

ELECTRONIC TELEVISION

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649085613

Electronic television by George H. Eckhardt

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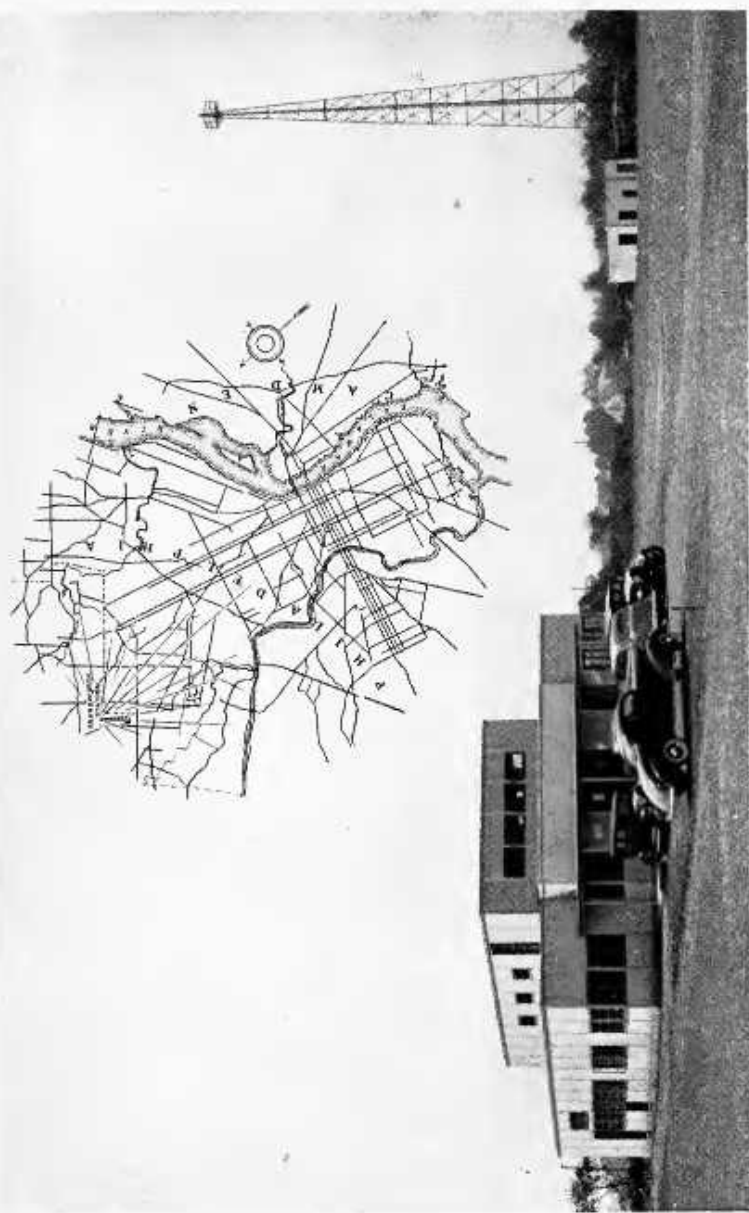
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GEORGE H. ECKHARDT

**ELECTRONIC
TELEVISION**



Studio

FARNSWORTH TELEVISION STATION
WYNDMOOR (PHILADELPHIA)

Diagram Indicates Approximate Directional Coverage of Station

Transmitter
House

Antenna
Approx.
600 Ft.
Above
Sea Level

ELECTRONIC TELEVISION

By

GEORGE H. ECKHARDT



CHICAGO
THE GOODHEART-WILCOX COMPANY, Inc.
Publishers
1936

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Printed in the United States of America

PREFACE

Two men stand out as pioneers in electronic television—Philo T. Farnsworth, of Farnsworth Television Incorporated; and Dr. V. K. Zworykin, of the Radio Corporation of America. Practically all of the basic research in this work has been done in the laboratories of these two companies, and it would be impossible to conceive any new development that would not encroach upon the basic research done in one or the other of these laboratories. From time to time both Mr. Farnsworth and Dr. Zworykin, and members of their respective staffs, have contributed articles to proceedings of engineering and other learned societies, especially the *Journal of The Franklin Institute*. These articles have been scattered and were written primarily for advanced engineers and scientists.

With the emergence of electronic television from the laboratory into the field, it was obvious that an authentic book on the subject was needed, a book that not only would be accurate, but also would be written in a manner understandable to readers other than highly trained engineers.

It was equally obvious that the most reliable source of information would be the two laboratories in which the research had been done. The writer, therefore, wishes to express his profound appreciation to the Radio Corporation of America and Farnsworth Television Incorporated, for their splendid cooperation and patience. Both of these companies kindly consented to check over material in the book regarding their respective systems. Without their help, in matters pertaining to each of their respective systems, the book could not have been written, and it is doubtful whether any authentic book on electronic television could be written without their help.

The writer wishes particularly to express his appreciation to Mr. Philo T. Farnsworth and his brother, Mr. Lin-

coln B. Farnsworth, for tireless patience in explaining the basic principles behind electronic television. Mr. A. H. Brolly, of Farnsworth Television Incorporated, was extremely kind in his help, as were Messrs. Richard L. Snyder, Frank J. Somers, and Lieutenant William C. Eddy, of the same company. Appreciation is also due Mr. W. Parmelee West, in charge of electrical communication at The Franklin Institute, for help and suggestions.

July 20, 1936

GEORGE H. ECKHARDT

INTRODUCTION

Electronic Television Breaks through the Laboratory Door

The life history of every important modern invention, in some respects, is very much similar to that of a child. First a child is carefully watched over and guarded by its parents, then comes a day when the child must take its first step—a step out into the world. The parents still watch over the child, guiding and counselling and giving help when help is needed. But the child then begins to make its own way in the world on its own merits.

This day of "emergence" has come for electronic television. Elaborate and costly research has been progressing in the laboratory. Now electronic television steps out into the field. It has ceased to be a thing about which engineers and scientists cautiously wrote in the transactions of learned societies, and about which few indeed outside of the laboratories where it was born knew anything definite. Up until now the people in the United States who have actually seen the present day electronic television receivers in operation could possibly be numbered in the hundreds.

Here is something new. A new science and a new art is springing up, offering opportunity in many fields. A new form of entertainment in the home, a new field of study for the radio amateur, and a new field for the technician and engineer is also born. The veil has been lifted, and electronic television makes its bow to the public and the engineer.

What Is the Present Status of Electronic Television?

There can be no doubt in the minds of even the most skeptical that television must eventually come in a commercially perfected form, simplified for everyday use, for as in the motion picture, sound followed vision, so in radio, vision must follow sound. In entertainment and study—in life itself—sound and vision normally go hand in hand.



Fig. 1. Mr. Philo T. Farnsworth (holding tube) and Dr. Rolf Moeller, of Fernseh, A.G. This tube is part of the research even now going forward to perfect a tube which will project the picture. The projection tube in the receiver is the next big step forward that can be expected in **ELECTRONIC TELEVISION**