How it could be done is indicated by Karl P. Schmidt (*Science,* 1950, **111**, 235), who writes that we could create a *Systema Naturae* of the twentieth century by having the *Official List of Generic Names* brought up to date and efficiently extended.

I feel that Linnaeus might have signed the following words of my regretted friend Cyril Crossland, when he wrote in a letter printed for circulation among systematists during the war (1940):

> Systematists do not work for themselves alone, indeed if it were so their work would be of the most useless sort, and a waste of public money. It is, in fact, in every way the reverse. It is a part, and a fundamental part, of the great whole of biology. On this foundation rises a vast superstructure of such things as ecology, evolution, genetics, agriculture and medicine, which without it, are a chaos of loose stones. Species workers only exist in order that others may be able, with the least possible loss of time and labour, to find out all that is known about the relations of a species to its fellows, its structure, distribution, and habitat. If they put difficulties in the way they stultify their own work and their own existences.

This is the way any systematist should feel the responsibility of his task.

The ultimate aim of the *International Rules of Zoological Nomenclature* should be to have an unchangeable system of names of all animals. Everybody will agree that such a system is very far off, if nothing is done to bring it nearer.

When 1758 was fixed as the starting point of zoological nomenclature, it was quite an arbitrary date. It did away with many older authors and gave credit to Linnaeus in a way he himself probably never thought of; this was when it was decided that a generic or specific name should be followed by the author's name. A widespread mental disease among systematists was the deplorable result, the *Mihilisme.* In many cases this disease can only be cured by an operation; this has been done by placing the systematic names on the *Official List* (O.L.)—and with good results, as far as the O.L. is known, but this is hardly beyond the narrow circles of systematists. To be of any real value, it must be considerably extended and comprise a few thousands of names, selected from textbooks on physiology, embryology, ecology, etc. These names should form the *Systema Naturae* of the twentieth century, a book to be found in any biological laboratory. Any name used in reference to this book should be cited by adding "O.L." beside the author's name; e.g., *Gadus* Linnaeus 1758 (O.L.). Nobody would have difficulty in checking the exact significance of the name, and long lists of synonymic names could be avoided.

In view of the existence of the Vanity Fair of the Mihilists, I dare only dream about the day when we can write *Gadus* O.L. 1958, and the still more remote time when plain *Gadus* cannot be misunderstood because all names will have passed onto the O.L.

By that time all Mihilists will have been forgotten, while we will remember the outstanding systematists in the same way we remember outstanding physiologists, anatomists, etc., and for the same reason—their contribution to the structure of the great building of biology.

So let us have the *Systema Naturae* of the twentieth century.

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Book Reviews

Numerical Solutions of Differential Equations. H. Levy and E. A. Baggott. New York: Dover Publs., 1950. 238 pp. $3.00.

This is an American edition of a volume first published in England in 1934 under the title *Numerical Studies in Differential Equations.* Except for the title itself and the omission of Volume I from the cover, the present American printing and the original English text are identical in content. Everything was reproduced verbatim, including the preface which states among other things:

> This, the first volume, concerns itself only with the actual solution of ordinary differential equations and the numerical examination of many of their properties. The determination of Characteristic Numbers (*Eigenwerte*) and the investigation of Orthogonal Properties in general are, however, omitted. These will be included in Volume II, since such properties are primarily of importance in connection with the practical solution of partial differential equations.

As far as the reviewer knows, no such second volume has ever appeared in print. It is indeed regrettable that the authors of this fine little volume on the numerical solution of ordinary differential equations have not been able to carry out their plans of writing a similar text for the numerical solution of partial differential equations—a field which, owing to recent developments in automatic high-speed computing machines, is rapidly becoming of vital importance in engineering and applied mathematics, and for which not a single text is yet in existence.

Since this book has been reviewed previously on a number of occasions, the reviewer will confine himself to a brief outline of its contents. The first two chapters deal entirely with graphical methods for the solution of ordinary differential equations. Certain geometrical properties that are useful in the application of graphical methods are discussed, and the solutions of a number of typical equations are carried out in detail.

Chapters III, IV, and V are devoted to the numerical solution of differential equations both by expansion in infinite series and by finite difference methods. Although the authors stress the application of these methods to special cases, which are carried out in detail and described with great clarity, these procedures are of general usefulness. Thus the Adams–Bashforth method, which is a general method for the numerical integration of differential equations, is taken up in a subsection of Chapter IV entitled ''Forward Integration of First Order Equations.'' Among the topics discussed in these three chapters are: the solution of simultaneous equations and equations of second and higher order, estimation of total error over the range of integration, a comparison of the accuracy of the various methods for integration by finite differences, and the solution of equations with boundary conditions given at two end points. The sixth and final chapter deals with some special methods applicable to the solution of linear differential equations.

