

CHEMISTRY

"Harder than Diamond"

➤ A PHYSICAL chemist has scratched a girl's "best friend."

Dr. Robert H. Wentorf, of General Electric Company, Schenectady, N. Y., has discovered a new material that scratches diamond and stays hard at temperatures where diamond burns up. The material is cubic boron nitride, nicknamed "borazon."

The discovery was hailed by Dr. C. G. Suits, vice-president and director of research for GE, as not the announcement of a product, but "a major scientific achievement, the creation of a new material never observed in nature, with properties equaling or surpassing those of a material long thought to be the 'ultimate.'"

Dr. Wentorf produced the diamond-like crystals of boron nitride by using techniques similar to those employed for producing man-made diamonds. The borazon crystals reported are no bigger than grains of sand and vary in color from black to deep red. Others have been produced that are milky white, gray and yellow.

The discoverer said that borazon's hardness is about the same as diamond and

"scratches diamond almost exactly as diamond scratches diamond and diamond scratches borazon."

Borazon, however, withstands high temperatures better than its natural rival. Diamond literally "burns up" in air at about 1,600 degrees Fahrenheit. Borazon, on the other hand, can withstand temperatures of more than 3,500 degrees Fahrenheit.

This resistance to oxidation will make possible superior methods of mounting stones in industrial tools, Dr. Suits said, and may allow bits and wheels to be operated at higher speeds.

Ordinary boron nitride is a white solid material similar in slipperiness, density and crystal structure to black graphite. Superpressures above 1,000,000 pounds per square inch and temperatures exceeding 3,000° Fahrenheit are used to produce the crystals of cubic boron nitride, the scientists said. They pointed out that the boron nitride crystals have a structure that is not hexagonal like graphite, but cubic like diamond.

Science News Letter, February 16, 1957

PUBLIC HEALTH

Vaccine Available

➤ VACCINE protection against influenza is available, but not widely used by civilians at the present time, Dr. C. C. Dauer of the Influenza Reporting Center for the U. S. Public Health Service in Washington said.

In the Armed Forces the vaccine gets much wider use but is still under study, he stated.

The two major stumbling blocks to the vaccine's use for mass immunization against influenza appear to be apathy on the part of the public, and the fact that many physicians do not appear to be convinced of its effectiveness.

Since the disease is so unpredictable in nature and because outbreaks of it have been getting milder in the last few years, the public has remained apathetic about the vaccine, Dr. Dauer said.

No one thinks about it until there is an epidemic and then, of course, it is too late."

To be effective, the vaccine has to be given each year and this type of treatment is a very difficult one to promote, he added.

The vaccine itself is being constantly improved, a factor which may influence its relatively small scale use, Dr. Dauer stated.

Older age groups are more vulnerable to influenza fatality during an epidemic than are younger persons.

"In time," Dr. Dauer pointed out, "immunization programs may concentrate on these older persons, although a program has not been developed along these lines as yet."

It is difficult to determine exactly how

effective the vaccines are in civilian populations, Dr. Dauer explained. In the military the vaccine appears to be quite effective, but it is a situation where the persons receiving the vaccine are in a controlled environment.

Currently, limited amounts of the vaccine are available to physicians throughout the country, but not enough is immediately on hand to face an epidemic. The vaccine available offers protection against all the known strains of virus that have caused influenza in the past few years. They are combined because health officials can never predict which particular strain will pop up from time to time.

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MEDICINE

Drug Gives Added Life to Cancer Patients

➤ A DRUG that gives some cancer patients additional months or years of life was reported by Dr. Byron E. Hall and colleagues, Stanford University School of Medicine, Stanford, Calif., to the Western Society for Clinical Research in Carmel, Calif.

The drug, phenylbutyric acid compound, is a member of the nitrogen mustard family, a group of compounds used to destroy cancerous tissue. Unlike them, however, the phenylbutyric compound can be given by mouth instead of injection, an important consideration in long term use.

The drug was studied in 119 patients over a two-and-a-half year period and was found to be slower acting but much safer than its nitrogen mustard forerunners. It was found to be most useful against certain types of lymphatic cancer, the researchers reported.

Several of the patients were given a relatively short time to live by the best cancer specialists, the physicians said. But with the new nitrogen mustard they survived one to two years. In a number of cases the patients were able to live normal lives for this extended period, they reported.

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