

SCIENCE NEWS

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ADVANCES IN MEDICINE IN 1927

THE 1927 Nobel prize for medicine was awarded Prof. Julius Wagner-Jauregg, of Vienna, for his treatment of paresis by inoculation with malaria.

Cancer in the chicken can be rendered inactive by small quantities of aluminum and calcium salts, according to Mrs. Margaret R. Lewis and Dr. Howard B. Andervont.

A "heart hormone," or internal secretion that stimulates the heart to keep it beating, was discovered by Dr. Ludwig Haberlandt, of the University of Innsbruck.

Thyroxin, the hormone of the thyroid gland, was made synthetically in the laboratories of University College, London, by Dr. C. R. Harington and Professor George Barger.

Dr. J. J. Abel, of the Johns Hopkins University, has prepared a crystalline insulin which appears to be a pure hormone necessary for the maintenance of normal sugar metabolism.

"Synthalin," a German preparation designed to supplement or replace insulin in the treatment of diabetes, was at first widely hailed, but proved a disappointment.

Discovery of a new drug, "myrtillin," as a valuable treatment for diabetes was announced to the American Medical Association, by Dr. Frederick M. Allen, of Morristown, N. J.

Liver extract can be used to cure pernicious anemia, Drs. George R. Minot, William P. Murphy and E. J. Cohn, of Harvard University, announced; also the latter extracted from liver an extract which produces red corpuscles which is probably the active ingredient.

A diet that simulates a condition in the body brought about by starvation, has been found by Drs. F. B. Talbot, K. M. Metcalf and Margaret E. Moriarty at the Massachusetts General Hospital in Boston, to give very successful results in treating epileptic children.

Vitamin C, the substance that wards off scurvy, is present in milk as well as in the fresh vegetables usually relied on to supply it, was the report by Professor L. F. Meyer, following extensive experiments at the University of Berlin.

Ergosterol was declared to be the really active and essential substance in the antirachitic vitamin, by a number of investigators working independently of each other.

Dr. Alfred F. Hess, of New York, reported that dried milk that has been treated with ultra-violet light is the most practical of the irradiated foods that have been used to prevent rickets in babies.

Preventive vaccination for smallpox and typhoid, large quantities of quinine and elaborate mosquito control measures contributed to checking outbreaks of disease epidemics in the South after the Mississippi flood.

Drs. E. G. Wakefield and W. W. Hall, of the U. S. Navy Medical Corps, completed a systematic survey of

heat injuries and one of the first investigations into the physiological reactions underlying sunstroke.

Scientists at Berlin have shown that it is possible to change simple embryonic tissues into malignant tissue by exposing the former in tissue cultures to the action of arsenic.

Discovery of the germ causing trachoma, a serious disease of the eye that has been especially troublesome among the Indians, was announced by Dr. Hideyo Noguchi, of the Rockefeller Institute, N. Y.

A curative antitoxin for erysipelas, first developed by Dr. K. E. Birkhaug, of Rochester, N. Y., has been tried out with highly successful results at the Bellevue Hospital in New York, which has one of the largest erysipelas clinics in the world.

Streptococcus germs isolated from skin lesions of erysipelas are capable of causing sore throat without any skin affection, it was found by Drs. George F. and Gladys H. Dick, at the John McCormick Institute for Infectious Diseases.

Progress in the work of developing a serum to fight the African sleeping sickness was announced by Dr. William H. Taliaferro, of the University of Chicago.

A color test for tetanus and diphtheria toxins has been worked out by Drs. Lucy Mishulow and Charles Krumwiede, of the New York City Health Department, that will greatly speed up the commercial production of these products. Hitherto toxins have had to be tested out on live guinea pigs, a time-consuming and not altogether accurate procedure.

Dr. Florence B. Seibert, of the University of Chicago, has produced an active protein in crystalline form which represents a step nearer the solution of the actual chemical nature of tuberculin.

Statistical evidence that the first-born child in a family is more likely to have certain malformations of mind and body than later children, and that such malformations are not likely to recur in later births in the same family, was presented by Dr. G. F. Still, professor of children's diseases at King's College, London.

The utility of X-ray photographs of the head as a positive means of identification was demonstrated by Drs. William L. Culbert and Frederick M. Law, of New York, when they identified an unknown body with their aid.

Heart disease occurs less frequently in children who have had their tonsils removed than in those who have not, said Dr. A. D. Kaiser, of Rochester, N. Y., before the American Medical Association.

An extract from the liver of dogs that will keep blood from clotting was discovered by Dr. W. H. Howell, of Johns Hopkins University.

A new anesthetic known as avertin that lacks many of the undesirable features of the anesthetics now in use, is being tried out in German hospitals.

A new and accurate chemical test for drunkenness, by which the subject's breath is passed through a chemical solution, was demonstrated to the American Medical Association by Dr. Emile Bogen, of the University of Cincinnati.

