

temperature regulators and air conditioning. The sections dealing with the amount of heat required for warming and with the heat given off from radiating surfaces are of special interest. It must, of course, be understood that the efficient warming of a large building is a matter that is not susceptible of absolute mathematical calculation, and a great deal of the measure of success attained lies in the manner in which the warming and ventilating appliances are handled by those in charge. The volume before us has proved in the past to be a useful guide to architects and others responsible for providing the arrangements, and with the information which it now contains will no doubt prove equally useful in the future.

*Structural Steel Drafting and Elementary Design.*

By C. D. Conklin, Jr. Pp. vii + 154. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1915.) Price 10s. 6d. net.

THE author's object in compiling this book has been to provide a treatise dealing adequately with the preparation of shop detail drawings of structural steel work. Such a book is required no less in Great Britain than in the United States. In both countries there are several very good books dealing with the design of structural steel work. Some of these contain excellent expositions of the more theoretical work, but they do not meet the requirements of the practical draughtsman, and speaking generally, leave the reader with a very small knowledge of structural details. The book before us gives a clear and minute description of the methods adopted in some leading American drawing offices, and includes designs of riveted connections, beams and columns, steel roofs, a deck plate girder railway bridge, a through girder bridge, etc. Fully-dimensioned working drawings are given as well as the simpler calculations required in the design. The book is thus suitable for use in technical colleges, and provides a fairly complete course in structural drawing office practice. With a few minor modifications, which the teacher can easily supply, the book can be brought into line with British practice and nomenclature, and ought to be of service to students of structural steel work in this country.

*Calculus Made Easy.* By F. R. S. Second Edition. Pp. x + 265. (London: Macmillan and Co., Ltd., 1914.) Price 2s. net.

THE author of this book has added many worked examples and exercises to those in his first edition; otherwise the book is but little altered and we have not much to add to the remarks we made five years ago. The motto is, "What one fool can do, another can." Perhaps there may still be too many encouraging remarks of a jokesome nature and too many expressions of disdain for the stupidity of the usual methods of teaching, but the title of the book is justified. The author does show that the most fundamental operations of the calculus are easy to understand and may be performed by beginners with success, that is, without vague notions of being wrong. J. P.

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LETTERS TO THE EDITOR.

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Surface Tension and Ferment Action.

MESSRS. BEARD AND CRAMER, in a paper under the above title published in the Proceedings of the Royal Society issued on June 1, describe experiments made with invertase with the object of determining "whether the action of a ferment on a substrate is affected by surface tension." They answer this question in the affirmative and draw far-reaching conclusions.

The method they use, however, is open to very serious criticism; we think that there is little doubt that the phenomena they describe are due entirely to the effect of alkali and not to change of surface tension. They have compared the activity of invertase towards cane-sugar in tubes filled either with glass wool or with capillary glass tubes or with glass beads with that of a control in an ordinary test-tube. Retardation of action was observed in all such cases.

All who have experience in working with saccharo-clastic enzymes are well aware how extraordinarily sensitive these are to the influence of the minutest trace of alkali. This applies to the enzyme invertase in particular. In a paper published in the Proceedings of the Royal Society so far back as 1907 (Series "B," p. 362) we pointed out that unless hard glass vessels were used, it was impossible to obtain consistent results; in fact, it is not only necessary to carry out the action in hard glass vessels but it is essential also to use storage bottles and measuring pipettes of similar hard glass: even then the results are apt to be irregular.

The work done by Sørensen in co-ordinating enzyme activity with the degree of alkalinity or acidity of the medium is too well known to need description; his experience with invertase shows clearly how much the activity of the enzyme is influenced by the minutest trace of alkali. We look in vain in Messrs. Beard and Cramer's paper for any reference to the possible influence of alkali derived from the soft glass they used as a cause of retardation; it would appear that they have entirely overlooked this factor. So long as no definite evidence is brought forward to show that the retardation change they observed is not due to the action of alkali, it is unnecessary to attribute it to the influence of surface tension.

E. F. ARMSTRONG.

H. E. ARMSTRONG.

Training for Scientific Research.

IN connection with our position in regard to chemical industry, the present seems to be a suitable time for a careful discussion of what is doubtless not a new suggestion. It is a sufficiently obvious fact that the German chemical trades—especially those that most require highly-trained chemists—prosper in very much greater measure than our own, and, by general consent, the reason for this appears to be that the Germans appreciate the value of research more than we do. How then is a better appreciation of research to be fostered in this country? Various proposals to this end are being made; closer relationship between technical and theoretical chemistry, whatever that may mean; the establishment of an industrial council; the founding of scholarships, etc., all, doubtless, good things in their way, things, however, which have been