

PHYSIOLOGY

Insulin Injections Produce Hibernation

WARM-BLOODED animals can be sent into hibernation artificially by injecting insulin, or a combination of insulin and magnesium chloride, into their veins, Dr. Paavo Suomalainen of the Helsinki Biochemical Institute has discovered.

Working with European hedgehogs, Dr. Suomalainen found that the injections caused a drop in blood sugar content to less than half normal, and produced the cold-blooded state characteristic of warm-blooded animals in hibernation.

The animals remained asleep as long as he kept them in a refrigerator, at temperatures around freezing point. When he removed them to a warm room, at a temperature of from 70 to 75 degrees Fahrenheit, they awoke and returned to the normal warm-blooded state.

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CHEMISTRY

Self-Sufficiency in Rubber Wanted By Soviet Russia

SOVIET RUSSIA is endeavoring to become wholly independent of outside sources of rubber by 1942, principally by the development of the synthetic rubber industry that already supplies more than two-thirds of the needs of the USSR, it is stated in the *Far Eastern Survey* (Nov. 8).

There have been some complaints of the quality of synthetic tires, and Soviet chemists are now trying to overcome this difficulty, with the aim of increasing the life of the ordinary automobile tire to 21,000 miles.

Official figures for the present and hoped-for production in the USSR are not given, but on the basis of known present and scheduled future automobile production the *Survey* estimates the present output to be near the 100,000-ton mark or approximately 10% of recent world production of natural rubber.

Russia's home production of rubber has been developed practically step for step with the country's consumption of that commodity. Russia has never imported more than about 3% of the world output of natural rubber, so that her disappearance from the outside market would not cause any particular disturbance.

Only if the use of artificial rubber, now

being pushed on a large scale in Germany as well as Russia, should become common in other lands would there be real cause for plantation interests to worry. As yet, artificial rubber does not compete seriously with the natural product in either price or quality: the hoped-for 21,000-mile life of synthetic tires in Russia would be considered nothing extraordinary for present-type natural rubber tires in this country.

In addition to large-scale production of synthetic rubber, the USSR is striving for a supply of natural rubber from plants that can be grown within present Russian boundaries; but supplies from this source are as yet of little importance in the total rubber economy of the country.

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PUBLIC HEALTH

Alcohol Kills Three Times As Many As Reports Show

ALCOHOL kills or is at least partly responsible for deaths of more than three times as many persons in the United States as the official records show. This charge of inaccuracy in reporting causes of deaths has been made by the U. S. Census Bureau Division of Vital Statistics which keeps records of births and deaths in the country.

Three out of every 1,000 deaths in the United States are due to alcoholism, according to current reports to the Census Bureau. But when both primary and secondary causes of death as shown on death certificates are considered, alcoholism is found to play a part in more than 10 out of every 1,000 deaths.

Confidential inquiry among a large group of physicians by another physician revealed that alcoholism had been reported on the death certificate in less than half the deaths which it had actually caused.

Reported alcohol deaths have been reduced 51.9% during the period 1910 to 1937. This is about twice the decline in the death rate from all causes during the same period. Most alcohol deaths occur in middle age and are much more frequent among men than women. The proportion of all alcohol deaths differs very little between races, but there are marked differences in different regions of the country and different states. Nevada recorded the highest proportion of deaths from alcoholism, while the lowest proportion was recorded from Kansas, Louisiana, Mississippi, Missouri, Nebraska, Utah and Vermont.

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IN SCIENCE

METALLURGY

Alcohol Helps Turn Iron Into Hardened Steel

HOW soft iron changes under the influence of alcohol, into tough hard steel was demonstrated at the Westinghouse Research Laboratories, Pittsburgh, by John R. Gier, research metallurgist.

By projecting the image of a small hot, soft iron wire on a screen Mr. Gier was able to show that in the presence of alcohol vapor the soft iron quickly turned into hardened steel.

Electric current passing through the demonstration wire heated it to and above its crystalline transformation point at a temperature of 1670 degrees Fahrenheit in an atmosphere of hydrogen. As the temperature rose the image of the wire showed that it expanded and sagged.

At the transformation point hydrogen gas bearing alcohol vapor was passed over the wire for a few minutes and the carbon from the alcohol entered into chemical combination with the wire.

Whereas without alcohol the wire, on cooling, gradually returned to its original tautness it did not do so after alcohol's carbon atoms entered into the hot iron wire and made it hard. On cooling, in this case, it still sagged and had a permanent set.

Westinghouse engineers developed the exhibit apparatus to illustrate the effectiveness of controlled atmosphere in the hardening of steels.

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MEDICINE

Pneumonia Case Fatalities Cut By Two-Thirds

THE NUMBER of fatal pneumonia cases in the Civilian Conservation Corps, whose members have been given anti-pneumonia vaccine, dropped this year to a rate one-third that of the preceding five years. How much of this and of the reduction in total number of pneumonia cases is due to use of the vaccine cannot yet be stated with certainty, Robert Fechner, CCC Director, pointed out in his announcement of the figures.

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E FIELDS

ARCHAEOLOGY

Shutdown Halts Digging at Area Slated For Flooding

A PREHISTORIC crossroads, where at least three early Indian tribes left traces of their presence, has been discovered by archaeologists in the area of north-central Texas soon to be flooded by Possum Kingdom Dam.

