

# THE USE OF TELEVISION IN MEDICINE

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With the need for training thousands of men in radar and electronics, Captain William Eddy, Chief of Education for the Navy, realized that visual aids were necessary to cover the prescribed instruction in the time allotted him to prepare men for the Navy. He used every available visual aid to shorten the study periods and, without doubt, produced the greatest number of acceptable technicians ever trained in history. It was his interest in visual aids which stimulated the use of a special kaleidoscope for the correction of central visual defects and the improvement of vision in low grade myopia, thus aiding affected men in passing the required vision tests. In consultation on the use of television some four years ago, we both felt it was a readily usable adjunct in the field of surgery and have since been devising means of using it in teaching.

With the advent of a new camera recently constructed by R.C.A., it seemed feasible that a small portable unit could be constructed for use in the average operating room. For some time we have been working out the problem in the main studio of Paramount, the State Lake Building, Chicago, Illinois, with the assistance of Mr. Richard Shapiro and Mr. John Krimp, expert technicians for television. We worked with various types of lenses that would be necessary to televise the operations. In the home studios we used the long-focus narrow-angle lens; however, this lens was not available for the work at Cleveland Clinic, and we accordingly substituted one of the shorter focus lenses.

When the equipment arrived in Cleveland it was installed by Mr. Shapiro and Mr. Krimp. Several eye operations were televised, as were operations on the ear, neck, abdomen, and other parts of the body. It was felt that the black and white telephoto lens gave great contrast and detail and was entirely satisfactory for the operations about the head. With the use of longer focal lenses deeper cavities can be brought into view and the observer of the television screen sees the operation much more clearly and distinctly than does anyone else, including the first assistant; all save the operator himself are given a much better view than heretofore thought possible.

The apparatus was brought to Cleveland in the hope of learning the essentials for good observation of the procedures. We learned that with black and white, extreme illuminations are not essential. The ordinary operating room lights are sufficient, and the detail can be brought out by the proper lens in the camera. The operative area must be properly

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framed or placed in the field and care taken that it is not shifted out of position by injudicious movement of the patient. Care must also be taken by the operator to avoid projecting his hands or head into the field of the lens. With a variety of lenses of various focal lengths it is possible to show the general operative field and then to swing to the telephoto lens for detail. Recently we have tried out various types of filters which further enhance the contrast and bring out greater surgical detail.

In our experience we have been able to televise certain surgical procedures to a group of visiting clinicians, who were amazed at the clarity in the operative procedures. As the apparatus was combined with a loud speaker, a running commentary of the surgery could be given and all details of the operation were described. This in itself was a worth-while feature. We were fortunate in having the expert technicians under Captain Eddy's guidance so that our original attempts were not too amateurish. I am convinced that the surgical amphitheater is doomed and that, except for the occasional visitor in the operating room, the spectator will see more and be more at ease watching surgery on the television screen. He will see it better, larger, clearer, with better definition, and with more detail than heretofore thought possible.

Just a word of caution. The movements of the operator and assistants are magnified as much as the rest of the surgical procedure. It is well to remember that although the view of the surgery is enhanced tenfold, minute technical errors show up glaringly on the television screen; lack of ordinary technic, lack of proper use of the hands, sponging, suturing and the rest, all are magnified by contrast and detail. This is also true of the comments made at the time of operation. Statements made over the loud-speaker are received and coordinated with the surgical procedure, and care must be taken that they are accurate. It is now possible to record on the film the television image as it is also possible to record the speaking voice so that one can both televise and record operations by using this apparatus.

It is my belief that, because of its educational possibilities, there are no limits to the future of television. Its growth will be just as rapid as apparatus can be made available.