

RADIO Newspapers by Radio

Sets Now in Use Demonstrate Practicability of Printing Your Morning Newspaper on Radio Set While You Sleep

By ROBERT D. POTTER

See Front Cover

IT WON'T be long before the weekly bridge game between the Jones and the Smith families may end up in a conversation like this:

"Well, it's midnight. You folks licked us tonight but we'll be back and beat you next time. If we hadn't finessed the wrong way on that little slam hand..."

"Aw, forget the post mortems. Stay around a bit and see our new radio facsimile receiver work. Let's see what's new in news."

And so the Smiths stay on, and on, and on, watching the Jones' facsimile receiver produce, before their eyes, a small edition of the morning newspaper.

Throughout America today there are some hundreds of fortunate "Smiths" who own pioneer radio facsimile receivers. Within a year or two there are going to be several hundred thousands of them, and possibly a whole lot more.

Has Many Uses

What is radio facsimile? Simply a method of turning the black and whites and grays of writing or print, of a photograph or drawing, into suitable radio signals, the transmission of these signals through space to a suitable receiver and there turning the signals back into a replica of the original material. Bank checks, signed in London, have been transmitted across the Atlantic Ocean and honored in New York. Fingerprints of suspected criminals have been similarly exchanged between police departments. And weather maps, prepared on shore, are daily radioed to steamships in mid-ocean.

Technically radio facsimile is closely related to the transmission of the popular "wire photos" which today grace many a modern newspaper. Such pictures are transmitted by electrical signals carried over wires. Except for details it matters little whether the electrical signals are carried over wires or by radio waves.

Now that radio facsimile is entering the homes of many Americans it may seem, to some people, that here is a new marvel of science which has burst into

use suddenly; and for many people without warning. Yet radio facsimile, and its relative wire facsimile, already possess considerable antiquity. In fact, wire facsimile reproduction dates back nearly a century, when two Englishmen, Bain and Bakewell, in 1840 were credited with the transmission of drawings over wires.

Code Transmission

It was nearly sixty years later before wireless came into being with the developments of Marconi. But hardly was wireless conveying words through space, than pictures and drawings likewise were being crudely transmitted. Hans Kundson in 1908 sent pictures for short distances. At the beginning of the World War Prof. Arthur Korn, in Germany, was breaking down pictures into a rather simple code, sending the code message by wireless and then—on decoding at the receiving end—obtaining very recognizable likenesses of the original material transmitted.

How can you send a picture by code? Take a magnifying glass and look at a reproduction of a photograph in your daily newspaper. You will note that the pictures, which at first glance seem to have continuous tone gradations, really consist of multitudes of dots, varying in size, spacing and blackness.

With this bit of background you can code a picture in the following manner. Imagine a photograph, drawing, or a printed page covered with a tissue-thin sheet of cross-section paper. Each square can be given a position by letter and number as one marks the squares of a chessboard. You can add a third symbol designating various degrees of blackness.

Thus 1-A-1 might be the spot in row one, column one having a blackness rating of one. And so on. In Prof. Korn's later inventions and subsequent ones by others the coding and decoding of the picture were done automatically by machines.

Coding, however, is a rather artificial way of transmitting pictures, drawings or printed text by radio and since the coming of the three-element radio tube it has been superseded by more direct methods.

By 1924 Capt. R. H. Ranger, then with the Radio Corporation of America, developed the system which transmitted pictures across the Atlantic and which has been the basis, since that time, of the ship-to-shore radio facsimile transmission of weather maps and other intelligence.

The receivers of these marine and trans-oceanic facsimile transmission have been large and costly affairs. The thing that is now new in facsimile for the home is that the mechanisms have been greatly simplified, reduced to a cost price within range of ordinary pocket-books, and turned into essentially robot devices which merely require the owner to plug a cord into the nearest light socket.

Some of them automatically turn on when the aural programs of ordinary broadcasting are ended for the night and then, during the off hours, the mechanism prints—in the home—the news and pictures being transmitted. In the morning one has a long sheet of paper containing the various facsimile announcements. These stories, it must be emphasized, are not merely printing as obtained from a teletype machine but are replicas of the pages of a newspaper, with headlines, captions, layouts of pictures and all the other familiar marks of journalism.

Cost Still High

The current spread of facsimile home radio receivers has come about because of a ruling by the Federal Communications Commission that every radio station that transmits facsimile must install at least fifty home receivers in its territory. Owners of these pioneer home receivers are to be part of the general experiment and their job will be to serve as a yardstick for the reaction of the public to facsimile transmission.

How much do the present receivers for facsimile cost? The receiver built by R.C.A. sells to radio stations for \$250 each in lots of fifty. The device of the W. G. H. Finch Laboratories sells for \$125. Both companies state that these figures can be cut in half on large scale production. Thus \$65 is about the lowest figure contemplated for the cost of receivers for some time to come, which means, among other things, that there is no present indication of anything like

the cheap "midget" radio receivers now on the market.

Now that facsimile in the home is a fact, one can sit down and think of many ways the job could be done. The RCA facsimile receiver turns the varying incoming radio signals into varying pressures between black carbon paper and white paper. Thus, on the latter, is marked a carbon copy which has the white, blacks and the grays of the original material being transmitted.

