

## SCIENCE NEWS

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## SCIENCE REVIEW OF THE YEAR

*(Copyright, 1935, by Science Service)**Biology*

ANIMAL growth without either paternal or maternal nuclei was demonstrated by centrifuging sea-urchin eggs and then treating them with concentrated sea-water, by Dr. Ethel Browne Harvey working at the Marine Biological Laboratory at Woods Hole, Mass.

Units of cellulose, held together in a pectin matrix, were isolated and seen for the first time by Mrs. Wanda K. Farr, U. S. Department of Agriculture, and Dr. Sophia H. Eckerson, Boyce Thompson Institute for Plant Research.

Maturing fruits and vegetables produce ethylene gas in their own tissues, it was shown by researches at three laboratories: the Minnesota Agricultural Experiment Station, the Low Temperature Research Station at Cambridge University, England, and the Boyce Thompson Institute for Plant Research, Yonkers, N. Y.

Eyes of the larva of the fruit-fly, or *Drosophila*, were successfully transplanted to the abdomens of other individuals, by Boris Ephrussi and G. W. Beadle, in Paris.

A monkey embryo in the blastocyst stage was found by Dr. George L. Streeter, director of the department of embryology, Carnegie Institution of Washington, in Baltimore.

An ornithological expedition made permanent records of the songs of rare birds in the South, working under the auspices of Cornell University and the Carnegie Institution of Washington.

Dyes of certain types render living cells more sensitive to the lethal effects of light, was discovered by Professor D. H. Tennent, of Bryn Mawr College.

The air at 20,000 feet and over was found to be germ-free by Dr. George Walker, of Baltimore.

Spores of fungi taken nearly 14 miles into the stratosphere on the flight of the National Geographic Society-Army Air Corps balloon *Explorer II* survived the cold, solar radiation and other extreme conditions of the journey.

A lily that never sheds its pollen was produced by D. N. Moore in the laboratories of the General Electric Company, by x-raying bulbs for several successive generations.

The plant hormone auxin, chemical substance stimulating growth was produced synthetically by Drs. K. V. Thimann and J. B. Koepfli, California Institute of Technology.

Irritability in protoplasm was traced to a substance of unknown composition, called "R," by Drs. W. J. V. Osterhout and S. E. Hill, Rockefeller Institute for Medical Research.

Pantothenic acid, believed to be a universal essential in growth and respiration of cells of living bodies, was isolated by Professor Roger J. Williams, Oregon State College.

Southern pine forests produced an exceptionally large seed crop.

Properly controlled fires are beneficial to growing pine woods in the South, according to evidence produced before the annual meeting of the Society of American Foresters.

Forest fires increased in number but decreased in total area burned over.

A program of basic research in biology was planned by the Department of Agriculture.

Establishment of "wilderness areas" in all countries of the Americas was advocated by Dr. John C. Merriam, president of the Carnegie Institution of Washington, in an address before the Pan American Institute of Geography.

Neon lamps were used instead of the conventional incandescents, in forcing plants and flowers in the greenhouses of the Agricultural College of Wageningen, the Netherlands.

A College of Agriculture was organized at Hebrew University in Jerusalem.

More than 3,300 ants, each part male, part female, were found in one colony in Trinidad, by Dr. N. A. Weber, Harvard University.

The Sixth International Botanical Congress was held at Amsterdam, during the first week in September.

Trees afflicted with Dutch elm disease were found in Virginia and Indiana.

A new food factor necessary for the growth of chickens was discovered by Dr. H. Dam, of Copenhagen, and named vitamin K.

Plantings were begun in the great Western Shelterbelt project, largely utilizing species native to the region planted.

Insect heads were successfully transplanted to bodies of other insects of the same species, by Dr. Atma Malabotti, Vienna Academy of Sciences.

A band of rays in the almost invisible red has a powerful retarding effect on plant growth, it was discovered by Dr. L. H. Flint, U. S. Department of Agriculture, and Dr. E. D. McAlister, Smithsonian Institution.

