

TELEVISION ANTENNAS

The transmitting station of the Farnsworth system, showing the two steel antenna towers.



SCENE DURING REHEARSAL IN MAIN TELEVISION STUDIO

This is a view that greeted your reporter's eyes on the recent demonstration of experimental television at Wyndmoor.



TAPS AND GYRATIONS

The tap dancer is bound to be a favorite to television audiences in the future. Scene shows rehearsal of such a feature.

A New Kind of Program

WITH the inception of television broadcasting will come a totally new kind of radio program over the air. To show how close this era is, the pictures on this page indicate the pains an outstanding television authority and his staff are taking to be ready with studio staffs and trained personnel for the very special art of television presentations.

MINIATURE BACKGROUNDS

It is predicted that "dwarf" set-ups may be used for backdrops in future television productions. Picture shows a BBC midget model of the Coronation Procession.



New Studios And A New Transmitter FARNSWORTH

By The RADIO NEWS

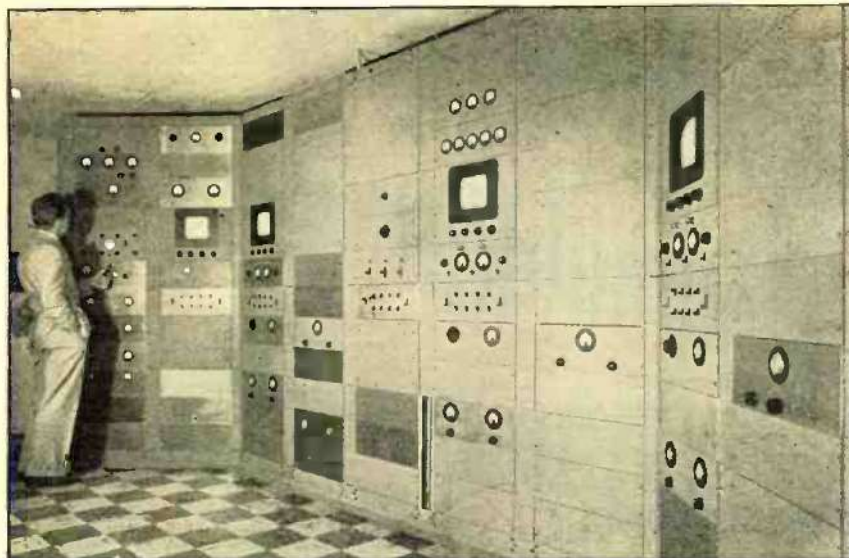
UPON my return from Wyndmoor, Pennsylvania, I am still more convinced that the television era is closer than many persons in the radio industrial and legislative circles of the nation care to admit. Maybe you never heard of Wyndmoor. But you're going to hear about it and may even see a part of it in the very near future. This small town, a suburb of Philadelphia, already holds, within its limited bounds, one of the most complete and technically advanced television stations in the world. Designed and erected by Farnsworth Television, Inc., of Philadelphia, the sight-and-sound unit should be on the air experimentally by the time this article reaches print.

More than a year had passed since my earlier visit to the Farnsworth laboratories and the strides noticeable in that period were gigantic. The number of image lines is now 441, as are also the new Philco and RCA-NBC standards. This is the recommended standard of the Radio Manufacturers Association. A sharper image is now available and the apparatus has been considerably refined, one of the most notable improvements being in the design of a shorter receiving tube which, by a new

STUDIOS JUST COMPLETED

An early photograph of the new Farnsworth studios before the surrounding grounds were landscaped.





THE GREAT NEW TRANSMITTER FOR SIGHT AND SOUND
 Here is a view of the new panels containing the transmitting apparatus installed in the transmitter house at Wyndmoor, Pa.



TELEVISION CAMERA

The above words aptly describe the appearance of the Farnsworth television pick-up, which looks simpler and is smaller than those used by other systems.

