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Germinal epithelium in X-rayed testes of rats.

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Testes of rats have been exposed to graded doses of X-ray (determined physically and biologically) and studied over periods of time ranging from one day to six months. Doses up to ten erythema have been given at one time. The extent of degeneration produced in the seminiferous epithelium depends roughly upon amount of radiation. However, the degree of degeneration for a given dosage after a given number of days is not constant. Actively dividing cells, spermatocytes and then spermatogonia are the most easily injured. Spermatozoa disappear for a short period of time about ten days after exposure. Their absence marks the time required for conversion of spermatogonia into spermatocytes, these to spermatids, and the latter to spermatogonia.

Doses exceeding 3 erythema cause aspermatogenesis with degeneration of all seminiferous epithelium excepting so called "Sertoli" cells. In all experiments with exposure up to seven and one half erythema these cells have persisted. Doses of eight erythema and over have resulted in death. The persisting cells gradually change in structure and from them are produced spermatogonia. Cell types intergrading between these so called "Sertoli" cells of degenerated testes, which are in realtiy *Indifferent cells,* and spermatogonia have been found in these experiments. Regeneration takes place from these persisting Indifferent cells. They are, therefore, essentially germ cells. Within one month considerable recovery has taken place and in three or four months the testes are again normal. The time required for regeneration following extensive injury is about three months.

Since germinal epithelium has not been completely destroyed by radiation, as evidenced by cell division and regeneration, it cannot be said that this tissue does not take part in producing the sex hormone in X-rayed animals.