

MEDICINE

Hepatitis Vaccine in Sight

Hope for a hepatitis vaccine is seen with isolation of the viruses causing infectious and serum types of the liver-damaging ailment, Faye Marley reports.

► HOPE FOR a hepatitis vaccine beckons researchers on into 1962 as the worst year for the liver-damaging disease ends with an expected 75,000 reported cases.

Tedious months of testing lie ahead, but scientists believe success is just a matter of time.

Prisoners at the Illinois State Penitentiary, Joliet, continue to undergo tests given by Dr. Joseph D. Boggs of the Children's Memorial Hospital, Chicago, who worked with some 175 volunteer prisoners at Joliet when he successfully isolated the virus for infectious hepatitis.

From ten to 50 men at a time are participating in the present studies. None of them, including those volunteering for the original experiments, received promises of monetary reward or reduced sentences.

But Dr. Boggs told SCIENCE SERVICE that the vaccine "cannot possibly be finished by next spring" and he could not predict when the work would be done.

Symptoms Resemble Grippe

Symptoms of hepatitis may resemble mild grippe. There is usually, but not always, a yellowing of the eyes and skin as in jaundice. The urine becomes dark. Loss of appetite and weight may occur, and in the more serious cases there is mental confusion and hysteria. Depression is common.

Alcohol must be avoided for a considerable time, along with anything that puts a strain on the liver. Liver function is upset, causing some bile to escape into the blood instead of entering the bile ducts. This is what causes the yellow color of the eyes and skin.

Infectious hepatitis accounts for well over 90% of the hepatitis cases reported to the U.S. Public Health Service's Communicable Disease Center, Atlanta, Ga., Dr. Alexander Langmuir, chief, Epidemic Intelligence Service, said. "This causes comparatively few deaths," he said, "but patients may lose from one to three months to the illness."

However, 897 deaths from infectious hepatitis have been reported annually to the Public Health Service's Office of Vital Statistics for 1957, 1958 and 1959, with 880 estimated for 1960.

Hepatitis has been particularly common among children, U.S. Army troops, and in places where sanitation has been poor. Fecal matter containing the virus is a common cause of infectious hepatitis, but regional and family epidemics as well as those in institutions occur.

Water contaminated by sewage is considered the most widespread cause of infectious hepatitis.

In the first three months of 1961 Mississippi and Alabama traced 77 cases to consumption of raw oysters from a localized area at the mouth of the heavily contaminated Pascagoula River.

New York and New Jersey health authorities in early May, 1961, closed Raritan Bay and other nearby New Jersey waters to clamming because of a possible link between contaminated raw clams and the spread of infectious hepatitis.

In Alaska, Tlingit Indians suffered an outbreak of infectious hepatitis, and epidemics also occurred on the Menominee Indian Reservation in Wisconsin, and in Nebraska on the Omaha Indian Reservation.

In an Oregon home for mentally retarded patients, the water supply was probably at fault. During periods of low water pressure, a temporary cross connection between the water and sewage streams occurred.

Serum hepatitis, which has a 20% death rate, can be traced to the use of inadequately sterilized needles and syringes in doctors' offices.

An epidemic of eight cases of acute serum hepatitis in a New England community was caused by improperly sterilized instruments, according to Dr. H. Bruce Dull, now with Peter Bent Brigham Hospital, Boston. He reported in the Journal of the American Medical Association that the multiple-dose syringe is a hazard.

The Wyeth Laboratories in Philadelphia, the Pfizer Laboratories in Brooklyn and Eli Lilly and Company in Indianapolis have produced disposable syringes. In cases where the multiple-dose syringes resist sterilization by all the best-known methods, one-time syringes are recommended by health authorities.

A suspect lot of plasma reportedly caused 24 cases of serum hepatitis, according to hepatitis surveillance unit investigations of the Communicable Disease Center.

Ten hospitals over the U.S. were investigated in an attempt to identify possibly contaminated lots of plasma that might cause serum hepatitis.

