

SCIENCE NEWS

Science Service, Washington, D. C.

A NEW B VITAMIN

A DISCOVERY linking a new B vitamin, folic acid, with blood cell production in the body has been made at the National Institute of Health at Bethesda, Md. This is the first time a vitamin has been linked with white blood cell production, although a relation between vitamins and red cell production has been hinted in two or three previous reports. An article in "Public Health Reports" by Dr. Floyd S. Daft and Dr. W. H. Sebrell, U. S. Public Health Service, states that folic acid will cure the anemia and white blood cell destruction caused in rats by sulfa drugs.

Sulfa drugs sometimes cause the same white blood cell destruction, called leukopenia and granulocytopenia, and anemia in human patients. The first practical result of the discovery, therefore, will probably be greater safety in sulfa drug treatment.

White blood cell destruction, or a condition in which there are too few of these cells, however, occurs also in patients who have not been getting sulfa drugs. Some of these cases have been attributed to other chemicals, such as those used in formerly popular headache remedies. In other cases no cause for the condition could be found. The findings on the rats suggest pretty strongly that in all such cases the underlying cause may have been a diet deficient in the folic acid vitamin.

Whether this vitamin plays as important a part in blood cell production as vitamin D plays in bone formation remains for future studies to determine. Folic acid was first introduced to the world in 1941 under that name by Dr. Roger J. Williams, of the University of Texas, but its only significance heretofore known was the cure of anemia in chickens. It is a member of the vitamin B group and is found more abundantly in liver, kidney, yeast and immature grass than in other materials analyzed, according to a report from John Bowden, E. B. McQuarrie and W. H. Peterson, of the University of Wisconsin. It got its name from the same Latin word that gives us the word foliage, because it was found abundantly in leaves.

Professor C. A. Elvehjem and his associates at the University of Wisconsin have also found that, although rats can thrive on a diet lacking both folic acid and another B vitamin, biotin, they stop growing and get sick when given a sulfa drug while on such a diet. The ill effects of the sulfa drug could be both prevented and cured by adding folic acid and biotin to the diet. Without the sulfa drug, the bacteria in the rat intestine presumably manufactures enough of these vitamins for the animal's requirements.

Dr. Daft and Dr. Sebrell were able to pin the blood disorders in rats definitely to lack of folic acid because they were able to use pure folic acid, instead of a vitamin concentrate, for curing the disorders. This material, which has only been isolated in the past few months, was furnished them by Dr. A. D. Emmett, of Parke, Davis and Co., and Dr. E. L. R. Stokstad, Dr. B. L. Hutchings

and Dr. N. Bohonos, of Lederle Laboratories, Inc.—JANE STAFFORD.

THIAMIN

DR. VICTOR A. NAJJAR and Dr. L. Emmett Holt, Jr., of the department of pediatrics of the Johns Hopkins University, have discovered that human beings as well as rats and ruminant animals have in their bodies a factory that manufactures thiamin, or vitamin B₁. Their findings, which seem to give the first direct evidence for the biosynthesis of thiamin in man, are announced in the *Journal of the American Medical Association*.

For seven weeks four young men lived without sign of vitamin hunger disease on a diet completely lacking in thiamin. They were not getting the vitamin in pills or from any other outside source and they had been on low thiamin rations so long that little or none could have remained stored in their bodies from previous supplies. A similar group of four young men on the same diet regimen did develop signs of thiamin deficiency such as neuritis, swellings, loss of appetite and vomiting.

Tests of the four who stayed healthy without any outside supply of the vitamin showed that they were excreting large amounts of free thiamin in their intestinal wastes. Further tests showed that these four thiamin-starved young men were getting enough thiamin to stay healthy from bacteria in their intestines. Intestinal bacteria have been known to produce thiamin for rats and ruminants, but so far the question of whether man's intestinal bacteria could supply him with thiamin has been largely unanswered.

Whether the intestinal bacteria could supply enough thiamin to keep a man healthy for an indefinite length of time has not yet been determined. It may be that you have to feed bacteria minute amounts of thiamin or some other diet ingredient to keep the thiamin factory producing.

Diet rules regarding thiamin requirements seem likely to be revised in future as a result of these findings. A number of contradictory points may be explained, such as why beriberi from thiamin lack develops much more frequently among rice eaters than among those who live largely on other milled grains.

Sulfa drug treatment also is likely to be revised somewhat as a result of the discovery. Part of the search for the thiamin supply that was keeping the young volunteers healthy on a thiamin-starvation diet consisted in giving them doses of succinylsulfathiazole every four hours for one week.

At the end of the week, there was no more free thiamin in the intestinal wastes, evidence that the thiamin-producing bacteria were being destroyed or put out of production by the sulfa drug. This suggests that in future when doctors give a sulfa drug for intestinal infection, such as dysentery, they will be giving thiamin pills to make up for the production loss in the body's thiamin factory.

