



The radio-television controlled plane (shown at right) sends the television impulses down to Earth, where observers before six screens, pictured above, can look into six directions at once. As the plane has no crew it is wholly directed by radio. Wherever it may be, the distant ground radio observers and operators can follow the plane visually at all times. It can be destroyed in flight so it will not fall into the hands of the enemy, should such a decision become necessary.

Here we see the television-controlled plane in flight. It has no crew, but is entirely directed via radio and distant sight, by the ground crew, shown in the illustration at left. Here we see the plane engaging fighter planes deep in enemy territory. If necessary, such a plane can deliver atomic bombs without risking lives. Note the smoke screen.



# 40 Years OF TELEVISION

By HUGO GERNSBACK

**W**HEN I wrote in December, 1909, what was probably the first technical television article to appear in print—"Television and the Telephot," for my former magazine, *MODERN ELECTRICS*, even I did not foresee all the coming wonders of television. As I write these lines almost 40 years later, television has finally arrived—after many false starts.

For the first television magazine in print, *TELEVISION* (published by me in 1927), I wrote editorially the following paragraph:

"What the public demands is *sight* by radio, an apparatus to be attached to your radio set, whereby it will be possible for you to see what goes on at the radio station, in the studio or elsewhere, wherever sight is to be broadcast. Thus if the president speaks at Washington, in the future, we shall have a television transmitter in Washington also, which will transmit the visual impulses while the president is speaking. The entire country will, then, by listening to the president, also be able to see him. The same will be the

case when two prizefighters meet in the ring, when the public will be enabled not only to hear, but actually to see what is going on."

All very commonplace today. Yet in 1927, only 21 years ago, television was still crude—a laboratory curiosity, a whirling disk with images of postage-stamp size, with little definition and clarity. Our present cathode-ray-tube receivers and modern television broadcasting were at that time far away in the distant future.

### What of the future?

Television receivers will become much cheaper for some time to come. For the past 15 years I have insisted in my various technical articles that television will never be as popular as radio until the masses can afford it. That means good television receivers from \$50 up. As recently as two years ago I was roundly denounced by many leaders in the industry for my temerity in publicizing such heresy. (Remember that at that time no receiver sold below \$250.) Yet today there are receivers selling for \$99.50 list price. The \$50

tele set is not far off. Mass production plus the new automatic robot radio and television set builder, with appliqué circuits in the offing, will help to bring prices down.

### Color television?

It is still in the laboratory, but nearly all the problems have already been solved. In three to four years electronic color television will be here—if the public wants it.

### Stereoscopic television

This is also in the cards in the not too distant future. It can be realized better and sooner than stereoscopic movies. When we look at a person in real life we see him *in depth*, because we see him at a slightly different angle with each eye. When looking through the old-time stereoscope, we look at two photographs simultaneously. Now people, trees, buildings, seem to stand out in relief—they look real, not flat like a picture. Future television will be a thing of great beauty—no flat lifeless images but *reality itself*. We will still have a single screen but there will

**Television is Booming—Cash in on it!**

RADIO-ELECTRONICS for

be two images, slightly out of phase. But you won't see this, because there will be a special finely grated optical film covering the television screen. This optical differential-grating film combines the two images into a single one. You will see the end result—a perfect illusion of real life—stereoscopic television.

What is more, eye strain will probably be much less with this means of seeing higher-fidelity images.

### The radio-television plane

The radio-controlled television plane was one of the first guided missiles which I described in the November, 1924, issue of *THE EXPERIMENTER*. This is a plane for war purposes. It carries no living human being and, thanks to television, can be steered entirely from the ground. It carries a short-wave television transmitter and six viewing lenses. Therefore it can "see" into all six directions: east, west, north, south, up, down. Its television impulses are sent to headquarters, where an observer views a large screen divided into six spaces. Sitting at a keyboard the observer and his assistants can control the plane far better than a single pilot or even two pilots who can't look into six directions *at once*.

If an enemy plane approaches, or if a mountain must be flown over, the ground operator can guide the plane readily. Bombs can be released exactly over the target, smoke can be released by the plane to hide it. It can be equipped with guns to shoot down enemy planes, etc., etc.

Today all this is no longer fanciful. *The television controlled plane is here.* It is sure to be used in World War III—it is a terrible instrument for attack. *It is THE ideal instrumentality for delivering atom bombs.* As it carries no live crew, long chances can be taken by the distant guiding crew. Instead of a suicide, one-way crew, the television-controlled plane can be sacrificed after its atomic bomb mission, and destroyed by blowing it up in the air. While in flight with an A-bomb, it can be adequately protected so that an unexploded A-bomb will not fall into the hands of the enemy. There are a number of means known to scientists to accomplish this.