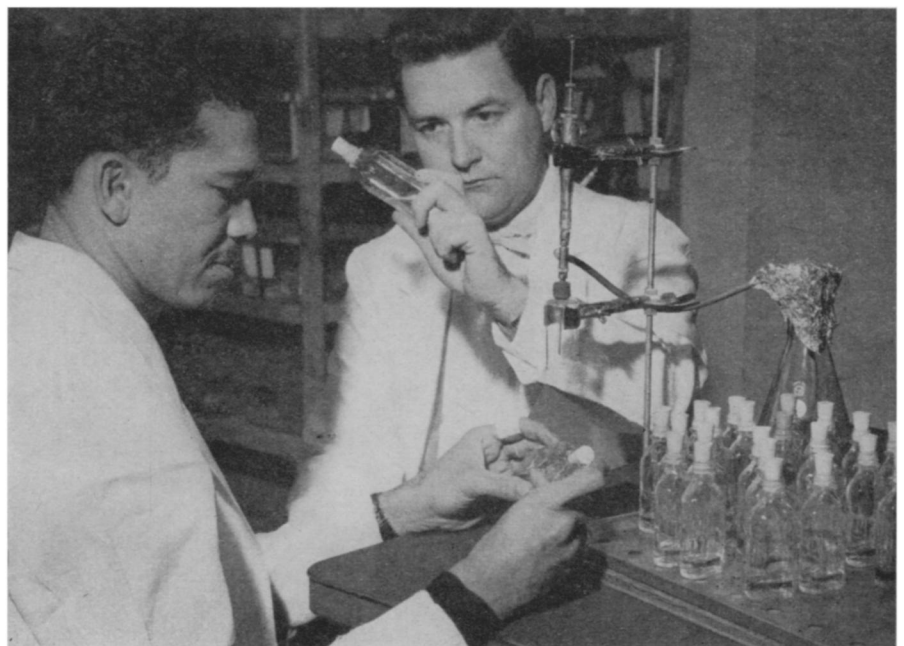
The CDC hepatitis surveillance unit said it would be helpful "if all plasma were dispensed through blood banks where a composite list of plasma recipients could be maintained."

Gamma Globulin Protects

Until a vaccine is developed, gamma globulin injections can provide short-term protection to those who have been exposed to the virus of infectious hepatitis. The American National Red Cross processes and distributes gamma globulin to its blood centers, public health agencies and state health departments.

Numerous virus hunts have taken place with an icterogenic pool (contaminated by jaundice, which is related to hepatitis) of human plasma at the National Institutes of Health.

Dr. Joseph P. O'Malley, a virus researcher



VIRUS COLONIES—Dr. Joseph P. O'Malley (right), virus researcher at the Division of Biologics Standards, National Institutes of Health, Bethesda, Md., and Alfred Segee, technician, seek the cause of serum hepatitis.

at the Division of Biologics Standards, NIH, cautiously announced recently that he had recovered an agent, referred to as A-1, in rabbit kidney tissue cultures inoculated with material from the NIH pool. However, he will not say that he has discovered a virus causing serum hepatitis, and continues his search. A great number of people have isolated agents from the serum of people with clinical hepatitis, but this is not necessarily the agent that is causing the disease, Dr. O'Malley said.

Three Arizona investigators who started their virus hunt with some of the plasma obtained from NIH believe they have really isolated the serum hepatitis virus.

Prisoners Inoculated

Dr. Vern Bolin, director of the Bolin Laboratories of Phoenix, Ariz., with Drs. John B. Alsever and James D. Barger of the Southwest Blood Banks in Phoenix, inoculated Arizona State Prison volunteers who later became ill with serum hepatitis.

But much work remains to be done by these and other researchers.

Two of the largest grants made recently for studies on hepatitis were given by the John A. Hartford Foundation of New York.

A \$408,900 grant was awarded to the Presbyterian Hospital in New York for a three-year study of both infectious and serum hepatitis. Dr. Stanley E. Bradley, director of medical service at the hospital, is directing the research.

The other grant, for \$327,000, went to Stanford Research Institute, Menlo Park, Calif. Dr. Gustave Freeman, chairman of the institute's department of medical sciences, will direct the research on "conventional and new concepts of the nature of the disease."

Eight Grants Made

Eight grants totaling \$80,000 have been made by the National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md.

Among the institutions receiving these funds will be Harvard University, for microbiological studies on human cells in test tubes in an attempt to cultivate the virus responsible for infectious hepatitis.

Johns Hopkins University, Baltimore, also received a grant, for experiments with virus hepatitis in mice. Washington State University, Seattle, received another to work on canine virus hepatitis in tissue culture. Children's Hospital in Los Angeles got another grant to work on gamma globulin and post-transfusion in hepatitis.

In addition to serum and infectious hepatitis, which are most common, toxic hepatitis can be contracted from a patient's allergy to chemicals. These include the cleaning compound, carbon tetrachloride; insecticides; chloroform; arsenic and substances inhaled, absorbed through the skin or taken by mouth.

