

MEDICINE

Recovery From Anesthesia Hastened By Acid Injection

Palinaesthesia, Method of Reversing Effect of Anesthetics, Found Successful in Harvard Tests

A MEANS of quickly reversing the deep unconsciousness caused by ether and other anesthetics and, in some cases, of bringing back from the brink of death overanesthetized patients, was announced to the American Association for the Advancement of Science by Dr. Walter V. MacGilvra, a dental surgeon of the Harvard dental school, after experiments in which the Harvard medical and dental faculties have cooperated.

A "shot" of weak hydrochloric acid injected directly into the blood is the agent that has been found effective in recalling and restoring to sensibility patients who would otherwise sleep for hours, and in some cases would never awake.

Followed Wrong Theory

While Harvard scientists have demonstrated the effectiveness of this new medical method, it was a young woman technician in a medical laboratory in Joplin, Mo., who, by following what is now believed to be a wrong theory, actually discovered the method. Miss Pearl L. Moorman, in an effort to save an animal with which she was working, introduced a minute dose of acid into its blood and found that it awoke from anesthesia.

She wrote Dr. MacGilvra an account of her discovery, and both he and a Kansas City medical laboratory verified her results, although her theory that anesthesia makes the blood more alkaline and that therefore acid would reverse the process has not been substantiated.

For Many Shocks

This acid method of terminating anesthesia has been christened "palinaesthesia," the name having been selected with the blessing of the Eliot professor of Greek at Harvard, Prof. Charles B. Gulick. A rough English equivalent is "renewed feeling."

Because extreme alcoholic intoxication, asphyxiation, near drowning, severe electric and other shocks are very similar to the purposely induced

anesthetic states caused by ether and other drugs, Dr. MacGilvra believes that injections of weak hydrochloric acid will prove effective in rescuing and bringing back to full use of the faculties, those who suffer from such difficulties. Palinaesthesia has not yet been tried on an extremely intoxicated person simply because Dr. MacGilvra has not yet had such a case made available to him.

"Annoying Wakefulness"

The first use of palinaesthesia on a human being was made by Dr. MacGilvra and Dr. Alfred Ellison, then resident surgeon at the Worcester Memorial hospital, last July. It was a real emergency. A patient had had an unusual reaction to avertin and following an operation he was plainly in a dying condition. As a heroic measure, Dr. MacGilvra, using the experience of successful experiments on rabbits, injected a weak solution of hydrochloric acid in the patient's veins.

There was an immediate improvement with the first few drops that en-

tered the blood, and forty minutes after the first injection, the patient, who had been so near death, was actually awake and answering questions. That night he complained of annoying wakefulness.

Seven more times palinaesthesia has been used on human patients, each time with striking results. Now the doctors are ready to suggest its use not only in emergencies to save life that might be taken by unusual effects of anesthetics, but as a routine method of awakening patients early after operations.

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MEDICINE

Palinaesthesia Finding Described by Discoverer

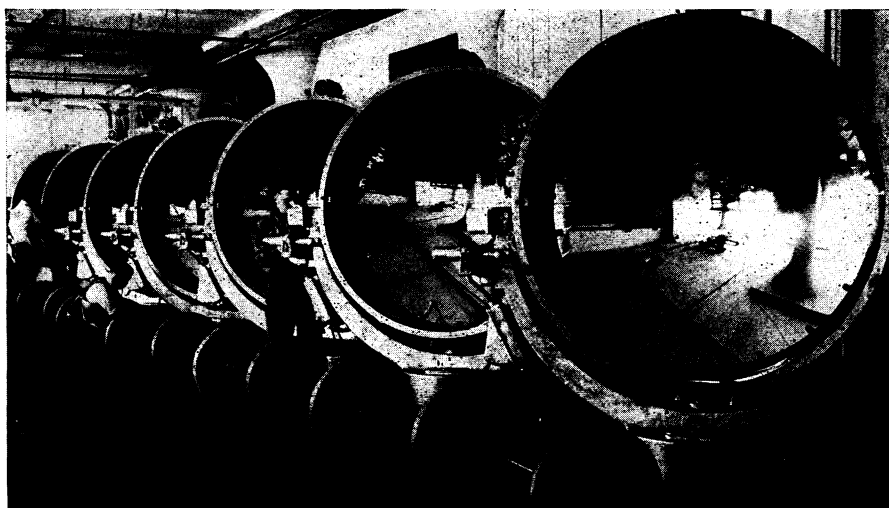
An auburn-haired, gray-eyed young nurse-technician of Joplin, Mo., is the discoverer of palinaesthesia, the method of quickly reversing the anesthetic state. She is Pearl L. Moorman, age 34, who is in charge of the Duncan Medical Laboratory in Joplin and supervises the laboratories of the city's health department and Freeman hospital.

Miss Moorman's statement, made at the request of Science Service, follows:

By MISS PEARL L. MOORMAN

I MADE the discovery of recall from anesthesia by intravenous injection of hydrochloric acid while trying to obviate the high death rate of anesthetized guinea pigs used in scientific work.

In approximately three hundred animals anesthetized only three have been lost and these probably died because of the fact that I had used them for four or five experiments in a single day.



