

PHYSICS

Radiations Have Small Energy Expenditures

RADIATIONS like X-rays or the gamma rays from radium that destroy harmful growths in the body, or sometimes do injury to normal tissues, accomplish their often revolutionary work with very small amounts of actual energy expenditure, says Prof. Friedrich Dessauer of Frankfurt-am-Main, Germany. A spoonful of hot tea brings more energy into the body in the form of heat than all the radiation reaching the inner tissues in a carcinoma treatment, he declares.

From this fact Prof. Dessauer infers that the work of such radiations is done practically at the instant of first impact, while they are still concentrated and before they have had opportunity to become dispersed into neighboring regions.

Assuming that the primary result of any radiation is regularly to set free an electron somewhere, Prof. Dessauer concludes that such an electron discharged from an atom and roaming around within a protein molecule should be expected to cause inner vibrations in it. This condition may be described by stating that the one individual molecule hit by the radiation has been raised to a higher temperature. Therefore Prof. Dessauer speaks of "point heat" as the actual cause of the devastating effects of radiation.

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PHYSICS—BOTANY

Electrical Detector For Rays From Living Cells

ELECTRICAL measurement of the so-called "M" rays or Gurwitsch rays, given off by living cells, has been accomplished by Dr. Boris Rajewsky, docent of the Institute for the Physical Foundation of Medicine at Frankfurt-am-Main. Biologists and physicists have long been trying to construct a device that would give a physical measurement of these mysterious radiations, but until now without success, and they have had perforce to continue measuring them by the old way of exposing other living cells to their action.

The Rajewsky apparatus is based on the principle of the Geiger counter, which is a device for detecting travelling electrons and other charged particles by letting them hit a wire and thus give

an electrical "kick," amplified to detectable magnitude by a radio-like hook-up.

However, Dr. Rajewsky built several important modifications into his apparatus. Into the side of the tube through which the radiations were to be directed he set a quartz window, for the Gurwitsch rays are stopped by glass though they pass through quartz. The wire he covered with a semi-conducting material, to make it somewhat less sensitive. And between wire and window he installed a thin sheet of cadmium.

Cadmium is sensitive to rays of 3,000 Angstrom unit wavelength, which is the approximate amplitude of the Gurwitsch rays. Whenever rays of this length fall on the metal, they release electrons, which in their turn electrically charge the air between the cadmium and the wire. Thus the cadmium becomes the means for the indirect expression of the Gurwitsch rays in electrical terms, and enables the experimenter to obtain a quantitative idea of their energy.

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GENETICS

Reward Study of Heredity Of Mental Disease

TWO PRIZES for original research on the inheritance of mental disorders are being offered by the Eugenics Research Association of Cold Spring Harbor, Long Island, N. Y. The amount of the first prize is \$3000, that of the second is \$1000. The contest closes July 1, 1935.

Probability of a given individual being committed to an institution for mental disease as a result of hereditary factors is the criterion on which the research must hinge.

The Society suggests that contestants select at random one member of a family, living in a community of 5,000 population, in which family there is a recorded history or tradition of about 100 members having suffered from mental disorder. White stocks only are to be studied. The contestant should then go back over the family history for about 100 years, noting the occurrence of mental disease and whether there was intermarriage in the family or marriage into other families in which mental disease occurred.

From this study and a knowledge of the law of heredity, the contestant should be able to predict whether or not the individual will probably be committed.

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IN SCIEN

ZOOLOGY

Lively Young Marmosets Survive in Captivity

See Front Cover

TWO LIVELY, chattering young marmosets are growing up in San Francisco without the slightest notion of what "rare specimens" they are. They have a very great distinction of surviving birth in captivity.

Naturalists say that this type of New World monkey is often born in captivity but usually the captive mother has a perverse way of immediately neglecting her young and the tiny creatures have almost never been known to live.

The young brothers who escaped this fate are the offspring of a pair of marmosets brought to San Francisco from Nicaragua. The youngsters are now six months old and are half grown. Their parents are about as big as squirrels.

Marmosets are among the most primitive forms of the monkey family. They differ from ordinary monkeys in having sharp claws instead of nails on their fingers. Their long tails are not made for the usual monkey-use of swinging and grasping.

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PHYSIOLOGY

Keep Eyes off Skyline To Avoid Airsickness

DO NOT WATCH the horizon when you are in an airplane, if you want to avoid airsickness, or at least escape its worst effects. This advice was offered at the meeting of the American Society of Mechanical Engineers by Dr. L. H. Bauer of the Aeronautics Branch, U. S. Department of Commerce.

Although optical effects help to cause airsickness, they are not the only factors. The disturbances set up in the balancing organs of the inner ear are potent causes, but the pulls and sags of the muscles and vital organs, like those experienced in a suddenly moving elevator, apparently play no part in airsickness, Dr. Bauer said.

