



TELEVISION DEMONSTRATED
Here is the new Farnsworth transmitter for moving-picture film, demonstrated recently in Philadelphia.

Television Rumors Rife

NEW YORK, N. Y.—In recent weeks countless "television" announcements, reports and rumors have come to the editorial offices of RADIO NEWS. Some of them are presented herewith: Richard C. Patterson, executive vice-president of NBC, in announcing plans for elaborate new Hollywood broadcasting studios, set the report buzzing that his chain has television in mind and will weld closer links between the talkie stars and the microphone. . . . The television-minded British Post Office has announced that Baird has adopted a transmission standard of 240 lines and 25 pictures per second. . . . But Baird is also said to be able to transmit on 405 lines. . . . Also from England comes word that the Marconi-E. M. I. Television Co. has adopted a 405-line interlaced scanning system. . . . Philo T. Farnsworth sailed for Europe in August, possibly for conferences on his firm's tie-in with Baird, of England, and Fernseh, of Germany. . . . In a syndicated newspaper article, David Sarnoff, R.C.A. president, pointed out his firm has produced "on a laboratory basis" a 343-line picture as against the crude 30-line image of a few years back. . . . R.C.A. is contemplating commercial service facsimile tests between New York and Philadelphia at an early date. . . . A Philco executive, speaking in San Francisco, asserted that his firm produced a \$275 set that could be placed on the market in 30 days, but no station was provided to supply programs for the receivers. . . . Andrew W. Cruse, chief of the U. S. Department of Commerce electrical equipment division, advised American broadcasters to name a com-

Television RUMORS

from
Here and Abroad

mittee to keep stations informed on television progress and suggested employment of an European observer to assist the committee. . . . National Television Co. is reported to be working on the development of an inexpensive vision receiver. . . . In a new pamphlet issued to trade and public, the British R.M.A. sets forth: "It is estimated that at least 10 stations will be required to cover roughly half the population in this country. Many years must elapse before television service is available for the country as a whole."

NEW YORK, N. Y.—Since the Radio Corporation of America announcement that \$1,000,000 would be spent in research and development of television, the radio industry has watched this firm's moves with great interest. It is understood that a portion of the television budget will be used for a new transmitter atop the Empire State Building, New York, where many tests have been conducted at earlier dates. Also, reports indicate that 500 experimental receivers of different designs are being constructed, the sets ranging from de luxe models to adapters for present receivers. The de luxe models are expected to employ 52 tubes, including the cathode ray, and will yield pictures about 8 inches square. Others will give 3-inch images.

This special group of receivers will not be sold, it is said. Instead, the sets may be installed in the homes of officials, engineers and other groups (probably including newspaper and magazine editors). Tests will be ready with this equipment within 18 months, but it will be much longer before the sets are offered to the public.

Further reports indicate that the most

TELEVISION, IN EUROPE

The new Baird apparatus, for the transmission of television of regular talking films, exactly the same as used in the movies, is shown in the lower left. At right: the special television cable, running from the Berlin television transmitter to the antenna atop the radio tower, being installed.



—IN AMERICA

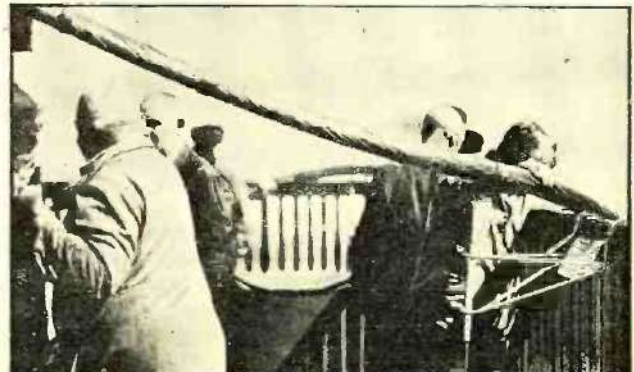
The new home-television receiver developed by Farnsworth as seen from the rear, showing (on top shelf) the vision apparatus; (second shelf) the sound apparatus; (lower shelf) the power supply for both.

complicated of these sets will consume about 700 watts of current and that the models will be equipped with a folding mirror top to reflect the image on the cathode-ray tube which will be mounted vertically. It is expected that 360 lines at 24 frames-per-second will be employed and that the receiving light source and picture color will be fluorescent-green.

Dr. Vladimir Zworykin's iconoscope will probably be used in transmitting studio, film and outdoor programs. The inventor is said to be working on a problem of color with the aim of obtaining black-and-white pictures and already has had some experimental triumphs along this line, but seeks a method that is more permanent.

A duplicate transmitter may be arranged for Philadelphia. Whether this comes through or not, it is believed assured that studios will be erected in the Quaker City, and that programs will be sent to New York by both ultra-short-waves and the new coaxial cable to be installed between the two cities by the American Telephone and Telegraph Company. The Empire State Building transmitter will probably use frequencies between 50 and 100 megacycles and the service area is computed to be 17 miles.