Shortage of WPA workers has temporarily halted joint efforts of the University of Texas and the WPA to salvage all possible Indian material in the sector before the dam is completed late in 1940.

Bison which thronged Possum Kingdom Basin are believed the attraction which drew aborigines from various parts of Texas. The excavations thus far have shown a new southern limit to which certain cultural traits of Plains Indians spread. Another type of Indian in the area was the "burnt-rock mound builder." Typical East Texas Indians who had a Mississippi Valley pattern of living also showed their presence in the Possum Kingdom country, but whether they were then heading toward an East Texas destination, or had come from there, remains to be cleared up.

Hope that the shutdown will be brief is expressed by A. T. Jackson of the University, in charge of excavations, because time lost now means "work can never be done."

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PSYCHIATRY

Murder Is Seen as Bizarre Form of Attempted Suicide

WHEN a murder is committed, the psychiatrists can sometimes pronounce it: "Suicide." Not suicide of the victim, but the result of a suicidal tendency in the murderer.

Mentally ill minds studied by Dr. Philip R. Lehrman, Clinical Professor of Neurology and Psychiatry at Columbia University, saw in other persons their own hated selves. They were driven by their own self-hatred to the killing of others.

Murderers studied by Dr. Lehrman had been preoccupied with suicidal

thoughts during adolescence. An insane man who killed his wife allegedly because he was driven by fear that she would confine him in a mental hospital, was really striving to annihilate the effeminate side of his own nature. Details of Dr. Lehrman's study, "Some Unconscious Determinants in Homicide," are made available in the current issue of the *Psychiatric Quarterly*. It is not by mere chance, he found, that murder and suicide are so often a single act.

Dr. Lehrman's conclusions lead us to conjecture that even normal men going to war may attribute to the enemy, unconsciously perhaps, their own worst faults. The killing then becomes in their minds almost an act of mercy—a release from such base elements.

Perhaps it is from this tendency that war's atrocity stories grow—attributing to the enemy the most revolting and even unthinkable acts, reflecting the hatred and forbidden part of man's inner nature, long suppressed by parental, religious and other social influences. In turn, the atrocity stories aid in projecting onto the enemy the vile nature that men want to crush.

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ENGINEERING

British To Build Concrete Ships To Save Steel

B RITISH shipbuilders, working under the new Ministry of Shipping are planning large scale construction of ocean-going vessels built of reenforced concrete instead of steel. Reenforced concrete ships, tried successfully during the last war in Scandinavia, France, Italy and on a large scale in the United States, require less steel and skilled labor for their construction than do ordinary vessels.

Tried before in Britain only on an extremely limited experimental basis, concrete ship construction demands only a slipway and ordinary building contractor's equipment. Maintenance of the finished ship is also reduced, as cleaning and painting are unnecessary.

Though entirely seaworthy, the concrete craft are considerably heavier than steel vessels of the same size and are slower. They are often launched upside down because construction is easier and cheaper if the keel is uppermost. The hull is righted by flooding compartments on one side. Several concrete ships of World War vintage are still in service. Their construction is approved by experts of Lloyd's Register of Shipping.

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GENERAL SCIENCE

Bickel and Swanson Elected Science Service Trustees

T HE ELECTION of Karl Bickel and Neil H. Swanson as Science Service Trustees is announced by Science Service. Mr. Bickel was formerly president of United Press and he has long been associated with the Scripps-Howard Newspapers. Neil H. Swanson is managing editor of the *Baltimore Evening Sun* and he is also an historical novelist, one of whose books has just been made into a motion picture.

Mr. Bickel fills the vacancy caused by the resignation of W. W. Hawkins, chairman of the board of the Scripps-Howard Newspapers, who left the Science Service board on account of added duties caused by the international situation. Mr. Swanson fills the vacancy caused by the resignation of J. Edwin Murphy, formerly managing editor of the *Baltimore Evening Sun*.

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MEDICINE

Make Chemical Approach To Hay-Fever Problem

A FIRST step in a fundamental chemical approach to the hay-fever problem has been taken by a group of scientists, Drs. Walter L. Winkenwerder, Mary V. Buell and John Eager Howard, at the Johns Hopkins University.

Like G-men on the trail of a criminal, these scientists are on the trail of the exact chemical in ragweed pollen that makes pollen-sensitive persons snuffle and sneeze in the pollen laden breezes of late summer.

Pollen-sensitive persons, they report (*Science*, Oct. 13) are also sensitive to certain acids and their derivatives, among them those from yeast, thymus gland, beef heart and tea leaves. The acids are called nucleic acids because they come from the nuclei of cells. They produce the same wheal on the skin that ragweed pollen does in sensitive persons.

Pollen, being a germ cell, probably also contains nucleic acid. Next step will be to determine whether it does contain such an acid and if so, whether hay-fever patients are sensitive to it. Dr. Winkenwerder and associates think that the criminal in the pollen is more likely to be a protein than an acid, but since this is the first time that pollen-sensitive persons have been found sensitive to a known chemical substance, they are following the clue of the acid.

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