

PHYSIOLOGY-MEDICINE

New Studies on the Blood Promise Medical Advances

An Extract to Help Save "Bleeders," Instrument to Measure Clotting of Blood Among New Developments

BLOOD featured discussions of the American Physiological Society at Washington. While this may sound as if a gory time was had, no blood was shed.

The discussions were so technical that at times they seemed far removed from the vital red fluid that courses through the arteries and veins of the human body.

Among the many important reports at one session were:

1. An extract from maternal tissue which may help to save the lives of "bleeders," persons suffering from the hereditary disease, hemophilia.

2. A substance in brain tissue and another in the eye which affect the clotting of blood.

3. An adaptation of the photoelectric cell to measure clotting of blood; the new apparatus is called a "coagelometer."

4. Discovery of the primary cause of dangerous blood clots in veins.

5. A method of studying blood regeneration involving total removal and replacement of the blood of dogs and cats.

The extract that may prove valuable in treating hemophilia was obtained from the placenta by Drs. Arda Alden Green, Hope Lowry, R. C. Eley and C. F. McKhann of Harvard University. Dr. McKhann had previously used an extract from this maternal tissue for treatment of measles. The one now reported is a different extract from the same kind of tissue, and seems to have the property of making the blood of bleeders clot more rapidly.

From Cornea

From the cornea of a dog's eyeballs, Dr. John H. Ferguson of the University of Alabama extracted a substance which he found can play a part in the process of blood clotting. This effect of the eyeball tissue indicates, according to Dr. Ferguson, the possibility of preparing a blood-clotting agent from tissues that have no blood in them. The clotting of blood is generally supposed to depend on a substance found

in the blood itself. Inability of the blood to clot normally when shed, as in hemophilia, has been thought due to the absence of such substance. He reported other experiments supporting another theory on blood clotting. This is that cephalin from the brain, as well as calcium, is an essential factor in directly activating the clotting substance in blood.

The coagelometer was designed at the Mayo Clinic by Drs. E. J. Baldes and K. K. Nygaard to determine the coagulability of blood in such diseases as hemophilia, obstructive jaundice and thrombocytopenic purpura, in which the blood takes a long time to clot, and in certain cases of thrombosis, or stoppage of a blood vessel by a clot, in which the clotting time is shortened. The coagelometer makes use of the photoelectric cell. Studies with this new tool of modern physics show that there are four and possibly five stages in the process of blood clotting. Clinical application of the coagelometer are under way and will be reported on later.

Clotting of blood within the blood vessels, which may be extremely dangerous, is due primarily to the action of tissue extract, Drs. Stearley P. Harrison and Edward C. Mason of the University of Oklahoma Medical School concluded from experiments they reported at the same meeting. They were able to produce such clots within the veins of an artificial blood-vessel system. Minute amounts of the tissue extract produced the clots when relatively large amounts of blood were circulating through the artificial blood vessels. The clots thus formed were examined under the microscope and found strikingly similar to those occurring in human disease.

The problem of how fast the plasma protein content of the blood supply of the body can be restored to normal after extensive blood loss was investigated by the apparently drastic but harmless operation of removing all the blood and then replacing it by a salt and blood cell mixture, a sort of modified transfusion. In the case of dogs, the

plasma protein is regenerated within 200 hours and in cats within 100 hours, Drs. William R. Amberson, John Stanbury and Edna Warweg, of the University of Tennessee and the Marine Biological Laboratory at Woods Hole, Mass., reported.

The operation is performed under ether and the animal suffers no pain or damage. Blood is withdrawn from the carotid artery in the neck. Into the same artery is then injected a salt solution containing in proper proportion the blood cells of another cat or dog. This is continued until examination shows that all the plasma, or liquid constituent of the blood, has been replaced by the salt solution. The rate at which the plasma and its proteins are regenerated is then determined.

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ARCHAEOLOGY

Religious Text Carved in Ice Found in Tibet

"HAIL Jewel in the Lotus"—"Om mani padme hum"—the most popular Tibetan religious formula, has been found many places in Tibet but, strangest of all, an American expedition has discovered it carved in ice.

Brooke Dolan II, who has just returned from Tibet and West China, where he led an expedition of the Academy of Natural Sciences of Philadelphia, found the words carved in an ice bridge on the Upper Yangtze River. (*Turn to next page*)



"OM MANI PADME HUM"

Carved in the icy wastes of the strange land of Tibet was found this devout religious inscription, "Hail Jewel in the Lotus."

Mr. Dolan's journey totaled 5,000 miles by caravan, 2,500 miles by airplane, and 1,700 miles by river.

Ernst Schaefer, of Goettingen University, was zoologist of the expedition.