While hepatitis viruses remain elusive and tricky, 1,000 to 2,000 cases of the disease each week are swelling the total of misery in this country.

• Science News Letter, 81:10 January 6, 1962

MEDICINE

Persistent Hoarseness Related to Arthritis

► PERSISTENT hoarseness can be a symptom of rheumatoid arthritis.

If the hoarseness is a symptom of damage to the cricoarytenoid joint, which is a major part of the voice box (larynx) controlling vocal cord movement, rheumatoid arthritis may be suspected.

The joint is difficult to see or feel except through mirror examination, but recent autopsy examinations revealed it was damaged in seven of eight persons who had been rheumatoid arthritis patients.

The damage ranged from irregularity to almost complete destruction of the articular joint surface. The microscope revealed inflammation.

Drs. Harry Bienenstock, George E. Ehrlich and Richard H. Freyberg of the Hospital for Special Surgery, New York, reported the autopsies to the eighth scientific interim session of the American Rheumatism Association meeting in Washington, D. C.

• Science News Letter, 81:11 January 6, 1962

TECHNOLOGY

Navy Designs Craft For Land, Sea Rescue

► A 29-FOOT craft that can skim over the sea buoyed up by its own cushion of air and land on the water for rescue operations has been designed at the U.S. Navy's David Taylor Model Basin in Washington, D. C. Known as GEM (ground effects machine), the craft can carry a crew of six men and can glide over rough terrain and mount slopes with a 40% incline.

A design feasibility study by H. Chaplin, made available by the Office of Technical Services of the U.S. Department of Commerce, reported that, powered with a free-turbine engine, the GEM's estimated top skimming speed three inches above any surface would be 80 miles an hour. The wide flat craft would weigh about 10,000 pounds.

• Science News Letter, 81:11 January 6, 1962

PUBLIC HEALTH

Radiation Sickness Can Be Treated

► RADIATION SICKNESS can be treated and most persons will recover just as they would from any other illness.

Serious effects, such as permanent sterility, burns over the entire body and loss of hair may occur if radiation exposure is high. Today's Health, Jan., 1962, reports. However, temporary effects are more common.

"It is true that if you receive a radiation exposure of approximately 300 roentgens over a short period of time there is a chance that after two or three weeks you may lose your hair," the magazine said. "But in several months your hair will grow back."

Similarly, persons made temporarily sterile may regain their ability to reproduce

after some weeks or months. The only time a person may be "burned" is when fallout remains on exposed skin surfaces instead of being washed off.

Radiation sickness is not really a sickness in the sense of a disease caused by germs, such as the common cold. Radiation has an effect only on living cells. The greater number of these cells affected, the greater the sickness.

The basic rule of treatment is to "treat the symptoms." If the victim complains of nausea or has a fever, these symptoms should be treated exactly as they would under other circumstances.

• Science News Letter, 81:11 January 6, 1962

METALLURGY

Sapphire "Whiskers" Increase Metal Strength

► THE INCLUSION of "whiskers" of sapphire grown from pure aluminum has been shown by scientists at General Electric Company's Missile and Space Vehicle Department to increase the strength of pure silver about five times. (Sapphire is a form of corundum, or Al_2O_3).

The method is based on the fact that the "whiskers," single sapphire crystals, retain their strength even at very high temperatures. However, they have neither the rigidity nor the bulk to be used as whole parts. It will be possible in the future to develop stronger combinations by using a higher percentage of whiskers, stronger whiskers, and using a stronger base metal, such as steel. At this stage, the major problems lie in the bonding the whiskers to the metal and eliminating pores in the finished composite.

• Science News Letter, 81:11 January 6, 1962

MEDICINE

Computer Used to Help Diagnose Heart Disease

► A COMPUTER has been used to help diagnose heart disease, five scientists reported to the Eastern Joint Computer Conference in Washington, D. C.

Information indicating the electrical, mechanical and acoustical properties of both normal and diseased hearts is stored in the computer's memory. After a person's electrocardiogram has been taken, the record is fed to the computer. It then determines the patterns of various wave forms and compares them to those in its memory.

This automatic system gives reproducible results that compare favorably with those obtained by cardiologists using manual methods.

C. A. Steinberg and W. E. Tolles of Airborne Instruments Laboratory, Deer Park, Long Island, N. Y., Sidney Abraham and Dr. C. A. Caceres of the U.S. Public Health Service, and Dr. A. H. Freiman of Cornell University Medical College, New York, developed the techniques for the use of a digital computer as an aid in diagnosing heart disease.

• Science News Letter, 81:11 January 6, 1962