

MEDICINE

Synthetic Chemical Vaccines Against Pneumonia Announced

Rabbits and Mice Are Protected Against Type II By Artificial Antigens Built in Laboratory

ANTI-PNEUMONIA vaccines of sugars and acids made in the chemist's laboratory instead of in the pneumonia germ's body were announced by Dr. Walther F. Goebel, of the Hospital of the Rockefeller Institute for Medical Research, New York City, at the meeting of the Society of American Bacteriologists in New Haven.

Rabbits and mice were protected against Type II pneumonia by these artificial antigens, as Dr. Goebel terms them. No human trials were reported.

A sort of chemical dissection of the pneumonia germ was the starting point for production of the artificial antigens that give resistance or immunity to the disease. The specific polysaccharide or complex sugar of the Type III pneumonia germ was taken apart and one of its building stones used to make an antigen which, when injected into rabbits, called up pneumonia-fighting antibodies. Rabbits' blood containing these antibodies also protected mice against Types II, III, and VIII pneumonia germs.

A second antigen was prepared synthetically. This synthetic antigen differs from the natural one only in the chemical structure or architecture of one group of substances, the aldobionic acids, present in both. This single difference, however, is sufficient to make the natural and synthetic antigens very different for pneumonia vaccination purposes. For example, the synthetic one can protect mice against very large doses of virulent Type II pneumonia germs, but not against Types III and VIII germs.

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Influenza Vaccination

RESULTS of influenza vaccination on more than a thousand human subjects with a vaccine of living influenza virus made in the laboratories of the New York City Department of Health were announced for the first time at the meeting.

The influenza-preventing value of the vaccine could not be conclusively determined from this trial, Drs. Morris Siegel and Ralph S. Muckenfuss, of the New

York City Department of Health, reported.

One difficulty in evaluating the vaccine on its first trial was that it was given during the 1939 epidemic. Influenza virus, however, was probably not responsible for all the illness during this epidemic. The patients had symptoms of influenza, but the germ that made them sick was not the same as the virus usually considered the cause of influenza and used in making anti-influenza vaccine.

Blood tests of the vaccinated people, however, showed that their blood contained influenza-fighting antibodies for four or five months after vaccination with influenza virus vaccine. Mouse tests also showed that the vaccine had anti-influenza potency.

Further human trials of the vaccine are planned. The first trials were made at Letchworth Village, New York State institution for mental defectives at Thiells, N. Y. Of the 3,600 inhabitants, one-third were given the influenza vaccine.

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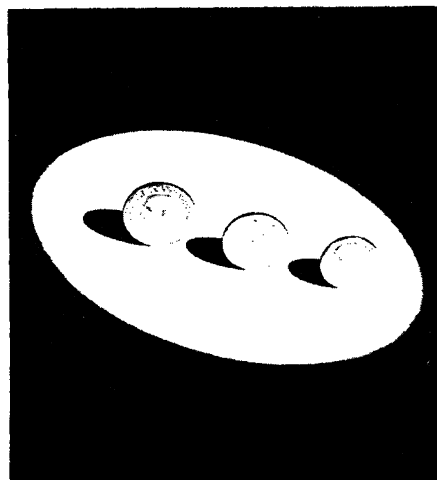
Sulfanilamide In Oil

SULFANILAMIDE and related chemical remedies for streptococcus and other germ diseases are more effective when given in oil than when given, as is usually done, in water or gum arabic, Dr. W. Harry Feinstone of the American Cyanamid Company reported.

The chemicals are absorbed more readily when given in oil, he found, and the concentration in the patient's blood remains at a curative level for longer periods.

New chemical derivatives of sulfanilamide, more active in mouse streptococcus infections than sulfanilamide, and capable of acting directly on the germs without first having to be broken down chemically in the body, were announced by Dr. Feinstone. These new chemicals, he said, were made by Drs. M. L. Crossley, E. H. Northey and M. E. Hultquist, of the Calco division of the American Cyanamid Company.

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STEEL COIN

Stainless steel gets new usage in Italy as her mints pour out an entire issue of coins made of a steel containing approximately 22% chromium, 12% nickel and a small amount of molybdenum. Smallest among the coins is about the size of our nickel, the largest slightly larger than our half dollar. The total issue will use about sixteen and one-half million pounds of stainless steel. Italians are becoming accustomed to have stainless steel substitutes for noble metals; about three years ago patriotic Italian women sacrificed gold wedding rings as a patriotic gesture. The government replaced them with bands of stainless steel.

MEDICINE

Federal Health Service Has New Vaccine

A NEW vaccine for protection against a new and possibly widespread feverish ailment spread by ticks is ready for its first trials on human volunteers, the U. S. Public Health Service announces.

The new vaccine, successful in guinea pig trials, was prepared by Dr. Herald E. Cox and E. John Bell, of the Rocky Mountain Laboratory of the National Institute of Health at Hamilton, Mont. It was made from germs from infected ticks and also from the same kind of germs grown on developing chick eggs.

A member of the Washington headquarters staff of the National Institute of Health was the first recognized human case of the new disease, which has been named *Rickettsia diaporica*. He contracted the disease while observing research on it during a visit to the Hamilton laboratories, and recovered after about one month's illness characterized by mild fever with chills, recurrent sweating and tender finger joints.

