

composite view does not appear as a flat photograph, but gives the observer the impression that he is looking into the actual scene itself. The illusion is very striking.

#### A DOUBLE TELEVISION IMAGE

By applying the stereoscopic principle to television, it has now become possible to transmit television images with all the appearance of depth and solidity; and, by a further combination of colored television with stereoscopic television, the complete illusion of images in natural colors, and with depth and solidity becomes possible. All this has recently been demonstrated in the Baird laboratories.

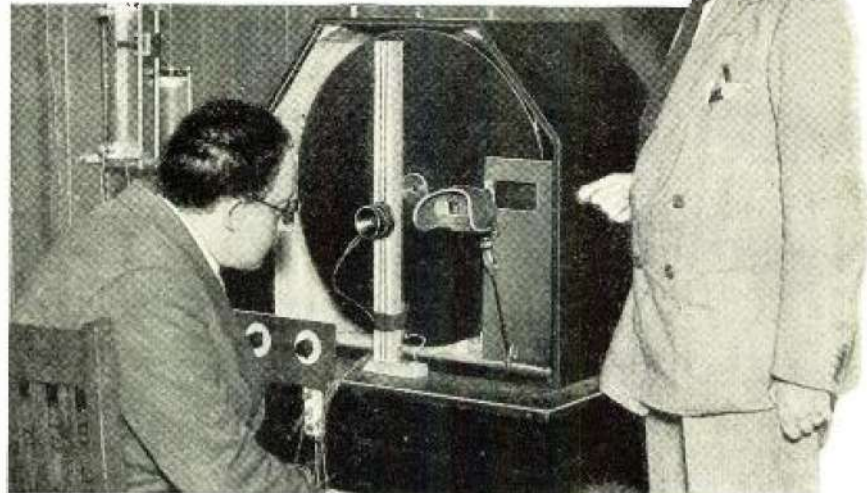
The transmitting apparatus consists of a disc, perforated as shown in Fig. 1A with two spirals; the first spiral being arranged round one-half of the circumference of the disc. The other spiral occupies the other semi-circumference, about four inches further in; the separation corresponds to the distance between the eyes of a human being.

Behind the disc, when it is mounted in the transmitter, as shown at the left of Fig. 1, is arranged an intense source of light. In front of the disc, and in line with the light-source, a lens is placed in such relation to the disc that a spot of transmitted light is caused to traverse the object. This arrangement is duplicated, so that each spiral has its lens and light-source; thus, two light spots traverse the object alternately, and two images are transmitted, one for the left eye and one correspondingly for the right eye.

At the receiving station a similar device is used, as indicated at the right of Fig. 1. A disc with the same arrangement of holes runs exactly in step with the transmitting disc; but behind the receiving disc is a neon tube, arranged as in ordinary television. The neon tube, however, covers both spirals and illuminates them alternately; so that on the receiving screen appear two images side by side, and separated by approximately half an inch. One of these corresponds to the object as seen by the right

Mr. Baird (right) is here shown demonstrating his "stereovision receiver." The familiar eyepiece with its twin prisms is at the right of the apparatus; the Baird receivers "frame" the image at the side of the scanning disc instead of the top. The microphone in front of this receiver is for communication with the transmitting room.

Photos © Photopress



eye, the other to the object as seen by the left eye. These images are then viewed through a stereoscopic viewing device, consisting of two prisms, which cause the images to converge and blend into one, just as in the ordinary stereoscope for photograph viewing.

It may be of interest to note that this stereoscopic viewing device is really unnecessary, and those who have the knack can make the images blend without the use of prisms; merely by looking fixedly at the images, and concentrating, by an act of will, the left eye upon the image at the left and the right eye upon the other. This is, in fact, the method used by most experts in stereoscopy. They seldom use the stereo-

scope, but rely upon the naked eye; in much the same way as a user of the microscope keeps both eyes open, but still sees only the object under the microscope. The eye which is not looking through the microscope is sub-consciously rendered, as it were, blind.

Professor Cheshire, lately president of the British Optical Society, who was present at these demonstrations, stated that a man sitting at the transmitter was very clearly seen on the receiver in another laboratory in the same building, in perfect relief, showing the facial delineation and expression; and declared also that these experiments promise considerable development and importance in their practical application.

