Measuring Heart's Output

Details of a new method for measuring the heart's output of blood were described by Dr. Arthur Grollman of the Johns Hopkins University at a meeting of the American Physiological Society.

Four quarts of blood a minute is about what the heart pumps in normal persons. Of course the amount cannot be measured directly, and various indirect methods are resorted to by physiologists. Dr. Grollman used acetylene gas. Making use of the fact that all the blood pumped by the heart goes through the lungs, he determined with a special apparatus the amount of acetylene gas the lungs took up in a given time. From this he was able to figure the amount of blood going through the lungs in that time, and from this the amount of blood—about four quarts—put out by the heart every minute.

Physiology
Science News-Letter, April 5, 1930

Electricity From Sun

Running motors with electricity from sunlight is one of the possibilities forecast by the invention of a new type of cell that converts light directly into useful quantities of current. It is the invention of Dr. B. Lange, of the Kaiser Wilhelm Institute for Silicate Investigation in Berlin. Previously this has not been possible. The new cell, the essential part of which is a "sandwich" of copper oxide between two layers of metallic copper, one so thin as to be transparent, may also prove a revolutionary improvement in talking movies and television and in many phases of scientific work.

Ordinary photoelectric cells, consisting of a layer of a metal such as potassium inside a glass bulb containing either a vacuum or a small amount of inert gas, can only be operated with an auxiliary source of electric current. When light falls on the potassium layer, electrons are given off. When connected to a battery, or other source of current, the electrons are carried to another metal plate or wire which forms the other electrode. Thus, the flow of the current is regulated by the amount of light falling on the potassium layer.

In Dr. Lange's cell, the light falls on one of the thin copper layers and the electrons are driven off. They pass through the copper oxide layer, which is exceedingly thin, only a few layers of molecules in depth. When they reach the other layer of copper an electric current results. Because of the short distance through which the electrons have to travel, the cell operates without the slightest appreciable lag. The current given off is powerful enough that when a rapidly flickering light shines on the cell, the current can be fed into a loud speaker and a note vibrating at the same rate as the light can be heard.

Other advantages of the copper cell are that it does not show fatigue as does the ordinary type, it can be operated indefinitely without loss of efficiency and it is much more sensitive to the infra-red waves, too long to be visible.

In round numbers, Dr. Lange estimates, his new cell is ten times as efficient as the older types. But by the proper adjustment of the middle layer, and the use, perhaps, of other materials than copper oxide, he foresees the possibility of increasing the efficiency still further and converting light directly into large quantities of electricity. Even as constructed at present, the cell should prove a radical improvement in talking movies and television. It will also, suggests Dr. Lange, be useful as a photometer, to measure light intensity, because the current given off is directly proportional to the light falling on it, over a long range of brightness.

Electricity
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Indian Writings Saved

Picture writings left on the rocks along the Susquehanna River by early inhabitans of America are to be rescued from a watery grave, so that scientists may study the prehistoric records. The rock pictures are on islands which will be covered by water when the $30,000,000 hydro-electric development at Safe Harbor is constructed.

The enterprise is unusual in that the Pennsylvania Water and Power Company, which is about to change the appearance of the river region so materially, has been concerned with the scientific value of the rocks. The company is cooperating with the State Museum to finance the removal of the unread picture writings. Donald A. Cadzow, assisted by other archaeologists, will supervise the lifting of the stones.

Mr. Cadzow plans to study the pictures, with the idea of comparing them with what is known about the powerful Conestoga and Susquehannock Indian tribes. This may lead to an understanding of some of the symbols cut in the rocks.

"It is believed that the glyphs were pecked into the hard river rock by an unknown tribe long before the Susquehannock and Conestoga tribes came into the region," Mr. Cadzow stated. "Some of the carvings are almost Asiatic in appearance."

Petroglyphs found in the United States have not been very extensively studied, he explained. This is chiefly due to the belief that only the persons who made the pictures or other persons who lived during the prehistoric times possessed the key to them. The pictures in some cases are thought to have been used in connection with magic rites. Other paintings and carvings must have been "road signs" marking trails and water holes.

Archæology
Science News-Letter, April 5, 1930

IN VARIOUS

Vitamin A Destroyed

New knowledge of the vitamins was disclosed at the meeting of the American Society of Biological Chemists. Destruction of vitamin A by radiothorium was reported by Prof. A. G. Hogan, C. L. Shrewsbury and Gerald F. Breckenridge of the University of Missouri. This vitamin is important for promoting growth and for preventing eye disease. It is found in butter, cheese, eggs, spinach and liver. While the experiment was conducted with radiothorium, the inference is that any radioactive substance would have the same effect on this important vitamin.

Nutrition
Science News-Letter, April 5, 1930

Osborni

Fragments of skull, face-bones, jaw and shoulder-blade, found by Prof. Wilhelm Freudenberg in Ice-Age gravels of the Bammental near Heidelberg, have proved upon piecing together to be the remains of a big ape-like creature with a brain bigger than that of any known anthropoid ape, either living or extinct, says Natural History, a publication of the American Museum of Natural History. The animal has been named by its discoverer *Hemianthropus osborni,* in honor of the seventieth birthday of Dr. Henry Fairfield Osborn, president of the American Museum.