PHILADELPHIA, PA.—A special press demonstration of the television equipment developed by Philo T. Farnsworth was recently given at the Chestnut Hill, Pa., laboratories of Farnsworth Television, Inc. Newspaper reports were most enthusiastic (Turn to page 252)



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(universal wound, in the middle) is used, since for both ranges it must resonate below 530 kc. to prevent broadcast-band stations pushing through if it resonated in the broadcast band—a fine, but very important point of design.

Figure 2 illustrates an i.f. transformer assembly. The four transformers vary in coil spacing, and the fourth has the best oscillator inductance loosely coupled to its secondary.

Figure 3 shows the "engine room" of the

off sides of this curve indicate the true band pass filter. The "sway back" is necessary to compensate for the r.f. amplifier selectivity. Just how the two aid each other is seen in the ideally flat-topped oscillograph photo measurement from antenna to audio system in Figure 5.

Space does not permit showing the sharp selectivity curve, but it closely resembles Figure 5 except that it is only 7,000 cycles broad at its flat peak, while Figure 5, the high fidelity curve,

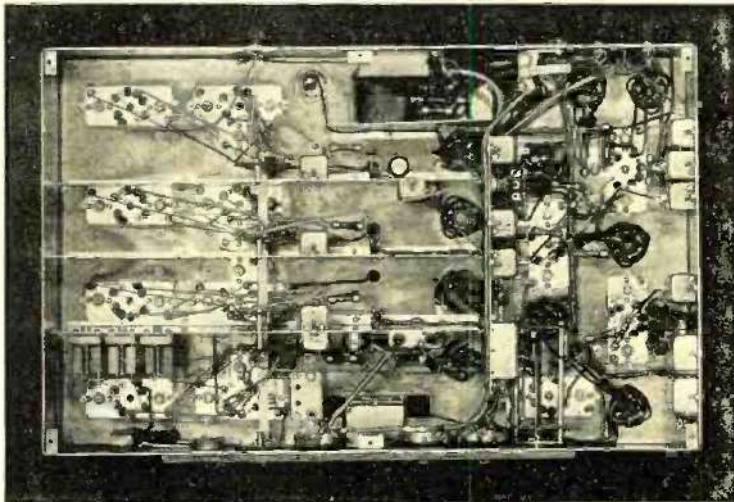


FIGURE 3

tuner. At the right of the central partition all i.f. and a.f. wiring is located. At the left are the r.f., first detector and oscillator circuits. The sectional shielding is especially noteworthy as it provides effective interstage r.f. isolation, with each gang of the wave-band switch being located within the shield for the corresponding circuit. All r.f. wiring is uniform and direct. Isolation filters are used generously, as will be noted from the large number of shielded filter condensers mounted on the shield partitions and chassis walls.

Figure 4 is an oscillograph showing the overall i.f. selectivity curve necessary to effect the perfect band-pass alignment of the last two i.f. transformers. The "sway back" and sharp cut-

is 15,000 cycles broad at its peak. Further high audio-frequency compensation occurs in the audio amplifier—but read the next installment for that.

How well the design of the Masterpiece IV has been executed throughout is indicated by one user's report of 51 broadcast stations received in one evening between 4500 and 13,000 kc., all in the congested d.c. district in the "great white way" section off Times Square, on 44th Street in New York City, in middle June. Another user in Chicago besides many foreigners too numerous to list, heard an Alaskan weather beacon station on long waves—equal to reception of long wave European broadcasters on the east coast, which is indeed a tribute to the receiver's quiet distance-getting ability.

Television Rumors

(Continued from page 198)

over the clarity of the images in tests conducted over both wires and the air. Films and live subjects were used.

The screen, about 5 by 7 inches, revealed remarkably clear images. The inventor revealed his purpose to receive images on a small tube and project them optically onto a screen of convenient size. He expressed the belief that commercial television in the U. S. A. will arrive in less than a year.

Screens of zinc orthosilicate and of a combination of calcium tungstate and other substances were used. The first received the images transmitted over the air while the latter was used in the wire television tests. A coil placed around the "oscillight"—a receiving tube—reduced the spot of light from the valve to a tiny speck which sped across the screen at the rate of 6,000 times a second.

WASHINGTON, D. C.—After considerable controversy, the Federal Communications Commission authorized the American Telephone and Telegraph Company to install a coaxial cable between New York and Philadelphia for experimental television and multiple telephone and telegraph service. But the F.C.C. ruled that all parties having an interest in the transmission of television images should have access to use of the cable during the experimental period. When the various parties are unable to agree on terms, the F.C.C. itself will aid in arbitration. The Commission refused to grant the A.T. & T. sole rights to the use of the cable for the development of its patents. Postal Tele-

graph and Western Union filed objections to the telephone company's application, but they were withdrawn. Other opposition was made by moving-picture interests.

WASHINGTON, D. C.—A group of Federal Communications Engineers recently visited the television laboratories of R.C.A., Farnsworth and Philco. The party was headed by Dr. C. G. Jolliffe, chief engineer of the commission, and included Andrew D. Ring, Lieutenant E. K. Jett, Gerald C. Gross and J. P. Buchanan, Jr. No comment was made on their observations of the three cathode-ray systems, though they were reported to be impressed.

