

PHYSICS

Mesons Explode in Body

You and everything else on earth are constantly bombarded with cosmic ray particles. This produces an explosion in your body every minute.

► ONCE A MINUTE even as you read this a meson explodes inside your body and produces three pieces of sub-atomic "shrapnel," one mysterious bullet of which could penetrate literally millions of miles of lead.

Hot on the trail of what happens to cosmic ray particles when they disappear near the earth's surface after having come in from outer space, Dr. John A. Wheeler, Princeton physicist, pictured for the American Association for the Advancement of Science, meeting in Washington, what happens.

Only one of the three pieces of the splitting of the meson (that's the cosmic ray particle) has been actually discovered—the electron, the unit of electricity. Another piece is the neutrino, a neutral particle that is almost not there at all (it has what the physicists call zero rest mass). This is the one that has such neutrality, small size and great energy that it could drive through solid lead for 200,000,000,000 miles! Since 1932 when Prof. W. Pauli conceived

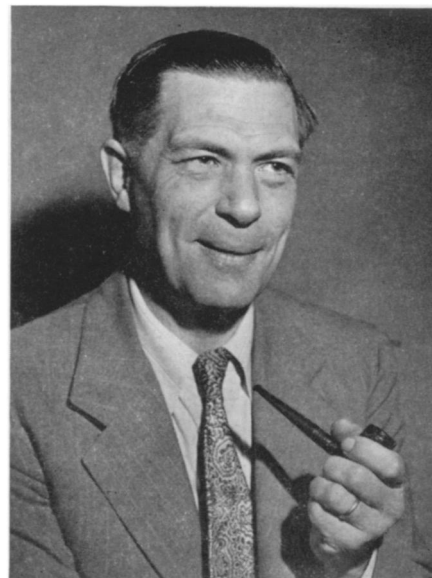
it, scientists have been confident that it actually exists because they need it to explain what happens in the atomic world. But they despair of finding it.

The third particle is a neutral meson, undetected, but probably 50 times the weight of an electron, contrasted with the original meson of 200 times the electron's mass. It, too, is very energetic.

Everything on earth, including you and your friends, is bombarded constantly by this radiation from the depths of the universe. It has been going on for ages, so far as we know. The idea of the way particles die and give birth to other particles is new.

A Brazilian, Dr. Jayme Tiomno, aided Dr. Wheeler in his research, while Dr. W. Y. Chang on leave from Peiping University discovered upon cosmic ray photographs the strange appearance of an electron that bobbed up some distance from where a meson was stopped dead in its track.

Science News Letter, September 25, 1948



NEW ADMINISTRATIVE SECRETARY—Dr. Howard A. Meyerhoff, geologist at Smith College, Northampton, Mass., succeeds Dr. F. R. Moulton, as secretary of the A. A. A. S.

GENERAL SCIENCE

Administrative Secretary Of A.A.A.S. Appointed

► DR. HOWARD A. MEYERHOFF, professor of geology at Smith College, Northampton, Mass., has been appointed administrative secretary of the American Association for the Advancement of Science, to succeed Dr. Forest Ray Moulton, noted astronomer, who has held the post for the past 12 years.

A native of New York City, Dr. Meyerhoff was educated in the public schools of that city and completed his college training at the University of Illinois. He received master's and doctor's degrees in geology at Columbia University. Although he has been on the teaching staff of Smith College 24 years, he has been professionally active in the Caribbean, where he has served as geologist on the Scientific Survey of Puerto Rico and the Virgin Islands, consultant to the Dominican Republic and adviser on many public and private projects. He has recently returned from an Andean expedition in Argentina, which he directed.

The new administrative secretary brings an assortment of non-professional experience to his job. He was director of civilian defense in the Connecticut Valley region of Massachusetts during the war, and he also served as mediator and chief hearings officer on the National War Labor Board from 1942 to 1945. For nine years he was chairman of the Board of Directors of the Propper-McCallum Hosiery Company, and has been chairman of the Arbitration Board

GENETICS

Biochemistry of Genes

► HOW CAN PEOPLE and plants and animals be so much alike yet so different from even their closest kin?

Biochemical explanations for the strange workings of heredity were offered before the meeting in Washington of the American Association for the Advancement of Science by a series of speakers: Prof. Tracy M. Sonneborn of Indiana University, Prof. David Bonner of Yale University, Prof. Curt Stern of the University of California and Prof. Laurence H. Snyder of the University of Oklahoma.

Discussion of heredity, whether in men, mice or microbes, always revolves around genes. Nobody has ever seen a gene, just as nobody has ever seen electricity; scientists are sure of their existence because of the things they catch them doing.

Genes are submicroscopic units of living stuff that roost on or in the chromosomes, which are small rod-shaped or round bits of specialized protoplasm that can be seen with a microscope within the nuclei of cells. They are considered to be chemically highly potent, able to cause and control the production of various substances in the rest of the cell's protoplasm, which is known as cytoplasm.

These actions of the genes on the cyto-

plasm may determine the development of such body chemicals as the coloring matter in hair, skin and eyes, the various blood-group factors, and the enzymes and hormones that operate in digestion, respiration and other body functions. Abnormal action on the part of the genes may produce such inherited chemical disturbances as diabetes and gout.

Individual differences apparently arise through differences in the response of cytoplasm to the chemical influences of the genes. It even seems likely that some of these cytoplasmic entities which the genes help to set up become quasi-independent, producing types of hereditary transmission that are carried on mainly or altogether in the cytoplasm.