SCIENCE FIELDS

The *Hemianthropus* part of the name is Greek for "half-man." The creature, if an ape, was a highly advanced kind of an ape. Its somewhat gorilline face was uncommonly wide, and its brain is stated to surpass that of the Trinil skull from Java, and to equal in size the brain of Neanderthal man. The Trinil skull, *Pithecanthropus,* is considered to be human by a great many scientists, though some are of the opinion that it belonged to an ape; but Neanderthal man is unquestionably human.

The editor of *Natural History* adds a note that "The question of the validity of *Hemianthropus osborni* as distinct from Heidelberg man remains an open question."

Heidelberg man has been represented to date only by a jawbone found at Mauer near Heidelberg, in sands of the same geologic age as the gravels that have yielded the bones of *Hemianthropus.* It has been regarded as undoubtedly human, though of a very primitive type, characterized chiefly by its exceedingly massive structure and its almost total lack of a chin. The jaw which Prof. Freudenberg found is even more chinless than the classic Mauer specimen. Its lower border resembles that of the Java skull.

Prof. Freudenberg has been a tireless searcher for human and anthropoid remains in the region around Heidelberg. Recently he found a portion of a broken and water-worn arm-bone which he attributes to a fossil gibbon.

Paleontology

Science News-Letter, April 5, 1930

Safer Crossings

The National Conference on Street and Highway Safety, which has been at work gathering information and pondering ways and means of reducing the heavy toll of automobile accidents in this country, will meet in Washington, D. C., late in May by call of the Secretary of Commerce, Robert P. Lamont.

Committees will report on local problems that delay in many communities the hoped for standardization of traffic rules and signals. The safety situation will be discussed by the official delegates from states and municipalities and from interested organizations, and promising and practical solutions will be considered.

Evidence assembled leads the committees to conclude that safety at crossings both in city streets and on highways can be most readily increased by standardized regulations and signals. This would insure motorists and pedestrians knowing definitely what is expected of them and what their rights are. Not only would accidents be less likely to occur, but congestion due to hesitating and confused motorists would be greatly reduced. Obstructions which prevent motorists and pedestrians from gaining a reasonably long and clear view at crossings should be removed whenever practically possible, and other physical hazards should be investigated and remedied, the committees have urged.

The variety of ways of making left turns to which various cities cling continues to be a problem for the conference The inside turn on the green light is now most common, and is recommended in the model ordinance already approved by the conference.

Marking of traffic lanes where streets are wide has been studied and is found to be a useful device. Observers of traffic have discovered that the wider the street the farther away from the curb vehicles tend to travel. This reduces the speed of traffic. Lane marking relieves this condition.

Safety

Science News-Letter, April 5, 1930

The Waste Trade

Even if Americans are wasteful, as is often claimed, they salvage nearly a billion dollars worth of their waste every year. This is according to figures of the U. S. Bureau of Mines on the amount of scrap and secondary metal recovered which, the Bureau says, is increasing every year.

The waste trade industry is concentrating in large units. Even gold and silver is recovered in quantity from jewelry and dental waste. Photographic solutions contain half an ounce of silver to the gallon and 1,000,000 feet of waste movie film yield 800 ounces.

Of the 500,000 tons of secondary copper recovered annually, part comes from 300,000 burned out electric lamps collected by one company. About 40 per cent of the annual supply of tin and lead has been used before.

The iron and steel saved in a year is worth $500,000,000. Other metals salvaged in quantity from scrap, sweepings, skimmings and dross are mercury, zinc, antimony, aluminum and nickel.

Economics

Science News-Letter, April 5, 1930

Life-Saving Extract

The vital hormone of the cortex of the adrenal gland has been obtained in an extract called cortin, Prof. F. A. Hartman and Dr. K. A. Brownell of the University of Buffalo reported to a recent meeting of the American Physiological Society.

The adrenal gland has two parts, one of which, the cortex, is essential to life. When the adrenal cortex is destroyed by disease or accident or removed by operation, the animal or man dies shortly. However, the Buffalo scientists stated that their extract will prolong the lives of animals whose adrenal glands have been removed so that they live from two and one-half to three times as long as untreated animals without adrenals. The extract when properly made is harmless when injected into human beings. It has been given by mouth with beneficial results in some instances. The method of preparing it was briefly described in the report.

Medicine

Science News-Letter, April 5, 1930

Fainter

Wilk's comet, discovered by a Polish astronomer on Friday, March 21, passed the sun on April 2. It will now be visible with a small telescope in the early morning sky for several weeks. However, though its distance from the sun will make it easier to see, it will be diminishing in brightness. Now, it is of the sixth magnitude, just at the limit of naked eye visibility, but it is so close to the sun that it cannot be seen except with a telescope.

These predictions were made by Dr. A. O. Leuschner, professor of astronomy at the University of California, following calculations of the comet's path by two of his students. They have found that the comet was at perihelion, or closest to the sun, on March 28, only half as far from that body as the earth. When discovered it was just a little farther from the earth than the sun, around a hundred million miles away. By April 10, said Dr. Leuschner, it will be only 85 per cent. as bright as it was when discovered.

Astronomy

Science News-Letter, April 5, 1930