GENETICS

X-Rays Can Speed Up And Reverse Evolution

First Bombardment of Fruit Flies Changes Unborn Insects While Second Treatment Restores Original Traits

X-RAYS can speed up the processes of evolution, and they can also reverse its direction, undoing changes which they themselves have caused. This was announced at the meeting of the Sixth International Congress of Genetics at Ithaca, N. Y., by Dr. N. W. Timoféeff-Ressovsky.

The discovery of the evolution-reversing power of X-rays was made as the result of researches conducted at the Kaiser-Wilhelm Institute for Brain Research in Berlin. It agrees with similar results obtained by other workers in the same field.

Dr. Timoféeff-Ressovsky worked with fruit flies, classic experimental animals in genetics, using the X-ray technique for producing hereditary changes developed by Prof. H. J. Muller of the University of Texas. Bombardment of their reproductive cells with X-rays caused marked changes in color, shape, size, etc., of eyes, bristles and other body parts in their offspring. Dr. Timoféeff-Ressovsky discovered that a second bombardment infflicted on these same offspring would often reverse the changes, causing the third generation to have a normal appearance again.

From his results he argued that the effects of an X-ray bombardment are not merely destructive of the genes, as has frequently been stated. He pointed out that while the production of an abnormality might look like a destructive effect, the return to normalcy by a second X-ray bombardment makes this conclusion absurd.

Fern Spores X-Rayed

Other strange effects of X-ray bombardment were demonstrated by Dr. Lewis Knudson of Cornell University, with a series of cultures of ferns in their earliest stages of growth. The spores from which they sprouted were treated with X-rays at varying intensities and lengths of exposure. Doses of 2,500 and 5,000 roentgens increased the rate and quantity of growth. But doses from 7,000 to 30,000 roentgens stopped growth altogether. These heavier X-rayings, however, did not kill the sporeling ferns, for examination with the microscope has shown that they produced one or two massive cells that continue to live but do not grow, although they have been kept for over six months.

These cells of arrested growth possess chlorophyll, and presumably manufacture carboyhdrate foods for themselves. No theory has yet been advanced regarding the mechanism of this growth stoppage caused by X-rays.

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ARCHAEOLOGY

Treasure Unearthed From Maya Pyramid

UNDER the main stairway of the imposing El Castillo, chief of the temple-topped pyramids of the ancient Maya city of Chichen Itza, Mexican archaeologists found a treasure cache hidden centuries ago. A jade necklace with carved pendants, one representing a Maya god and others bearing hieroglyphs, which is pictured here, is one of the most important finds.

A pottery vessel containing small bones, as yet unidentified and perhaps human, was in the cache. Necklaces of coral, jade and turquoise were mingled with the head of a dried lizard, a magic jade ball used for healing and divining, and other objects.

Lino Bravo, of the Mexico City National Museum, has gone to Yucatan to restore a jade and turquoise plaque seven inches in diameter, which was found in a jar along with 2,000 small turquoises. A jade object with a bit of ancient cloth stuck to it is also being studied. Four flint spearheads, from twelve to sixteen inches long, were also in the cache.

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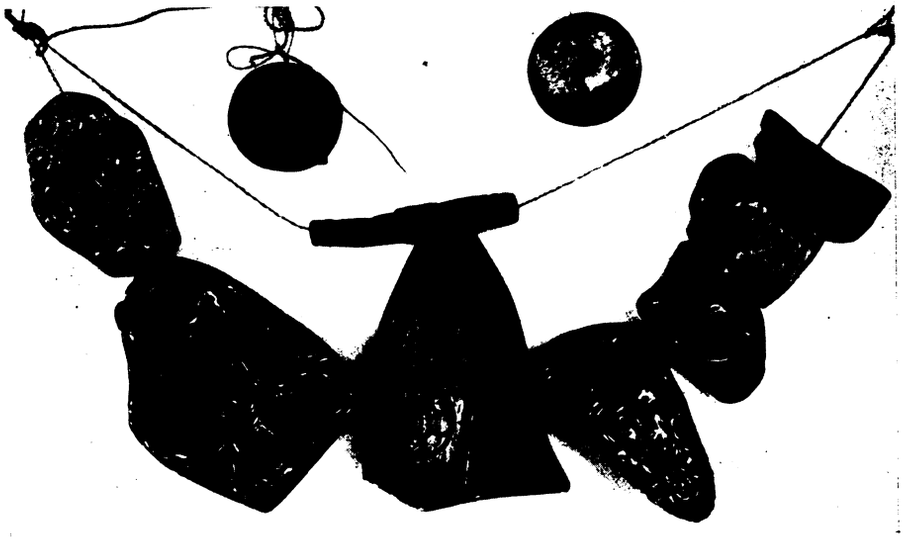

FROM ANCIENT TREASURE CACHE

ELECTRICITY

Low Resistance in Cold Intrigues Engineers

ELECTRICAL ENGINEERS who know the cost of ordinary transmission of electrical current along wires look with longing eyes upon experiments performed within the confines of extremely frigid liquid helium.

