

PHYSICS

Mercury Possibly Turned To Gold In Atom-Smasher

No Use to Misers, However; It Is of a Form That Rapidly Vanishes and Only Minute Amount Obtained

MERCURY has apparently been turned into gold by the cyclotron, or atom-smasher, at Harvard University. This experiment, which may realize the ancient dream of the alchemists, was reported in Washington to the American Physical Society by Dr. Rubby Sherr and Prof. Kenneth T. Bainbridge.

However, the amount obtained was so exceedingly minute that only by an indirect method was its presence shown. Further, it is a form of gold that rapidly vanishes, even faster than ordinary gold in one's pocket! It decays like radium. With one form detected, after 48 minutes, half of a given amount is gone; after another 48 minutes, half of what remains, and so on. The other forms lasted a few days.

Dr. Sherr and Prof. Bainbridge shot heavy hydrogen nuclei, or deuterons, from the Harvard cyclotron, at lithium, from which high speed neutrons were obtained. These, in turn, were used to bombard mercury. A tiny amount of

gold was mixed with about a pound of the bombarded mercury. The mercury, being a liquid, was boiled away in a vacuum, leaving behind the gold, which is non-volatile. A chemical process removed small amounts of platinum which were also formed by transmutation of the mercury.

Tests of the gold showed several forms which acted like radium. One was the new kind, with half decaying in 48 minutes. Also were present forms that have previously been found by other means, with half-decay periods of 65 hours and 78 hours. However, since the gold itself had not been subjected to the neutron bombardment, and had not originally shown any radioactivity, it appears that these were formed in the mercury itself. Putting more gold with it, they all joined together, and could be more easily removed. In other words, the additional gold was the bait which drew the transmuted gold atoms to it, so that they could all be pulled out together.

Science News Letter, May 17, 1941

PSYCHOLOGY

Images Reproduced In Brain As In Television Receiver

Way in Which You Are Fooled by Optical Illusions Found to Conform to Laws of Electro-Magnetism

WHEN you look at a pretty girl or a house or a streamlined automobile, you are able to see them because of the electric impulses such forms send speeding to your brain. This is indicated by a report to the Eastern Psychological Association presented by William R. Sickles, of Columbia University.

Your eye works like a photoelectric cell, Mr. Sickles told the psychologists. Light differences reflected from an object produce electro-chemical differences in your eye's retina. This sends electrical impulses over the optic nerve to your brain.

In your brain, electric currents are created which reproduce the form seen by your eye in a way much like that in which pictures are reproduced on a television screen.

The electric nature of the visual process was demonstrated by Mr. Sickles from the way in which you can be fooled by optical illusions.

If you draw on a sheet of paper two lines meeting at a point, you can produce this sort of "fool-yourself." A car parked at a 40-degree angle to the curb would produce a similar outline. Now draw a line across the space between

Coming soon →

THE HARVARD BOOKS ON ASTRONOMY

Edited By Harlow Shapley and Bart J. Bok

Nine books, by members of the Harvard College Observatory staff, intended for all who are interested in Astronomy. Teachers, students and amateurs alike will find them clearly and accurately written and abundantly illustrated. Together these books present a comprehensive survey of Astronomy; individually they describe and consider the problems of their particular fields. Each is the mature work of an authority, and all are edited by Dr. Shapley and Dr. Bok.

TELESCOPES AND ACCESSORIES

By George Z. Dimitroff and James G. Baker

EARTH, MOON AND PLANETS

By Fred L. Whipple

BETWEEN THE PLANETS

By Fletcher G. Watson

THE STORY OF VARIABLE STARS

By Leon Campbell and Luigi Jacchia

THE MILKY WAY

By Bart J. Bok and Priscilla F. Bok

OUR SUN

By Donald H. Menzel

INSIDE THE STARS

By Theodore E. Sterne and Martin Schwarzschild

ATOMS, STARS AND NEBULAE

By Leo Goldberg and Lawrence H. Aller

GALAXIES

By Harlow Shapley

THE BLAKISTON COMPANY
Philadelphia

the lines near the point. Or lay a straight stick on the pavement diagonally between your car and the curb.

The laws of physics indicate that there is an electro-magnetic "pull" on your cross line which is proportional to the distance it lies from the point.

Next draw freehand another cross line parallel to your first one and a little farther from the point, trying to make it exactly the same length. When you measure it, you will probably find that it is actually longer than the one you tried to match.

