TELEVISION IN AMERICA

by Raymond M. Bell.

The First television transmissions in the United States were made eight years ago. On April 7, 1927 W3XN Whippany, New Jersey transmitted a sight programme to a New York City laboratory on 1570 k.c. In January of the next year W2XI Schenectady broadcast television scenes on 7900 kc. to a number of receivers in Schenectady homes. By the summer of 1928 several stations were transmitting sight programmes on a regular schedule. Among the stations on the air were: WGY 790 kc., WRNY New York 920. W3XK Washington 6425, and W8XAV Pittsburgh 4800. In 1929 all television stations were assigned to four bands 100 kc. wide between 100 and 200 meters. The number of stations steadily increased.

The pictures were transmitted at the rate of twenty per second. Each picture was made up of 60 horizontal lines. The programmes at first were silhouette and halftone movie films. Later regular movies were sent. By 1932 all stations were transmitting direct studio pickups with accompanying sound on an adjacent channel. Among the leading stations were: W1XAV Boston; W2XAB, W2XBS, W2XCR, W2XR New York; W3XK Washington; and W9XAO, W9XAP Chicago. W2XAB, operated by the CBS, was the leading station. Sight and sound were transmitted on the same frequency. These stations have all gone off the air.

From 1930 to 1934 the writer had a five valve television set for reception of the above stations. The 60 line programmes were often interesting. The person looking in saw singers, dancers, banjo players, pianos being played, clocks, station call letters. The detail was sufficient to enable persons to be recognised. The features of a singer could be seen clearly enough to see her lips move.

The televisor was a 60 hole disc rotated in front of a neon lamp at a speed of 1200 r.p.m. Synchronization was only approximate. Pictures were about two inches square. As it was realized that this was not satisfactory for real home television it became necessary to turn to the ultra-short waves to get sufficient detail In 1932 stations began to move to a band between 3 and 7 meters instead of 100 to 200 meters. As a result only a few stations are continuing to experiment with the longer waves (2050 and 2800 kc.) There are at least half a dozen stations on the ultra-short waves.

It is well known that waves below ten meters are limited in range, generally covering only the area of visibility. This is a disadvantage and will require many stations in a country the size of the United States. However, there is no static or fading below ten meters. At present, television stations are using 40 to 80 mc. The best known is W2XF, located on top of the Empire State Building in New York City. This building is 1250 feet high and has 102 storeys. This height enables the station to cover the metropolitan area with ease. Reception is good over a 15 mile range. The interference range of these waves is about 100 miles, so that stations farther apart than this can use the same frequency

Programmes will be sent from city to city by intermediate relay stations Already programmes from the Empire State have been sent to Philadelphia via a mountain top in central New Jersey. At present 240 lines at 24 pictures per second are being transmitted The development of the iconoscope, a combination of a photoelectric cell and a cathode tube, has eliminated the mechanical at the transmitter. Outdoor pickups in much greater detail are now possible.

Television is ready for the pubic in America, except for the problem of financing it. The cost of erecting stations will be great No receivers have been put on the market, but a number have been built in laboratories. These receivers are most interesting from a technical standpoint Sight and sound are simultaneously received. Transmissions are made on separate frequencies, always 1mc apart (for example, 49 mc. and 50 mc.) The receiver is made up of two separate circuits tuned by one control. The circuits are set exactly 1 mc. apart, so that when a sound programme is tuned in the corresponding sight programme will automatically appear, well illuminated and clear on a six inch screen. The synchronization of picture at transmitter and receiver is automatic; no pictures can be received except in phase. The reception of pictures is noiseless and non-mechanical; the picture is built up by a kinescope, a form of cathode ray tube. The complete receiver tunes from 40 to 80 mc. and uses 9 valves for sound, 10 for sight, and 8 for the kinescope and synchronizer, making 27 in all. There are five controls: tuning, sound volume, sound tone, picture brightness, picture contrast.

The future of television appears to lie with the ultra-short waves. At present, one of the problems is to develop high power transmitters below ten meters. There are differences between sight and sound programmes. In listening, concentration is not needed, one can read and listen; in looking one must concentrate on the picture. When interference arises in sight one can glance away, but in sound the volume must be cut down. In 1932 there were nearly 10,000 television receivers on the 100-200 m band. To-day there are comparatively few receivers for the ultra-short programmes outside the laboratories. By 1940, however, television should be well established in the homes of America.

Radio Round the World

All new electrical apparatus sold in Hungary must bear an official certificate that it will not interfere with broadcast reception.

Germany's lead in forcing manufacturers to provide a wireless set at less than £4 is likely to be followed by Poland and Hungary.

The Paris police caught burglars with a receiver, jemmies and other housebreaking tools stowed away in the cabinet. They claimed the receiver was their receiver, and the tools were what they were trying to fix it up with.

The Turkish Government has an idea that the Kurd tribes in the desert are all equipped with portable radio receivers, and has instituted educational programmes from the Ankara station with the idea of making them more reasonable The education is lightened up with sweet music and vaudeville wise-cracks.

In January 31 issue "The Listener" runs a kind of apologia pro vita sua in the form a supplement, an opologetic supplement, which sets forth that the B.B.C never ever tried to make proselytes of American listeners, is a public utility service, has developed 8 licenses per 100 of population, equalling America's estimated 8, and suggests that, if only the truth were known, the aristocratic English programme builder is as good a mixer as the most vulgar of democratic Americans. Also, 4250 schools make use of school broadcasts; the quarterly talks programme has a circulation of 200,000, etc.