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CE FIELDS

MEDICINE

Iodine for Goiter May Produce Acne

A SKIN ERUPTION resembling the acne of adolescence may follow the use of iodine for goiter prevention, it appears from a note by Dr. Karl G. Zwick of Cincinnati to Science.

This iodide acne does not occur in everyone, but does occur in persons who already have an idiosyncrasy to iodine when they start taking it as a goiter preventive, or in persons who develop sensitiveness to it.

Iodide acne seems to occur more often since the drinking water of cities is chlorinated, Dr. Zwick has observed. This is not surprising, he explains, since all the halogens, the chemical group to which iodine and chlorine belong, are irritating to the glands of the skin.

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ENTOMOLOGY

Twelve-Legged Sea Spider Startles Scientists

A SEA SPIDER with six pairs of legs instead of the customary four pairs, was captured by Sir Douglas Mawson in the Antarctic during the British, Australian and New Zealand Expedition. It was found at a depth of 200 fathoms.

The discovery was announced at a meeting of the Royal Society by Dr. W. T. Calman, F. R. S., Keeper of Zoology at the British Museum, who is in charge of the work of examining Sir Douglas Mawson's specimens.

Dodecolopoda mawsoni, as the new species of animal is named, was exhibited at the Royal Society. The interest aroused among biologists is gauged by the fact that there are some 400 known species of marine arthropods, or insects, with the standard four pairs of legs, corresponding to the three pairs of legs of land insects. The only previous exceptions to this apparent law of nature had five pairs of legs. The first of the ten-legged "freaks" was found off South Georgia by the American scientist, Eights, approximately a century ago.

Though a few others have since been found the existence of twelve-legged pycnogonidae had not been suspected.

Dr. E. W. MacBride, F. R. S., professor of zoology at the Imperial College of Science, London, suggested that the extra number of legs "may have been added as an afterthought," in the same kind of way as the North American starfish, which originally had five rays and still drops from its larva in five-rayed form now has further rays that grow in between the primary five.

Both the ten-legged and twelve-legged arthropods have been found in the Antarctic zone, suggesting that this environment may call for additional legs, possibly to facilitate food capture.

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NATIONAL PARKS

New National Parks Head Is Pioneer in Service

ALTHOUGH Horace M. Albright has resigned voluntarily as director of the National Park Service effective next month, the work of making the nation's areas of natural beauty educational and recreational assets to the public will continue under specialized, non-political personnel.

Arno B. Cammerer, associate director of the National Park Service since 1922, has been appointed director to succeed Mr. Albright.

Both Mr. Albright and Mr. Cammerer were closely associated with the late Stephen T. Mather, first director of the National Park Service, in organizing the great system of national parks and monuments that has been created since 1917.

As successor to Mr. Cammerer in the position of associate director, Arthur E. Demaray, now senior assistant director, has been appointed. Mr. Demaray is also a pioneer member of the service.

Mr. Albright is resigning to become vice-president and general manager of the United States Potash Company, operating mines and refineries at Carlsbad, New Mexico. He has served 21 years in the Department of the Interior.

Since 1929 when Mr. Albright became director, four new national parks and ten new national monuments have been established. These include: Carlsbad Caverns, Grand Teton, the Great Smoky Mountain National Parks and Morristown Historical Park.

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PSYCHOLOGY

Efficient Policemen Are Not "Dumb"

GOOD COPS are not "dumb." At least not in Duluth. Although the typical policeman in Duluth has completed only eight grades in school, tests show that he has an education equal to that of high school sophomores. Policemen rated as the most efficient on the force are superior in mental ability to 70 per cent. of gainfully occupied men.

The tests were given by the Employment Stabilization Research Institute in the course of a survey to find out the qualifications necessary for success in various occupations.

Efficient policemen are also superior in clerical ability, particularly in checking differences in numbers and names. They are not particularly superior in mechanical ability, although inferior policemen are also below the average man in this ability. The most efficient group is younger, on the average, than the less successful policemen, but individual differences in efficiency are far more important than age in the selection of good men for this job.

The typical Duluth policeman is native born, married, the owner of his home, and the father of two children.

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AGRICULTURE

Grasshopper Menace Will Reach Peak This Month

THE PLAGUE of grasshoppers threatening the small grain and forage crops of the western states will reach its peak during the latter part of this month, according to a report received by the U. S. Bureau of Entomology from Dr. J. R. Parker, scientist of the Bureau who has been making a field survey of the situation.

Minnesota will not fare as badly as surrounding states in that region because of the fact that adequate control campaigns have been organized there and farmers supplied with poison bait, which is the farmer's most effective weapon against the insect enemy.

In North Dakota, South Dakota, and eastern Montana the prospects are very bad, however. Hot, dry weather, has favored the development of the insects, producing great hordes which consume every green thing above ground.

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