RED BLOOD CELL POWDER

SUCCESSFUL use of a blood powder from red blood cells, salvaged from plasma production, in speeding wound healing is reported by Dr. T. H. Seldon and Dr. H. H. Young, of the Mayo Clinic. The red blood cell powder is either dusted on the wound or applied with a sterile spatula. One or two applications are made daily and the wound covered after each with a dry, sterile dressing.

A five-inch-wide varicose ulcer, which almost encircled the patient's leg and had been present for eight years in spite of treatment by the usual accepted methods, was almost completely healed in eight weeks by daily application of the red blood cell powder. The blood powder has also given good results in a number of wounds following surgical removal of pilonidal cysts and fistulas. Infected wounds, amputation stumps that were not healing, and open chest wounds are among other types treated.

The results are not uniformly beneficial. In three cases the powder caused such severe, irritating, burning pain that it had to be discontinued. It is believed, however, that further study of the use of the red blood cell powder is warranted. The possibility of using red cells from other than human blood, such as beef blood, so as to have a supply when the source of human blood cells drops off after the war, should also, they suggest, be investigated.

The use in wound treatment of red blood cells salvaged from plasma production was first suggested and tried by Dr. J. J. Moorhead and Dr. L. J. Unger, of New York City. They used the cells in the form of a gelatin-like mass. Difficulty in keeping this semi-liquid material from being absorbed by the dressing or running out of the wound led to the development, by Dr. A. E. Osterberg, of the Mayo Clinic, of the red blood cell powder.

CARGO PLANES

HUGE cargo planes that will each carry 38 tons of perishable and valuable freight in weather-proof packages around the globe were predicted for the post-war world by J. H. Macleod, of the Hinde and Dauch Paper Company, speaking at Chicago before the air cargo meeting of the Society of Automotive Engineers. The biggest benefit for the manufacturer would be the partial or entire elimination of costly warehouses, Mr. Macleod declared.

Mr. Macleod predicted that reduction in air cargo freight rates, development of global skyway shipping routes and methods, and the availability of packages protecting every type of merchandise, will bring about post-war changes in business methods. Package engineers, he added, have developed not only corrugated boxes, thereby solving a majority of air cargo shipping problems, but have assured tailor-made packaging by means of special corrugated boards, coating materials, and adhesives with tough, flexible corrugated material used simultaneously to wrap and to pack.

Air-freighting of Lend-Lease and war material has resulted in the production of new bag packing or overwrapping materials of laminated papers and cellophane bags which control temperature and humidity, prevent corrosion, and mold formation and insect infestation.

With air cargo on a global basis after the war these methods will be utilized to transport fruits, vegetables and all types of machinery to every corner of the world.

ITEMS

FIVE blisters of eruption have broken out in the basin of Mexico's volcano, Paricutin, just as when Jorullo volcano, 67 miles west of Paricutin, burst forth in 1759 it also produced 19 similar formations. As yet it is undetermined whether the little craters are openings in the lava flow with the molten material coming down under the surface of the volcano's main cone or whether they are real craters reaching down into the earth. Visitors at the edge of Paricutin's basin described the change in the volcano's activity as spectacular. This development was not unexpected to geologists studying the volcano, and Dr. Ezequiel Ordonez had published a prediction of this possibility.

THE new copper penny, scheduled for production on January 1, will contain slightly less copper and a little more zinc than the traditional "copper." Whereas the old coin was made of 95 per cent. copper and 5 per cent. zinc and tin, the new coin will contain 85 per cent. to 90 per cent. copper and 10 per cent. to 15 per cent. zinc. It will weigh a trifle less than the standard bronze coin and will be similar in appearance. The Mint will use as a base for the new cent small-arms cartridge cases recovered by military authorities from proving grounds, firing ranges and other training areas for troops. These cases contain 70 per cent. copper and 30 per cent. zinc, to which will be added enough virgin copper to bring the copper content up to the required amount. The old cases will be melted at the Mint for use. Due to a shortage of pennies, the 1943 zinc-coated steel penny will remain in circulation and continue to annoy Mr. Average American until it becomes sufficiently discolored with use.

NEW fiber insulating board standards have just been released by the National Bureau of Standards. They include classes of structural materials designated as building board, lath for plaster base, roof insulating board, interior board, and sheathing. The publication is a revision of the 1935 standards. The new standards cover minimum physical requirements and tests for thermal conductivity, transverse and tensile strength, linear expansion, deflection and water absorption. They cover also requirements for composition, construction and finish.

DEVELOPMENT of an "emergency" heat-resistant alloy has been disclosed in a report by Oscar E. Harder, assistant director, and James T. Gow, assistant supervisor of Battelle Memorial Institute, Columbus, Ohio, to the American Society for Metals. This alloy is low in nickel and chromium, two of the metals high on the wartime scarcity list. After a laboratory study of nearly 100 alloy compositions, a heat-resistant alloy was found that possesses adequate toughness for handling in the foundry and is low enough in hardness to be machinable. The new metal can be used at temperatures up to 1400 degrees Fahrenheit.