SEARCHLIGHTS ON PARADE

One hundred and four 60-inch diameter anti-aircraft searchlights are being built for the U. S. Army by the Sperry Gyroscope Co. with \$2,015,900 of PWA funds. Improvement in design of the electric arc light source and of the reflector curve make these lights the Army's most powerful. Each will throw a beam of about 800,000,000 candlepower, visible 100 miles.

Demonstrations of the method have been given before the Jasper County Medical Society, a group of physicians at the Missouri State Medical Society, and before many other groups of physicians.

In making the original experiments I was following a theory of Dr. J. S. Haldane, the British physiologist, and Prof. Yandell Henderson of Yale. I asked myself what should be done when respiration ceased and the usual methods of resuscitation failed. I conceived the idea of an intravenous respiratory stimulant in the case where respiration has ceased and the heart beat was still present. The idea was based on the fact that hydrochloric acid when combined with carbonates produces carbon dioxide gas and that the blood of animals in a state of asphyxia is prone to shift toward an alkaline state. I decided that hydrochloric acid administered intravenously would obtain this desired result. Experiment showed that it did. Such was the birth of my discovery.

Ionization May be Cause

The idea of the production of carbon dioxide and its action as a respiratory stimulant was my original idea, but because the reaction caused by the injected acid is too instantaneous, I abandoned this theory some time ago. I am now working on the theory of ionization.

Other acids than hydrochloric have been used in my subsequent experiments.

Use of hydrochloric acid in recall from anesthesia is now being experimented upon at the University of Kansas, Northwestern University and by the Ernest Bishof Company in New York.

Nurse and Technician

I am a trained nurse and registered technician. I was graduated from the Duncan School of Technology at Kansas City, Mo., and I was a special student in chemistry at the Junior College in Kansas City. My other chemical education was self-obtained. Born in Monett, Mo., of poor parents, I was unable to pursue a higher education in college. I stole what chemical knowledge I could from contact with chemists and from books that I could buy or borrow.

My ambition is a position in a research laboratory where I can have the facilities to test further theories I have for the advancement of scientific medicine.

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ASTRONOMY

Universe Not Expanding in Our Part of Cosmos, Shapley Says

WHILE the universe as a whole may be expanding, as recent astronomical theory contends, the portion of the universe closest to man and the earth, extending for millions upon millions of miles out into space as far as the famous Clouds of Magellan and the Andromeda nebula, is not expanding. This is the conclusion Dr. Harlow Shapley, director of the Harvard Observatory, announced when he was presented the Rumford Medal of the American Academy of Arts and Sciences.

Dr. Shapley has studied intensively the region of the cosmos relatively close to us and he finds that there is a local supergalaxy, a sort of universe within a universe, consisting of our own Milky Way system, the two clouds of Magellan, the Andromeda nebula and two companions, and two other external galaxies. This supergalaxy seems to behave as a single unit and it does not show the expansive nature attributed to the universe as a whole by the theory of Abbé Georges Lemaître, the Belgian priest-cosmologist.

Doubled in Size

Dr. Shapley's study has doubled the previous estimate of the size of the Large Magellanic Cloud, which is the nearest of the external galaxies. It is a spectacle of the southern latitude skies and bears the name of the famous world explorer. The dimensions heretofore accepted have been doubled, and Dr. Shapley rates the Large Cloud as not less than twenty thousand light years in diameter. This makes it larger than the average external galaxy, but it is still much smaller than our own system and the great Andromeda nebula.

Using photographs made at the Harvard Observatory's southern station in the Orange Free State of South Africa, Dr. Shapley has found that there are several millions of giant and supergiant stars that are of higher candle power than our own sun, some of them ten thousand times as bright.

A gigantic mingling of our own Milky Way galaxy with the Large Magellanic Cloud some time in the past, many, many thousands of years ago, may have occurred, Dr. Shapley surmises

from irregularities in the cloud. He finds an intimation in the arrangement of newly found star clusters in the cloud that it is a deformed or broken-up spiral, and he believes that the disfiguring may have been caused by the passage of the cloud through our Milky Way at a remote past time.

Five hundred new variable stars, found among the giants and supergiants of the Large Magellanic Cloud, bring the total to thirteen hundred and fifty. These are the famous Cepheid variables that astronomers can use as yardsticks of the heavens. They allow Dr. Shapley to estimate that the Large Cloud is so distant that it takes speedy light ninety thousand years to travel from it to earth.

600 Nebulae Found

One of the last Harvard Observatory discoveries of 1933 was reported by Dr. Shapley. He said that six hundred galactic nebulae, great masses of stars similar to our own Milky Way, have been found in a region where only sixteen were known hitherto. This accomplishment was made with the aid of one of the Observatory's new telescopes.

The bit of the heavens thus given nearly a forty-fold increase in its known population of galaxies is an area about equal in size to the bowl of the Great Dipper and lying between that constellation and the Lynx.

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ARCHAEOLOGY

Queen Jezebel's Ivories Divided Three Ways

BROKEN pieces of carved ivory, all that is left of the extravagances and splendors of wicked Queen Jezebel of Bible fame, have been divided three ways among museums in Palestine, England, and the United States. Twenty fragments of the palace ivories have just come to the Fogg Art Museum at Harvard University, Prof. Kirsopp Lake, of Harvard, announced.

The carvings reveal visibly for the first time the meanings of Bible lines, describing the "ivory house" belonging