

MEDICINE

Dangerous Bleeding Stopped By New Thrombin Preparation

Preparation Induces Life-Saving Clotting in One Second; Supply Still Limited, But Tests Give Encouraging Results

BLEEDERS, from new-born babies to patients on the operating table and even, in many cases, hemophiliacs suffering from the hereditary bleeding disease, can now be saved by two death-defeating substances presented by Dr. H. P. Smith, State University of Iowa, at the meeting of the Federation of American Societies for Experimental Biology in New Orleans.

One of the anti-bleeding substances is a new preparation so powerful that when sprinkled on a wound it stops bleeding by clotting the blood "in the twinkling of an eye." It is obtained from beef blood at the slaughter house which, after preliminary treatment, is whirled in apparatus like a cream separator. The fluid that separates out, called blood plasma, is diluted with water, treated with acid and other chemicals to purify it and finally sterilized by filtering through cakes of ground glass partially fused together.

This material is so fast in action it will clot blood in one second. It is not yet on the market and the supply is still limited but surgeons at the University of Iowa have already used it, with "quite encouraging" results, to stop dangerous oozing of blood during major operations. This oozing, which is difficult if not impossible to stop by other methods, is especially troublesome in operations on the brain, liver and bone.

Thrombin May Save Lives

When the material is available generally, dentists will also be able to use it to stop bleeding after teeth are drawn. For hemophiliacs, like the Spanish Count of Cavodonga, who recently bled to death from injuries following an automobile accident, the new thrombin may prove life-saving. It cannot stop the internal bleeding, but in many cases hemophiliacs bleed to death from cuts on the surface of their bodies. This bleeding can be stopped by the new thrombin.

Thousands of new-born babies and older patients suffering from obstructive jaundice can be saved from bleeding to death by the other substance Dr. Smith discussed, vitamin K. This vitamin not

only stops bleeding but if used properly will prevent the bleeding, Dr. Smith emphasized.

The vitamin was discovered by Prof. H. Dam of Copenhagen. Its chemical identity was determined and it was prepared synthetically by scientists at the St. Louis University and the University of California. It was first used to treat patients by Dr. Smith and by doctors at the Mayo Clinic.

A "bedside" test for determining when to use vitamin K to prevent bleeding was described by Dr. Smith. He urged doctors to use this test on patients who might bleed, so that the vitamin can be given in time to prevent the bleeding. For new-born babies, one out of every two or three hundred of whom are in danger of bleeding, vitamin K can be given during the first few days of life. The second to the fourth days are the

danger periods for these babies. Doctors at Johns Hopkins Hospital in Baltimore, in Virginia and in New York, Dr. Smith said, are giving the vitamin to the mothers before the babies are born, to prevent the bleeding in the babies.

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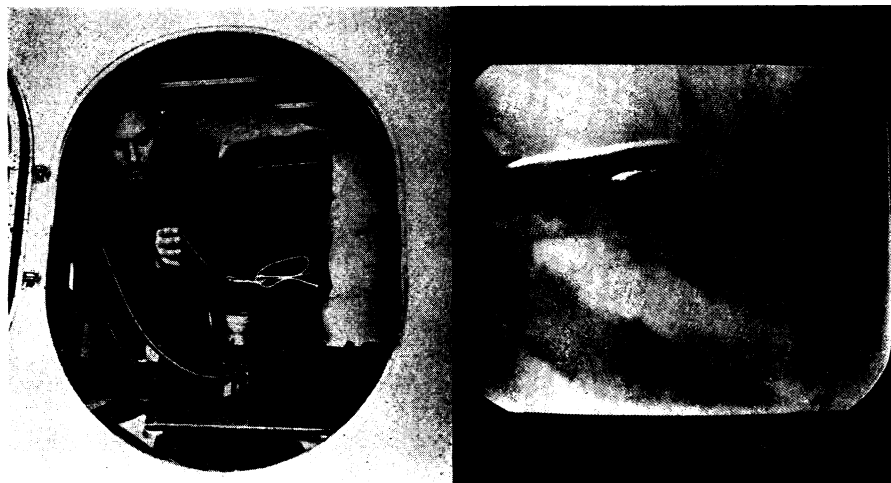
BIOCHEMISTRY

Starch Synthesized in Test Tube for First Time

STARCH has now been synthetically produced from glucose under laboratory conditions, thus paralleling one of the most important food-forming processes of nature. This "foot in the door" of one of the plant world's hitherto most difficult secrets was accomplished by Dr. Charles S. Hanes of the Low Temperature Research Station at Cambridge, England (*Nature*, March 2).

The feat of synthesizing starch could be accomplished, to be sure, only through the aid of a naturally produced enzyme extracted from plants, known as phosphorylase. Dr. Hanes found it in many parts of many plants, but for purposes of his researches extracted it principally from potatoes.

In contact with a form of glucose containing phosphorus, phosphorylase builds the smaller molecules of the sugar into the larger molecules of starch, at the



EYES IN THE AIR

Not long ago guests in a comfortable air transport plane saw, by television, that same plane glide in for a landing at La Guardia Field, New York, as it appeared to a television camera on the ground. Now the eye of television has taken to the air. Light weight cameras and equipment, hefty as about a dozen people, perfected by RCA engineers, installed in a United Air Lines laboratory ship, saw a companion plane (right) and little old Manhattan from a couple of thousand feet up. It gave groundlings before television sets the thrill of flying by proxy. This frees television from being bound to the earth's surface and previews the day when telereceivers will act as the eyes of the world in the air as on land and sea. It suggests that a general, safe at GHQ, will see behind the enemy's lines if a warring world continues to use science for destructive purposes. At the left is the television camera "looking" from the airplane.

same time splitting off phosphorus. The starch aggregates into definite grains, just as it does under natural conditions in the food-making cells of green plants. The grains turn blue when treated with iodine, and show all other normal reactions to the usual tests for starch. Moreover, they can be broken down into glucose again, by appropriate chemical treatment.