## Televentures, Telewitticisms and the Televocabulary

WITH the first public demonstration of successful television, on however modest a scale, the press has taken up the task, in a spirit of humor blended with seriousness, of accustoming itself and its public to the new conditions which must be met. As with the telegraph, the telephone, the electric light, the moving picture, the airplane and the radio broadcast system, all of which have successively emerged from the laboratory in an unperfected condition, to develop into public utilities of the most commonplace nature, so it is to be with television.

A certain amount of gibing at the present unperfected nature of the invention alternates with half-serious prophecy of what it will be when it has reached its fullest growth; in many cases, no doubt, the reality will outrun the joke.

"Moving pictures by radio," remarks H. I. Phillips in "The Sun Dial" of the *New York Sun*, "are soon to be a household commodity. The time may come when every radio set will carry a chart giving Charlie Chaplin's wavelength, the number of kilocycles it takes to get Tom Mix and the right type

of bulb to use to give perfect reception to Douglas Fairbanks."

"Probable complaint to radio service station: 'This set you sent me is no good. I can't get Famous Players or Metro-Goldwyn.'"

"The owner of a two-bulb set soon will be able to get everything a picture house can offer except the ultra-polite ushers, the lobby statuary and the liar outside the box office who tells you there are 'plenty of good seats inside.'"

"The radio is making it more and more unnecessary to leave home for diversion. All that is needed now is announcement from some genius that he has found a way for the family to make its week-end automobile trip by radio and for all men to go to work by television."

#### THE INVENTOR'S CHANCE

More conservatively and sedately, as ever its editorial wont, the *New York Times* looks at the present experimental stage of the art:

"Probably the tinkering televisionary will never be as ubiquitous as was the 'listener-

in' in the heyday of home-set building. The construction of a television apparatus in the garret demands an equipment and a skill beyond the average amateur. At best the 'televised' images must be coarse and barely recognizable, with an almost uncontrollable tendency to shift from the screen. It must not be forgotten that the brilliant demonstrations by the American Telephone and Telegraph Company were possible only with the aid of a score of trained engineers who knew their technical roles as well as the actors of a theatrical company know their lines. 'Fading,' one of the hughears of radio, causes unpleasant distortion of the image, and so does poor synchronization of the transmitting and receiving apparatus. Radiation of faces on a lavish scale is at present a technical impossibility because each television transmitter requires an excessively wide channel in an ether already overcrowded.

"Clearly, the development of television belongs to the engineer. British and German authorities view his task with misgivings and even doubt if it will be possible

(Continued on page 466)





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RADIO TUBES

## How to Make Your Own Television Receiver

(Continued from page 425)

hook-up, incidentally, it is a good idea to shunt the glow-lamp by a 0-10,000-ohm variable resistor; this resistor should be so set that the tube lights nicely when there is no incoming signal. The 171A draws about 20 milliamperes, which is the normal load limit of the glow-lamp; so the combination works out very happily.

### TRY YOUR LUCK

Remember that television as we have it to-day is very crude. Do not expect perfect images, and do not forget that television on 5,000 cycles was, until only very recently, held impossible altogether. Experiment with the

To receive the Jenkins radio movies, on 46.7 meters, you can use this same apparatus with the disc speeded up to 900 r.p.m. These "movies" are black and white silhouettes, usually of a little girl bouncing a ball, or playing with a dog.

Next month we will publish more television "dope." Meanwhile, try your luck with this receiver; you will have a lot of fun with it.

Drilling layout of the 24-inch disc used. A full-size template accompanies the blueprints—if you wish to try your luck making your own.

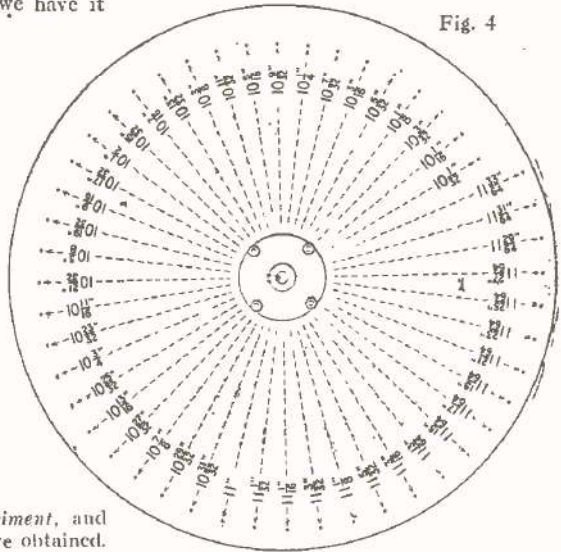


Fig. 4

neon tube and the motor's speed and try different output arrangements. Try putting an ordinary reading glass in front of the images, as shown in the cover illustration, and see if you can magnify them. Experiment, and let us know what results you have obtained.

