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SOURCE Radio, No 9, pp 50-51

VERY REMOTE RECEPTION OF TELEVISION TRANSMISSIONS

The following is a review of an article by P. Chechik appearing in Radio, No 9, pp 50, 51.

Chechik briefly lists some cases of anomalous reception in the radio amateur bands and then proceeds to a more detailed discussion of similar instances in television reception. The latter instances include the reception of the Moscow Television Center in Holland and Belgium in May and June 1951 and reception of the Moscow, Lopik (Holland), and Paris television stations in Germany during June 1952.

Letters from Soviet amateurs to the editors of Radio, according to the author, indicate that irregular reception of some remote television station was observed on the frequency of the first television channel in Vladimir in the spring of 1953 and that several telecenters are received sporadically in many regions of the Ukrainian SSR.

Chechik then discusses the US experiments with the Collins 23-kw transmitter, in which fairly stable reception was obtained at a distance of 1,250 km on 6-m waves. One conclusion from the study was that the height of the receiving antenna was immaterial, and the author states that this has been confirmed by the observations of German radio amateurs on the reception of the Moscow Television Center. Chechik observes that it is too early to draw any conclusions from these experiments as to the feasibility of using similar techniques for relaying television programs, and he notes that transmitters of very considerable power would undoubtedly be required for this purpose.

From the data accumulated thus far on cases of remote and very remote reception of television transmissions, Chechik arrives at the following conclusions:

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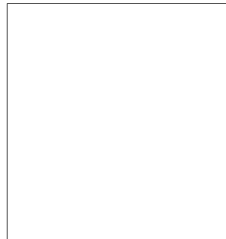
1. Normal reception of television on meter waves presumes quasi-optical wave propagation in which a relatively constant field intensity can be provided with comparatively low transmitter power; depending on the heights of the transmitting and receiving antennas, the range is about 60-70 km.

2. Remote reception, due to tropospheric propagation of meter waves, depends on temperature, pressure, and humidity. A weak but steady signal can be received at distances up to 150-200 km. Under these conditions, the height of the antenna and its directivity is of vital importance to the quality of reception. During chance inversions of temperature and relative humidity, the range may reach 400-500 km; in this case, reception depends on transmitter power.

3. Very remote reception, according to the assertions of B. A. Vvedenskiy, A. G. Arenberg, and M. P. Dolulhanov, is due to ionospheric reflection from the F<sub>2</sub> or E-sporadic layers. The conditions for ionization of these layers is especially favorable in years of high solar activity, which accounts for the cases of very remote reception in 1937 and 1947. As for similar cases from 1950 to 1953, i.e., in years of decreasing solar activity, they may be caused by isolated intense solar eruptions with the accompanying increased ionization, or by ionization of meteor origin. However, this is strictly guesswork and requires confirmation. Further observations will permit more definite and accurate conclusions.

Chechik concludes that progress in the further study of "remote" and very remote reception of television will be possible if more radio amateurs participate in observations. He urges Dosaaf radio clubs to organize such systematic observations.

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