Among the 3,100 birds and 140 mammals secured is a hitherto undescribed miniature sheep. The most

spectacular specimens brought back are wild yak, which inhabit an area never lower than 14,000 feet above sea level, and go with wild sheep as high as 17,000 feet. Big bulls stand six feet at the shoulder and weigh from 1,600 pounds to a ton.

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University of Chicago to the American Physiological Society.

The new hormone, called lipocaic, has not yet been used clinically. It will supplement but not replace insulin. Lipocaic apparently controls the utilization of fat in the body as insulin controls the use of sugar. The diabetic patient suffers from a disturbance in the utilization of fat, so that even with insulin treatment he cannot be returned to a fully normal state. The disturbance in fat utilization often causes a premature hardening of the arteries as well as other difficulties. For this reason the fat in his diet must be more or less restricted.

The new hormone was discovered in studies on dogs. When the pancreas in these animals is completely removed, they cannot live more than two or three months even when given adequate amounts of insulin. At death an extreme infiltration of the liver with fat is found. Giving the new hormone together with insulin, after complete removal of the pancreas, prevented the infiltration of fat into the liver and has enabled the dog to live probably a normal life span.

The Chicago scientists are now trying to obtain lipocaic in pure form.

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GENETICS

Biologist Predicts Babies May Come From "Borrowed" Ova

Mother Might Serve Merely as Incubator to Infant From Ideal Parentage; Present Eugenics Condemned

WOMEN having children with neither their own nor their husbands' hereditary qualities—physiologically their mothers, but biologically only their "adopted" mothers—constitute one possibility in a future Utopia sketched by a leading American biologist, Prof. H. J. Muller of the University of Texas, who has for the past three years been carrying on research at the Academy of Sciences of the U.S.S.R. in Moscow, of which he has been elected a former member.

This somewhat dizzying suggestion for really radical eugenics is set forth by Prof. Muller in a recently published book, "Out of the Night" (Vanguard Press), which has been in practically its present shape in manuscript form for a quarter of a century, "while the world caught up." Now, Prof. Muller considers publication justified.

There are several developing biological techniques which he regards as promising eventually to make his biological dream a reality. Ovarian tissue might be transplanted from women of extraordinary qualities into prospective mothers of only average hereditary promise, and conception assured through the mechanical implantation of male sex cells from highly gifted men. Or, the ovum might be fertilized outside the body of the mother, and then accepted by her for development and birth. Or the "eugenic" ovarian stock might even imaginably be kept going in incubators, like Dr. Alexis Carrel's famous chicken heart tissue.

This deliberately selective parenthood would have nothing to do with the regular marital life of the commonplace husband and the commonplace wife who would thus "adopt" a baby in the one-cell stage. They would live

together, carrying on their normal love-life in the immemorial fashion—but would carefully practice birth-control, to make sure that all their offspring should be of the "thoroughbred" type. Prof. Muller believes that marital love and parenthood need not, and indeed should not, have anything to do with each other.

For eugenics of the type advocated by many sociologists and scientists today, he has only scorn. The measures are only halfway attempts, inadequate even to achieve their limited objectives, he declares. And he even challenges the oft-repeated assertion that the "best stocks" in present-day society should be encouraged into greater fruitfulness. Today's upper classes, he points out, hold their position largely through their success as competitors, as predators. "Eugenics" that would perpetuate a dominantly predatory class, he holds, is really dysgenics.

Prof. Muller won world-wide recognition some years ago by his brilliant researches in genetics, in which he forced the production of new forms, or mutations, by bombarding germ-plasm with X-rays. Election to membership in the National Academy of Sciences of the United States was one of the honors accorded to him at that time.

Science News Letter, April 11, 1936

MEDICINE

New Hormone Promises Help for Diabetics

A NEW hormone from the pancreas which may greatly improve treatment of diabetes was reported by Drs. Lester R. Dragstedt, John van Prohaska and Herman P. Harms of the

GEOLOGY

Greatest Hazard From Meteorite Would Be Hot Air

ARRIVAL of a large meteorite—or perhaps an object like the newly-named planetoid Anteros—would probably do more damage upon the earth through atmospheric disturbance than by seismic shock, according to Dr. Frederick C. Leonard, astronomer in the University of California at Los Angeles. To be sure, a direct hit would wipe out life and property in the line of the collision; but for spectators well to the side the greatest hazard would be that of hot wind, unless perchance the blundering celestial visitor should happen to touch off an unstable rock-fault and produce an earthquake through secondary forces.

New data from explorations in Siberia, published recently by the Society for Research on Meteorites, of which Dr. Leonard is president, reveal details of the terrific blast of hot air which accompanied the great meteorite of June 30, 1908.

If a cosmic mischance had directed the flying planetoid Anteros to earth, friction would undoubtedly have