And do not let the layman think that the enemy can easily "take over" the control of a radio-controlled plane by "counter-signals." Electronically guided missiles today usually go through to the target—the science of radio-telematics has made vast strides since Nikola Tesla originated it back in the year 1898.

Dr. Lee de Forest, father of radio and inventor of the vacuum tube that made radio possible, in a letter dated November 27, 1944, wrote to me as follows, regarding the television-controlled airplane:

"In 1936 Mr. U. A. Sanabria and I enjoyed a contributory brainstorm and broke into print along the same lines of a television-controlled airplane, but

I had no idea that you had described a similar device as far back as 1924. Yours was indeed an historic prediction."

### Television eyeglasses?

For the October, 1936, issue of my publication *SHORT-WAVE CRAFT*, I wrote an article predicting television eyeglasses. This is an eyeglass frame on which are built two separate miniature televisers. The whole weighs but a few ounces. The images on the two tiny screens are about postage-stamp size, but as the screens are less than an inch from your eye-balls, the small size is no drawback. The dual images, though small, are sharp and clear, exactly as



Television eyeglasses of the future are an adjunct to the regulation television set. A number of such eyeglasses can be plugged into the set. The idea is particularly useful for invalids and for those who wish to relax without having to sit rigidly in front of the television receiver for hours.

if viewed through binoculars. Now you can recline in your easy chair and really enjoy television. Or, in your office you can plug the Tele-Eyeglasses into your regulation teletset; and if you wish to see an important event, you can stay right at your desk, without moving about. If you are ill, in bed, the "teleyglasses" will prove to be a great boon.

Note well that the television eyeglasses are only an adjunct to a regulation television receiver—they are what an extra speaker, or headset is to a radio set. They will NOT be—at least for years to come—a complete self-contained television receiver.

The teleyglasses are merely two tiny, lightweight cathode-ray tubes with two controls for sharpening and properly adjusting the images. We have the technical means today to make teleyglasses—it should not be many years before they are on the market.

### Multiperception

The above was a term I coined in a recent article in which I stated that the worst feature of television is its time-devouring proclivity. But I noted also that the younger generation had learned the trick of going about its work while listening to the radio. Accountants, typists, switchboard operators, students completely immersed in work, actually listen and work hard simultaneously—something older people haven't learned

because they weren't brought up with radio.

Can one look at a television screen and work or read a book at the same time? Certainly. The young generation not yet in its teens will learn to do it readily. How? I give a single example: A pupil learning to play the piano must keep his eye on his notes, and on his hands as well. The eye-ball must constantly move from the notes to the hands—*quickly*. In a few years the pupil has mastered this trick. In addition to the notes, he also learns to read the words of a song *at the same time*. And if necessary he sings too! That's doing *four things simultaneously*—quadruple multiperception.

In television it will work as follows: Already small table-model, portable teletsets are being built; but they will get even smaller, with brighter screens, intensely illuminated, for daylight use. The screens will be inclined at such an angle that you can place the receiver in front of you, on the desk or table, about a foot or eighteen inches from your eyes. Your eyes will shift rapidly from screen to book, back and forward, just as does the piano pupil's—with this difference: eyestrain will be far less, because your eyeball moves through a much smaller angle. Nor will this exercise hurt your eyes any more than those of the piano pupil—eye doctors insist we never exercise our eye muscles sufficiently anyway.

In a year or less your youngster will have learned to study and watch the screen and listen all at the same time—and he will retain all three—his studies, watching the visible action, plus the sound program.



Multiperception, as pictured above, enables one to do two things at once. This the now rising generation will do. The student is studying and watching the television screen almost at the same time. The eyeball moves only through a small angle, as illustrated, from the book to the screen and back.

And now from the sublime to the ridiculous. I have often been asked, particularly while publishing my former magazine *TELEVISION NEWS*, what new and better terms we could coin instead of the inadequate *televviewer*, *televviewing*.

Well, here is a list I once made up. Make the most of it!

Telogler—telogling.

Telooker—telooking.

Teleseer—teleseeing.

Teleerer—teleering.

Telepeeker—telepeek, telepeeking.

Telegazer—telegazing (not to be confounded with telegeezer!)