Methods were developed by the U. S. Public Health Service investigators to show graphically the bactericidal effect of the beta rays as compared with the non-bactericidal gamma rays of radium; and the irradiation of bacteria by radium emanations was found to produce profound cultural and morphological changes.

Air-conditioning methods were applied in the transportation of parasitic wasps used in combating insect pests.

A world-wide survey of breeding stocks of domestic plants and animals was inaugurated by the U. S. Department of Agriculture.

A "Farm Chemurgic Council," to promote the use of agricultural products in industry, was formed, with Francis P. Garvan as its first president.

Chinch bugs, much feared at the beginning of the growing season, did little damage in the Grain Belt.

On the occasion of the fifth anniversary of the plant patent law, a check-up disclosed that only 124 plants had been patented.

A comprehensive survey of the enemies of oysters was begun by the Bureau of Fisheries.

Several large wilderness areas, comprising a total of nearly 8,000,000 acres, were set aside as game preserves by the Soviet Government.

Pennsylvania's last scrap of virgin timber, 4,000 acres in extent, was acquired by the U. S. Forest Service, to be kept as a wilderness area.

#### *Medical Sciences*

The virus that causes the plant disease, tobacco mosaic, was isolated by Dr. W. M. Stanley, Rockefeller Institute, Princeton, N. J., as a crystalline protein, thus, according to Dr. Stanley, characterizing a new class of disease-producers and indicating that viruses may not be living substances in the sense that bacteria, plants and animals are.

Identification of the virus of human influenza and its cultivation outside the body were reported by Drs. Thomas Francis, Jr., and T. P. Magill, of the Rockefeller Institute.

First definite evidence of a vitamin participating directly in a physiological process was found by Dr. George Wald, Harvard University, who found vitamin A in the eye's retina and active in vision.

Relief and apparent cure of a fatal type of high blood pressure by surgical operation was reported by a number of surgeons, working independently and using different surgical techniques, among them Dr. Alfred W. Adson, Mayo Clinic; Dr. Max M. Peet, University of Michigan Medical School; Dr. Irvine H. Page, Hospital of Rockefeller Institute for Medical Research, and Dr. George J. Heuer, New York Hospital.

Study, at many research centers, of electrical impulses generated by brain activity and known popularly as "brain-waves" shows that brain activity, like heart activity, is constant but unlike heart activity, proceeds at different rates during sleeping, waking, and mental processes; that epilepsy is a sort of neurological storm set off by stimulation of a convulsion-causing brain center; that different kinds of brain activity occur under different anesthetic agents; and promises much future information about mental processes in health and disease. Scientists engaged in this research were: Drs. F. A. Gibbs, E. L. Gibbs, H. Davis, E. L. Garceau, A. Forbes, A. J. Derbyshire, B. Rempel, E. Lambert, Harvard University; Drs. H. H. Jasper and L. Carmichael, Brown University; Dr. A. L. Loomis and Garret Hobart, Loomis Laboratories, Tuxedo Park, N. Y., and Professor E. Newton Harvey, Princeton University.

Electrical impulses generated in the brain during sleep and dreams are paralleled in the case of deaf-mutes by similar impulses in the hands and arms, which they use in speech, experiments by Dr. Louis W. Max, New York University, disclosed.

A substance that can be applied to the outside of teeth to relieve pain during drilling and other dental procedures was announced by Dr. L. L. Hartman, Columbia University.

Dr. William H. Howell, emeritus professor of physiol-

ogy, the Johns Hopkins University, discovered that the blood platelets are formed in the lungs by giant cells called megacaryocytes.

Heart muscle tone is the chief factor influencing the blood flow through the heart's arteries and should be considered in prescribing drugs for heart disease due to occlusion of these arteries, Dr. William B. Kountz, Washington University School of Medicine, reported.

