

MEDICINE

X-Rayed Cells Live Faster; Die of Premature Old Age

**Irradiated Cancer Cells Not Killed, Research Shows;
They Live Normal Life But Go Through Cycle Sooner**

WHEN X-RAYS are used to treat cancer, the cells of the cancer are not killed directly but are made to live more merrily, finish their normal life more rapidly and die of senility at an earlier age.

This answer to the hitherto unsolved problem of what happens when a cancer victim is irradiated and his cancer decreases in size was given to the American Association for the Advancement of Science by Dr. Raphael Isaacs of the University of Michigan, who made observations on 923 patients before he announced his findings.

It is expected that this discovery will be of great importance in understanding various kinds of cancer and other diseases of cell growth, such as leukemia, lymphoblastoma and pernicious and other anemias.

Treatment of cancer by X-rays results in a premature old age, Dr. Isaacs found. The premature old age occurs not in the patient but in the cells of the malignant growth with which he is afflicted. This is a case where premature senility is welcome.

Dr. Isaacs studied the various kinds of the blood cells and noted the effect of the X-ray treatments given the patients. Even after X-ray therapy, the blood-forming cells, both white and red, go through their lives in an orderly manner and die normal deaths.

"Nothing happens to the cells that would not have happened to them if they had lived their normal life," said Dr. Isaacs, "except that X-rays make them go through the process somewhat faster. X-rays act by hurrying the onset of old age and not by killing directly."

Radiologists have noted that there is a lag between the time of the X-ray treatment and the effect that is produced. Dr. Isaacs said that it corresponds to the time it takes the irradiated cells to live and die, in an accelerated but normal manner. Some cells, like germ cells and white blood cells, die fairly quickly after treatment with X-rays. Dr. Isaacs finds that these cells have a short adult life and therefore die soon after it is

reached. Other cells, like those of muscle, nerve and fibrous tissue cells, live long after they become adults and when stimulated to develop to maturity by X-rays, they do not die of senility for a long time. The effects of the X-ray treatment are therefore delayed longer.

A favorite explanation of the action of X-rays and radium on the cancer and other cells has been that they killed the cells, but the researches reported by Dr. Isaacs repudiate this theory.

Science News Letter, July 9, 1932

ENGINEERING

Soap Bubbles Reveal Strength of Steel Beams

WILL the new bridge safely carry the heavy traffic that is going to flow over it?

Ask a soap bubble.

That is what engineers at the University of Michigan have been doing; and the soap bubble answers are so accurate that they are being used in a mathematical formula to picture the stress in metal parts of complicated shape.

This procedure is revealed in a report made to the American Society of Mechanical Engineers by Dr. P. Allerton Cushman of the College of Engineering in the University of Michigan. He told how the soap bubble has become a valuable aid in the determination of stresses in materials. By mapping the contour of a flimsy soap film over the cut-out model of the cross-section of a machine part or skyscraper beam, engineers can determine quickly and accurately just how much twisting or bending stress will affect the original of the model.

The apparatus devised to record these findings is surprisingly simple. Half-way down in a square box a brass sheet is sealed, with a portion of the metal cut out in copy of the cross-section of the article to be tested. Topping the box is a glass plate inset with a depth gauge. In operation a film of soap so-

lution is drawn across the cut-out design, water is forced into the lower part of the box, causing the confined air beneath the plate to push up the film, and with the depth gauge the varying level of the film is measured from the glass top. Many readings are made in various spots, curves are charted between the points, and a contour map results which locates stress points which may easily be interpreted in their meaning for the designer of metal work.

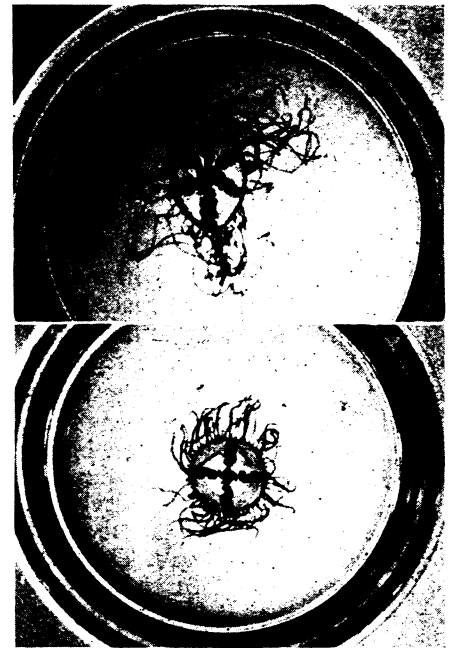
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CHEMISTRY

Colored Coverings Prevent Rancid Foods

SPECIAL red and green wrappers and bottles are likely to be used in the future for packaging oils, mayonnaise, butter, lard, potato chips and other oil-bearing foods to prevent them from becoming rancid as the result of a Department of Agriculture discovery that certain wavelengths of light produce rancidity.

Mayne R. Coe of the food research division of the U. S. Bureau of Chemistry and Soils reported in *Science* that the keeping quality of oily foods is greatly enhanced by the use of packages that screen out the *(Please turn page)*



A FREAK JELLYFISH

—matching two-headed turtles and four-legged chickens, turned up in the zoology laboratory collections of the University of Southern California. Normal jellyfish of this group have four "radial canals" as shown in the specimen at the bottom. This one had six, two mouths and eight frilled lobes about them.

kind of light that causes spoilage.