READERS will find interest and probable profit in the article, "How to Build the 'S & I' Television Receiver," in the November issue of SCIENCE AND INVENTION Magazine. This receiver may be readily built upon a fan motor, like the experimental set-up described in RADIO NEWS for September; and employs a very simple, but ingenious, visual ("stroboscopic") method of determining its speed and obtaining synchronism.

## Televentures, Telewitticisms and the Televocabulary

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within a generation to broadcast to a whole nation such sights as a Reinhardt 'Miracle' or a tennis match. The optimistic American regards the surmounting of obstacles as the very essence of invention, and rightly. One has but to read the Federal Trade Commission's examination of radio patent monopolies to learn of the romance that lies in vaulting over technical obstacles—of fortunes paid to young engineers who made it possible for a farmer in carpet slippers to enjoy the Philharmonic Orchestra better than in a hard-boiled shirt in Carnegie Hall. To an inventor of imagination the difficulties that now beset the commercial realization of television are glittering opportunities, and it is in that spirit that they will be conquered."

### WHAT OF THE DICTIONARY?

With the vocabulary of even radio broadcasting quite out of the hands of the engineering profession, what is the puzzled maker of dictionaries to do about the new words which the art of television will require? The "glow lamp" and "scanning disc" may be soon used only in the past tense; but what shall we call the apparatus required for the transmission and reception?

Will both be "televisors"? And if not, which?

"Television" is a word on which the language sharps look askance; like "automobile," it is a hybrid—half Latin and half Greek—and the public has even less Latin than the Bard of Avon, and no Greek. The editor of RADIO NEWS, before the days of broadcasting, coined "television," and suggested for the apparatus "telephot," which is a better word from the dictionary standpoint than "televisor." Will we use "photos" or "visors"? An English writer has hinted of "teleopsis" and "teleoppers," to be shortened into "'oppers"; but this seems to lack the necessary seriousness to convince.

What will be the title of the operators? We have "radiotricians" as specialized electricians; we will need a word of the weight of "televisticians," which may do for the present. But a "visionary engineer" seems impractical.

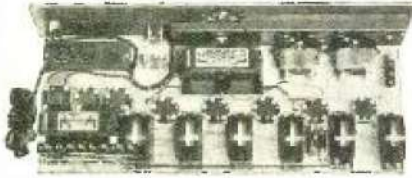
Television transmissions require modulating frequencies, increasing with the size and detail of the image. While small figures suitable to the experimental receivers of the day are being reproduced from audio frequencies, the larger images of tomorrow will require wider bands and special amplifiers. These will be specially designated: "image-



