THE RADIO AMATEUR'S HANDBOOK

EIGHTEENTH EDITION  *  NINETEEN-FORTY-ONE

BY THE HEADQUARTERS STAFF OF THE
AMERICAN RADIO RELAY LEAGUE

PUBLISHED BY THE
AMERICAN RADIO RELAY LEAGUE, INC.
WEST HARTFORD, CONNECTICUT
COPYRIGHT 1940 BY THE AMERICAN RADIO RELAY LEAGUE, INC.

Copyright secured under the Pan-American Copyright.
All rights of translation reserved.

First Edition, November, 1940. 5,000 copies
Second Edition, Second Printing, April, 1947. 10,000 copies
Third Edition, First Printing, October, 1947. 10,000 copies
Third Edition, Second Printing, April, 1928. 10,000 copies
Fourth Edition, December, 1928. 10,000 copies
Fifth Edition, May, 1929. 10,000 copies
Sixth Edition, First Printing, November, 1929. 10,000 copies
Sixth Edition, Second Printing, March, 1930. 10,000 copies
Sixth Edition, Third Printing, June, 1930. 7,000 copies
Seventh Edition, October, 1930. 25,000 copies
Eighth Edition, April, 1931. 25,000 copies
Ninth Edition, First Printing, January, 1932. 30,000 copies
Ninth Edition, Second Printing, September, 1932. 10,000 copies
Tenth Edition, First Printing, January, 1933. 30,000 copies
Tenth Edition, Second Printing, July, 1933. 8,750 copies
Eleventh Edition, First Printing, January, 1934. 30,000 copies
Eleventh Edition, Second Printing, May, 1934. 3,000 copies
Twelfth Edition, First Printing, November, 1934. 40,000 copies
Twelfth Edition, Second Printing, July, 1935. 8,000 copies
Thirteenth Edition, First Printing, October, 1935. 40,000 copies
Fourteenth Edition, First Printing, October, 1936. 40,000 copies
Fourteenth Edition, Second Printing, February, 1937. 28,300 copies
Fifteenth Edition, First Printing, November, 1937. 40,000 copies
Fifteenth Edition, Second Printing, January, 1938. 25,000 copies
Sixteenth Edition, November, 1940. 60,000 copies
Seventeenth Edition, First Printing, November, 1939. 40,000 copies
Seventeenth Edition, Second Printing, January, 1940. 25,000 copies
Eighteenth Edition, First Printing, November, 1940. 40,000 copies
Eighteenth Edition, Second Printing, January, 1941. 39,000 copies
Eighteenth Edition, Third Printing, June, 1941. 19,000 copies

PRINTED IN U. S. A. BY
THE RUMPFORD PRESS
CONCORD, NEW HAMPSHIRE
FOREWORD

IN PRESENTING FOR 1941 the eighteenth edition of The Radio Amateur's Handbook the publishers again express the hope that it will be found as helpful as previous editions and will enjoy as whole-hearted a reception at the hands of the amateur fraternity.

From modest beginnings in 1925 the Handbook has had an inspiring success, running now to eighteen editions is thirty printings and a total distribution well over six hundred thousand copies. Its fame has echoed around the world. Schools and technical classes have adopted it as a text; quantity orders have come from many a foreign land. But most important of all, it is the right-hand guide of practical amateurs in every country of the globe. This success derives in considerable measure from the splendid cooperation we have always received from practicing amateurs everywhere, for which we remain grateful.

Devoted to a fast-moving and progressive science, it is only natural that throughout this life the Handbook should have required sweeping and virtually continuous modification. Since the very beginning a strenuous attempt has been made to keep the book up to date, as accurate and as reliable as is humanly possible. A studios effort has been made to restrict the material to modern, sound and well-tried practice. Having always had somewhat the charter of an annual review of time-tried and proven methods in apparatus construction and operation, the Handbook has never provided a place for tricky circuits or methods. As any practicing amateur is well aware, there is an almost infinite number of ways of accomplishing a given result in his station — some good, some poor, many indifferent. Our editorial task has therefore been basically one of selecting. It has been necessary to eliminate from the enormous wealth of ideas on technique, methods and procedure, all those that have not proved themselves by successful application in practice.

For many editions back the annual revision of the Handbook has been a sort of family affair of the headquarters staff of the American Radio Relay League at West Hartford. Most of the technically-skilled specialists on the League's staff, men who have earned their spurs in amateur radio, have participated in its revision. The present edition has seen a general rewriting and the addition of nearly two hundred new illustrations, while dozens of new pieces of apparatus were specially designed and constructed — and tested! Prepared under the general technical editorship of Mr. George Grammer, QST's technical editor, and with major contributions by him, the present work also represents many months of labor on the part of Moore, Donald H. Mix and Byron Goodwin, QST's assistant technical editors; Mr. Clinton B. Debois, assistant secretary of the League, and Mr. Vernon C. Shamansky, in charge of QST's technical information service. The station-operating material of course is contributed by the League's communications manager, Mr. Francis E. Handy. The actual production of the book has been on the broad shoulders of Mr. Carl C. Rodinman, QST's managing editor.

In this edition we retain last year's plan of arranging the material for the greatest benefit of the various classes of Handbook users, and a few words of explanation may be in order. First, from a reference to the contents it will be seen that the book is divided into sections: introductory, principles, the construction and use of equipment, antennas, and so on. Within these sections there continues to be a more extensive subdivision into chapters than
in the text, for the purpose of segregating the material in which various groups of users will be more particularly interested. For example, the elements of a lecture or study course in radio will be found by taking Chapters 3 to 6, 11, 17, 21, 24, and 26. Design information particularly valuable to manufacture planning should now be available to those who plan their own equipment, as given in Chapters 4 to 6, and 26. Adjustment and "troubleshooting" have been segregated into transmission, receiver, and "phone" sections, respectively, in Chapters 9, 14, and 16, to make these important treatments more readily available not only for those who are building new equipment but for those who already have satisfactory apparatus. At the end of each chapter in the construction or equipment base there is a bibliography of articles in QST which will be found more extensive descriptions of some of the pieces of apparatus described in this edition. References to these bibliography articles will be found frequently in the text and also such a form as Fig. 6, which means that the fifth item in the bibliography at the end of that particular chapter will give a reference to a QST article describing the particular piece of gear in somewhat greater detail. It should perhaps be pointed out that, to facilitate reference, the illustrations herein are serially numbered in each chapter and with the last digit indicating the chapter number. Thus, Fig. 612 can be readily located as the twelfth illustration in Chapter 6. Finally it should be mentioned because many readers do not seem aware of it that this Handbook has, at the end of some reading pages, a comprehensive and carefully-placed index, which will aid the reader quickly in the treat-

ment of a subject of particular interest.

One feature of the Handbook which has been generally in importance for the extent of the advertising. We recognize that it is generally not regarded as good form to make material reference even in the existence of advertising, but this we believe to be different. To be truly comprehensive in a handbook — to fill all the blanks in a table with the word "Handbook" — the book must bring the reader data and specifications on the manufactured products which are the "key" material of amateur radio. Our manufacturers have collaborated with us in this purpose by presenting here not more advertising but catalog technical data. The amateur constructor and experimenter will find it convenient to possess in such juxtaposition both the structural data and the needed data on available equip-

ment, since both are necessary ingredients of the complete standard manual of steady high-frequency communication.

It is not natural that we here shall all feel very happy if this edition of the Handbook brings as much assistance and inspiration to amateurs and would-be amateurs as have its predecessors.

KENNETH B. WALTERS
Managing Editor, A.R.R.L.

First Reprint, Cont.
November, 1940