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Book Reviews

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PRINCIPLES OF ORGANIZATION AS APPLIED TO BUSINESS, by HENRY P. DUTTON. *McGraw-Hill Book Co.*, New York, 1931. 315 pages.

What is "engineering"? Mr. Dutton says he approaches the problems of business organization from the engineering standpoint, but the attribution to "engineering" of all that is orderly and efficient is wearying. Mr. Dutton speaks of engineering as though it were the origin of all planning and as though before it rescued us all was inefficiency and chaos. There was method and efficiency before engineering, as usually understood, had a name.

Mr. Dutton's book really is systematic; it does present in an orderly manner the subject of business organization and, incidentally, other matters, such as the political organization of the United States, the underlying motives from which spring altruistic motives, and the electron theory as it is related to Mendelejeff's series.

One who wishes to become acquainted with what already has been done to develop business organization can find the information he seeks, at least in its theoretical aspects, fully and clearly set forth in this book. It is well written, except that the author, in the earlier chapters, has an annoying habit of alluding in his sentences to things as though they had already been mentioned, although no mention of them has been made. In some but not all cases the use of the indefinite instead of the definite article would have avoided the defect. The latter part of the book is free of this fault.

Little exception can be taken to the statements of fact; but occasional carelessness has led to technical misstatements, as on page 69, where it is written without qualification that "the running of the mile in 4.21 is at present writing the standard by which all competitive performance is measured." Immediately following is an account of the competitive performance of riveters in ship yards during the world war. There is nothing in the context to indicate that a standard only for running competitions was meant. The intent of course is fairly evident.

The book can be recommended to students who wish to prepare themselves for entry into the executive departments of business enterprises; it is not a work particularly suitable to the needs of the public accountant.

F. W. THORNTON.

MATHEMATICS OF ACCOUNTING AND FINANCE, PART I, by CHARLES H. LANGER and THOMAS BUELL GILL. *Walton School of Commerce*, Chicago, 1930. 618 pp. including problems and index.

When THE JOURNAL OF ACCOUNTANCY sent me this volume for review my first thought was that the readers of THE JOURNAL would not be interested as this book covered only arithmetic and very elementary algebra. Then I noted a statement in the preface that the two volumes were designed as a text for colleges and wondered if my suspicions were confirmed that arithmetic was no longer taught in our grade and high schools. So I rather listlessly turned over the six hundred pages, while the temperature was registering over the century mark, wondering also how anyone could expend the energy and have the ingenuity to stretch out any such simple subjects over any such space.

Then something caught my eye, then something else, then I began at the beginning and read it all. It is a monumental work, too deep for use in a grade school and probably too deep in places for the ordinary high-school pupil, but a wonderful fount of knowledge for a real student of mathematics. A few days ago someone handed me a copy of the September *American Magazine* which contained an article by Sam Lloyd on mathematical puzzles. He states: "Arithmetic is the simplest and the most advanced branch of mathematics. Based on pure reasoning, it is replete with subtleties that delight the mind and stimulate the imagination." This quotation describes the book in a nutshell and might well be printed on the title page of a future edition.

Of course in a book of this size there is bound to be some repetition. Definitions in the arithmetic section under "whole numbers" are repeated almost verbatim under "fractions" and under "algebra," but this is a virtue rather than a fault. Details are given to the *n*th degree. In one extreme case, for example, three lines are taken to show that ⅛ of 5 equals ⅛ of 5.000. It reminds me of one of the Sherlock Holmes stories, where the famous detective astounded the doctor by asking him to prove that two and two made four. By the time I had finished reading his argument I doubted if they did.

The formulæ for square and cube roots are said to be given in part II. Part I gives only methods of ascertaining these by approximation. Surely square root, at least, is so simple that an elaborate method of trial and error is unnecessary.

Everything being worked out in full detail, the authors fail to mention in a few cases the usual shortcuts. For instance, in converting repeating decimals to vulgar fractions the process is worked out very clearly by mathematics, but the authors should add: "It will be seen therefore that in all cases the numerator is obtained by deducting the non-repeating part from the entire decimal, while the denominator consists of a 9 for every repeating figure, followed by a zero for each non-repeating figure." This latter method I learned at school and used for forty years or so before I troubled to learn the "why" of it. I am glad to find a text book showing the notation of dots over the first and last figures of the repetend, a notation apparently little known, even by teachers, in this part of the country. Take for example $^1/_7 = .\dot{1}4285\dot{7}$. I wonder if the authors can tell me why the first three figures, 142, added to the second three, 857, give 999 and why this is so in the case of many other recurring decimals. Perhaps in part II they will show that any vulgar fraction may be expressed as a decimal by the expansion of $\frac{1}{1-x}$ where x is less than one, sometimes a quicker method than dividing the numerator by the denominator.

Again, in division of decimals, I have always found that the simplest way to ascertain the position of the decimal point was to multiply above and below by the power of 10, which would eliminate the decimal point from the denominator. And, speaking of decimal points, in the paragraph on contracted multiplication the authors leave it to the reader to find the position of the point when the multiplier is more than unity.

The authors refer to certain multiplication tables giving the products of every two numbers up to 1000 × 1000 or 100 × 10,000. They do not mention what is known as the "quarter squares" table from which the product of any two numbers whose sum does not exceed 100,000 can be easily obtained. However in these days of calculating machines all of these tables are rather out of date.

In any discussion of continuous fractions one troublesome number known as "pi" makes a good example as it resolves itself into $\frac{355}{113}$, a number easy to remember—two 1's, two 3's, two 5's. This result is so close that a circle with a diameter of 113 miles has a circumference of 355 miles plus two inches—so I am told, at least, by a mathematician of some renown.

In paragraph 104 on division by a composite number, an example should be given where there is a remainder after each division and an explanation how the total remainder is derived.

Many short cuts are given, particularly in multiplication, which might be useful if they could be remembered when wanted, but I have a suspicion that they are included more for effect than for use and to show the possibilities of combinations of numbers. The same criticism applies to the solution of perfectly simple equations by "determinants" or by graphs, both of which, to use the vernacular, leave me cold.

The above criticisms are petty, but a reviewer is supposed to criticize and I have no major criticisms to make. Part I is a wonderful volume and I am awaiting with the greatest interest the arrival of part II.

EDWARD FRASER.