

## PHYSICS

# World's Record Pressures Are Achieved at Harvard

Maximum of 3,500,000 Pounds Per Square Inch  
Achieved Through Use of Nests of Pressure Vessels

**N**EW world's record high pressures, as much as 3,500,000 pounds per square inch, have been achieved by Dr. P. W. Bridgman in Harvard's Physics Laboratories through use of nests of high pressure vessels in which inside apparatus receives outside support at critical parts.

A piece of tool alloy, Carboloy, composed of tungsten carbide and cobalt, was subjected to a compressive stress of between 200,000 kilograms per square centimeter (2,800,000 pounds per square inch) and 250,000 kg./sq. cm. (3,500,000 lb./sq. in.) without fracture. Carboloy's crushing strength under normal conditions is not more than 70,000 kg./sq. cm. (1,000,000 lb./sq. in.). The confining pressure that made possible these new high pressures was about 25,000 kg./sq. cm. (350,000 lb./sq. in.).

Dr. Bridgman, in reporting his results (*Physical Review*, Feb. 15) also made known that under such extreme pressures, carbon in the form of a thin plate

of crystal graphite is not converted to diamond at room temperature. Both graphite and diamond are carbon. There has been hope that pressure alone might cause the formation of diamond out of the other form of carbon.

"It is probable that no pressure, however high, will accomplish the conversion at room temperature," Dr. Bridgman now concludes.

Doubling of the pressure apparatus, as practised by Dr. Bridgman, makes it possible to reach pressure considerably more than double because of the increase in intrinsic strength under hydrostatic pressure.

A striking effect of the extreme high pressures on Carboloy was that, although under normal conditions it is highly brittle and breaks with practically no plastic deformation, under the confining pressures used by Dr. Bridgman the piston of this tough material was plastically and permanently shortened by 5.5% with no perceptible cracks.

*Science News Letter*, March 9, 1940



## BEAUTIFUL ON LAWN

*This summer woven furniture will be made of wicker-like strands of a transparent, elastic, durable, plastic, acetate butyrate. Extruded in continuous strands, this material is woven like reed or rattan for lawn settees, chairs, and tables. In addition to crystal clear matting for wicker-type furniture, machine woven from narrow transparent strands, material for garden chairs more rustic in design is hand woven from wide flat strips in bright translucent colors. Advantages claimed: Its smooth surface prevents tearing of sheer frocks and hosiery, low heat conductivity keeps it from becoming excessively hot when left in the summer sun, it resists sun and rain.*

## MEDICINE

# Protection From Flu Virus In Human Nose Secretions

Nasal Substance From Healthy Persons and Those  
With Common Cold Inactivated Virus in 50% Cases

**D**ISCOVERY of a substance in human nasal secretions that has the power of protecting against influenza by inactivating relatively large amounts of influenza virus is announced by Dr. Thomas Francis, Jr., of New York University. (*Science*, Feb. 23.)

While the studies of Dr. Francis, one of America's leading research workers on epidemic influenza, are not yet complete, he considers it highly probable that the phenomenon he has discovered is of considerable importance in relation to individual susceptibility to epidemic influenza.

Dr. Francis began his experiments because the amount of influenza-fighting antibodies in the blood did not always indicate whether the individual would contract or escape influenza. He suspected from this fact, and from rapid and protective repair that took place in the noses of ferrets with influenza, that the human nose and respiratory tract might play a significant role in the prevention of the natural disease.

Over the last 15 months, Dr. Francis has experimented with nasal secretions from 31 patients in the first day or two of acute feverless common colds, two

hayfever patients, and 15 well persons. Liquid was centrifuged from such material. For testing, it was mixed with 1,000 lethal doses of influenza virus and given test mice through the nose. The mice were watched to see whether or not they became ill. There was little difference between the results obtained with nasal secretions from patients with common colds and those from normal subjects. Nasal secretions of approximately half caused complete or almost complete inactivation of 1,000 lethal doses of virus, while the other half exerted either slight or no inactivation.

Whether Dr. Francis' discovery will lead eventually to a preventive or curative treatment for influenza will depend upon further research and results.

*Science News Letter*, March 9, 1940

A flicker's tongue is coated with a sticky substance useful in catching ants.