able time is required to interpret it. For example, in one 1944 paper about three hours were required to find the necessary information for only six compounds. Since hundreds of compounds are to be abstracted, this becomes a slow and tedious task.

It seems that it would be relatively easy for the authors, who are familiar with the compounds upon which they are reporting, to give the aforementioned information in their papers, preferably in connection with the table of data. If this were done, the data could be abstracted much more easily and quickly.

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ANOTHER MASTODON FOUND IN OHIO

WITHIN the last few weeks, the skeleton of a mastodon was found on the farm of Carl Work, located about 2 miles northeast of Jackson, Ohio, and approximately 12 miles from Wooster. The bones were found protruding from the bank of a drainage ditch. The skull with the two tusks, the neck vertebrae and a number of ribs were unearthed. The entire skeleton was not present and apparently the rear portion of the animal had been removed, either during the excavation of the ditch or subsequently by erosion. The tusks, which are complete, are three feet in length and 4 inches in diameter at the base. The teeth are in excellent condition. The bones indicate a small animal. The material in which the skeleton was embedded is a muck deposit. An examination of the soil at the depth of three feet, which was the horizon of the skeleton, indicates that it is a layer of peaty material covered by sandy loam. The fact that it is a flat stretch of land, which was originally so poorly drained that a drainage ditch was necessary, combined with the evidence of a peaty formation, indicates that at one time the area was a swamp. Doubtless, at some time after the great Ice Age, this animal was mired in the bog and died there. A few years ago, parts of another mastodon were found in bog deposits near Benton, Ohio, located not far from the spot where a giant sloth was unearthed. The latter, found at a depth of five feet, was embedded in marl and peat in an area known as "The Plains" south of Millersburg, Ohio.

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SCIENTIFIC BOOKS

PUBLICATIONS OF THE MATHEMATICAL TABLES PROJECT

Table of the Bessel Functions $J_0(z)$ and $J_1(z)$ for Complex Arguments. By the Mathematical Tables Project, under the sponsorship of the National Bureau of Standards. xliv + 403 pp. New York: Columbia University Press. 1943. $5.00.

Tables of Lagrangian Interpolation Coefficients. By the Mathematical Tables Project. xxxvi + 392 pp. New York: Columbia University Press. 1943. $5.00.

Table of Circular and Hyperbolic Tangents and Cotangents for Radian Arguments. By the Mathematical Tables Project. xxxviii + 410 pp. New York: Columbia University Press. 1943. $5.00.

Table of Reciprocals of the Integers from 100000 *through* 200000. By the Mathematical Tables Project. viii + 201 pp. New York: Columbia University Press. 1943. $4.00.

FOR the prosecution of the American war effort, in which mathematical research is playing such a fundamentally important role, it is difficult to imagine any more important event than the organization early in 1938 of the computing group under the direction of Dr. Lyman J. Briggs, director of the National Bureau of Standards. With Dr. Arnold N. Lowan, the able technical director of the group, many manuscripts of fundamental mathematical tables were prepared. And the nucleus of the original great group is still very active while dealing with problems of the Applied Mathematics Panel of the National Defense Research Committee.

Up to the end of 1942 the Mathematical Tables Project had published 15 bound volumes. To these are now added four volumes, the first to be published by the Columbia University Press. The first three of these are of particular importance.

The table of Bessel Functions $J_0(z)$ and $J_1(z)$, for complex argument, $z = re^{i\phi}$, has the range $r = 0(.01)10$; $\phi = 0(5°)90°$; to 10 places of decimals. For $\phi = 0°$, the table is really of $J_0(r)$, $J_1(r)$ for every hundredth of a unit of the argument. For $\phi = 45°$, we have the most extensive table of ber, bei, ber′, bei′ functions yet published. The same may be said of the tables of $I_0(r)$ and $I_1(r)$ for $\phi = 90°$, although Aldis in 1899 published a 21-place table for each tenth of a unit 0 to 6, and an 18-place table for each unit 6 to 11. Except for Dinnik's trivial and highly erroneous three-page table of 1922, this volume contains the first table of the kind. We understand that the Project has prepared similar tables of $Y_0(Z)$, $Y_1(Z)$.

