

Radio News

March, 1937

Italy's Progress in the

VIDEO ART

With radio's future so definitely tied up with television development it is only fitting that progress in this art all over the world should be of foremost interest to the wideawake radioman. This short article tells of the progress Italian engineers are making with cathode-ray television and it is significant that in most countries this method is proving the one through which the best results are being obtained.

By the Television Reporter

CONSIDERABLE activity and developmental improvement in Italy, in the "video" art, is now apparent to your reporter after an examination of their latest television instruments. The SAFAR organization, which is the only manufacturer in that country producing this kind of equipment, has recently demonstrated a new 15-tube television receiver using a huge cathode-ray tube that gives high-definition television reception in actual black-and-white images. The system used is that of Arturo Castellani, head of the Italian Laboratory for Television Researches. The development of this new receiver and of the transmitting apparatus, which uses wavelengths between 5 and 7 meters, follows a course somewhat parallel with those of Farnsworth, RCA and Philco in America, and Baird in England, Telefunken in Germany and other developments in France, Russia and Japan. The apparatus, however, has been worked out with such a regard to fidelity in reception and fineness of manufacture that it should be brought to the attention of television enthusiasts everywhere. This is evident from the illustrations accompanying this article.

Steady Progress

SAFAR first started its television activities in 1930 and its first successful tests were carried out at Milan at the National Radio Show of that year. The first transmissions

and receptions employed Nipkow disks with a synchronization system using impulses transmitted along with the signal. These first images were of 60 lines and 25 frames per second.

In 1931 the company instigated the establishment of experimental laboratories for the development of luminous gas lamps and other types of tubes for television. In 1932 a new disk receiver with a mercury-vapor lamp was demonstrated and a rather successful experimental service through the period the show was held. This included an ultra-short-wave television transmitter working on 7 meters with 100 watts power.

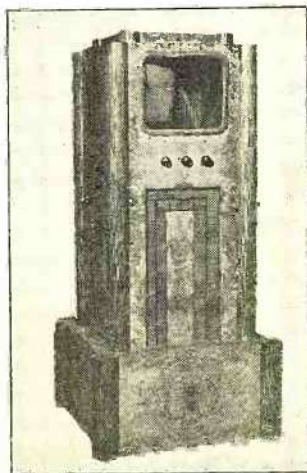
After that a 1 kw. transmitter was developed and installed and tests were made with various early types

of cathode-ray tubes, including a whole series of experiments with different kinds of fluorescent substances. The first public demonstration of cathode-ray television in Italy was made with 130 and 240 line transmissions utilizing frequencies from 25 to 1,000,000 cycles wide. During 1933 and 1934 the researches were advanced and a 13-tube system was developed utilizing the SAFAR "Televisode" cathode-ray tube, with an image of 180 by 210 millimeters. In 1935 the development progressed to a point utilizing similar but improved equipment, with 240 lines and 25 frames per second.

(Turn to page 575)

NOTHING EXPERIMENTAL ABOUT THIS SET-UP

The two illustrations, below, show the external and internal appearances of the new SAFAR television receiver using a huge cathode-ray tube that projects images in actual black-and-white as well as reproducing the sound accompaniment for the visual program.



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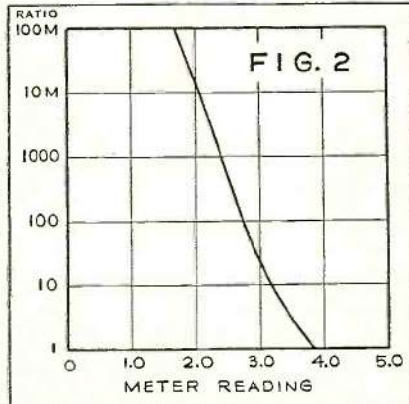
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very closely for all these receivers. The value of this little chart to owners is that they can determine, in terms of relative voltage inputs, improvements wrought through changes in antennas; or they can make up "R" scales according to their own interpretations, but based on actual ratios. The degree of fading of any given signal can also be recorded (a record greatly appreciated by broadcast stations when receiving reports from DX listeners).

The band-spreading system, which is automatically cut in on the three high-frequency ranges, is invaluable to the operator. So effectively does it spread stations that tuning in the short-wave ranges is no more critical than in the regular broadcast range. With the main dial set at 10 megacycles, in the 5.0-10.0 range, for instance, the 100-degree band-spread



dial tunes from 10.0 mc. down to 9.12 mc., a range of 880 kc. or an average of a little under 9 kc. per division. Thus the 31-meter broadcast stations operating on adjacent 10-kc. channels in this range are just about 1 degree apart on the dial. In most of the other popular tuning ranges the band-spread is even greater than this, in some cases being as much as 1.4 kc. per division.

