FUNCTIONS OF THE ALLOYING ELEMENTS IN STEEL

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A SERIES OF FIVE EDUCATIONAL LECTURES ON THE FUNCTIONS OF THE ALLOYING ELEMENTS IN STEEL PRESENTED TO MEMBERS OF THE A. S. M. DURING THE TWENTY-FIRST NATIONAL METAL CONGRESS AND EXPOSITION, CHICAGO, ILLINOIS, OCTOBER 23 to 27, 1939.

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FOREWORD

A CRITICAL appraisal of the several series of educational lectures presented in the past to the members of the American Society for Metals on the occasions of the Annual Metal Congress would undoubtedly emphasize the degree to which the lecturers had succeeded in making admittedly complex technical subjects seem convincingly simple. Nor has this circumstance been the result of either verbal legerdemain or superficiality. It is rather the manifestation of orderly thought, clear writing and, in short, good teaching. With a precedent of this nature well established, the present author could certainly do no less than strive to maintain the tradition; indeed, only to the extent to which this discussion of the roles of the alloying elements in steel adheres to the established standards of simple, logical presentation, may any satisfaction be taken in its preparation.

Most simplifications of comprehensive subjects are accomplished by the device of classification, — the assignment of things and phenomena to categories. Upon the skill in setting up the categories largely depends the acceptability of the simplification. In the present instance the choice of useful categories may be regarded as more or less obvious but that they be convincing requires a great many exemplifications. In the field of steels carrying alloying elements it is not always easy to secure examples which are not confusing by reason of manifesting more than a single active factor and likewise more than one single effect.

In securing an adequate number of examples of the physical-metallurgical influences exerted by the alloying elements with a single variable exerting a single effect at a time, the author has been greatly assisted by the work of those to whom acknowledgment is made in the footnotes. These acknowledgments cannot, however, adequately express the author's

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