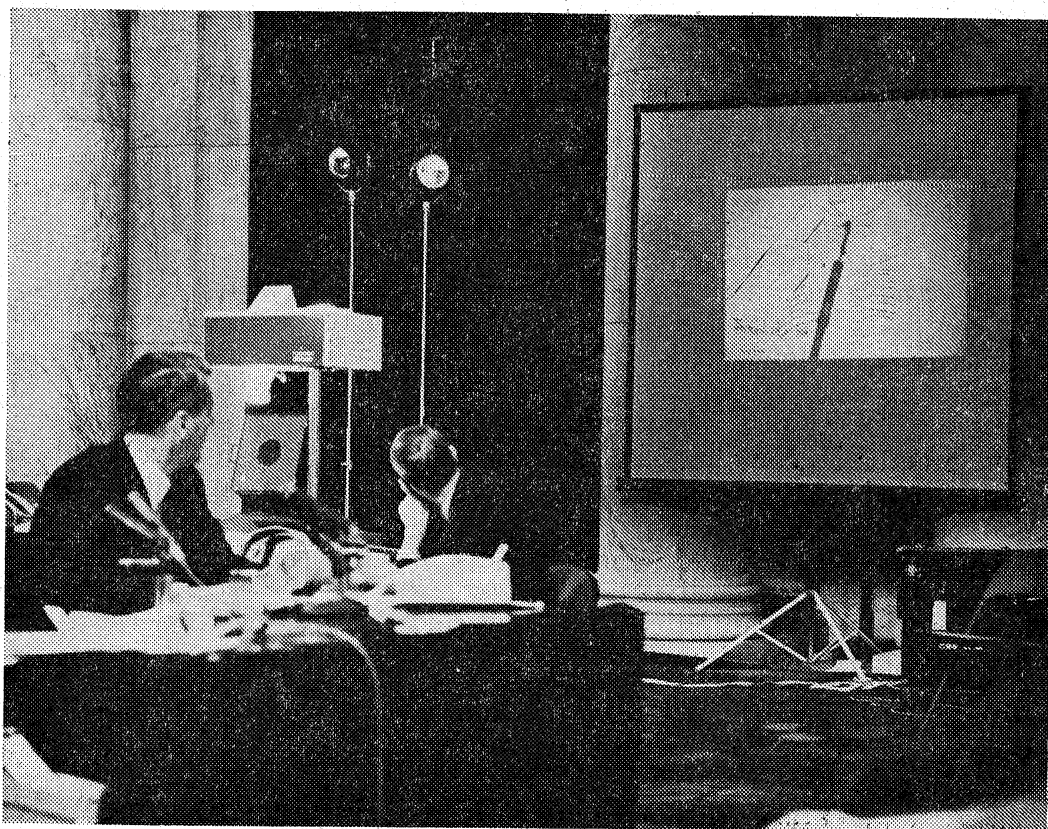




radiation damage to the surrounding healthy tissues on the way to the lesion.

In order to approach this problem comprehensively, taking into full consideration the structure of the body, it has been necessary to go to automatic computers.

The treatment planning procedure includes taking the patient's contour in relation to the size and position of the cancer and constructing dose curves which describe the extent to which the X-ray beams is attenuated as it passes through various tissues. If it is planned to direct the radiation beam from several different angles, the amount of radiation delivered to any given tissue must be calculated accordingly.

Now, another approach to the same situation, again assuming that we have a lesion in the lung, would be the actual physical implantation of radioactive sources within the patient. This would involve a surgical procedure by the radiation therapist in which radioactive needles are physically implanted in the tumor.

If this were done according to any particular pattern, a specific distribution of dose could be achieved. But just as in the previous case where external radiation was employed, it is particularly important that this patient receive the actual distribution of the radiation of dose as planned by the therapist.

These are the two methods which are generally employed, both of which require accurate computation.

We have indicated the objective of what we call realistic treatment planning. This is essentially with the necessity of taking into consideration the inhomogeneous structure of the body.