In general the text is clearly written and illustrated with a great variety of typical problems, which are carried out in detail and which can be easily followed by a student at the college level. It fulfills a great need in this field which exists at the present time. For this reason its republication in this country should be welcomed as a timely venture which will prove extremely useful to many students in applied mathematics.

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History of Physics. Max von Laue, Ralph Oesper, Trans. New York: Academic Press, 1950. 150 pp. $2.30.

Joseph Henry: His Life and Work. Thomas Coulson. Princeton, N. J.: Princeton Univ. Press, 1950. 352 pp. $5.00.

Max von Laue's life has spanned the great revolutionary period of modern physics. An authority on relativity and a pioneer in the theory of crystal diffraction of x-rays, whose classic contributions in both fields were published before World War I, von Laue continued his work during the years of Nazi tyranny, when he successfully, and at times courageously, refused to compromise with the dictates of racialized science. Few men did more to uphold the honor of German science in its darkest hour. It was with impatience that this reviewer waited for the appearance of a short history of physics which he learned von Laue was publishing in a series edited by Erich Rothacker. The German original appeared in 1947; the disappointment felt on seeing it has been confirmed, and if anything enhanced, by the appearance of the English translation, which is carelessly made from what seems to have been an earlier and less polished version than that finally issued in Germany! The ineptitudes of translation are numerous. Just why *Schwingungen* should be rendered ''vascillations'' is unclear, unless, like ''statistics'' for *Statik,* it involves a clerical error.

Von Laue's little book is arranged topically, and although he clearly is not very sympathetic to the earliest periods of the history of science, each section deals with the background history of its particular branch of physics. For those earlier branches which have a history running back of the 19th century, his treatment is not always satisfactory. His statement that ''Nothing in either Antiquity nor the Medieval period points to any systematic scientific investigation'' should apprise us that he is not aware of the important research historians of science have been doing in the past half-century. Yet this does not explain why he could not have consulted generally sound works in the history of physics like the books of Gerland, Rosenberger, and others, to avoid errors about the 17th and 18th centuries. Had von Laue not devoted so much space to this background, and lent the prestige of his great name to his statements, these points would hardly deserve mention. What is really enduring in this little book is von Laue himself and what von Laue tells us of the period he lived through. Here there is much useful material—especially in such chapters as the one on the physics of crystals—though the account is everywhere coldly factual and condensed. Since the first draft was completed before the news of Hiroshima, the question of atomic energy is scarcely mentioned, and, for once among recent publications, *Kernphysik* does not dominate the picture to the exclusion of other branches of modern physics. After the publicity about the successful large-scale release of atomic energy, von Laue added a perfunctory paragraph and cut out a sentence that has been translated: ''Nuclear transformation can provide mankind with energy direct, though at present in not more than extremely modest quantities.'' Rather absurdly, this sentence, and the paragraph on thermonuclear reactions which includes it, have been retained in the translation, though they are not to be found in the German version.

Thomas Coulson's *Joseph Henry* is a conscientious work, written in rather undistinguished fashion, about one of the most interesting personalities in the history of science in America. Evidently the loss of the Henry papers by fire was a disaster of real magnitude to the biographer, for, although some use has been made of manuscripts in the Smithsonian Institution, it has been necessary to rely mainly on familiar sources—secondary biographical accounts and the published scientific papers—and no unsuspected reservoir of information has been turned up. Some relevant recent studies, like Carleton Mabee's life of Morse, were apparently not consulted. Coulson takes us in some detail through the researches of Henry's Albany and Princeton days and gives a good account of his important connection with the Smithsonian Institution, whose first secretary he was, and the National Academy of Sciences, of which he was one of the founders. The author's avowed aim of rescuing Henry from the neglect into which he has fallen has been achieved to the extent of presenting a most convincing picture of Henry's claim to a scientific reputation far beyond that which the 19th century, or our own, has accorded him. Coulson presents fairly Henry's claim to the prior discovery of electromagnetic induction and his share in the invention of the telegraph, but he seems to this reviewer to make perhaps a bit too much of Henry's interesting speculations of 1844—two years after the publication of J. R. von Mayer's paper—on the conservation and convertibility of energy.

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