HAMBURG, GERMANY—The S.S. *Caribia*, operating in the Hamburg-American Line's Central American service recently participated in oceanic television reception. The experiments were made jointly with the German Association of Electro-Technicians and the Reichspost. Synchronized sight and sound from the Reichspost shore station were received on a set installed in the ship's reception room. Observers were reported to be favorably impressed with the demonstration.

LONDON, ENGLAND.—According to *Industrial Britain*, official publication of the British Travel Association, an industrial application of television is being made by the Automatic Electric Company, of Liverpool, in the supervisory remote-control apparatus to be installed over the whole of the electrical grid scheme of South Scotland. The report follows: "The apparatus is an arrangement whereby engineers at a central spot are able, by means of television, to read the meters at any number of distant sub-stations, and

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take whatever steps are necessary to deal with exceptional demands on one or more sub-stations by transferring power from others. When the new apparatus is installed, engineers in Glasgow will be able instantly to control the supply to places as far apart as Dundee, Kilmarnock, Edinburgh, and down to the English border."

LONDON, ENGLAND.—Alexandra Palace has been selected as the site for the London zone's television transmitter. The site is 306 feet above sea level and it is proposed to erect a 300-foot mast, thus providing an antenna height of 606 feet above sea level, which is believed high enough to supply the large London area with images of sharp definition. Details of new Baird home vision receivers were recently announced here. One model has a picture, 6 by 8 inches, while another yields a 9 by 12 inch image. Licenses will be granted by Baird to other British manufacturers.

All Continents

(Continued from page 202)

knob at the right. This tuning knob is pushed "in" for high ratio, 55:1, and "out" for low ratio, 5 1/2:1, for fast tuning. The three lower knobs are, from left to right, the sensitivity control, the volume control and the combination "off-on" switch and volume control.

The receiver, taken as a whole is a remarkably efficient, beautifully toned receiver, with plenty of high frequencies so that long distance station announcements can be easily recognized. The receiver should appeal to those who wish to literally step out all over the world to hear the short-wave stations clearly, and yet at a moment's notice switch over to the broadcast band for high-quality reception of local stations. This is also one of the first American receivers to incorporate a high wave band above the standard broadcast band including 2000 meters reception. We heartily recommend this set to our Listening Post Observers and other s.w. listener-readers on the basis of the results of the tests we have conducted.

A Battery Super

(Continued from page 219)

is secured. Now proceed directly with the r.f. alignment.

First, tune the oscillator to 1400 kc. Then tune the receiver to the same and adjust each trimmer on the gang condenser until the meter reading is a minimum. Now, tune the oscillator and receiver to 600 kc. Don't touch the trimmers, but adjust the padding condenser until minimum meter reading is secured, rocking the gang condenser back and forth while making the adjustment. Now recheck at 1400 kc. If an oscillator is not available, align the r.f. circuits first by tuning in good steady station signals at around 1400 and 600 kc. Then when the r.f. end is lined up make the adjustments in the i.f. transformer tuning to bring them into exact alignment.

The protective resistors may now be removed and meter rheostat adjusted so that the meter shows full-scale deflection with the a.v.c. switch "on" but no signal tuned in. The receiver is then ready for use.

When working properly, the receiver should have some tube hiss and more or less background noise, depending on the location, when turned full-on. The tuning should be very sharp in the "manual" position. Though not broader, the tuning will appear so in the a.v.c. position.

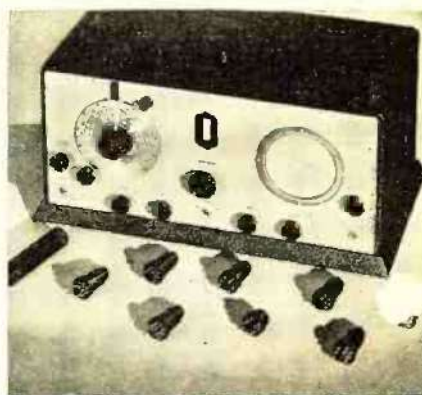
Two antenna posts are provided for doublet and other types of ungrounded antennas. When an ordinary antenna is used the middle post should be connected to the ground post (chassis).

It should be noted that filament type tubes encourage feedback, or coupling, between stages. Therefore, a receiver with such tubes will be inherently somewhat less stable than a set using unipotential (heater) type tubes. This may not be noticeable, but, for the utmost gain possible, it will pay to experiment a bit with a by-pass condenser (0.1 to 1.0 mfd.) connected from the positive filament to chassis. In this particular set, the condenser had no effect. In another, it may be useful. Additional plate and screen-grid filters consisting of a 10,000 ohm resistor and 0.1 mfd. condenser may permit a bit more gain although in this set the writer found them of no help.

The permanent magnet dynamic type of speaker is very satisfactory for a set of this type, providing good quality and requiring no power sup-

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In the re-design of the Super SKYRIDER, HALLICRAFTERS engineers have achieved an efficient five band coverage of all wave bands from 7.14 to 550 meters (41,000 to 540 KC.), made possible through an antenna circuit that is in each case tuned to the low frequency end of each band.

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*See Technical Article Page 36, August Q. S. T. Magazine.

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