Choline, produced by the pancreas, is a vitamin essential for liver function and probably an important factor in control of diabetes, Dr. C. H. Best, co-discoverer of insulin, and Dr. M. Hershey and Miss M. E. Huntsman, all of the University of Toronto, found.

Relief of several cases of hitherto hopeless Pick's disease by surgical removal of part of the pericardium was reported by Drs. Paul D. White and E. D. Churchill, Massachusetts General Hospital, Boston.

A new hormone, enterogastrone, produced by the upper intestinal walls, which may aid treatment of stomach ulcer because it inhibits stomach activity, was announced by Professor A. C. Ivy, Northwestern University Medical School.

Synthetic production of male sex hormones was reported by Dr. L. Ruzicka, Zurich, Switzerland.

Evidence presented by Dr. L. G. Rowntree and colleagues indicates that extract of pineal gland causes precocity of sexual development and premature cessation of body growth.

First scientifically controlled test of the Park-Brodie infantile paralysis vaccine was made by U. S. Public Health Service on over 1,000 children during the North Carolina epidemic, but was inconclusive as no cases developed in either control or vaccinated groups.

A slight drop in the cancer death rate appeared in life insurance statistics for the first nine months of 1935.

Length of life can be predicted by measuring change of the eye lens' power of accommodation, early presbyopia indicating probability of a shorter than average life, Dr. Felix Bernstein, Columbia University, found from research on thousands of individuals in Germany.

Progress in cancer research was marked by chemical studies of cancer-producing substances; one of these, methylchloranthrene, was made synthetically by Professor Louis F. Fieser and M. Fieser, E. B. Hershburg, M. Newman and A. M. Seligman, Harvard University; discovery of two new cancer-producing chemicals, tetraphenylmethane and triphenylbenzene, by Professor Avery A. Morton and Dr. Donald B. Clapp, Massachusetts Institute of Technology, and Dr. Charles F. Branch, Evans Memorial Hospital, Boston, show that the production of cancer by pure hydrocarbons is much more general than supposed.

Discovery that the female sex hormone produces tissue changes similar to beginning stages of cancer furnished evidence of a long-suspected but unproved relation between sex and cancer to Professor J. B. Collip and Drs. H. Selye and D. L. Thomson, of McGill University.

Inoculating cancer cells into the skin instead of under it made mice immune to cancer, is reported by Professor

Alexandre Besredka and Dr. Ludwik Gross, of the Pasteur Institute, Paris.

Discovery, in connective tissue tumors, of sex hormones which definitely influenced growth of the tumor indicated to Dr. Charles F. Geschickter and Dean Lewis, the Johns Hopkins Hospital and University, that a connection may exist between sex and cancer.

Further support of the idea that heredity plays a part in cancer was seen by Dr. Raymond E. Militzer, Pondville Hospital, Massachusetts Department of Public Health, in the first known cases of simultaneous occurrence of stomach cancer in identical twins.

Isolation of the active principle of ergot, drug used in childbirth, was announced by several investigators, working independently.

A new amino acid, alpha-amino-beta-hydroxybutyric, essential for growth and life, was discovered, identified and prepared synthetically by Dr. William C. Rose and associates, Dr. H. E. Carter, Richard H. McCoy and Madelyn Womack, University of Illinois.

A substance which checks the action of the important digestive enzyme, trypsin, was discovered, isolated and prepared in pure crystal form by Drs. John H. Northrop and M. Kunitz, Rockefeller Institute for Medical Research, Princeton, N. J.

Ventricular fibrillation, fatal heart condition and auricular fibrillation, another grave heart disorder, may be caused by the external nerves of the heart, researches by Drs. Louis H. Nahum and H. E. Hoff, Yale School of Medicine, revealed.

Ultra-violet rays, heat and calcium salts are three inter-related factors in the production of cataract, Dr. Janet Howell Clark, the Johns Hopkins School of Hygiene and Public Health, found.