The ease with which the infection was picked up in the laboratory plus the fact that the infection occurs naturally in ticks suggests that there may have been other human cases. The disease is very similar to if not the same as the "Q" fever of Australia. The fact that

two such similar diseases exist at points so geographically far apart leads health authorities to believe that other cases must be occurring in both countries and probably in many countries between here and Australia.

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DENTISTRY

Tooth Decay Remedy Made By Sulfanilamide Discoverer

"Zephiran" May Prevent Caries by Stopping Production Of Lactic Acid; Is Powerful Germ Killer and Cleanser

A CHEMICAL weapon against tooth decay that may prove as effective as sulfanilamide is against streptococcus infections was announced by Drs. Benjamin F. Miller, Sigmund Bradel and John A. Muntz, of the Zoller Memorial Dental Clinic of the University of Chicago, in a paper presented before the meeting of the American Association for the Advancement of Science in Columbus.

The new anti-caries chemical, called Zephiran, was made by the man who gave sulfanilamide to the world and who was awarded the 1939 Nobel Prize for this achievement, Prof. Gerhard Domagk, of the I. G. Farbenindustrie in Germany.

Long-term studies of Zephiran on patients suffering from dental caries are now under way, following the promising results of laboratory experiments with it, the Chicago scientists stated.

When it was swabbed on the teeth of patients in preliminary trials, it stopped lactic acid production after two minutes of swabbing, and prevented any increase in general acidity. Since lactic acid in high concentration can destroy tooth enamel and thus give decay a chance to start, Zephiran promises to be a potent weapon against tooth decay.

Zephiran was tried after the Chicago scientists had found that two other chemicals, sodium fluoride and iodoacetate, markedly reduced the amount of experimental caries or tooth decay in rats. These two chemicals, it was believed, checked decay by interfering with enzyme processes involved in the growth or metabolism of bacteria associated with the decay process. Fluorine in drinking water, cause of the ugly mottled enamel condition of teeth, had previously been found by other investigators to play a role in caries prevention.

Search for a better and less poisonous

substance than sodium fluoride or iodoacetate to use on human patients led to the trials of Zephiran. This substance is, in chemical terms, alkyl dimethyl benzyl ammonium chloride. It is a powerful germ-killer. In addition, it acts as a cleansing agent, is relatively harmless to mucous membranes such as line the inside of the mouth, and it lowers the surface tension of water. This last property is important because it means the chemical is a good wetting and penetrating agent and can get into effective contact with the dense mass of germs in the dental plaque. Dental plaques are deposits on the teeth of material supposed to act as a medium for the lodgment of germs associated with the decay process.

Zephiran-swabbed and unswabbed plaques were removed from patients' mouths and studied in the preliminary trials. It was in these trials that the inhibition of lactic acid formation was discovered.

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Diabetics Miss Toothaches

DIABETIC children in general are spared the nagging pain of toothaches and the discomfort of having cavities in their teeth filled, it appears from a report by Dr. George Stein, of the Harvard Dental School.

A group of 82 patients who had acquired diabetes during childhood gave Dr. Stein the information he reported. Examination of these patients showed that caries, or tooth decay, was infrequent. If there was a marked susceptibility to caries at the onset of the diabetes, the progress of the caries and acquisition of new caries was slowed.

Difference in nutrition seems not to be the only reason for the low suscepti-

bility to caries, as all the patients Dr. Stein examined are on a normal mixed diet. Changes in the composition of the saliva and other factors seem to play a part, he said.

Pyorrhea and other diseases of the gums, on the other hand, do afflict diabetics, particularly as they grow older. Pyorrhea was not found affecting the temporary or "baby teeth," but one-fourth of the patients over 18 years of age had pyorrhea or other diseases of gums and tooth sockets, and three of these patients had lost all their teeth by loosening.

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POPULATION

Population Trend Alarming To Statistical Expert

ALARM over the trend toward lower birthrates was expressed by Prof. Raymond Pearl of the Johns Hopkins University in his presidential address before the American Statistical Association in Philadelphia in which he said people in the prime of life are contriving to throw off some of the burden of supporting young and old by having fewer children.

"Just possibly what mankind is slowly and steadily doing," Prof. Pearl warned, "may turn out in the long run to be the moral equivalent of curing a toothache by the effective but disastrous technique of cutting off the patient's head. There is no good in making life easier if there is not going to be anybody around to live it."

The world's population, he said, increased nearly five-fold in the three centuries between roughly 1630 and 1930. This brought about present efforts to lessen crowding and discomfort, which now are showing results in lowered birthrate and increasing numbers of the old.

Analysing the United States' biggest population problems, and citing "such weird economic philosophies" as those currently associated with "ham and eggs" or "\$200 a month," Prof. Pearl said:

"It is plain that the old folks, on the one hand, and the youngsters, on the other hand, by their own lusty bellowings and the supplementary skullduggery of their 'humanitarian' friends are ganging up, as the expressive phrase goes, on the half of the population that does the work, pays the bills and taxes, and in cold fact earns the livings for all."

Counting both young and old, the burden borne by the harassed section of the population between 15 and 50 years old, is actually not so great as it was a cen-