

IC 2269 EXPERIMENTAL TELETHERAPY. F. V. Thomas (Oak Ridge Inst. of Nuclear Studies, Inc., Tenn.). Contract AT(40-1)-Gen-33.

The objective is to find methods of improving the radiocurability of cancer.

Many ideas require clinical trial including fundamental questions on the mechanism of radiation injury. Advances in radiation therapy offer one of the major hopes for salvage of certain kinds of cancer. Transplantable rat tumors are used for accumulating basic evidence such as the relative radiosensitivity of tumors and normal tissue treated under anoxia. Clinical trials with  $^{60}\text{Co}$  teletherapy will be made in selected cancer patients. For example, probably the first patient ever irradiated with willful interference with the blood supply was one with extensive squamous cell carcinoma of the left maxillary antrum. To achieve anoxia of the tumor, Jacobson cuffs were applied around each external carotid artery and were inflated during each treatment. The tumor showed good immediate response, but several complications occurred during treatment. Even so this trial showed that the procedure is feasible. A second example concerns the mechanism of effects of local splenic irradiation in patients with chronic myelogenous leukemia, which has never been explained. Does irradiation directly destroy or inhibit the proliferation of the many leukemic cells in the spleen, or is something peculiar to the spleen (hormal) activated by irradiation? Two patients have been given 500 r to spleen and liver. One patient showed not hematologic changes when the liver was irradiated, but a profound fall in circulating white blood cells occurred after irradiation of the spleen. The other patient responded to liver irradiation in a way undistinguishable from the changes occurring after spleen irradiation; in both instances the peripheral white count went from about 100,000 to 20,000 with a fast return to pretreatment levels.