The Metropolitan Life Insurance Co. announced that their statistics showed that America has had more deaths from alcoholism since prohibition than before.

RELATIVITY

ONCE again photographic plates, exposed at the time of a total eclipse of the sun, help to substantiate the theory of relativity, as proposed by Einstein. This time it is the moon's diameter which is being measured. On plates made at the January, 1926, eclipse, which they went to Sumatra to observe, Dr. John A. Miller, director, and Dr. Ross W. Marriott, of the Sproul Observatory of Swarthmore College, find that the moon is just as large as at other times.

One of the possible experimental tests of Einstein's theory, announced in 1915, was on account of the fact that he considered light to have mass. This would result in its being pulled out of a straight line as it passed a heavy body such as the sun. Stars can only be observed near the sun at the time of a total eclipse. At such a time the stars around the sun should appear closer together than if the sun were not there. In 1919 English astronomers actually observed this effect at an eclipse visible in Brazil, and it was again verified at the Australian eclipse in 1922 by Dr. W. W. Campbell, of the Lick Observatory.

Another possible cause of this shift of star images on eclipse plates other than the one given by Einstein was proposed by Professor Charles Lane Poor, of Columbia University. He pointed out that the shadow of the moon in the earth's atmosphere during an eclipse forms a cone of cooler air. The observers are inside and as the light from the stars has to enter this cone, it might be deflected in the same way. As the edge of the moon is clearly seen during an eclipse, the light that grazes it should be similarly affected. This would mean that the moon's diameter, as measured on eclipse plates, should be less than the diameter of the moon at other times.

After unsuccessful attempts to make satisfactory plates at the eclipses in Mexico in 1923 and in New England in 1925, Dr. Miller and Dr. Marriott succeeded in 1926. A large camera, 65 feet long, with which the moon's diameter on the plate was about $7\frac{1}{2}$ inches, was used. The night before the eclipse one of the plates was exposed on some stars, then, the next day, on the eclipse. The stars, their positions being accurately known, gave points from which to measure the moon's diameter.

After months of careful measurement, Dr. Miller and Dr. Marriott have found that the plates show the moon's angular diameter, as it would appear from the center of the earth, to be 2001.30 seconds, with an uncertainty of .18 second. The most accurate figure for this diameter, from measurements made at other times, is 2001.35 seconds, with an uncertainty of .1 second. As the difference, which is much less than expected by Professor Poor,

is less than the uncertainty of each, Dr. Marriott has announced that there "is no measurable effect."

DR. BESREDKA'S EXPERIMENTS IN IMMUNIZATION

PILLS of dead bacilli are taken before breakfast for three days in the simple method of immunization against typhoid, dysentery and cholera now being used by people in large sections of Europe and Asia. The pills are preceded by doses of ox bile in the typhoid and cholera vaccination. This means of immunization which grew out of animal experiments made at the Pasteur Institute by Professor A. Besredka is becoming increasingly popular, according to Dr. Harry Plotz, his American assistant. It is being used extensively in France, Russia, Italy, Spain and India.

American workers in this field regard Dr. Besredka's figures as interesting and encouraging, but are of the opinion that they can not be accepted at their face value alone. Interpretation of such fundamental experiments, they maintain, is not entirely acceptable without further confirmation.

According to Dr. Plotz, "vaccination by the mouth is much simpler and easier for the patient. There are no disagreeable after-effects such as often follow vaccination under the skin and which, in the case of dysentery, proved so disastrous that the subcutaneous method was abandoned. It is also more rapid in its immunizing power. We have proved experimentally that immunization takes place a day or two after the last dose of vaccine is given."

Moreover, he stated, the new method is quite as effective as the old. Statistics show that in various typhoid and cholera epidemics where both methods were used, vaccination by the mouth was equally effective, and, in some cases, more so. Just recently Lieutenant-Colonel A. J. H. Russell, in a report to the medical section of the League of Nations, showed that he had found vaccination by the mouth and vaccination under the skin to be of equal effectiveness for cholera. He drew these conclusions after extensive vaccinations in towns in India, using both methods. Colonel Russell is director of Public Health, Madras, India. Vaccine by the mouth was given 4,982 persons. Of these 18 contracted the disease, with 4 deaths resulting. In other words, the percentage attacked was 0.36 with the deaths 22.2 per cent. of those. Among 11,004 unvaccinated controls, 222 contracted cholera and 93 died, making the percentage 2.02 attacked of which 41.9 per cent. died. Vaccine under the skin was given 8,485 persons of whom 31 contracted the disease, 2 dying. The percentage attacked was then 0.37 and the mortality 6.5. Of 29,254 unvaccinated controls in this experiment 489 contracted the disease, 184 dying. The percentage attacked was 1.67 and the percentage of mortality 37.6.