Many Possible Ways

Or, you might use the incoming radio signals to shoot out controlled sprays of ink and thus build up a picture. Or you might vary the intensity of a beam of light falling on a light-sensitive piece of photographic paper. Another trick would be to vary electric current passing through a moist electrolytic paper and have the chemical reaction produce the tone gradations. Finally, you might use special dry-electrolytic papers in the same way. The latter system is employed by W. G. H. Finch, whose equipment is now used by many stations.

The reception of facsimile is not too speedy by some standards of comparison. In the R.C.A. unit the copy is produced at the rate of about three feet an hour on a sheet of paper the width of ordinary business letters. The Finch receiver gets more copy per hour but the width of the paper is only four inches.

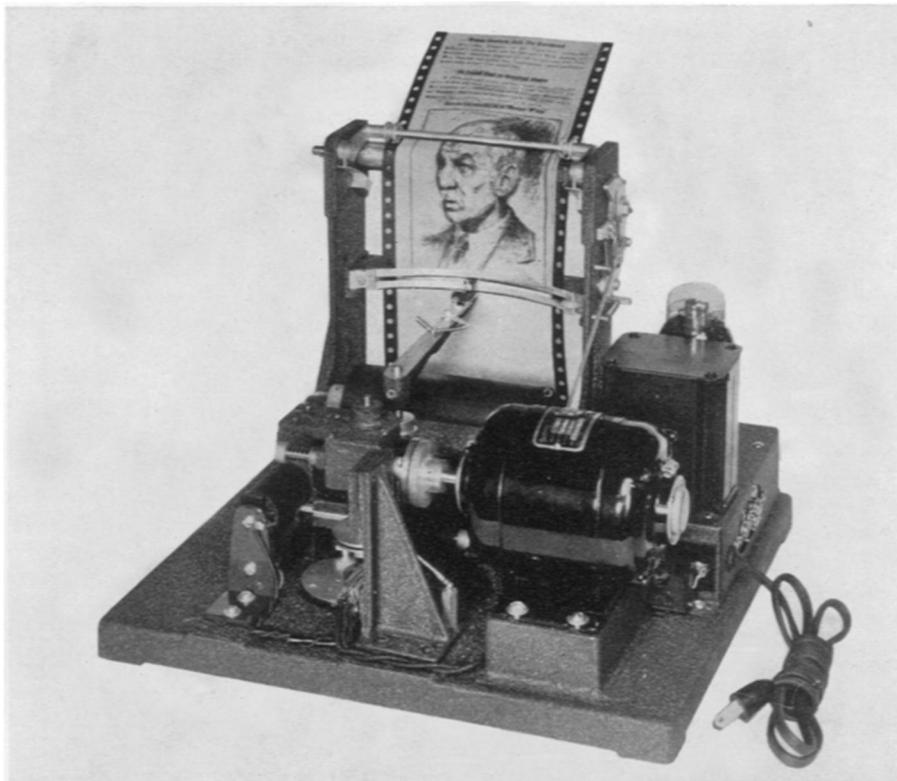
In both systems the cost of operating the device is almost negligible. A roll of paper for ten days' reception, four hours a day, costs only twenty cents. The electric current used to operate the machine is no more than it is for a comparable radio set.

Newspapers Safe

Enthusiastic writers have hailed radio facsimile as the thing which will render the newspapers obsolete. Thinking journalists and radio men alike, however, do not see that facsimile will ever supplant the newspaper.

In the first place the cost of receivers is high. At the \$65 price (which is only being talked about, remember) one has sitting in the parlor the equivalent of an eight years' subscription to a newspaper. For that investment one has a machine which renders no unique service outside of the method of delivering the news. Radio, in contrast, offers the owner of a radio set a service of entertainment which cannot be duplicated in any other equally convenient way.

Moreover, journalism and the modern newspaper is something more than a col-



THE MOVING FINGER PRINTS

This is a Finch radio facsimile set with the cover removed. The paper contains a dry chemical compound which responds to electric impulses by darkening. The motor-driven stylus sweeps back and forth across, carrying a varying current, thereby gradually building up the printed text and illustrations being transmitted.

lection of pieces of paper on which are printed words and pictures.

Behind every newspaper is a complex news-gathering agency. In the editorial office of the paper is the city staff, combing the city and its region for news of direct interest to the local readers. And behind all this stand the great, far-flung press associations, newspaper syndicates and other agencies collecting and preparing news from all corners of the earth.

If radio facsimile for the home wants to go into competition with these powerful existing organizations it will, at last resort, have to build up some equivalent organization.

Few people picture the rise of such radio news-gathering agencies and so it is probable that what finally will result will be an outgrowth of present news-over-radio methods, where there is close cooperation between the press and the radio. As a matter of fact, over half of the more than twenty radio stations which now have licenses to transmit radio facsimile are owned by newspapers. Until the speed of facsimile reception is greatly increased it will not be possible for facsimile to present the bulk

and detail of news which is now offered by newspapers.

Readers of tabloid newspapers who like their news brief, "hot," and well padded with pictures, might be a potential market for facsimile. But one can be quite sure that they will never get their entire wish. They may get brevity and pictures but the sensationalism—either in news or pictures—will meet with the unofficial, but quite rigorous, arm of radio censorship which exists today in aural broadcasting.

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Science News Letter, September 3, 1938

● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following preliminary epicenter:

Wednesday, Aug. 24, 8:27.7 p. m., E.S.T.
East Indies, near southwest coast of Sumatra.
Latitude 3 degrees south, longitude 103 degrees east.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismograph see SNL Aug. 13.