Employing 441 Lines Announced By **TELEVISION**

Television Reporter

means of deflection, yields as large a picture as the older and very long type of valve.

Television demonstrations to the press are now a commonplace. There are bracketed periods every year when all commercial contenders for American and world television leadership get up a show and invite radio and science editors to look at a laboratory test, usually

with makeshift, improvised studios. Oftimes the demonstrations reveal the progress made technically with little thought to the program and production end. But, at Wyndmoor, where I visited the Farnsworth plant for a special demonstration, I discovered an elaborate Hollywood-like studio. Programs were in rehearsal. Scenic paraphernalia, lighting equipment and the television cameras arranged in the large studio revealed that polished, well-rounded programs can go on the air on short notice.

Although Wyndmoor is just past the Philadelphia (Turn to page 679)



MAKE-UP IMPORTANT

As RADIO NEWS has pointed out before, new technique must be developed for television make-up. Photo shows a cosmetics expert actually testing the effects of different styles of make-up in determining one most successful for this new art.

Everyone Wants Television

THERE is no doubt in people's minds as to whether or not they would like to have an efficient television receiver in their homes.

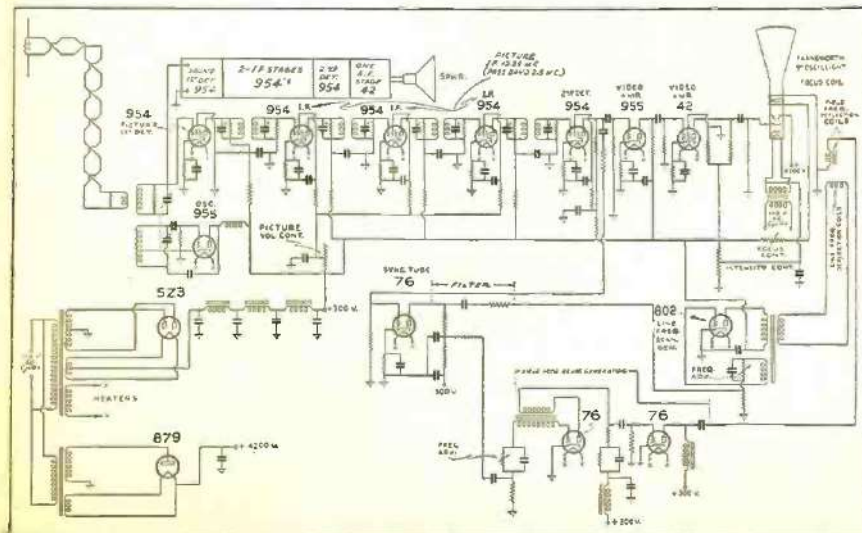
FOR YOUR HOME?

Every American may soon be enjoying a television receiver such as that pictured below, which is one of the models developed by Farnsworth. It contains a vision screen at eye level.



TELEVISION SCHEMATIC

Below is the fundamental circuit employed in the latest receiver types developed by Farnsworth.



is a collection of case histories of over 1500 receiver troubles. As interesting and useful as this information is, to our mind the greater value of the book lies in the various addenda—a compilation of miscellaneous and practical radio information made readily available to the serviceman between the covers of a single book. Items included are complete circuit diagrams of practically all automobile electrical systems (and make believe that information won't help the intelligent serviceman track down many a case of ignition interference!), grid-bias resistor charts, resistance-current-voltage-power rating resistance chart, tube charts, rectifier characteristics, drill and tap sizes, and the RMA standard color-codes for fixed resistors, condensers, dynamic speaker connections, battery cables, power transformer leads, i.f. transformer leads and audio transformer leads. We venture to predict that of all books in the service library, this will be one of those to which reference will most frequently be made. The 468 pages that comprise this book are in an attractive loose-leaf binding—with plenty of room for more pages to come—at the rate of two supplements per year.

What About Television?