Professor Besredka's theory, which led him to experiment with oral vaccination, is simply that it is logical to vaccinate the organ that is infected during the course of the disease. In the case of dysentery, typhoid and cholera, the germ enters by way of the mouth and pro-

duces the disease in the small intestine. Then why not vaccinate by the mouth and emulate mother nature as much as possible? This is a far more direct way for the vaccine to reach the intestine than through the skin.

But to immunize against typhoid and cholera Professor Besredka found that it is necessary to administer ox bile first. Bile prepares the mucous membrane of the intestinal wall to receive the dead bacteria which are given by the mouth. It removes the mucous and prepares for the absorption of the vaccine which might otherwise slip through the intestinal tract. In the case of dysentery, however, the bacteria in the vaccine are capable of performing this function.

THE YIELD OF TOBACCO IN THE RIO GRANDE VALLEY

HEALTH-RESORT sun and river irrigation water combine to produce in the middle Rio Grande Valley a yield of tobacco much greater per acre than that grown anywhere else in the United States. The nicotine content of the plants is twice that of crops produced elsewhere, according to R. G. Mewborne, chemist, who is president of a local tobacco company.

The extraordinary yield in this region of the Southwest is attributed to the fact that New Mexico receives more actual hours of sunshine in a year than other sections of the country. Sufficient food from the soil in the form of potash, for which tobacco has a greater appetite than most other plants, is supplied by the waters of the Rio Grande River which irrigate the valley farms.

The Rio Grande Valley qualified as a tobacco country in a series of experimental plot tests. The heavy trial yield justified the establishment of a tobacco-growing industry in this region.

While the various smoking types of tobacco show large increases in weight per acre, a species known as *rustica*, whose high nicotine content was developed by the U. S. Bureau of Plant Industry, is the chief commercial crop. This tobacco, as grown in the Rio Grande Valley, has such marked insecticidal properties that it is unnecessary to extract the nicotine as is ordinarily done. The whole plant is dried, pulverized and separated into different classes of insecticidal products, some for animal parasites, particularly for dipping sheep and cattle, and others for spraying and dusting insects in orchards, gardens and farms. The supply of insecticidal nicotine in the United States was formerly limited to waste material swept up in tobacco factories.

ITEMS

HEALTH and nutrition may play a part in determining keenness of hearing, according to an investigation made by Dr. Dana W. Drury, of Boston. Using an audiometer, Dr. Drury measured the acuity of hearing of four groups of children. The best hearing was found among a group of boys in a school where care is taken to maintain high physical and nutritional standards. The next best hearing average was made by children at an institute for the blind. One hundred children from the Boston public

schools average just a little lower than the blind children, and a group of children in a Massachusetts institution for state wards who are crippled and deformed had the least keen hearing of all. Of the numerous groups of different ages studied by Dr. Drury, the Harvard football squad at the close of the playing season exhibited the highest level of auditory keenness.

WHY some motormen and bus drivers have the hard luck of getting their car into accidents, while others sail along without much trouble has been investigated by two psychologists of the Personnel Research Federation. A connection between health and accidents was discovered among older drivers, the psychologists, Dr. Walter V. Bingham and C. S. Slocombe, report. Men over 50 years of age with abnormal blood-pressure had on the average more than twice as many accidents as men of the same ages and experience whose blood-pressure was normal. "It has not been generally recognized," they state, "that excessive blood-pressure, even when it is not so high as to indicate danger of a sudden collapse, may, nevertheless, be a symptom of incipient nephritis or of some systematic condition which affects general health and temperament to an extent which may seriously interfere with safe driving."

AN archeological find, throwing light on the little-known period following the withdrawal of the Roman legions from the German frontier early in the fifth century A. D., has been made by Dr. Fritz Fremersdorf, of the Wallraff-Richartz Museum at Cologne. It consists of an ancient Frankish graveyard, which was discovered during excavations in an athletic park in one of the suburbs of the city. Thus far 35 burials have been uncovered, consisting of skeletons of both men and women. The latter have articles of household gear about them, and the men are equipped with their warriors' weapons. These consist for the most part of the typical Frankish battle-axe, the long sword and the lance. One skeleton has the head of a long lance beside its right foot, and on the left side extending from shoulder to knee, was the blade of a magnificent sword.

DRIED whites of eggs, when included in the diet of rats, produces a curious new type of disease, Dr. Margaret A. Boas, of the Lister Institute, has found. "After two or three weeks, red scaly patches appear at the corners of the animal's mouth, the coat becomes rough and sticky, and the long hairs fall out. The red patches then spread, and the baldness increases. There are also nervous symptoms. In all cases the rats lose weight progressively and soon die, although rats on the same diet, but with fresh instead of dried egg-white, live quite contentedly in perfect health." Dr. Boas does not consider that the disease is caused by a toxic substance, but believes that it is due to the deficiency of some essential food factor which is probably destroyed when the egg-white is dried. The dried egg-white can be rendered quite harmless, she has found, by adding some other substances to the diet, such as potatoes or arrowroot.