

BACTERIOLOGY

New Invisible Chapter In Disease Germ Life Found

Ability of Familiar Germs to Diminish in Size to Filterable State May Explain How Diseases Can Lie Dormant

AN UNKNOWN chapter in the life of common disease germs, during which they are invisible through the most powerful microscope and so small that they slip through the finest filters, was announced to the Society of American Bacteriologists at Cambridge by Prof. Philip Hadley of the University of Michigan.

Cholera, typhoid, dysentery, diphtheria and other germs were shown by the experiments of Professor Hadley and his associates, to take on a filterable state of existence when roughly treated by chemicals, digestive fluids and unfavorable food. This new G type culture, as Professor Hadley has named it, differs markedly in form, growth, chemical and serum reactions from the ordinary types of the germ.

The consequences of this discovery made as the result of intensive work in Professor Hadley's laboratory since 1927 can not now be foreseen.

The germ of dysentery, known as the Shiga bacillus, which was the organism most thoroughly studied in the G type stage, was found to be non-toxic when rabbits were infected with its invisible stage. On the other hand, the bacillus in its invisible state was resistant to its usually effective enemy, the bacteriophage or "bacteria eater."

It seems probable that Professor Hadley has discovered a reason why diseases can lie dormant for a time and then later become dangerous. After the germ has been induced to take its G type existence, it propagates itself and retains the characteristics of its invisible form. But after some weeks of growth of the culture, the germ reassumes its common form. This indicated to Professor Hadley that his G type cultures are a real stage in the changing existence of the bacterial races.

The finest porcelain filters that can be made do not have holes small enough to separate the organisms of the young broth cultures of the new G type from the liquid in which they grew. Moreover, the filtrates and the cultures themselves when sealed up for more than

two years were alive and ready to produce the common form of germ.

Professor Hadley considers the filterable virus forms he has been investigating as comprising, at least in part, the bacterial microgonidia, which correspond loosely to reproductive cells or spores. These microgonidia are liberated from the cells and filaments of the germs at a certain point in their development.

Miss Edna Delves and John Klimek aided Professor Hadley in his research which was conducted in the hygienic laboratory of the University of Michigan.

Science News Letter, January 3, 1931

PSYCHOLOGY

Psychologist Measures Moral Age of Individuals

YOU have been told that psychology can estimate how old you are mentally, and socially. Now comes a new yardstick: How old are you morally?

The new measuring scale was reported to the American Association for the Advancement of Science by Prof. F. J. Shields of the Connecticut College for Women and Prof. E. A. Lincoln of Harvard.

A child develops gradually in moral judgment until he reaches maturity, and in the average person this moral maturity is not reached until well over sixteen years, Professor Lincoln said in presenting the "tentative conclusions" of the investigation. That the word guilty has no meaning to a child under ten or eleven years of age, is one of the vocabulary facts that the two professors discovered when they probed into the moral understanding and attitude of people of different ages and different kinds of environment.

The effect of environment in shaping a child's attitude toward moral questions was clearly shown in the case of a little Italian boy of twelve years. This child ranked stealing as worse than

murder. When questioned, he insisted that was right, and showed that killing was taken rather as a matter of course in his neighborhood if affairs shaped seriously in that direction.

Many individuals grow faster mentally than they grow morally, so to speak, the investigation showed.

There is no evidence that the person who has a mature understanding of moral questions will act accordingly, the professors admit. The test is expected, however, to prove useful in studying the problem individuals who get into trouble in society and whose attitudes toward the world have to be studied in the courts, in clinics, and in schoolrooms.

Science News Letter, January 3, 1931

ELECTRICAL ENGINEERING

Pioneer Radio Work Brings Dr. Conrad Award

PIONEERING work in radio-telephone transmission before the days of broadcasting, and the building of an amateur radio telephone transmitter which resulted in the world's first broadcasting station, KDKA, have brought to Dr. Frank Conrad, of the Westinghouse Electric and Manufacturing Co., Pittsburgh, the Edison Medal, the highest award of the electrical engineers in the United States.