Mr. E. H. Rietzke writes in the CREI News what he thinks about approaching television and the types of men it will give employment. There seems to be a prevailing idea that television is some new subject whereas it is just a branch of radio. Therefore, it is absolutely essential that the prospective television technician must be thoroughly familiar with the principles of radio engineering and electrical engineering. But let us quote Mr. Rietzke: "We feel that there is no question about the fact that one of these days television will be with us, and on a scale equivalent to present-day broadcasting. This will without question mean thousands of new jobs and opportunities.

"We feel that these opportunities will open up to the better-than-average men now in radio. The problems of television engineering are simply specialized problems of radio engineering. The fact that the program is picked up by a photo-electric device instead of a microphone, and reproduced by means of a cathode-ray tube instead of a dynamic reproducer, does not alter the fact that everything between these two extremes consists of wide-range amplifiers, selector circuits, and radio transmitters and receivers.

The good television engineer must first be a highly competent radio engineer. All his basic training will be that of the radio engineer, just as radio engineering is simply a specialized branch of electrical engineering. The men who get in on the ground floor of television will not be the inexperienced young men who take a course in "Television", neglecting the most necessary part of all, basic electrical and radio engineering training. They will be the men now in radio who are outstanding in the allied fields of broadcasting and manufacturing—who keep right up to date in their own work and who take the trouble to learn from every available source what there is to know about the principles directly relating to the specialized field of television—photocells, cathode-ray tubes, scanning devices, optical systems, etc."

Farnsworth Television

(Continued from page 655)

boundary, as one approaches the transmitter building, the first impression is of a very small rural farm town. Although the

studio and transmitter building is just two average commercial stories in height, it stands out prominently on the country terrain. The structure is of the prefabricated type, perhaps the nation's only transmitter building of such construction.

The first thing that attracted us on entering the building was a television theatre where accommodations are provided for a large group of lookers-in. The several rows of chairs face a new Farnsworth receiver. The set differs from most other American types demonstrated in recent seasons in that the picture is seen right off the tube instead of by a mirror-lid reflection. This permits the cathode-ray tube to be mounted horizontally and, because the valve uses magnetic rather than electrostatic deflection, its length permits a shallow cabinet depth. Although the set demonstrated yielded a picture only six inches square, it was apparent that the direct framing of the tube's screen in the face of the cabinet gave an illusion of a still greater size. The use of a tilted mirror lid with a vertically mounted tube sets the picture back some inches from the face of the cabinet and seems to yield a smaller image.

The adjoining combination control and transmitter room is as professionally equipped as a standard broadcasting station with the feature of boasting "video" as well as audio units in its multiple-panel control boards.

But the surprising highlight of our visit was the studio! Here was a chamber 40 feet long, 24 feet wide and 24 feet high equipped in cinematic fashion with lights, props and full-sized and miniature sets. Every day for many months programs were being built and performed in this studio. The only transmissions have been over wire lines to the Farnsworth Philadelphia laboratories, we were told, but the actual air transmission schedule on a television carrier of 62.75 megacycles and a sound carrier of 66 megacycles was expected to be effective by the time this article reached print. If it's not, it will be within a very short period. While the tests are not intended for public reception, any amateur within some thirty miles equipped with a receiver tuned to these channels and adjusted to the 441-line pictures with an interlace of two to one can get the program. The station will have an ultimate power of 4 kilowatts video and 1 kilowatt sound.

Mounted on a 150-foot mast, the antenna is of the vertical di-pole type.

It should be noted that the sound and video carriers are 3.25 megacycles apart, as recommended by the R.M.A. The Farnsworth station also intends to abide by the R.M.A. standards in the matter of band width, this being 2.5 megacycles.

