

Strong Glass

A bit of glass about a sixteenth of a square inch in area bearing a load of approximately fifteen tons, is the simple new weapon of science developed by Prof. Thomas C. Poulter of Iowa Wesleyan University.

It served as a tiny window looking into a pressure-chamber, where experiments are performed under the tremendous pressure of thirty thousand atmospheres. The little glass window is ground perfectly flat and set against a disk of high-speed steel, also ground perfectly flat. There is no gasket; the pressure attends to the sealing of glass against metal.

Physics

Science News-Letter, February 15, 1930

Move River

Several hundred acres of swamp land practically in the heart of Dallas, Texas, are being reclaimed for commercial and aviation purposes by the removal of the Trinity river to an entirely new channel for a distance of about 20 miles.

A large area will also be made available for vegetable and fruit growing. The building of the levees which will confine the river is expected to be completed by 1933. The cost is put at \$2,000,000.

Engineering

Science News-Letter, February 15, 1930

Radio to Moon

Extremely short radio waves, ten meters or less in length, may provide a possible means of sending a signal to the moon if an experiment suggested by Dr. A. Hoyt Taylor, chief of the radio division of the Naval Research Laboratory, is made.

It is not with any hope of communicating with inhabitants of the moon that he plans this test. His laboratory is conducting research on radio transmission. If successful, the lunar signal would provide a check on the travel time of radio waves in outer space. He suggested that the signal would be reflected from the moon's surface back to the earth, where delicate receiving instruments might detect the echo. Thus, it would be similar to the "earth-shine," the faint glow that can be seen on the dark side of the moon when almost new, caused by the reflection back to the earth of sunlight that was reflected from the earth to the moon.

Dr. Taylor cautiously states that nobody knows whether the moon really would reflect the radio waves back, and whether or not they could be detected if they were. But he has studied radio waves that have trav-

eled around the earth four and five times, 125,000 miles or more, and still retained enough power to produce effects that could be photographed. The moon is about 240,000 miles away from the earth, so that a radio wave would have to travel something less than a half million miles for the round trip. His studies show that a wave could travel this distance and still be detected. The trip would take about 2.5 seconds.

Several years ago Dr. Carl Störmer, a Norwegian physicist, observed echoes of short wave radio signals several seconds after transmission, and concluded that they were due to reflection from a layer far out in space, even beyond the moon. His ideas have not been generally accepted, but it is known that very short radio waves, around ten meters or less, can penetrate the Kennelly-Heaviside layer, the sheet of partly broken atoms high in the atmosphere that reflects back the longer waves.

Radio

Science News-Letter, February 15, 1930

Three Vitamins

Cheering news for those who make malted milk the mainstay of the working or school day is to be found in the report of E. J. Quinn and L. B. Brabec of Columbia University to the American Home Economics Association.

These investigators have found malted milk a good source of vitamins A, B and G. However, a sample of a chocolate-flavored variety had not so high a vitamin content as the unflavored or "straight" malted milk. The extensive use of malted milk for invalid and infant feeding led the investigators to examine samples for vitamin content. Vitamin A is known as a preventive of eye diseases, vitamin B prevents beri-beri, and vitamin D prevents pellagra.

Physiology

Science News-Letter, February 15, 1930

Brighter Than Sun

An analysis of the electric spark completed in the physics department of the University of California by means of a camera whose shutter operates in one-billionth of a second discloses that during its brief life a 20,000-volt spark is 50 per cent. hotter than the sun and 100 times more bright.

Using a special electro-optical shutter camera developed by Abraham Lemoine and J. W. Beams of Yale, the experimenters were able to take what amounted to slow-motion pictures of the life of a spark at in-

IN VARIOUS

tervals of four one-millionths of a second, and show how the appearance of a spark changes from beginning to end.

The spark lasts only one hundred-thousandth of a second, but that would allow time for about 250 views at the time interval in which the camera shutter operates.

The camera which made the work possible is not a mechanical device, but makes use of the physical properties of light for its operation. The spark literally takes its own picture.

Physics

Science News-Letter, February 15, 1930

13-Month Year

Calendar simplification and the international adoption of the thirteen month year is urged in a resolution adopted by the American Association for the Advancement of Science announced by Dr. Burton E. Livingston, permanent secretary.

This organization of some 18,000 scientists went on record favoring: "A revision of the calendar such that the year will consist of thirteen months of twenty-eight days each, and an extra day of non-week-day name, with an additional midyear leap day in leap years."

Reaffirming calendar reform advocated in resolutions adopted in 1925, the association declared that "calendar simplification should be internationally adopted for the benefit not only of scientific work, but also of commerce and of the peoples of the earth in their daily lives, and for the promotion of international and national understanding."

Chronology

Science News-Letter, February 15, 1930

Reducing Chrome Hazard

New methods of ventilating worked out by the U. S. Public Health Service may save thousands of workers in automobile factories from serious nose trouble, now often caused when accessories and trimmings on the car are treated to a coat of non-tarnishable chromium.

Hydrogen, carrying a slight amount of chromic acid, is released in the plating process, Dr. L. R. Thompson of the Public Health Service explained to the House Committee on Appropriations, and if this passes a man's nose, it may be drawn up and be deposited on the septum.