Announcement of this year's award, the twentieth to be granted, was made by the American Institute of Electrical Engineers. In addition to his developments in radio, Dr. Conrad has made important contributions to alternating current work and arc lamp design. He has been in the employ of the Westinghouse Company since 1890 and is now assistant chief engineer.

Science News Letter, January 3, 1931

MEDICINE

Maternal Care Saves Mothers and Babies

MOTHERS who have adequate care when their babies are born and during the months before and after have about three times as good a chance to survive as mothers in the same locality and circumstances who do not have this care, it appears from a statistical study made by Dr. Louis I. Dublin of the Metropolitan Life Insurance Co. Dr. Dublin reported the results to the Maternity Center Association in New York.

During a six-year period in the Bellevue-Yorkville district of the city, mothers who did not have the care of the association showed a maternal mortality rate of 6.2 or nearly three times as high as the rate for mothers who had that care, Dr. Dublin reported.

Of the 4,726 mothers studied, during a period of eight years, no woman under care died before her child was born. Only 11 died after the birth of the child, the deaths being from puerperal causes. The babies of these mothers have about twice the chance of being born alive that the average white baby has in New York City. Those born alive, have three times the chance of living beyond one month that the other babies of their district have.

While there is still room for improvement in maternal and infant mortality even under the regime of the association, the country as a whole can profit by the lessons of the association's work.

Science News Letter, January 3, 1931



THE ATHENAEUM

At the California Institute of Technology, Pasadena, where Professor Einstein is expected to be a guest

METEOROLOGY

English Rainfall Predicted For Coming Decade

ENGLAND is due for a rainy time in the second half of 1932, the first half of 1934, the first half of 1935, and especially in the second half of 1937. In the latter year, the rainfall will average 43 per cent. more than the mean for nearly a century. On the other hand, English rainfall will be deficient in the first half of 1931, throughout 1936, especially the first half, the first half of 1939 and the second half of 1940.

These are the predictions of Dr. Dinsmore Alter, professor of astronomy at the University of Kansas, announced in Cleveland before a meeting of the American Meteorological Society. He has just returned from a year in England where he made his studies of periodicities in English rainfall.

Using the mathematical method known as a "periodogram," Dr. Alter has found eleven separate terms that vary periodically and affect the rainfall. Using these terms, and data that were available in 1925, he made predictions of the excess or deficiency of rainfall from then until 1930. The curves showing the predicted rainfall, and the actual observations, follow each other very closely. The predictions were made

after the years in question, but they could have been made in 1925, as the same material was then available.

Dr. Alter has continued these predictions to 1940. If these are as close to the truth as the 1925-1930 period, they should establish the value of his method.

Science News Letter, January 3, 1931

GENERAL SCIENCE

Science Athenaeum Opened at Pasadena

WHEN Prof. Albert Einstein comes to Pasadena this month it is expected that he will visit the new Athenaeum of the California Institute of Technology at Pasadena.

In this \$500,000 building, just completed and opened this fall, Prof. Einstein will find congenial thinkers and fellow scientists. For the whole building is devoted to the social interests of the California Institute of Technology, the Mount Wilson Observatory and the Huntington Library and Art Gallery, to serve as a gathering place for scholars and visiting scientists, the staffs and

research students of these institutions. It has already a membership of 400.

The building, designed in Mediterranean architecture to harmonize with the other structures of the campus, has a spacious lobby, a large, beautifully appointed lounge, several small dining rooms and one seating 500 people. These may be thrown into one for important banquets, and adjoining them is a salon-hall known as the Hall of Associates, in which weekly lectures and demonstrations will be held as well as more social functions.

Science News Letter, January 3, 1931

BIOLOGY

Two-Headed Baby Reported to Scientists

A BABY with two heads, that died as soon as it was born, was reported before the meeting of the American Society of Zoologists in Cleveland by Leo E. Buss of the University of Detroit.

A preliminary examination of the anatomy of this ill-starred little being showed that it was a sort of half-way stage between a normal individual and a pair of Siamese twins. It had two separate hearts and two stomachs. Two separate spinal columns rose from a single pelvis. On the mid-line of its body there was a third arm, containing a double upper-arm bone but only one bone in the forearm, where normal arms have two.

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