At temperatures far below those common here on earth, some 268 degrees Centigrade below the freezing point of water, a current set up by induction in a lead coil will continue to flow for hours with little falling off of intensity.

Members of the Royal Institution in London had this experiment performed for them by Prof. J. C. McLennan, the University of Toronto physicist who has recently retired to England. The phenomenon of superconductivity was discovered over twenty years ago by the Dutch scientist Heike Kamerlingh Onnes and his co-workers, who made Leyden a center of low temperature research. It was a most surprising discov-

ery, for theory led them to expect that resistance would increase as the cold increased.

To demonstrate this persistence of an electrical current in a metal at a temperature near absolute zero, Colonel the Master of Sempill, a famous British aviator, flew over to Leyden and brought back with him a nest of vacuum bottles, containing at their heart a lead ring with a current flowing within it. The ring was immersed in liquid helium, and the helium flask was kept cold in two bottles of liquid air. The electrical current was still flowing for the edification of the British audience even after the thirteen hours of the international air trip across the North Sea and the auto journey from the airport to London.

The virtual disappearance of electrical resistance in gold, silver, tin, mercury and some other metals at extremely low temperatures may raise hopes of practical application, but further research dashes them.

For twenty years metals and their alloys have been tested and superconductivity has not yet been found to occur at a temperature higher than 263 degrees below zero Centigrade. Such temperature is achieved in only a few laboratories. Prof. John F. Allen of the University of Toronto who investigated superconductivity believes:

"It is impossible to say what will happen or be discovered in the future, still it is fairly certain that no direct practical value at least for power transmission will ever come out of the phenomenon of superconductivity."

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EUGENICS

Larger Families May Again Become Fashionable

LARGE FAMILIES may become fashionable again. A small but distinct tendency in that direction has been discovered among the abler people of the upper social and economic classes, Dr. J. Sanders, of Rotterdam, told the Third International Congress of Eugenics at its meeting in New York. If the war and the post-war period of economic hardships had not had such severe dysgenic effects, the tendency for more offspring among the more gifted would be more widespread, he believes.

Dr. Sanders addressed himself to the problem of taking advantage of this eugenic psychology, so that more as well as better children may be produced by those whose scientific, artistic or organizing abilities give promise of transmission to the next generation. The prime factor, he said, must be public opinion: people must be educated to feel that large families are right and desirable, and especially so among the more talented. This must be done not only by well-directed general propaganda, but must be carried on intensively in the universities, among those preparing for the professions.

In direct economic encouragements, by state grants or remittances of taxes, Dr. Sanders did not express such great confidence, although he believed they might accomplish some good, especially if such aids are directed toward the special end of securing adequate educations for really gifted children. He made the much more radical suggestion, however, that the size of the individual inheritance of children in small families might be limited by law.

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ZOOLOGY

Two Weeks' Delay Precedes X-Ray Sterility In Mice

X-Rays, long known to cause sterility in male animals if applied in sufficiently heavy doses, yet give mice two weeks of grace before sterility sets in.

This has been determined by experiments performed at the University of Texas, and reported by Dr. George D. Snell before the meeting of the Sixth International Congress of Genetics.

After the mice had been X-rayed, he stated, two weeks elapsed before they became sterile; though litters which they sired during this time were reduced in size. And even after sterility set in, the sperms that were in the tubes leading away from their sex glands were still alive. Living reproductive cells were found still lurking in such mice seven weeks after they had been X-rayed. After that, some months elapsed before the sterile condition passed.

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PUBLIC HEALTH

Yellow Fever Certificates Recommended for Tropics

TRAVELLERS from countries where yellow fever exists, particularly those travelling by air, should have certificates based on blood serum tests showing that they have acquired resistance, or immunity, to the disease, Dr. B. J. Lloyd, assistant to the director of the Pan-American Sanitary Bureau, told the Conference of State and Provincial Health Authorities of North America.

Dr. Lloyd pointed out that yellow fever is still a menace to life and particularly to commerce in the Americas. He quoted a statement of Dr. F. F. Russell of the International Health Division of the Rockefeller Foundation to the effect that, because of the very rapid development of air travel, population centers which once had yellow fever but have now been freed of it are again threatened with reinfection with the disease unless persistent, continued effort is made to keep it within bounds.

Recent discoveries of a method of testing for immunity to yellow fever and of vaccinating against it make possible the certificate-method which Dr. Lloyd suggested. By this means it would be possible to tell definitely whether or not a person desiring to leave a yellow fever community would endanger the country to which he was going. If the test showed that he had immunity to the disease, that would mean either that he had had yellow fever or had been vaccinated against it. In either case, he would not introduce it into a yellow-fever-free country by developing it soon after his arrival.

Dr. Lloyd recommended in addition that aerodromes in infectible territory be kept continuously and absolutely free from mosquitoes which carry yellow fever, and that fullest cooperation be maintained between nations, health authorities and transportation companies.

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ENTOMOLOGY

Male Water Bug Has Family Cares Thrust Upon Him

A FATHER, even a proud one, usually feels that he is being a bit put upon if he has to hold the baby. And if it's twins or more, he feels like a martyr indeed. But what would such a rebellious human male think if his wife were to treat him as the water-bug's