

TELEVISION FAR IN FUTURE AVER THOSE IN KNOW

Intricate Machinery, Cost Of Installation And Problem Of Finding Programs And Customers Obstacles

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NEW YORK—(UP)—Sound broadcasting, the system that brings you the tones of symphony orchestras and public speakers, is simple compared to the intricacies and complexities of television. Even those who know the most about it, men such as Dr. Alfred Norton Goldsmith or Charles Horn, hesitate to describe the process to a layman.

Briefly, however, the system is this. At the transmitting station a scene is scanned by an electric "eye," which translates the lights and shadows of the "picture" into electronic waves and shoots them into the ether. The eye travels at unbelievable speed from the left to the right of the picture, one "line" at a time, and at the completion of one line, drops down a fraction of an inch, to the next line. When it has completed one picture, it returns and does the job all over again. And this, if you please, in a fraction of a second.

At the receiving end, there must be a machine to turn the electrical impulses back into light. This is done by a process too technical for description here, by "cathode tubes."

Mechanical Brush
A strong light, operating in the reverse of the original system by which the scene was picked up, is used "like a paint brush," and "paints" the picture, in black and white, all over again on your screen.

The screen is coated with oxides and other metals which become brilliant when bombarded with the stream of electrons that pour from this "electronic machine gun."

"And when I say a bombardment, I mean just that," said Dr. Goldsmith enthusiastically. "These tiny projectiles bang against the screen at a velocity of thousands of miles a second. As they strike the screen they illuminate it, from left to right and up and down, with the same high lights and shadows of the original scene, but so rapidly that the eye is completely fooled and sees the picture as a whole."

Problems Still Left
That sounds simple, and the process actually is accomplished in laboratory work. But there are a thousand unanswered problems that must be solved before the process can be made commercially thinkable. Some of the problems are in radio engineering. Some of them are purely psychological. Many of them are actually economic, for television, to meet the same standards and entertain the same number of people who now enjoy radio, would require billions—not millions, but billions—of dollars.

A coaxial cable, an inch or so in diameter, must be built for transmitting pictures across the country, in order to provide the 1,300,000-cycle band required, and such a cable is now only in the process of experimental construction. Or, alternately, hundreds of repeating stations must

be made to dot the country at 25-mile intervals. Both are costly.

The first receiving sets will necessarily be expensive, how expensive the radio engineers hesitate to say. But they are actually five receivers in one. One receiver is for sound, another for the picture, a third for "line reflection" (which swings your electronic machinegun or paint brush back and forth over the screen), a fourth for "vertical deflection," (which swings the paint brush downward from line to line), and a fifth for "background control," which takes care of regulating the dark greys, the light greys, the high lights and the shadows of your picture.

Big Investment
Let us suppose, for instance, that these first sets, two, three or four years hence, will cost \$500 apiece. Ten million of them would mean that the public would have to dig up \$5,000,000,000 to buy them.

"And that, together with the millions that would have to be put into construction of the sending apparatus," said Dr. Goldsmith, "would be a major economic operation that would stagger even Washington!"

The sets would have to be serviced by a newly trained army of radio experts, who would be "engineers" rather than repair men. The layman couldn't throw a wire out of his window and proceed to pick up television. Nor could he fumble around with the insides of a machine carrying a tremendously high voltage. The machines will be safe, of course, and fool proof. But the handy-man-around-the-house won't be able to fix them if they go wrong.

\$50 Tubes
Tubes will cost as high as \$50 apiece, and that is no inconsiderable sum when the possibility of setting the whole system junked in a year is brought to mind.

Then there are other perplexing questions. Where will the material

for television broadcasts come from? Hollywood today spends \$1,500,000,000 annually to put out 500 hours of entertainment—one-tenth of the material necessary if television is to become half as successful as radio. There will have to be a new technique in television writing and acting. There will have to be new stages and new stage-lighting engineering. There

will have to be new costume technique.

"And if the attitude of the average 'looker' is that of the average radio listener, the engineers say, the criticism of programs will be terrific."

Program Perplexities
What kind of programs, then, will be offered? Will the public be able

to concentrate its attention and focus its eyes on the screen for any considerable period of time? When you look at a television picture, you won't be able to play bridge, as you do when the sound-radio is going. In the first place, the room will be in semi-darkness. In the second place, the ear, which is not directional, can pick up sounds even if you're in the

kitchen, mixing a highball. The eye can't pick up anything at which it is not directly focused.

There's a big job ahead for everybody, therefore, and that includes radio engineers, electronic experts, psychologists, and craftsmen in the field of public entertainment.

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