Long ago, man learned to take starch and break it down into glucose by heating it with a dilute acid. This process is carried on in industrial plants, by thousands of tons. But not until now has

man succeeded in imitating the reverse process, glucose-into-starch, that in nature apparently always precedes the starch-into-glucose step by which stored starch becomes available for transport or use within the plant body.

Thus far, the work at the laboratory has been attended with extreme technical difficulties, so that very little of the new synthetic starch has been accumulated. The total stock on hand is only about 20 grams—two-thirds of an ounce. But it weighs myriad-fold more in terms of scientific conquest.

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PHYSIOLOGY—MEDICINE

Anemia in Children Blamed On Iron Deficiency in Soil

Nutrition, Cancer Control and Other Problems of Health Discussed as Two Leading Societies Meet at New Orleans

FARM children in Florida, and other regions as well, are in danger of severe nutritional anemia if they live on home-grown food from poor soil that is deficient in iron. Such anemia is not primarily due to hookworm disease as previously believed, Dr. Ouida Davis Abbott, of the Florida Agricultural Experiment Station at Gainesville, Fla., told members of the American Institute of Nutrition.

Hookworm infection affects the degree of anemia, but the prevalence of anemia among rural children in Florida is due primarily to diets low in iron, Dr. Abbott stated.

Anemia of children is so widespread, Dr. Abbott pointed out, that it has been called omnipresent, "the ubiquitous nutritional disease." From Nova Scotia, Massachusetts, North and South Carolina and Georgia as well as Florida have come reports of deficient soils and mineral deficiency diseases of cattle. Plants grown on such soils are lacking in iron and other blood-forming minerals. Both vegetables and meat from such regions, therefore, would be so low in iron that even children living on good diets would be anemic if the diets were composed of home-grown foods.

Anemia was discovered in from 52% to 96% of rural children in Florida living in regions where the soil was predominantly deficient as shown by prevalence of salt sick of cattle. This age-old disease of cattle is known to occur

when the animals are restricted to forages grown on certain white and gray sands and residual mucks known to be lacking in iron, copper, cobalt and perhaps other elements.

Even though hookworm was widespread among the children in Dr. Abbott's study, many children with no

hookworm were so anemic they had only from about one-fifth to one-half the normal amount of red coloring matter in their blood.

When iron was given to children with hookworm, most of the symptoms, such as pallor, marked weakness, excessive fatigue, loss of appetite and edema gradually disappeared, even when the hookworm infection remained. On the other hand, clearing up the hookworm infection did not improve the quality of the blood.

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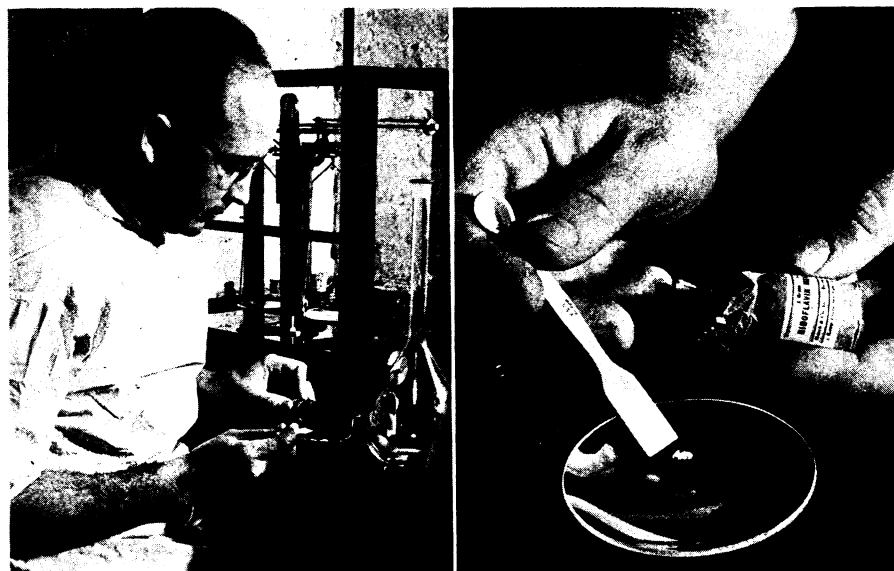
Insulin Changes Cancer Cell

STARVATION treatment of wildly growing cancer cells that caused them to turn toward normalcy, accomplished in test tube experiments, was announced by Drs. Richard H. Steckel and John R. Murlin, University of Rochester, at the meeting of the Federation of American Societies for Experimental Biology in New Orleans.

This change from cell activity characteristic of cancer toward normal activity was made by starving the cancer of sugar through the use of insulin, the diabetes remedy.

"The experiments offer no proof that insulin will cure or prevent human cancer," the Rochester scientists stated in response to inquiry.

The results, however, seem to be an



HONORED FOR RESEARCH

Dr. W. H. Sebrell, shown here in his laboratory at the National Institute of Health, shared with others the Mead, Johnson and Company's award for his discovery that riboflavin, part of vitamin B, is essential in human nutrition. At the right are Dr. Sebrell's hands and some riboflavin.