the laws of causation, may at least admire the uniformity of results which the author’s diagrams exhibit. The nature of some of his observations, and the labour and care which they required, are indicated in the following quotation:—

“The object of my investigation was . . . [principally] to see whether any, and if so what, relations subsist between diseases believed to be distinct. . . . I accordingly traced eighty-nine curves representing the death-rates per million in England and Wales from as many ‘alleged causes.’ . . . By a simple application of the law of combinations, it will be found that to compare all these eighty-nine curves two and two together, would involve 3916 operations. Of these I have as yet actually made only 1425.”

This comparison of curves representing the fluctuation of death-rates for different diseases forms some of the most beautiful pieces of statistics which we have ever seen. We may allude in particular to the comparison of erysipelas, scarlatina, rheumatism of the heart, and certain other diseases with each other and the variations in the rainfall (Plate xix.). The death-rates are shown to be parallel to each other, not only for different times, but also, in the case of three of the diseases, for different places in all the eleven registration counties of England and Wales. The splendid diagram which exhibits this manifold comparison (Plate xxi.) affords, as the author points out, a good illustration of the value of large numbers in statistical inquiries.

“The curves for England and Wales exhibit smaller fluctuations than those for sections of the country, and the correspondences between them [between the rise and fall of death-rates for three specified diseases] are in nearly all cases much closer.”

Among investigations of which the interest appeals to the mere statistician as distinguished from the medical expert, we may mention the calculation of the frequency with which coincidences between the deaths of both husband and wife from phthisis “might be expected to occur as a pure matter of chance, on the hypothesis that

phthisis is *not* a communicable disease.” By a beautiful application of the calculus of probabilities, the following conclusion is reached:—

“It is plain, therefore, that, to show any substantial argument for the existence of infection, it would require a much larger collection of cases than has yet been published.”

Another inquiry which the general reader will follow with peculiar interest relates to hydrophobia. The statistics suggest laws very different from popular beliefs. The paucity of the observations, however, necessitates caution which Mr. Longstaff does not fail to inculcate. It is not his least merit that he instils what may be called the logic of statistics by occasional precept, as well as by repeated examples.

OUR BOOK SHELF.

The Best Books: A Contribution towards Systematic Bibliography. By William Swan Sonnenschein. Second Edition. (London: Swan Sonnenschein and Co., 1891.)

THE idea of this “contribution towards systematic bibliography” is excellent, and has been excellently carried out. When interest in a subject has been excited, the first question of the student, of course, is, Who are the best and most recent authorities on the matter? The question is by no means always easily answered, for as yet there are few good subject-indexes, and the most valuable of them are not within the reach of everyone. The present volume may almost be said, for ordinary practical purposes, to have solved the problem. Mr. Sonnenschein has not attempted anything so ambitious as a philosophic classification of the sciences. He has worked out his scheme on what he properly calls “a common-sense plan,” grouping books first into large classes, then breaking them up into sections, sub-sections, and paragraphs—“with the result of obtaining all the literature of one subject in one list, and that of outlying subjects close at hand.” He begins with theology, next takes mythology and folk-lore, then philosophy, society (including many different branches), geography, history, archæology, and so on, until all important departments of knowledge have been included. No one who has occasion to use the book will have the slightest difficulty in understanding the principle, or in finding the particular subdivision presenting the facts of which he is in search. The new edition contains the titles of twice as many books as the first edition (50,000 as against 25,000); and, so far as we have been able to examine them, they seem to have been admirably selected. Here we have to do only with the scientific part of the work; and, considering how vast is the material from which Mr. Sonnenschein had to choose his lists of scientific treatises, he may be congratulated on the manner in which his task has been accomplished. For the most part, he refers only to books that are in print, and easily obtainable. The very best books he has “asterisked,” and in every case he gives the dates of the first and last editions, with the price, size, and publisher’s name. Two separate indexes—one, a list of authors, with the titles of their works; the other, a list of subjects—add greatly to the value of the compilation.

The Fairyland Tales of Science. By the Rev. J. G. McPherson. Second Edition. (London: Simpkin, Marshall, and Co., 1891.)

THIS volume consists of a number of papers which appeared originally in various periodicals. The author does not profess to embody in them the results of independent research. His object is to give to readers who may not have access to recent scientific authorities “an accurate and at the same time interesting account of the