These experiments clearly showed that the very penetrating rays had traversed the 6½ inches of tissues.

However, it does not follow that because the rays traverse an organic tissue of such thickness they must necessarily act therapeutically on all their way through these tissues; in fact, we will see that a therapeutical action is only in proportion to the amount of rays which reaches a special spot; and it must be understood also that each layer of cells cuts off a certain number of rays, so that the deepest layers receive but a very small amount of rays.

As the patient underwent an operation for the removal of the breast on the sixteenth day after the 48 hours application was completed, we were enabled to make a histological examination of the tumor, in order to ascertain what changes had taken place in the cells, and at what depth these changes were observed.

This photograph was taken just before the operation. Observe the difference in the size of the breast, which has diminished in size during the sixteen days so that it now measures only 5½ inches in diameter. Instead of one hard, homogeneous mass, distinct hard nodules could be felt.

After the breast was removed we cut it through the middle in the same direction as the rays traversed it. Here is the photograph of this section.

The arrow shows you the direction of the rays. The apparatus had been placed at A and directed from A to B. You can see a large burn on the surface, and farther, you at once observe a very decided difference in appearance of the cancerous tissues which lay directly in the path of the rays and those which were beyond them.

The former are hard and smooth, somewhat sclerotic tissue; the latter are greyer and softer and have an encephaloidic character.

For the histological examination, sections were taken from a cancerous gland of the axilla, which had not been irradiated and from the breast tumor at different levels, namely ½, 3½ and 5½ inches.

Here is a slide which shows with slight magnification both non-irradiated and irradiated tissues at the depth of half an inch. The nature of the cancer is an atypical lobulated epithelioma. You can see at the first glance, by comparison, that the amount of the connective tissue stroma has increased. This connective tissue penetrates into the epithelial lobes and separates them. It contains newly formed nuclei, which you will see more clearly in the more highly magnified section which I will now show you. The