Tiny animals like fruitflies, and latterly even one-celled forms like certain molds and protozoa, have been favorite experimental material for this kind of research because they are inexpensive to maintain, breed readily and rapidly, and do not present such complexities in interpreting results as are presented in the uncontrolled matings of human beings. Eventually the results of these laboratory researches are often capable of expression in human terms.

Science News Letter, September 25, 1948

of the Maryland Drydock Company in Baltimore. For several years he has been active in the work of the Industrial Mineral Division of the American Institute of Mining and Metallurgical Engineers.

Dr. Meyerhoff has served the Association as secretary of the Section on Geology and

Geography from 1937-1940, and as executive secretary in 1945-46. He was also vice president in 1944. He plans to continue his academic duties at Smith College until June 1949, although he will take office in January, when Dr. Moulton retires.

Science News Letter, September 25, 1948

tor, Harvard College Observatory, Cambridge, Mass., retiring president of the A. A. A. S.; Dr. Elvin C. Stakman, University of Minnesota, president-elect 1949; Dr. E. U. Condon, Director, National Bureau of Standards, Washington, D. C.; and Dr. F. R. Moulton, Administrative Secretary, A. A. A. S., Washington, D. C.

Science News Letter, September 25, 1948

Letters To The Editor

New Clotting Factors

For the sake of historic accuracy concerning the discovery of new clotting factors (SNL, Sept. 4), it should be mentioned that in 1943 I discovered a hitherto unknown factor essential for prothrombin activity (AMERICAN JOURNAL OF PHYSIOLOGY, 140, 212, 1943) which undoubtedly is the same as the agent Dr. Paul A. Owren of Oslo, Norway, found one year later. In addition to this substance which I named the labile factor I have subsequently presented evidence that two additional factors are essential for prothrombin activity (AMERICAN JOURNAL OF PHYSIOLOGY, 151, 63, 1947).—Dr. Armand J. Quick, Professor of Biochemistry, Marquette University School of Medicine.

Rainbows within Rainbow

In the Colorado River Valley area numerous rainbows are seen during the spring and summer.

On Aug. 5 at 6:45 p. m. MST, my wife, family and I were attracted by a particularly bright rainbow. This rainbow was a conventional bow with red outside and green inside. However, three smaller concentric contiguous rainbows were inside the main rainbow. In addition, an inverse rainbow with green outside and red inside could be seen plainly about 15 degrees outside the main rainbow.

The brightness of the bow decreased considerably in the few minutes that my

daughter spent looking for my movie camera loaded with color film, so no photographs were taken.

Is such a sight unusual? What conditions must exist for these rainbows to be seen?—Tell Ertl, Rifle, Colo.

What a pity you did not get that camera in time as such a gorgeous array of rainbows—primary, secondary and several supernumerary bows—are seldom seen. Dr. W. J. Humphreys, formerly of the U. S. Weather Bureau, reports that he has seen supernumerary bows both inside the primary bow and outside the secondary one. He has spotted as many as half a dozen, crowded close together, inside the major rainbow. For such a spectacular display, Dr. Humphreys says the sunlight must be exceedingly bright and the rain heavy, but clear air between you and the rainbow.

On This Week's Cover

➤ IN COMMEMORATION of its centennial, the American Association for the Advancement of Science was offered congratulations from many foreign countries. On the cover Sir Oliver Franks, the British Ambassador, is shown offering a scroll from the British Association for the Advancement of Science to Dr. Edmund W. Sinnott, president of the association, on the opening evening of the week-long session. Seated left to right in the first row on the platform are: Dr. Harlow Shapley, Direc-

tor, Harvard College Observatory, Cambridge, Mass., retiring president of the A. A. A. S.; Dr. Elvin C. Stakman, University of Minnesota, president-elect 1949; Dr. E. U. Condon, Director, National Bureau of Standards, Washington, D. C.; and Dr. F. R. Moulton, Administrative Secretary, A. A. A. S., Washington, D. C.

Science News Letter, September 25, 1948

SCIENCE NEWS LETTER

Vol. 54 SEPTEMBER 25, 1948 No. 13

68,800 copies of this issue printed

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., North 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change, please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright, 1948 by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service. Science Service also publishes CHEMISTRY (monthly) and THINGS of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STAt 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, Princeton University; Karl Lark-Horowitz, Purdue University; Kirtley F. Mather, Harvard University. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. Nominated by the National Research Council: Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University; Alexander Wetmore, Secretary, Smithsonian Institution. Nominated by the Journalistic Profession: A. H. Kirchofer, Buffalo Evening News; Neil H. Swanson, Baltimore Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate; H. L. Smithton, E. W. Scripps Trust; Frank R. Ford, Evansville Press; Charles E. Scripps, Scripps Howard Newspapers.

Officers—President: Harlow Shapley, Vice President and chairman of Executive Committee: Alexander Wetmore, Treasurer: O. W. Riegel, Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Frank Thone, Jane Stafford, A. C. Monahan, Marjorie Van de Water, Martha G. Morrow, Ron Ross, Lydia Schweiger. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe.

Question Box

ANTHROPOLOGY

How do boars contribute to war among New Guinea natives? p. 201

ASTRONOMY

Why may the earth be due for a new Ice Age? p. 197

BIOCHEMISTRY

For what reason may streptomycin fail against lung TB? p. 200

CHEMISTRY

From what will food in the future be made? p. 198

GENETICS

What explanation is offered for the differences in people? p. 195.

Photographs: Cover, p. 195, p. 197, p. 199, Fremont Davis.

GEOLOGY

How are fossils aiding temperature studies of ancient seas? p. 200

PHYSICS

What is happening in your body every minute? p. 195

PSYCHOLOGY

Why may hay fever be induced by unhappiness? p. 205

ZOOLOGY

From where may your hair have originated? p. 198