This article does not attempt to describe in detail all of the features which impress one who operates the new Super-Pro. Instead the effort has been to present some of the outstanding impressions of features that are out of the ordinary.

Italian Television

(Continued from page 519)

This development was continued through 1936 and resulted in the present apparatus which transmits and receives scenes, in artificial or ordinary daylight and gives a dimensioned picture of 240 by 220 millimeters using 375 lines and 25 frames per second in a perfectly black-and-white picture. The system transmits and receives the television signals on 7 meters with the sound accompaniment on 6.7 meters.

In the newest receivers the large cathode-ray tube is mounted, as can be seen in the illustrations, on a rigid metal frame (duralumin) into which it sets, with the fluorescent screen at the top. A 45-degree mirror projects this image so that it can be seen through an opening in the upper-front portion of the cabinet. There are three controls used in this system, which are shown in the illustrations. The loudspeaker is also mounted on this frame.

The receiver itself is made in two parts, which are hinged so as to be easily serviced, each part folding down into one-half of the receiver chassis proper. One portion contains the power apparatus and the sweep circuits, etc., and the other con-

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for 1937



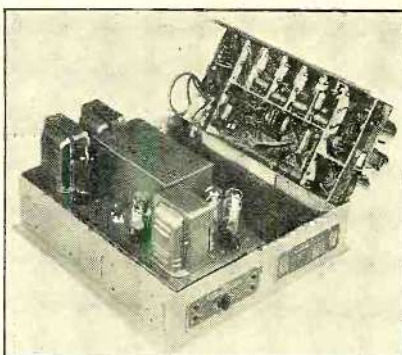
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TELEVISION RECEIVER PROPER

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tains the r.f. receiving circuits. This latest job uses a total of 15 tubes. The price of the complete receiver runs somewhere between \$450 and \$500 at the present rate of exchange. The cathode-ray tubes are priced at about \$60 and are guaranteed to give 2500 hours of operation. The whole receiving apparatus weighs slightly over 120 pounds.

Further experimentation and development is being carried on with the idea of establishing a chain of television stations employing the Castellani system throughout the length of the Italian Peninsula, possibly connected by a coaxial cable, for transmission of both sight and sound programs. According to present plans, each station will have a practical working range of approximately 20 to 25 miles.

The Radio Beginner

(Continued from page 563)

leads pass through holes. You should be able to receive all the local stations and many distant ones. The original model brought in stations in Philadelphia in the daytime without any difficulty and that was in a noisy downtown location.

Parts List

- R1—Electrad, type 280, potentiometer, 25,000 ohms.
- R2, R3—500 ohms
- R4, R5—1,000,000 ohms } I.R.C. carbon resistors,
- R6, R7—1,000 ohms } ½ watt.
- R8, R9—¼ megohm
- C1, C2, C3—Meissner, 3-gang variable condenser, type 15122, 00035 mfd.
- C4, C5, C6, C7, C8, C9, C10—Cornell-Dubilier, type BA-4P1 tubular paper condensers, .1 mfd., 400 volts.
- C11—Cornell-Dubilier, type 2W-5T23 mica condenser, .00025 mfd.
- C12—Cornell-Dubilier, type BB-4P25 tubular paper condenser, .25 mfd., 400 volts.
- L1—Meissner, type 1085 low impedance antenna coil.
- L2, L3—Meissner, type 1084 low impedance r.f. coil.
- 1—National, type C, dual-range velvet-vernier dial with illuminator and 6.3 volt pilot light.
- 3—octal sockets, wafer type, mounting centers spaced 1½ inch.
- 1—I.C.A. chassis, type 1531, cadmium plated steel, 11x7½x2½, with large holes punched.
- 1—aluminum panel, 4½x6 inches, 1/16-inch thick.
- 1—I.C.A. terminal strip, type 2419, marked "A. & G".
- 1—I.C.A. terminal strip, type 2418, marked "output".
- 4—insulated terminal strips, two terminals each.
- 1—insulated terminal strip, three terminals.
- 1—shaft reducer, ¾ inch hole, ¼ inch shaft.
- 2—angle brackets.
- 2 feet 5-wire battery cable.
- 1—five-prong plug.
- 1—gronmet for ½ inch hole.
- 1—knob for sensitivity control.
- 2—grid clips for metal tubes.
- 2—6K7 tubes.
- 1—6C5 tube.

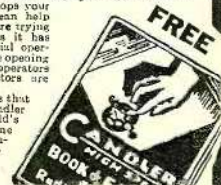
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