OXY-ACETYLENE WELDING, A COMPREHENSIVE TREATISE ON THE PRACTICE OF WELDING CAST IRON, MALLEABLE IRON, STEEL, COPPER, BRASS, BRONZE, AND ALUMINUM BY THE OXY-ACETYLENE METHODS

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Oxy-Acetylene Welding, a Comprehensive Treatise on the Practice of Welding Cast Iron, Malleable Iron, Steel, Copper, Brass, Bronze, and Aluminum by the Oxy-Acetylene Methods by S. W. Miller

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S. W. MILLER

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A COMPREHENSIVE TREATISE ON THE PRACTICE OF WELDING CAST IRON, MALLEABLE IRON, STEEL, COPPER, BRASS, BRONZE, AND ALUMINUM BY THE OXY-ACETYLENE METHOD, TOGETHER WITH CONCISE INFORMATION ON THE EQUIPMENT REQUIRED FOR BOTH WELDING AND CUTTING BY THIS PROCESS

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PREFACE

TEN years ago the oxy-acetylene method of welding and cutting metals was hardly more than a laboratory process, but in the course of these few years it has become one of the most important of the methods in the metal-working industries. It has made possible the making of repairs of broken machine parts that previously had to be replaced by entirely new castings or forgings. Not only has the process proved of the utmost importance in repair work, but its application has also been found to be of the greatest value in the manufacture of many articles. Much has been published relating to this process, but a great deal of that which has been placed on record in the past has been descriptive of odd jobs. It is, therefore, believed that the present volume, dealing in a more systematic manner with the principles and practice of the art of oxy-acetylene welding, will be of considerable value to those engaged in the metal trades.

The information here presented on the subjects of oxy-acetylene welding and cutting has been mainly furnished by S. W. Miller, proprietor of the Rochester Welding Works, whose wide experience in the practical application of the process and whose success in the work vouch for the reliability of the information here placed on record. The experience of the author in the oxy-acetylene welding field has been unusually extensive, but having been mostly on repair work, he has written especially for those engaged in a similar line. A great deal of the work done with the oxy-acetylene welding torch is on repairs, and while there are also a great many applications of it in manufacturing work, such applications are more or less special in each case, and sometimes require a great deal of experimenting before success is attained. The general principles here presented, however, apply equally to repair and manufacturing work.

In the publication of this volume the Publishers have also made use of several articles by other authors, especially articles by Julius Springer, which from time to time have been published in MACHINERY. A chapter on "Lead Burning," by James F. Hobart, has also been included. This material has been added in order to give as complete and comprehensive information as possible. In general, time and cost data have purposely been omitted in the chapters on oxy-acetylene welding, because, in the present state of the art, it is difficult, if not impossible, to give accurate cost data on repair work. Two welders, working on repairs of a similar character, will often vary as much as fifty per cent in the time consumed, and, as shop conditions also vary to a great extent, it is almost impossible to give accurate figures regarding cost.

This volume describes the equipment required for oxy-acetylene welding and cutting, deals in detail with the methods used for welding cast iron, malleable iron, steel, copper, brass, bronze, and aluminum, and gives, in addition, special attention to the welding of sheet metal, tank welding, boiler repairs, etc., as well as to the subject of lead burning, which is really a kind of autogenous welding. All of the information given has been obtained from the most authoritative sources, the descriptions of the welding apparatus and gas generators having been furnished by the manufacturers in each case, and has been subjected to careful and painstaking editorial work by the staff of MACHINERY'S Book Department, by whom all the volumes in MACHINERY'S Mechanical Library have been prepared. Hence, the Publishers believe that the present volume on oxy-acetylene welding and cutting equipment and practice will be found to be of very great value in the metal-working field.

THE PUBLISHERS.

NEW YORK, *July*, 1916.

AUTHOR'S NOTE

In preparing these chapters, the author has had in mind his own early experience in oxy-acetylene welding, and recognizes that, at best, much experimenting must be done, because no descriptions, however complete, can fully cover all the small details of successful welding work; but the author has endeavored to cover the principles that are of general value and application. He believes that photographs are, in most cases, superior to long descriptions, and has, to a large extent, acted upon this belief. All of the photographs shown are of successful work done in his own shops, with the exception of less than half a dozen, which were added by the publishers.

The author knows of no book devoted to repair work, and although descriptions of work done have appeared from time to time, in the mechanical papers, they do not appear to be as complete as desirable, and, for this reason, the writing of this book was undertaken. The author believes that equally good results may be obtained in other ways than those which he describes; but all methods described have produced thoroughly reliable and successful results, and he knows that what he has done others can do by following the same procedure. Beginners, especially, are advised to avoid apparent short cuts, which are liable to prove costly when not used by a welder of judgment and experience.

The metallurgical side of oxy-acetylene welding is of great interest and importance, but it has not as yet been studied as thoroughly as will be required for the highest development of the art. In the chapters that follow, however, the requirements of the practical man have been kept in view, and the

theory has been avoided as much as possible. The author hopes that the information imparted will prove of service to those engaged in the art of oxy-acetylene welding, the possibilities of which have only begun to be developed.

S. W. MILLER.

ROCHESTER, *July*, 1916.

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