BACTERIOLOGY

Humidity Kills Germs

Air-borne disease germs could be checked in schools, offices and theaters by a relative humidity of 50%, which seems to be lethal.

➤ A RELATIVE humidity of 50% swiftly kills disease germs in the air.

This discovery by Edward W. Dunklin and Dr. Theodore T. Puck of the University of Chicago may give us a new, simple way of stopping the spread of diseases like pneumonia, colds, 'flu and others whose germs spread through the air.

It may also explain why such diseases spread rapidly at some seasons and not at others. It might give scientific evidence for the phrase, "pneumonia weather," used by our grandmothers.

The discovery was made in studies with Type I pneumonia germs, staphylococci and streptococci, the latter the cause of serious sore throats, scarlet fever and other ailments. Whether viruses and other disease germs are similarly affected has not yet been determined. But using humidity, in schools, offices, theaters and the like, to check the spread of disease would be so simple that it would be worth while even if only partly beneficial, as the scientists point out.

The humidifying would have to be done exactly. A 50% relative humidity is rapidly lethal to the germs studied but they can survive a long time at higher and lower relative humidities.

At 50% relative humidity the pneumonia germs the scientists sprayed into an experimental air chamber were all dead in less than 10 minutes. But at relative humidities of 80% and 20% many germs survived for over two hours.

The 50% relative humidity that is deadly to germs would not be uncomfortable for humans indoors. Climatologists have found that whether the air is wet, dry or humid makes very little difference in comfort so long as the temperature ranges between 50 and 68 degrees Fahrenheit. That upper temperature level and the approximately 72 degrees Fahrenheit temperature of the studies with germs are fairly close to each other and to the usual indoor temperatures. Temperatures in the fifties and nineties make a difference in the germ-killing effect of humidity.

The 50% relative humidity kills the germs by dehydrating them to the point where they become most vulnerable to the action of sodium chloride, the ordinary salt we use for seasoning food. When the germs were suspended in distilled water, instead of broth, and then sprayed into the air, they did not die as fast at 50% relative humidity. But when sprayed from a salt solution, or from human saliva, which is the natural way they get into the air, they were rapidly killed, just as when sprayed from broth.

Measurement of the rate of settling of droplets showed that the disappearance of the germs from the air at 50% relative humidity was a true killing process and not a sign of collision of germs with the sides of the air chamber or with each other.

Details of the experiment are reported in the *Journal of Experimental Medicine* (Feb. 1).

Science News Letter, February 28, 1948

NUCLEAR PHYSICS

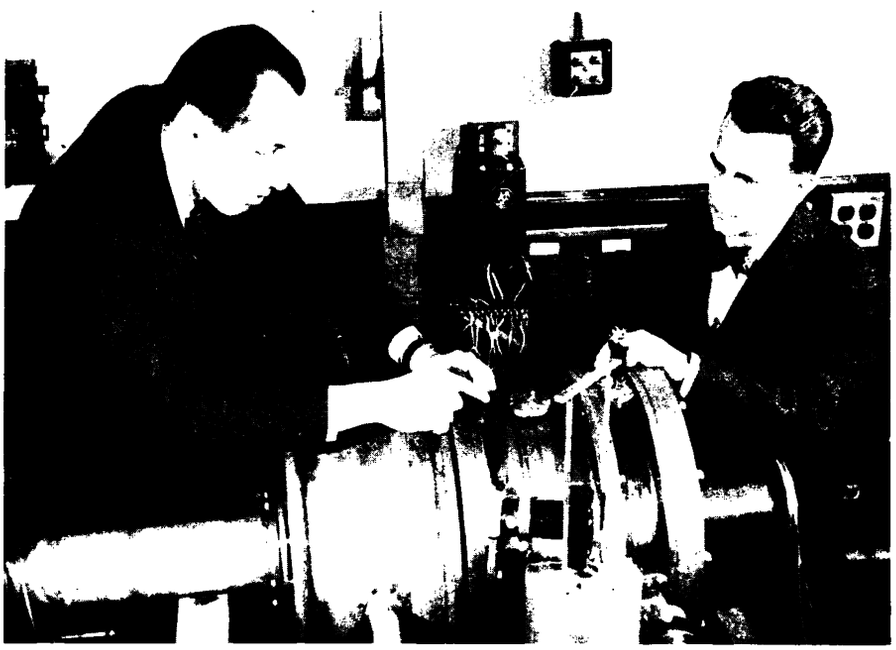
Attack Atomic Secrets

➤ ROUND, hollow "pill boxes" are at the heart of a new, powerful atom-smasher which has been constructed at Yale University, New Haven, Conn.

The pill boxes are three to seven inches long and weigh approximately 75 pounds. Connected up into what is called a cavity resonator, with high powered amplifiers, the pill boxes will generate an electrical voltage equal to approximately 2,000,000 volts each.

This system, known as a linear accelerator, has already attained 1,000,000 volts. Electrons, light-weight negatively charged atomic particles, are built up to the speed of light to smash the nuclei of atoms in the new effort to unlock atomic secrets.

Yale's linear accelerator was constructed under the direction of Howard L. Schultz, assistant professor of physics, in collaboration with Edward R. Ber-



NEW ATOM-SMASHING ACCELERATOR—"Pill boxes," on the average generating an electrical voltage equal to approximately two million volts each, are at the heart of a new linear accelerator at Yale. It was constructed under the direction of Howard L. Schultz, assistant professor of physics, shown in the picture explaining the system to Carol G. Montgomery, associate professor of physics.