"If this continues, in a short time

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he loses the entire nasal septum. . . . Some automobile companies have tried ventilation, but the methods they were installing would draw the air straight up rather than across the vat. . . . We showed them that if they would draw the current of air across rather than up it would relieve the situation."

Public Health
Science News-Letter, February 15, 1930

Two-Headed Snake

A sure-nuff two-headed snake, with nothing anti-Volsteadian about it, has been captured in Louisiana, and is described and pictured in the *Journal of Heredity* by Prof. Wm. H. Gates of Louisiana State University.

The freak snake was found by a couple of small boys, who followed their usual instincts and killed it. They brought the limp remains home with them, and the specimen is now the property of J. D. Morrison of Denham Springs, La.

Both heads are apparently normally developed, though one of them is twisted a little sideways on its neck. The two necks join in a common body, which had a permanent and apparently congenital kink in it a little aft of the point where the two necks join. Prof. Gates has not dissected the specimen, but states that he expects to make X-ray photographs soon in an endeavor to learn something about the skeletal arrangements.

Zoology
Science News-Letter, February 15, 1930

One Hundred Millions

Middle-western states are waiting with keen interest for a report from the U. S. Army engineers which soon will recommend to Congress the establishment of a nine-foot channel on the Upper Mississippi from Cairo, Illinois, to the Twin Cities.

Completion of this project will give the Mississippi from the Gulf to Minnesota a channel of such depth that inland waterway commerce can develop to greater extent than heretofore possible.

The project is said to be one of the greatest engineering efforts ever undertaken by the government, and before completion will call for the expenditure of at least \$100,000,000. It is expected that both legislation authorizing and appropriating for this work, and the engineering itself

will proceed rapidly, and that there will be no delays such as characterized the construction of the Ohio channel project.

Among other inland waterway developments being considered by the government at the present time are the linking of the Great Lakes with the Ohio River by one of four routes and a complete connection of the Ohio River with the Potomac, using the present Chesapeake and Ohio Canal as part of such connection. This old canal was used until 1924. George Washington himself made the original survey. But seventy-five miles through the mountainous Cumberland country remain to be conquered in engineering this water link between the Middle West and the Atlantic Ocean.

Engineering
Science News-Letter, February 15, 1930

X-Ray Diamond Detection

The practicability of the reported plans of the government authorities of the Union of South Africa to frustrate diamond smugglers by means of X-ray examinations of the smugglers (*SCIENCE NEWS-LETTER*, July 6, 1929, p. 7) has been questioned by a New York surgeon, Dr. Howard Lilienthal. Because the transparency of diamonds to X-rays is very high, the detection of the jewels in the human body would undoubtedly require great care and skill.

Dr. Lilienthal, in cooperation with a New York roentgenologist, Dr. Leopold Jaches, made an interesting experiment in this connection. A diamond of 2.45 karats and a piece of cooked goosebone of about the same size were placed beneath a mass of wet cotton about one and one-half inches thick and were exposed to the X-rays. In the resulting picture the shadow of the goosebone was more prominent than that of the diamond. From this experiment Dr. Lilienthal concludes that the recognition of diamonds, especially those of the so-called rough variety as they come from the mines, would be almost if not quite impossible.

"One could not be sure that the shadow seen would not be that of some object in the intestinal canal, such as a piece of bone which had been swallowed with food. And, too, if the diamond happened to be in alignment with one of the normal bones of the body, such as that of the spine or pelvis, its discovery would be still more improbable," Dr. Lilienthal stated.

Roentgenology
Science News-Letter, February 15, 1930

Element 87 Found

With a method so delicate as to detect the presence of a chemical compound when dissolved in ten billion times its own weight of water, Dr. Fred Allison and Edgar J. Murphy, of the physics department of Alabama Polytechnic Institute, have located the unknown element number 87 in two well-known minerals. They will make a preliminary report of their research in the forthcoming issue of the *Physical Review*, official journal of the American Physical Society.

Lepidolite, a form of mica, and polucite, a mineral consisting chiefly of the elements caesium, aluminum and silicon, were the substances studied. As the properties of element number 87 are known in a general way, even though it has not yet been discovered, Dr. Allison and his colleagues were able to predict its effect. Studies of the substances in four different chemical combinations all showed the effects that would be caused by element 87. This, say the experimenters, "affords evidence of considerable weight for its presence in the sample under test."

The next step will be to extract the element from the minerals, and when this is done it may truly be said to have been "discovered." Then only one unknown element will be left. According to modern conceptions there are 92 elements, numbered from hydrogen, which is number 1, to uranium, number 92. At present the series has two vacant spaces, one being number 87, to which the name eka-caesium has been tentatively assigned, and which is in the same group as lithium, potassium, rubidium and caesium. The other undiscovered is number 85, in the same group as fluorine, chlorine, bromine and iodine, known chemically as halogens.

About seven years ago there were six unknown elements. Then, in 1923, two Danish chemists, Coster and Hevesy, found number 72, which they named hafnium, after the Latin name for their city of Copenhagen. In 1925, Dr. Walter Noddack, at the University of Berlin, with the aid of two assistants, discovered numbers 43 and 75, which he named, respectively, masurium and rhenium. This was followed in 1926 by illinium, number 61, discovered by Dr. B. S. Hopkins, and named after the University of Illinois, with which he was connected. This was the first element discovered by an American.

Chemistry
Science News-Letter, February 15, 1930