

RADIATION EFFECTS UPON REPRODUCTIVE
FUNCTIONS IN FAIR ANIMALS.

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Sexually mature bulls are being used as the experimental animals. The bulls were conditioned to the collection of semen in an artificial vagina during the summer and fall of 1954. However, it soon became apparent that while semen could be collected in this manner, the willingness of a bull to cooperate on a definite date was unpredictable. Consequently, an electrical ejaculation technique was adopted for routine use.

Bulls have been exposed to whole body irradiation at levels of 100, 200, 300 and 400 r. Weekly semen collections and blood samples have been obtained. Marked depression of blood elements occurred post irradiation, however, all returned to the normal level by six weeks. No evidence of semen abnormalities was evident at this time.

Approximately eight weeks post-irradiation sperm numbers showed a decrease, an apparent decrease in percent of live sperm per ejaculate and an increase in per cent of abnormal sperm. The types of abnormal sperm have included abnormalities of both head and tail. Protoplasmic droplets on the tail have been noted in a high percentage of the sperm of some bulls. Weekly semen collections will be continued as long as there is evidence of semen aberrations or until it is apparent that the damage is of a permanent nature.

Data on five bulls at each level of radiation will be studied in this preliminary phase. This should give an indication of the individual and between dose-levels of variation. Analysis of data obtained in this phase should furnish an estimate of the numbers of

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animals needed to establish statistically significant differences between levels of irradiation.

After determination of the minimum level of irradiation producing a significant change in the semen, bulls irradiated at that level will be bred to normal cows to test the fertility of the irradiated bulls.

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