

TELEVISION IN GERMANY

A general resumé of the television status in Germany, chronicled by the operator of German amateur station D4RPU, including details of technical interest.

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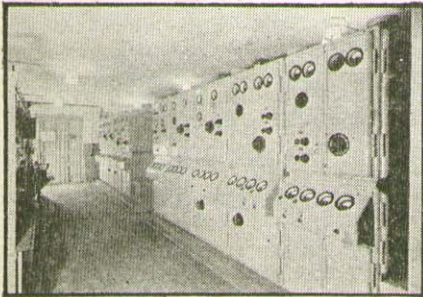


Fig. A. Transmitter with sight equipment at right.



Fig. B. Some of the fleet of 30 television trucks.

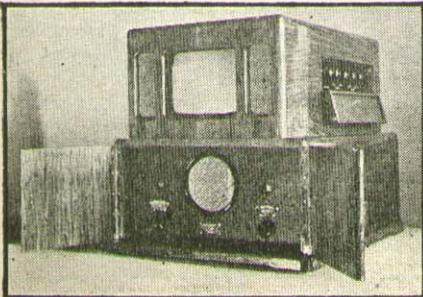


Fig. C. The complete television receiver described.

IN GERMANY the idea of television started very early due to certain conditions mentioned below. A short time after discovering the electrical effect of the selenium-cell, Paul Nipkow had, in 1884, the fundamental idea to relay pictures one after another by analyzing in separate lines. He developed for this purpose the disc, known in Germany as the "Nipkow-Scheibe," which is used all over the world for mechanically scanning persons and movies, and also for mechanically receiving pictures in

home-receivers. Prof. Karl Ferdinand Braun was the first to see the possibilities of the cathode ray for measurements, at about the time that Nipkow invented his disc. The availability of the cathode-ray tube for television (in German "Braunsche

Röhre") was first proposed by Diekmann, Glaye and Rosing in 1907 and 1908. It is quite natural therefore, that the idea of television was very much discussed in Germany; but the technical mediums were not at hand at that time to permit developing the idea.

After the Great War, German laboratories of the factories and universities began zealously to develop television. One of the first was Prof. Karolus from the university of Leipzig, who was

(Continued on page 123)



Fig. D. Unretouched photos received last month of German 180-line images.

TELEVISION IN GERMANY

(Continued from page 83)

working with Telefunken. Prof. Schroter from the same house proposed in 1926 to relay television transmissions on ultra-short waves.

To-day, the circle of firms and specialists has increased tremendously. Manfred von Ardenne was the first who successfully used the cathode-ray tube in 1930 for a television receiver. Since that time, great advancements have been made whereby all firms under the direction of the Deutsche Reichspost are inter-connected so that television in Germany has moved ahead of the world in several respects.

TRANSMITTER

Today, the following characteristics are used in Germany: 180 lines and 25 pictures per sec., (i.e. 40,000 points per picture); modulation nearly 100 per cent; dark 25-35 per cent; synchronism by interruption at the end of each line, using 5-7 per cent of the line. This results in a modulation frequency of 1,000,000 cycles.

The transmission organization in Germany is tightly held by the Deutsche Reichspost, which at present has 2 stations on the air. First is the new television transmitter in Berlin-Witzleben, which was erected in order to replace the old one which burned down in August 1935. Figure A shows two sections, at the right is the image transmitter with a power of 15 kw., which works on 44,800 kc. (6,772 meters), while at the left is the tone transmitter with the same power, the frequency of which is 42,500 kc. (7.06 meters). The programs are sent out as follows: daily from 9 a.m. to 11 a.m. television experiments; 5 p.m. to 7.30 p.m. music; from 8 p.m. to 10 p.m. both transmitters relay the official television program, and from 10 p.m. to midnight only the sound transmitter works.

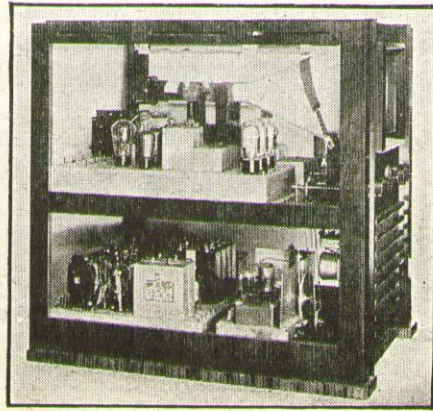
Because Germany plans to set up a complete network of television transmitters, the most favorable points for these stations have to be elected. For this purpose the Deutsche Reichspost has made a transportable television transmitter, which is built up on 20 heavy trucks. Figure B shows some of the trucks. The train of cars transports 2 ultra-short-wave transmitters, movie scanning transmitter, diesel motors, cooking and housing facilities for 30 engineers, etc. At first, the transportable transmitters went to the Brocken mountain and here sent out a good signal up to a distance of 62 mi. After conclusion of these measurements the transmitter traveled to other German mountains. In the meantime preparations for the construction of the main transmitter on the Brocken Mountain, which is connected with cable to the Berlin television studios has begun.

After many expensive experiments, which have

been undertaken in the labs. of the television and radio factories a good television receiver has been developed. The signals of both picture and sound are fed from the aerial to an R.F. stage, and are then mixed in the 1st-detector (mixer) with oscillator frequency, which is about 1 mc. different from the receiving frequencies. This produces two I.F. signals because of the difference in frequency between the sound and image signals and both are separately amplified. The I.F. of the sound transmitter runs through an I.F. amplifier, and then passes to 2nd detector (a duodiode) and the power audio stage. The image I.F. runs through an aperiodic I.F. power stage, where it is amplified tremendously. Now the image currents are rectified and fed to the cathode-ray tube.

In Fig. C we see a modern German television-receiver, made by Fernseh A.G. In this set it is only necessary to tune in the sound transmitter and then the picture is also tuned in right. The knobs, which are to be seen on the right, and which are covered by the hinged cover serve to adjust the receiver and the sweep oscillators. These are only changed when the cathode-ray tube is replaced.

The current consumption of the television receivers, which are supplied for 110 and 220 V. A.C., lies between 250 and 400 W., according to the design. The following firms produce television-receivers with cathode-ray tubes: Telefunken; Fernseh AG; Manfred von Ardenne with C. Lorenz A.G.; Radio Ag. DS. Loewe; CH. Muller & Co. (Philip Konzern).



The left side of the Lorenz A.G. set.

Please Say That You Saw It in RADIO-CRAFT