When Might We Expect Television?

The Present Position Reviewed

(By EDGAR H. FELIX)

The subject of television is one that constantly claims the attention of all who are interested in the progress of radio. From time to time reports appear stating that television is an accomplished fact, and in view of these, Mr. Edgar H. Felix, expert consultant engineer of the Radio Broadcasting Company, has conscientiously examined the claims made by various interests, and this article, the result of these investigations, can be accepted as an authentic review of television as it is.

THE drama is so predominantly the portrayal of human emotions and conflicts that we rarely accredit the influence of mechanical and electrical inventions their full share. Yet numerous devices of science have affected the progress of the drama no less significantly than our ever-increasing knowledge and experience with dramatic structure. As competition undermines public support, the drama must inevitably slow down in artistic progress. Hence we may consider the coming of television as a dangerous threat to the future of the legitimate stage.

How will the stage withstand the competition of a synthetic dramatic performance delivered by radio transmission into millions of homes? It is not difficult to foresee the destruction of the drama, the rivalling or superseding of the motion picture, and the complete alteration of human needs for group entertainment through the perfection of television!

Already radio broadcasting has brought an element of the drama into the home. Radio suffers an obvious disadvantage because the visual element, so highly developed in modern drama, is totally lacking in home reproduction. The home motion picture which, conversely, offers the visual elements of dramatic performance without the aural, has progressed slowly because of high cost and inconvenience. Home talking motion-picture reproducers, combining both the visual and aural elements, are already available, but these devices are even more costly and somewhat more complicated to operate than the home motion pictures without speech. All these devices, then, are either deficient in performance or too costly to offer dramatic entertainment in the home directly competitive with that of the theatre.

But television promises to relieve us of all of these difficulties and imperfections. It will provide the missing visual element to the dramatic entertainment which already comes to us through the radio loudspeaker. It represents the delivery of a synthetic counterpart of every important element of the drama into the home with an apparatus no more difficult to operate than a broadcast receiver. This, at least, is what the proponents of that art would have us believe.

THE effect of television on the drama depends largely upon the simplicity, economy, and technical perfection attainable in home reproduction. Only if the disparity between the realism of home reproduction and that attained at the average sound picture theatre, is really substantial, will television represent anything less than a complete revolution in the relation of the drama to the general public. It is, therefore, relevant to inquire into the capabilities of modern television devices and their prospective development. I am glad to say at the outset that such an investigation leads us to take vastly more hopeful view of the situation, for few would deny that the further undermining of the economic position of the drama would be little short of an artistic catastrophe.

Recently I had the pleasure of witnessing a demonstration of what I consider, after visits to the most famous television laboratories in all parts of the United States, the most highly-developed television apparatus in existence. This extraordinary device, developed by the Bell Telephone Laboratories, reproduces in full colours, faithfully and vividly, the scene enacted at the originating point. To add the element of sound reproduction, perfectly and automatically synchronised with this colour television, represents no technical problem at all; it is merely the application of existing devices in a perfectly conventional manner.

A snapshot taken at the recent very successful garden party given by Aunt Pat to the radio children of 3YA. The centre of interest is a large cake specially decorated with models of the towers of 3YA. Every child present at the party received a piece of the cake. The garden party was held in the grounds of Dr. Robinson Hall.

The Bell system device was recently set up for public demonstration in the auditorium of the Bell Telephone Laboratories at West Street, New York City, in order that representatives of the Press might view its latest accomplishment, the reproduction of colour. Dr. Frederick K. Ives, the presiding genius under whose direction vast research facilities were marshalled to produce this device, invited me behind a dark curtain, arranged somewhat like that in a photographer's developing room. I peered through a slit wide enough to enable me to look through with both eyes. About two feet before me in the blackness stood out a brilliant image in a frame about two inches square, the head and shoulders of a young lady who smiled graciously, as if to a vast audience. All the bright colours of her Spanish costume showed up vividly. In spite of the small size of the peephole image, she appeared life-like and animated. I watched her, fascinated, as she picked up various brilliantly coloured objects at the command of Dr. Ives, who directed her through a telephone circuit. It was not difficult to distinguish a red, white, and blue beach ball, a book, a magazine, an orange and a bouquet of flowers. Two persons, standing closely side by side might even have been accommodated on the miniature screen, although the reproduction of persons in full length would undoubtedly have involved so much sacrifice of detail that the features and expression of the faces would have been unrecognisable.

Indeed, a marvellous creation of the laboratory, this television machine; to the engineer, a technical mavel; to the layman, an amazing curiosity, but with less entertainment value than the first penny peep shows. Details of facial expression were difficult to observe; background was quite indistinct; a slight but none the less annoying flicker was present; altogether it was a delicate device which required the constant and attentive nurture of the skilful engineers and laboratory workers who had created it.

Obviously the device is a predecessor, an opening wedge, revealing the promise of the future, but wholly impractical for use outside the laboratory.

I will not attempt to describe the elements comprising this machine or combination of machines. The engineers who developed it have done that in a series of technical papers which appeared in the Bell System Technical Journal in October, 1927, a hundred pages of technical facts, diagrams, and illustrations. Since that tome was written, the element of colour now supplements the conventional home motion picture projector by a slight alteration of the projector.

WOULD you like one of these television reproducers in your home? Assuming that television broadcasts are available to you, then make room for a series of panels reaching from floor to ceiling, which comprise the control equipment for this marvel of science. As you watch a single person do his or her antics on the diminutive screen, a staff of two or three engineers will scurry about, watching meters, adjusting every element of this highly complex electrical maze. The installation will be no more incongruous in the quiet of your home, and no more costly to purchase or maintain, than a broadcasting transmitter, an automatic cigarette making machine, or a recording seismograph.

TELEVISION, like every system of wire or radio communication, whether of code signals, speech, or photographs, consists of breaking down the subject matter to be transmitted into a series of electrical impulses. The microphone of the telephone and radio converts sound waves into a succession of electrical impulses, counterparts of the sounds themselves. The telegraph operator reduces the message you write on the blank into a series of characters which have the significance of letters of the alphabet to the operator at the other end. With television, the visual subject matter, scenes or picture to be sent is broken down into a series of image areas arranged in an arbitrary order. A signal or impulse sent through wires or by radio successively describes the light or shading of each of these areas. The greater the number of these image areas, the greater the detail and clarity attainable in the reproduction.

Reproduction consists of reconstruction of these vast numbers of impulses or impressions by using them to control a pattern of light arranged exactly like that analysed at the transmission end.

To secure an image a little larger than two inches square, such as I observed in the Bell Laboratories, no fewer than 44,250 impulses or shading impressions are electrically observed, transmitted and reproduced every single second! In addition, synchronising signals are required to assure that each of these enormous numbers of light impressions are properly placed on the reproducing surface. When you appreciate the marvellous