The studio has a steel-beamed ceiling. There are no pillars. The pick-up cameras are mounted on tripods and permit the televising of any portion of the studio. Although all programs will originate in this single large room, the studio is so equipped that even with different scenes and settings, action will be unbroken and continuous. It is apparent that right from the start of a public-participating service, television will have no need for the "One minute, please!" sign that was so widely used in the early movie days when reels had to be changed.

Two, three and even more scenes can be prepared simultaneously within the same studio. Switch-overs are made instantly without program delay. A couple of portable partitions, about the size of telephone booths, are, in effect, miniature studios designed to hold audience attention while the larger scenes are prepared. Also, there are tiny sets in the studio, which obviously will be used to blend with the life-

(Turn to page 688)

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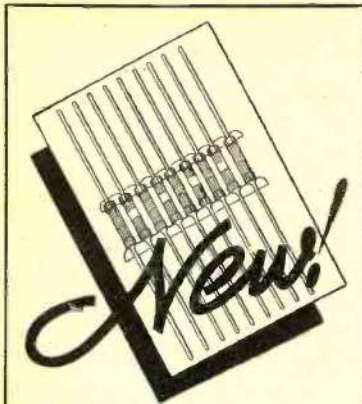


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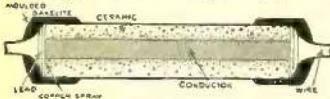
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JZP, Nazaki, Japan, 38 meters, 3 p.m., (Combe). Address: Broadcasting Corp. of Japan, Htagoyama, Tokio.

J2AA, Haseda Airdrome, Tokio, Japan, 6300 and 9840 kc., daily 1-7 a.m., (Tarr).

JVT, Nazaki, Japan, 6740 kc., (Leins), 6-7 a.m., (Pickering), 12-30 a.m., (Eder, Tarr).

JVP, Nazaki, Japan, 7510 kc., (Leins, Staley).

JZI, Nazaki, Japan, 9335 kc., 2:30 p.m., (Azevedo), until 10 p.m., (Atkinson, Self, Staley), 4-5 a.m., Monday, Thursday, (Markuson, Combe, Smith, Shamleffer).

JZJ, Nazaki, Japan, 11890 kc., daily, (Messer, Chiang), until 10 a.m., (Atkinson), irreg. 12:15-1 a.m., (Cox), daily 4-5 p.m., (Alfred, Piechuta, Herzog, Markuson, Dressler, Shamleffer, Coover, Kelly, Fallon, Hartzell, Eder, Magunson, Foslay, Hamilton, Partmann), daily 9-10 a.m., (Kentzel), Address: Broadcast-^{ing} Co. of Japan.

JDY, Manchukuo, 9925 kc., calling Tokio at 2:30 a.m., (Partmann).

Readers Who Are Awarded "Honorable Mention" for Their Work in Connection with This Month's Short-Wave Report

Elmer Samson, Kenneth Dressler, George Hare, Raymond Harrigfield, Earl P. Hill, John Coad, John C. Kalmbach, Jr., Elmer Patrick, Manfred Johnson, Werner Howard, Jack Staley, Joseph A. Piechuta, K. Mochrie, W. A. Youngblood, J. W. Lade, Earard De Madhal, Elmer S. Reese, Carl F. Shamleffer, Harry E. Keitzel, John Binder, Jr., Thomas B. Baker, James E. Moore, Jr., Charles Robinson, R. S. Seaward, James Black, Howard Spafford, L. W. Skipper, George H. Matthews, Harold S. Bauer, Hugo Richter, Louis Schmidt, W. F. Herzog, William James Campbell, Angel City D'Arer, Pierre A. Fortmann, R. F. Shamleffer, Harry E. Keitzel, Arthur Immicke, Fred Atterton, Leslie Mott, Erroll R. Birnie, P. Piorko, M. J. Markuson, Augusto Anca, T. F. Tynan, Leon Stabler, R. Stevens, Herman Ruppert, Carl and Anna Eder, Clayton D. Sands, Clarence Hartzell, Anthony C. Tarr, Irving Sporn, David Bressilber, Arthur Hamilton, Shokichi Yoshimura, Morgan Poshny, Gustave A. Magnuson, Rudolph Kure, Anchwell Tracey Bower, Wm. Skinner, Charles Ford, Charles F. Clark, Cyril Ruddoch, Lawrence Moore, S. G. De Marco, Henry Camp, Richard Nelson, Karl D. Beckeneyer, Daniel R. Buttner, D. Summers Smith, V. V. Labega, Denzel D. Murphy, Mr. and Mrs. John F. Leonard, J. Carroll Balloch, Frank Sakely, Herman Ruppert, R. C. Messer, George M. Hill, Campbell Matheson, Jr., Robert Pierce, Jr., Lloyd Ludwig, Alice R. Bourke, Merrill Marks, Wade Chambers, C. H. Tams, Melvin Pulley, Ernest W. Law, Earl O. De Haven, Peyton Black, Manuel De-
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Under this plan, when action takes place before a big building—a castle, for example—only a gate and hedge are provided in life-sized facsimile in the studio. But the long shots showing the entire castle are provided from a papier-mâché or plaster model and the illusion is effective over the air.

