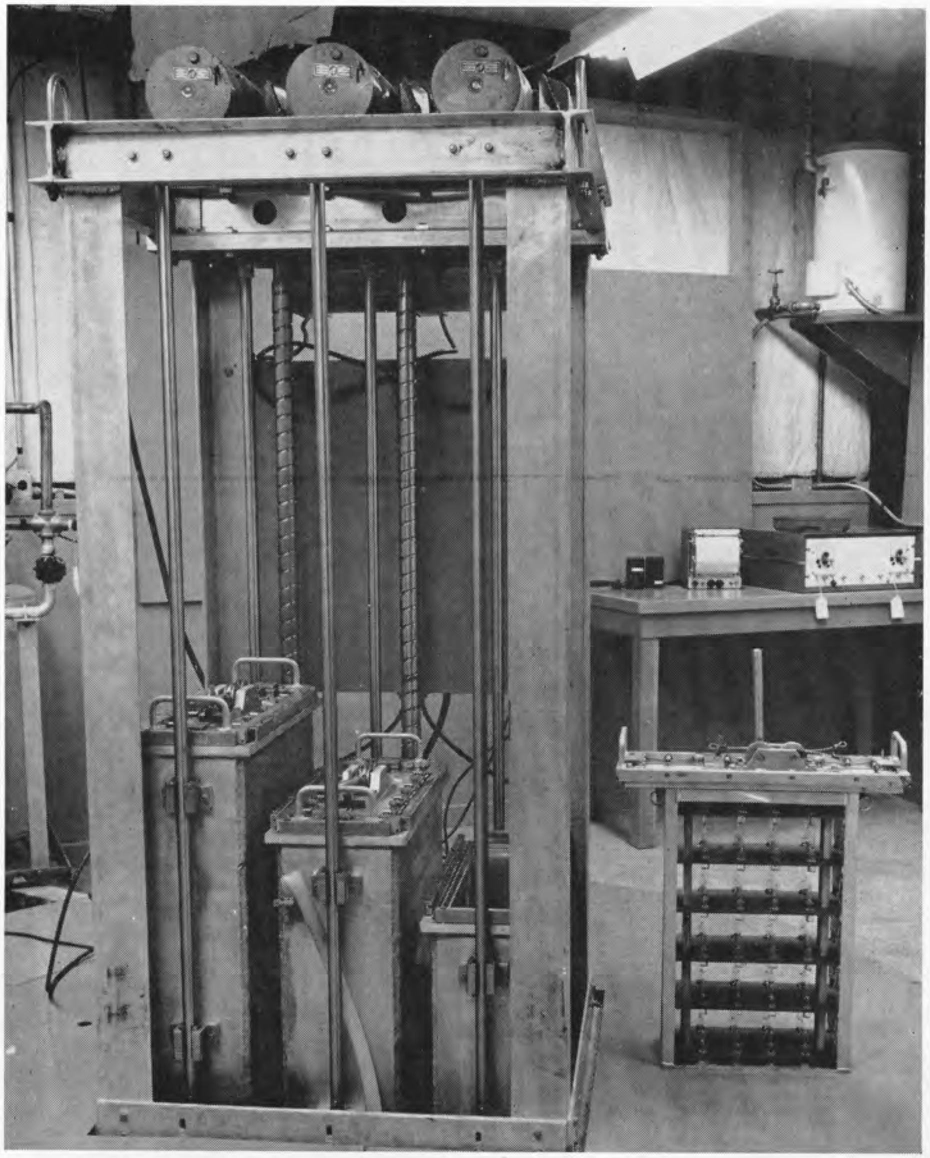

A view of the Mark II gamma irradiator showing all three irradiation chambers prior to being lowered into the radiation well. The top lid of the right chamber has been removed and is seen with the internal rack and dosimeter vials.

throughout most of its volume and the outer chambers can be assured of uniform dose distribution by raising them at half irradiation time and turning the contents 180 degrees. Such a large and uniform irradiation volume has been incorporated for the first time in this unit and two similar facilities at the Massachusetts Institute of Technology and at the University of Washington.

Another very important feature is the ability to introduce air or any other atmospheric mixture into the chambers during the irradiation period. This is accomplished by attaching lines of polyethylene tubing to the inlet and outlet ports on the lid of each chamber and pumping through the desired air mixture. In addition a coil of tubing around the inner perimeter of the center chamber acts as a heat exchanger. By circulating the appropriate cooling or heating liquids it is possible to irradiate at any temperature in a range from below freezing to about 150° F.

Planned experiments for the fruit research program include a survey of many varieties of fruit, which could benefit from an extended storage life. It is assumed that irradiation will not replace any of the normal refrigeration and storage needs in the marketing and distribution of fruit. However, it has been known for some time that irradiation may extend the storage life of several types of fruit, when it is used in conjunction with refrigeration and other post-harvest and storage manipulations.

Experiments in the past have often been limited and sometimes contradictory because of the difficulty in controlling temperature, total dose, dose distribution, atmospheric composition, and other conditions during irradiation. The new facility permits the control of all these variables and should prove invaluable to research in this field.

Along with its application for post-harvest treatment of fruits, the gamma facility has already been used in studies of genetic mutations and in breeding programs associated with agricultural products. This new tool is expected to lead to many new areas of radiation research for the benefit of California agriculture and science in general.

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WATERGRASS CONTROL IN RICE

Two YEARS of field experiments have shown that 3,4-dichloro propionanilide (DPA) can selectively control watergrass, *Echinochloa crusgalli* (L.) Beauv. in rice when used as a foliage spray. In 1960 yields of rice were increased by as much as 4,700 pounds per acre as a result of weed control from DPA applied at rates of 2, 4, and 8 pounds per acre. The only injuries observed were necrotic areas at the tips of rice leaves. In no case was subsequent growth of rice adversely affected by treatments.

Control of watergrass was poor when treatments were made one week after the initial irrigation of the field. Control improved for treatments made each succeeding week until the fourth week after initial irrigation. Treatments at five weeks were slightly less effective than at four weeks.

Watergrass is most susceptible to DPA in the two-to-four-leaf stages but it can be controlled later by using higher rates of herbicide. The over-all effectiveness is dependent on the size of the plants and the extent to which new plants emerge after treatment.—*Kenneth L. Viste, Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture, Department of Agronomy, University of California, Davis.*