

ZOOLOGY

# X-Rays Stop Tissues From Regenerating Themselves

## Newts Receiving Radiation Fail to Grow New Tails; Delayed Dosage Makes Growth Slow and Abnormal

**X**-RAY S' growth-stopping effects have been critically studied on healthy animal tissues that would ordinarily regenerate themselves, by Dr. Pressley Lee Crummy, working under direction of Dr. H. H. Collins at the University of Pittsburgh. These studies throw light on two regions of biological interest: they furnish a basis for comparison between X-ray effects on normal and abnormal growing tissues such as cancer, and they add information on the curious phenomenon of regeneration, by which certain of the lower animals are able to replace lost body-parts such as tails and legs.

Dr. Crummy experimented on the spotted newt, a long-bodied, long-tailed relative of the more familiar frogs and toads. Amputating the tail-tips of some of these animals, he rayed the cut ends of part of them with appropriate dosages of X-rays at various time-intervals. The others he left unrayed, as "controls." After some weeks he examined the lot.

The "control" animals were found to be going through the normal regenerative procedure, growing themselves new tails as they would after an accident in nature. The rayed newts, on the other hand, were still stump-tailed as the amputation had left them; they had averaged only about a millimeter of new growth—about the thickness of an ordinary knifeblade.

A strange differential effect was observed. Dosages sufficient to inhibit regeneration completely when given immediately after operation, would not stop regeneration when administered some weeks after regeneration was under way. The delayed dosage, however, was found to slow up the growth rate of the limb and to cause abnormalities in the formation of the fingers.

In preliminary experiments, Dr. Crummy tried raying the very tips of some of the newts' tails. Without exception, a degeneration and sloughing off of the tissues took place, reminiscent of the loss of finger-joints suffered by early workers with X-rays, before their destructive powers were known.

In the experiments, of course, due consideration was taken for the feelings of the newts. The operations were performed under anesthesia, and their bodies, except for the parts to be X-rayed, were protected during treatment under a quarter-inch lead shield. Apparently it doesn't bother a newt to lose a piece of leg or tail—perhaps a compensation of Nature for having them bitten off by hungry fish or snapping-turtles. At any rate, they seemed to be quite contented without them, while they grew replacements, and incidentally furnished biologists with excellent material for fundamental studies of growth phenomena.

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ENGINEERING

## Television For America Promised Within a Year

**H**IGH detail television within a year is promised by the Radio Corporation of America, probably in the metropolitan area of New York City, David Sarnoff, president of RCA, has announced.

RCA will invest \$1,000,000 in the development of a transmitting station, the manufacture of receiving sets, and the formation of a program service which will take the air within twelve or fifteen months.

Declaring that American television is now prepared to give fine detail pictures better than those being used in Europe, Mr. Sarnoff emphasized that the greatest need of the art today is to take it out of the laboratory into the field for future development.

Already pictures with 343 lines to the inch, as compared with the crude 30 lines to the inch pictures of a few years ago, are now available. What one can now see with the present stage of television, Mr. Sarnoff said, is "comparable with what ones sees of a parade from the window of an office building, or a world series baseball game from a nearby roof, or of a championship prize fight from the outermost seats of a great arena."

Television, said the RCA president, will not compete with sound broadcasting in its nationwide scope. The first transmission will be over a circle not of more than 25 miles radius. Wire facilities are not available for wide distribution and such mass-broadcasting is "not here nor around the corner."

An enormous economic sacrifice will be necessary to "put over" television, Mr. Sarnoff indicated, for each advance in the art will make obsolete prior equipment, both transmitting and receiving. The situation will not be comparable to sound broadcasting, where a ten-year-old receiver may still be used if one is not too fussy about the quality. It will, therefore, not be well to have the systems of transmission or receiving standardized too soon on a wide scale if future progress is to be possible.

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BIOLOGY

## Nature Levies Penalties For Destroying Her Mosaic

**"N**ATURE'S Mosaic," the myriad-pieced jigsaw puzzle of living plants and animals that automatically fits itself together to cover all habitable spaces on the earth is self-maintaining, self-restoring when man is not too meddling. But let him presume too much, disturb the pattern too drastically, and Nature takes sharp toll of retribution.

That is one of the lessons of what has been happening in the West recently, Dr. George J. Peirce, emeritus professor of botany at Stanford University, pointed out in an address given under the auspices of Science Service.

Dr. Peirce said, in part: "If breaking the native sod, clearing the land, and sowing to grain be followed by prolonged and intense drought, the crops will fail, there will be no cover and no binder to the soil, the wind will pick it up, carry it away, and finally deposit it in those places where it is least desired. On the marginal lands of the Dakotas and of the western dry belt the would-be farmer smashed the Mosaic of Nature.

"He has suffered variously for years, producing crops of political, social and economic ideas repugnant to those less bold or less original persons who remained where water, soil and climate are less threatening. Finally the continued threat has been carried out, good soil has been lifted and whirled away, the former owner impoverished, the recipient embarrassed. A return of the soil to Nature is impossible. The Mosaic is not only broken, it is dissipated. (*Turn to page 30*)