Lieutenant Eddy (U. S. N., retired) is a radio engineer as well as scenic designer and production expert. The combination of talents in the studio director resulted in a highly-developed performer staff at Wyndmoor even before test transmissions had begun. Eddy has recruited talent from Philadelphia and New York on the basis of schooling performers in the new art so that they could be on hand when the starting television gun in the U. S. A. is fired. There are actors, musicians, dancers and other specialty performers on his talent roster. Also, there are "cosmeticians" and make-up experts. There are even composers writing special scores for the visual programs.

There is a separate unit in the building for the pick-up of movie film, which suggests the likelihood that live and filmed subjects will be combined for certain program effects.

Wyndmoor is twenty minutes from the Philadelphia business section by rail and arrangements will be made to shuttle talent back and forth. Subsequent to the launching of a regular commercial service, the station expects to be served by a remote-control coaxial link with a new studio in the heart of the Quaker City.

Although the receiver the writer saw demonstrated had an image of black and green tone, Philo T. Farnsworth has already shown black and white pictures on other occasions. Also, according to A. H. Brolly, his chief engineer, the firm has developed a projector-type, cathode-ray tube capable of giving sharp pictures on a large-size screen. The commercial type of Farnsworth receiver, according to Mr. Brolly, will have "something less than thirty tubes." No estimate would be given of its approximate cost. The Farnsworth firm intends to license manufacturers and not to produce the equipment itself. (Farnsworth Television, Inc., has authorized RADIO NEWS to publish the copyright photographs and receiver diagram accompanying this article.)

QRD? QRD?

(Continued from page 681)

for the good of radio technicians and radiops. We have reprinted a few and here are a few more which will be played up in accordance with the amount of comment we receive on them. Suggestion number one is to the effect that due to the advent of television sometime in the near future it wouldn't be a bad idea for radio technicians to organize with this specific type of station in view! These men would be experts on this specialized angle of broadcasting, and therefore, if properly organized, might be able to command real good salaries and other emoluments which BC men have had to fight for, due to not being unionized in the very beginning of radio broadcasts. Of course we believe that if men will only study and make themselves indispensable when the call comes for this type of radio-technician he will be able to command a handsome figure as regards the filthy lucre, but we leave it to you-all. What do you boys and girls think of it??? The second suggestion would be modeled after the ARRL. The idea is to "band-into-one-whole" all radiomen, sort of a vertical

Farnsworth Television

(Continued from page 679)

sized props in giving long-distance and depth effects. Lieutenant W. A. Eddy, designer of the toy-sized sets, did not want to disclose how they would be applied, but it is our own guess that they will be used in the same manner as miniatures are employed in Hollywood and by the British Broadcasting Corporation in its London television transmissions.