MEDICINE

Make Valley Fever Vaccine

➤ IMMUNIZATION against valley fever is possible—for mice at least and soon may be for man, two University of California scientists from Berkeley have reported.

Valley fever, known technically as coccidioidomycosis, is a lung disease caused by an airborne fungus prevalent in arid regions of California and the southwestern United States. The immunization method was achieved through development of a "spherule-endospore vaccine."

This experimental vaccine can cut deaths from more than 50% in non-vaccinated mice to less than five percent.

The vaccine's effectiveness was demonstrated on animals infected by fungal spores entering the lungs via the nasal passages, which is the same way that man contracts the disease.

Problems remain to be solved, however, before tests can be made on man, Dr. Hillel B. Levine, associate bacteriologist, reported to the American Public Health Association in San Francisco. He described research conducted at the University's Naval Biological Laboratory with Dr. C. E. Smith.

Hope for an effective vaccine arose from Dr. Smith's work several years ago showing that even the mildest case of valley fever leaves the patient with a lifelong immunity to the disease.

Other studies showed that in highly endemic areas, such as near Bakersfield, Phoenix and El Paso, the disease infects almost 95% of the residents. Nearly two-thirds of these have no sickness with valley fever at all; the remainder are more serious, but in only a few cases is the disease fatal.

The work of Drs. Levine and Smith is based upon the known fact that the fungus *Coccidioides immitis* undergoes a startling change when it leaves the soil and infects man or animals.

Instead of focusing on the whiskery fungus found in the soil, as others had done in attempts to develop a vaccine, the California scientists worked out improved methods for growing and purifying large amounts of the fungus spherules and endospores—forms that are found in the infected body. They killed these particles, put them in a vaccine and began the immunization tests on mice.

First they infected the vaccinated animals by the nasal route with up to 500 valley fever spore particles. Less than five percent died. Next they infected non-vaccinated mice with only 20 or 30 spore particles. Some 50% died.

Eventually, they found that it took about 1,000 particles—far more than the number infecting man under natural conditions—to kill 50% of the vaccinated mice.

• Science News Letter, 78:309 November 12, 1960

MEDICINE

Many Early Miscarriages

➤ THE CHANCE for miscarriage is much greater in the early weeks of pregnancy than some previous reports have shown, two scientists from the University of California, Berkeley, have found.

Their five-year study, conducted on the island of Kauai, Hawaii, is the first attempt to follow all pregnancies in a community over a period of years.

The report shows a rate among early-reported pregnancies of 221 fetal deaths, commonly called miscarriages, per 1,000 total births, much higher than earlier studies based on medical records have indicated.

The risk of prenatal loss is probably highest in the first week of pregnancy, then declines gradually until the time of birth, their study showed.

These findings were reported to the American Public Health Association meeting at San Francisco by Dr. Fern E. French, biostatistician, and Dr. Jessie M. Bierman, professor of maternal and child health, of the University of California's School of Public Health, Berkeley.

One of the aims of the study was to identify every pregnant woman on the island of Kauai within a month after her first missed menstrual period.

Some 85% of all the fetal losses occurred from the fourth through the 15th week of pregnancy, the report said.

Contrary to earlier findings based on medical records alone, the Kauai study showed that fetal losses from the fourth to the seventh week of pregnancy were as high or higher than losses in the eighth to the 15th week.

The findings can be applied in the United States mainland, the Berkeley scientists said, because Hawaii has a very high health status and compares favorably with the other states in life expectancy at birth, proportion of women receiving prenatal care, and number of infants born in hospitals.

• Science News Letter, 78:309 November 12, 1960

PHYSICS

New Laboratory Tool Analyzes Low Pressures

➤ A NEW LABORATORY TOOL for measuring pressures less than one-thousandth of one-billionth of atmospheric pressure at the earth's surface has been developed by scientists at the Westinghouse research laboratories, Pittsburgh.

The device, known as a photomultiplier ion gauge, was developed as part of an ultra-high vacuum research program for the U. S. Atomic Energy Commission's Project Sherwood. It uses a beam of ultraviolet light to release electrons that form ions, collected and counted in the usual manner.

Conventionally, the electrons come from the surface of a hot tungsten filament located inside the vacuum system and in contact with the gas whose pressure is being measured.

• Science News Letter, 78:309 November 12, 1960

TECHNOLOGY

Vessels for Liquid Gases Tested to Breaking Point

See Front Cover

➤ PRESSURE VESSELS, made from a nine percent nickel steel for storage and transportation of liquefied gases, have been tested to the breaking point.

One application of the nickel steel vessels may be in the storage and distribution of liquid oxygen and nitrogen. Large users of liquid oxygen are steel mills, chemical plants and missile launching sites.

One of the vessels, seen on the cover of this week's SCIENCE NEWS LETTER, was pressurized until it broke by first being filled with liquid nitrogen and then subjected at minus 320 degrees Fahrenheit to severe shock by a 4,340-pound ball.

The testing program was conducted by the International Nickel Co., Inc., Chicago Bridge and Iron Company and United States Steel Corporation at Fairless Hills, Pa.

• Science News Letter, 78:309 November 12, 1960

USING ULTRAVIOLET BEAM