The volume of tables of Lagrangean Interpolation Coefficients will be welcomed by all users of tables, and especially by those computing with machines. The main part of this volume is occupied with 9 tables

of which the first, a Three-point table, $-1(.0001)+1$, is exact. This is followed by 8 tables each, to 10 places of decimals: a Four-point table, $-1(.001)0(.0001)+1(.001)2$, and so on to an Eleven-point table, $-5(.1)+5$. The volume contains other tables of importance for dealing with special problems. Previously published were special tables of Huntington, Kelley and others, but nothing as comprehensive and useful as the present volume.

The main table of the third volume under review is devoted to the Circular and Hyperbolic Tangents and Cotangents for radian arguments ranging from 0 to 2 at intervals of 0.0001. The number of decimal places varies from 5 to 13 for the different functions and different argument ranges. The only previous comparable table for radian argument was the unreliable table of Hayashi, 1926. Hence the volume under review fills a real gap in the field of tables of such elementary functions.

The 7-figure table of Oakes for reciprocals of numbers from 1 to 100 000 has long been in use. The new volume expands by tenfold the scope of existing tables for the interval 100 000 to 200 009.

The first three volumes have valuable introductions and bibliographies.

We are happy to learn that two more volumes of the Mathematical Tables Project, bringing the total number to 21, are to be published by the Columbia University Press in the near future. These are (a) Tables of $\sin^{-1}x$; (b) Table of Associated Legendre Functions. This is a noble and remarkable array of most useful volumes to be published in a five-year period.

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ADVANCES IN ENZYMOLOGY

Advances in Enzymology and Related Subjects of Biochemistry. Volume IV. By F. F. NORD and C. H. WERKMAN. Illustrated. viii + 332 pp. New York: Interscience Publishers, Inc. 1944. $5.50.

THE hybrid vigor of biochemistry appears clearly in Volume IV of "Advances in Enzymology." Through the resourcefulness of the biochemist more and more biological problems are being brought within range of the methods and concepts of chemistry. The biochemical systems that are gradually emerging must often surprise and bewilder the chemist as well as the biologist. The vigor of the hybrid science is perhaps more apparent in the "Advances" than it is in the various journals of biochemistry. In them it has become necessary to restrict and even standardize papers, so that much of what an author has to say never gets into his papers. We all know how a talk with a man in his laboratory clarifies and explains a field of investigation. Reading a chapter in the "Advances" is, at its best, like listening to a worker in his laboratory.

And the chapters in "Advances" are about as varied as the kinds of talk one hears in different laboratories. There are chapters that are severely factual; there are those that are heavily laden with speculation, more heavily than the assembled data can support; and there are also several chapters in which fact and theory are nicely integrated. For the present reviewer there was something of interest in every chapter. Even the chapter by Jensen and Tenenbaum on "The Influence of Hormones on Enzymatic Reactions" is enlightening to the reader. Here is a subject that must surely become one of the great fields of investigation. Even so, the authors are able at present to review it in eight and one-half pages. One can imagine the dismay of the editors when they received the manuscript of this brief chapter with its imposing title. The effect on the reader is sobering and convincing: a valuable paper.

Another short chapter is on "The Transamination Reaction" by Herbst. This chapter consists essentially of a brief, critical summary of the work by the Russian biochemist, Braunstein, along with an interesting comparison of the work by Herbst on nonenzymatic transamination. If transamination is one of the newest fields of investigation in enzymology, the study of emulsin is one of the oldest. The most active American worker in the field, Pigman, contributes a chapter on the "Specificity, Classification and Mechanism of Action of the Glycosidases." In the study of these enzymes the biochemist has been meticulous in the attention he has given to the various substrates used but rather surprisingly carefree in the attention given to the enzymes themselves. Investigation of the glycosidases would appear to have been too little influenced by the contributions to enzymology of Sumner and of Northrop and Kunitz. Another essentially factual chapter is on "The Absorption Spectra of Vitamins, Hormones and Enzymes" by Brode. This is a useful summary, and on the whole the reviewer must accept the word of a leading authority on chemical spectroscopy. There is, however, on page 277, a figure exhibiting the absorption spectra of amino acids which could be misleading. In this figure the relative positions and extinction coefficients of the curves given for tyrosine and diiodotyrosine are almost the reverse of what they would be in the region of neutrality. The reason for this is that the curve for tyrosine represents the absorption of this amino acid in 0.1N NaOH and the curve for diiodotyrosine represents its absorption in 0.1N HCl. These facts should have been given either in the legend of the figure or in the text.