Experiments upon rice bran and rice polish exposed to various kinds of light showed that they became rancid when kept under blue, purple, blue-green, yellow and various shades of red filters. But Mr. Coe found that a green filter, which approximates the chlorophyll coloring matter of the green leaf, and a red

filter that absorbs practically all the light, prevents or delays the oxidation and rancidity of the oily portion of the material tested.

A U. S. patent allowing use of the discovery by the public has been applied for by Mr. Coe, who predicts that the principle will prove of great economic value to producers of package foods.

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ARCHAEOLOGY

Hollow Log Coffins Found In Four-Story City of Dead

A FOUR-STORY CITY of the dead, recording a hitherto unsuspected settlement of high cultural level that flourished during the early middle ages near the site of the Baltic city of Memel, is described in the German scientific journal *Die Umschau* by Dr. Carl Engel of Königsberg, East Prussia.

In this cemetery the dead were buried at four levels. The oldest graves in the lowermost level, contained skeletons in coffins made of hollowed-out logs. The burials of the upper three levels showed that cremation had come into use among this early Germanic people, for they consisted of little wooden caskets containing only the charred remains of human bones, together with funeral gifts of bronze and iron ornaments and weapons. The whole series, from lowermost to upper, represents a stretch of over half a thousand years, from the sixth to the eleventh century A. D. Nothing even approaching this find in number of burials or in richness of funeral gifts has ever been found by archaeologists working in the East Prussian region.

The log-coffin burials of the lowermost layer give the best picture of the funeral customs. The men were buried with the full equipment of warriors; a sword before the breast, a dagger at the left side, and at the right the points of several spears or lances. There are no ornaments, except for one bronze brooch necessary to hold the garments.

There are plenty of ornaments in the women's graves, however. The skeletons are fairly loaded with necklaces, bracelets and rings. Two brooches were required for their garments.

As for their hair, they wore plenty of it, and apparently piled it high on top of their heads, to judge from the

length of the long bronze arrow-like hairpin found with every female burial. Many of the women's skeletons hold, on what were once their laps, well-made bone combs: long locks required long toilettes, then as now. The gentlemen of those days could prefer blondes or brunettes as it pleased them best; for hair of both colors has been found clinging to the long hairpins.

When the practice of cremation came in, there came with it the custom of burying the body of a goat or sheep under the little casket of burned bones, to supply the departed with provisions for his long journey. A few of these casket burials, apparently those of men of importance, were made on the bodies of horses. In one or two cases, the horse was buried upright, with the casket on its back, as though the dead chief's followers expected him to ride on "West."

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ASTRONOMY

Miss Ames' Death Interrupts Surveys of Universes

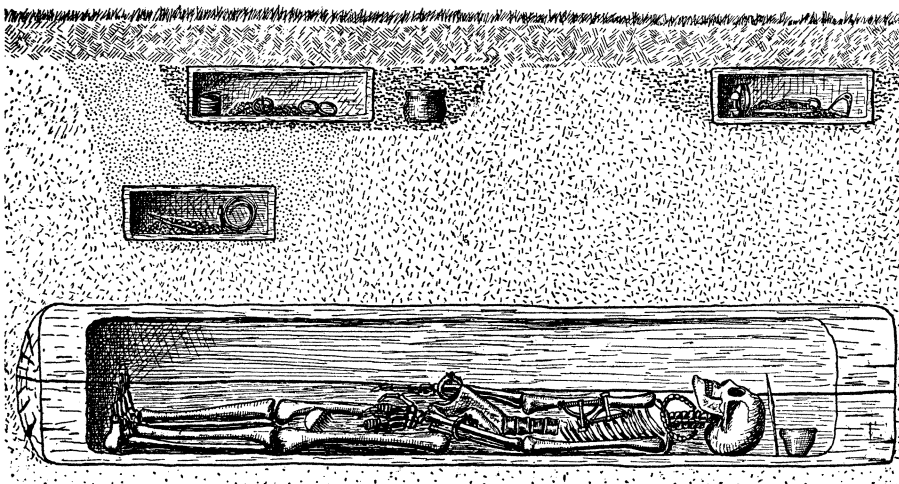
MISS ADELAIDE AMES, Harvard College Observatory astronomer who was drowned last week in a New Hampshire lake, had just finished the most complete and uniform study of distant universes of stars ever made. In this study of galaxies outside our own universe she collaborated with Dr. Harlow Shapley, director of the observatory, and the report is now in press.

Miss Ames and Dr. Shapley made an extensive catalog based on precise and uniform observations embracing every discovered galaxy or outside universe down to the thirteenth magnitude and the conclusions drawn are expected to have an important bearing on astronomical theories.

Miss Ames had been research assistant at the Harvard Observatory since 1923. She was a Vassar graduate, held a master's degree from Radcliffe, and she was secretary of the International Astronomical Union local committee preparing for the Harvard meeting to be held early in September. Miss Ames acted as delegate to the Leyden meeting of the union in 1928.

Miss Ames published in 1931 a catalog of nearly 2800 external galaxies in the constellations of Coma and Virgo. The survey is an extensive analysis of the number, magnitude, sizes, and classification of these outside universes. Miss Ames had also published with Dr. Shapley a series of notes on the Coma Virgo cloud of galaxies.

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THREE FLOORS OF DEAD CITY

Diagrammatic reconstruction of a part of the Memel valley cemetery, showing three of the four burial levels. In the log coffin in the lower level is the skeleton of a woman, loaded in costume jewelry. In the little caskets in the upper levels are the charred bones and ornaments of cremated bodies of the later days.