Maternal instinct in young rats is due to the influence of prolactin, pituitary gland hormone, and can be aroused in young virgin rats by injections of this hormone, was found by Drs. Oscar Riddle, Ernest L. Lahr and Robert W. Bates, Carnegie Institution of Washington.

Effect on the body of thyroid gland hormone and thyroid stimulating hormone of the pituitary gland is greatly influenced by temperature, lowered metabolic rate being produced by either of these hormones when given at 59 degrees Fahrenheit, Drs. Oscar Riddle, Ernest L. Lahr and Robert W. Bates, Carnegie Institution of Washington, found.

Important aid for the treatment of liver disease and for preparing patients suffering from fatty livers for operation was the discovery by Drs. J. L. Bollman and F. C. Mann, Mayo Clinic, that the composition of the liver can be varied within wide limits by diet.

Breeding experiments with mice, reported by Dr. E. C. MacDowell, Carnegie Institution of Washington, indicate that occurrence of leukemia, cancer-like condition of white blood cells, is increased through inheritance on the maternal side.

A method for keeping glands and possibly other organs alive outside the body by feeding a blood substitute by a mechanical "heart" was reported by Dr. Alexis Carrel, Rockefeller Institute, and Colonel Charles A. Lindbergh.

Cause of the paralytic disease, multiple sclerosis, may

be clotting of blood in the small veins of the brain, possibly as a result of infection, researches by Drs. Philip Solomon, Mary E. Dailey and Tracy J. Putnam, Harvard Medical School, indicated.

The world's record smallest viable baby, weighing one pound at birth, was born in El Paso, Texas.

Putting a specially prepared fat or olive oil mixture into the veins is a new method developed by Drs. L. Emmett Holt, Jr., Herbert C. Tidwell and T. F. McNair Scott, the Johns Hopkins Hospital, for treating babies suffering from severe nutritional disorders.

A new function of the pituitary gland, control of the reticulo-endothelial system, which is concerned with production of new blood cells and destruction of old ones, was indicated in experiments of Professor E. C. Dodds, Courtauld Institute of Biochemistry, and Dr. R. L. Noble, London.

First part of the human brain to develop is the area controlling what is called the body sense, Dr. Frederick Tilney and associates at the Neurological Institute, New York City, found in a study of the correlation between brain development and human behavior.

New evidence for the resonance theory of hearing was found by Dr. Elmer Culler, University of Illinois, and Dr. S. S. Stevens, Harvard, who, working independently, mapped the basilar membrane, locating experimentally the areas where each frequency range is picked up.

Very intense noise causes deafness for pitches other than that of the stimulus and injury in the ear's organ of Corti at points not involved in picking up moderate tones of similar pitch, researches at Harvard, Clark and Princeton Universities indicated, providing evidence that the resonance theory of hearing may need modification.

Evidence that the stimulus to the nerve of hearing is chemical and not electrical was obtained in researches by Drs. A. J. Derbyshire and H. Davis, Harvard Medical School.

A loud high-pitched sound produces more ear strain and greater loss of hearing if it is interrupted every second instead of being continuous, Dr. Elmer Culler and Glen Finch, University of Illinois, reported.

Chemical analysis of crystals of the fertility vitamin, E, show it to be a quite complex higher alcohol, Drs. H. M. Evans, O. H. Emerson and G. A. Emerson, University of California, reported.

An international clearing-house for serums used in treating, diagnosing or preventing disease was established at the Royal Danish Serum Institute, Copenhagen, by action of the Congress of Biological Standardization in connection with the League of Nations Hygienic Congress.

First step toward a simpler, cheaper and safer method of making Rocky Mountain spotted fever vaccine was apparently taken by Dr. R. E. Dyer and Ida A. Bengtson, U. S. National Institute of Health, when they succeeded in growing the virus of this fatal disease on chick embryos.

A physiological approach to methods for correction of stuttering was suggested by the finding of Hazle Geniesse, University of Michigan, that walking on all fours enabled stutterers to speak normally.