# The New Victoreen

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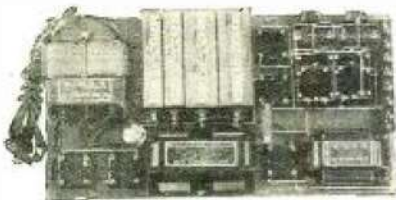
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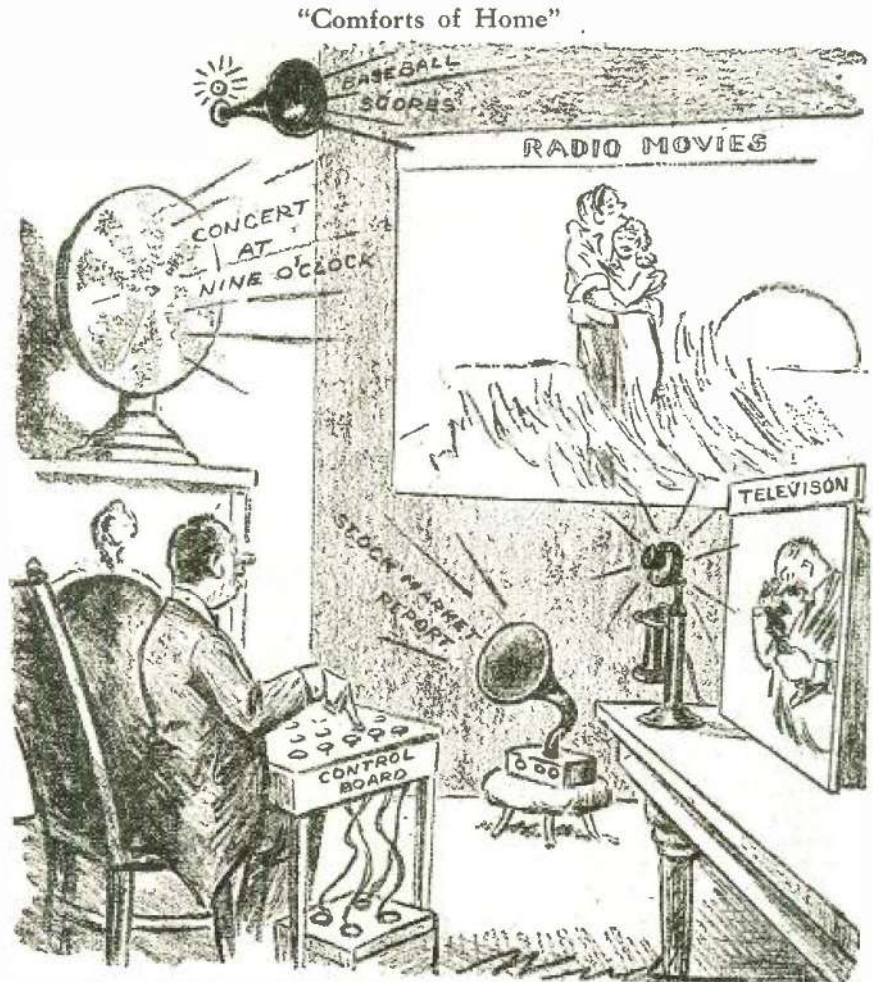
# Victoreen

Quality Radio Parts

frequencies" seems most logical, but the "I. F." of the superheterodyne is already too well established. Perhaps we shall have "T. F." amplifiers for television frequencies. It is too early to start on the task of standardizing the vocabulary; but we must have an eye to the future and see that the newcomer in radio is not saddled with names that will be a burden in days to come. We must have, O philosophers, a new "teleology."

Mr. H. Gernsback, editor of this publication, while addressing an audience at the New York University, at the occasion of

WRNY's television inauguration, perhaps had in mind all this and more, when he stated that he could not refrain from beating the newspaper columnists at their own game when he suggested that hereafter, we will call an inventor, not "visionary," but rather, "televisionary." Also, that we will not talk of a beautiful "vista" any longer, but it will, of course, surely be a "televista"; and, that certain females who are now called "perfect visions," are, of course, to become "perfect televisions"; and that finally, there will, of course, be a great many "televisecracks."



—Clive Weed in New York Evening World

Radio fans will see that the number of sound reproducers is somewhat too large; and the television will probably be of a later model. But the idea is clever, even though the "Television" is one's!

## "C" Voltage Depends on "B" Voltage

WHEN "B" batteries are used to supply the plate current for a receiver, listeners are cautioned to watch the voltage of the batteries and to discard them when the voltage of each 45-volt block runs down to about 34 volts, or when that of each 22½-volt block runs down to about 17 volts.

Fans who employ "B" batteries therefore usually test them at regular intervals to determine whether the batteries are still good for further service.

A matter of vital importance which is often overlooked, however, is that of providing a proper relation between the grid-bias voltage and the plate voltage.

It is generally known that, while "B" bat-

teries run down with usage, the "C" battery will last for the entire life of the battery without any appreciable loss of voltage.

This means that when the "B" batteries are new, the proper grid bias is being used for best results; but just as soon as the "B" battery voltage begins to decrease, the grid-bias voltage is greater than is needed for the lowered plate voltage.

In such cases, if the grid-bias voltage is reduced in proportion, as determined by consulting the tables showing the proper plate voltage-grid-bias voltage characteristics of the tube, the amplifying efficiency of the tube can be maintained at a high level in spite of lowered plate voltage from the "B" batteries.

Please say you saw it in RADIO NEWS