A stick lying between the curb and the angle-parked car at the position of the rear door would have to be longer than one near the front wheel in order to appear the same length.

The extent to which such diverging lines distort your perception of the length of the enclosed vertical was found by Mr. Sickles to be governed by physical laws applying only to electro-magnetic fields. This, he concludes, is evidence that vision is an electro-magnetic phenomenon.

Science News Letter, May 17, 1941

Ink Blots Suitable For Army

ARMY recruits may, in the future, be asked to gaze at colored ink blots and tell what fanciful shapes or ideas the blots suggest to them, as a means of weeding out those men likely to break down under strains of war.

This possibility appears likely from a report to the Eastern Psychological Association by Dr. M. R. Harrower-Erickson and Dr. M. E. Steiner, of the Montreal Neurological Institute at McGill University.

The test was tried out by these investigators on a large group including college students, student nurses and a few patients from the Neurological Institute suspected of having brain tumor. Conditions of giving the test were suitable for large scale examination of recruits.

The odd ink blot shapes were thrown on a screen from a lantern slide. The group being tested looked at them and wrote in test booklets a description of what they saw on the screen as you might describe the fanciful creatures or scenes you might find in a summer cloud.

Answers differed widely, according to the personality of the individual. Here is what one college student saw in a blot often described as a bat or a moth:

"Three figures, two tough, worn bearded thieves cowering to Satan for comfort. Their clothing is in tatters, probably old furs, their elbows out. Satan's legs are cut off at the ankles, and are skinny. His ribs show through his cloak, he is bent toward the man whose head is most bowed."

This boy is considered by his college authorities as "eccentric, peculiar, Bohemian."

From the answers, the psychologists were able to pick out students having difficulty in getting along in their classes. They made correct diagnoses in every case of the patients from the Neurological Institute.

Science News Letter, May 17, 1941

Intensified Training Urged

AMERICA'S defense program demands more scientists who understand the human mind. An urgent appeal for intensified professional training for future psychologists able to deal with problems outside the schoolroom was presented to his colleagues by Dr. Walter S. Hunter, of Brown University, speaking as president of the Eastern Psychological Association.

Pressing social problems demand both scientific ability and general experience and wisdom, he declared.

"If a psychologist were given the problem of devising the best form of illumination for night driving which would at the same time favor the driver and handicap an airplane observer," Dr.

Hunter said, "the solution could only come from a careful study of the application of scientific knowledge to the particular conditions specified.

"If, on the other hand, the task were one of raising the general level of group morale, wisdom and experience would count for as much as scientific knowledge."

With the increased demand for social service, professional training should be made more rigorous, not relaxed, he indicated. Students of psychology should intensify their study of other sciences so that later they can work with physicists, chemists, or biologists on problems which involve these fields.

Specialization, as in medicine and engineering, should come only after a mastery of the fundamentals of the science.

Internships for psychologists who have their doctor's degree, like those for medical doctors, should be provided, Dr. Hunter said. Such opportunities for supervised practice of psychology are important for those who intend to work outside of research and teaching.

"There is a crying need," he declared, "for the establishment, by a few of the larger universities, of professional schools for psychology where men and women can be trained for non-academic work in industry, child clinics and mental hospitals."

Psychology undergraduate students at the better universities are already receiving the sort of broad scientific training urged by Dr. Hunter, he told his colleagues. Examination of students beginning their work for advanced degrees showed that those training in psychology have a better balanced undergraduate training than either physicists or chemists. They know more about biology than any other group except the biologists themselves.

Science News Letter, May 17, 1941

Let us do it

When you want a book on science, save yourself the trouble of shopping. Let us get it for you. We will gladly obtain any American book or magazine in print and pay postage in the United States. Just send your check or money order to cover retail price (\$5 if price is unknown, change to be returned to you). When publications are free, send 10c for handling. Address:

Book Department

SCIENCE NEWS LETTER
2101 Constitution Ave. Washington, D. C.

SCIENCE NEWS LETTER SUBSCRIPTION COUPON

To Science News Letter, 2101 Constitution Avenue, Washington, D. C.

Start Renew my subscription to SCIENCE NEWS LETTER for 1 year, \$5 2 years, \$7

Name _____

Street Address _____

City and State _____

(No extra postage to anywhere in the world)