

PHYSICS

History of Piece of Glass Affects Its Physical Make-Up

Each Event in Its Making Leaves Record in Strength, Elasticity, and Other Properties

JUST AS the character of a man or woman today is determined to a considerable extent by the past history of experience and environment, so too is the character of a piece of glass determined by its past history, it was disclosed at the Corning, N. Y. meetings of the Optical Society of America.

In man the past experience changes one's education, moral training and other attributes. In glass it is such physical properties as density, expansion, elasticity and that all important factor of light bending, known as the index of refraction, which are changed by the past history of a given sample of glass.

Howard R. Lillie of the Corning Glass Works showed the atomic arrangement of glass and tests devised to study changes in glass with changing past heat treatment.

Scientists of the University of Rochester's Institute of Optics, L. C. Martin and Dr. T. R. Wilkins, showed how they obtain three dimensional photographs of tracks in photographic emulsions caused by the passage of some high speed atomic particle like alpha rays.

Highly important in the trick of using such photographic emulsions in the study of cosmic rays and the radiation obtained in atom bombardment experiments, is the knowledge of the exact position of the minute tracks in three dimensions. Stereoscopic viewing and photography made this possible.

Relativity Origins

Time turned back to 1881 in the report of the widely-known Bell Laboratories scientist, Dr. Herbert E. Ives, in his discussion of the famed Michelson-Morley experiment to detect the hypothetical "ether" which was then assumed to carry light through space.

It was the negative result of the Michelson-Morley experiment—the inability to detect the presence of an "ether"—which set up a chain of scientific thinking that resulted, in 1905, in Albert Einstein's special theory of relativity. Since then the notion of an ether

carrying light vibrations has fallen into disfavor as a concept of the science of physics.

Dr. Ives tackled the problem of theoretical optics involved in tracing the course of a pulse of light through the instrument—an interferometer—with which the ether conceivably might be detected. Using graphical methods and elaborate drawings beautiful in their curves and symmetry, Dr. Ives was able to explain the known negative results obtained in later variations of the famous experiment by other investigators.

Photocell Sensitivity

The sensitivity of the photoelectric cell—the scientist's electric eye—may be greatly increased by treating its sensitive surface with wet hydrogen, Prof. Jacob Kunz of the University of Illinois reported.

After the surface had been treated with the moist hydrogen the gas was pumped off and while the sensitivity fell quickly from large values it finally remained stationary at the improved factor of five times its former sensitivity.

Science News Letter, March 13, 1937

PHYSIOLOGY

Frightened Cat's Heartbeats Given Electrical Recording

THE HEART beats of a cat upon sudden sight of another cat or a large and active police dog have been captured and made permanent in the form of electrical records by Drs. J. G. Beebe-Center and S. S. Stevens of Harvard University.

The feline heart does tricks under these emotional circumstances that it does not do even when the cat hears a pistol shot. The menacing dog speeds up the cat's heart an average of 81 per cent, and about a second after first sight of this natural enemy a single extremely fast beat occurs, which may be an extra beat. This increase in heart rate is so extremely great that it may be close to

the physiological ceiling for the animals, the investigators stated.

After the pistol shot, the heart also speeded up and the increased rate lasted just about as long as that produced by the police dog. But the speeding up was not nearly so intense, and the extra fast beat was not observed.

The heart was not chosen for study in this connection because of any idea that it is the seat of the emotions, but because heart rate is an easily measured body response to emotional situations. The cat served as subject because it is so easy to place her in such a fur-raising, spitting situation.

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PHARMACOLOGY

Crystals of Super-Pep Obtained from Capsicum

CRYSTALS that are 200 to 500 times as hot as red pepper have been extracted from capsicum by Prof. Linwood F. Tice of the Philadelphia College of Pharmacy and Science. These crystals are called capsaicin and are the active principle of capsicum. With these crystals of super-pep Prof. Tice has devised a method of assay for capsicum which is being considered for adoption as a standard method in the U.S. Pharmacopoeia.

Science News Letter, March 13, 1937

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