NUTRITION

Vitamins on the Way

Two new important, soon to be isolated, factors in nutrition, were found in spinach and in cream. Function in human diet not yet established.

➤ SCIENTISTS in nutritional laboratories all over the country are pretty certainly going to present us with more vitamins in the future. You may think there are enough already to keep track of, but when you remember how much the vitamins mean for keeping people well, it is good news that still more may be on the verge of being discovered.

Discovery of a vitamin means that it has been isolated in pure form, Dr. Floyd S. Daft, of the U. S. Public Health Service's National Institute of Health, one of Uncle Sam's top-flight vitamin researchers, explains. As long as scientists are dealing only with an effect on animals of some substance in food, the vitamin has not been discovered, according to Dr. Daft's criterion, even though scientists may feel very certain of its existence.

Two new vitamins are on the verge of discovery, according to this criterion. One of them is folic acid. The University of Texas investigators who coined this name for it took the word folic from the Latin word for leaf, folium.

"Perhaps they were influenced by the fact that they had obtained their active concentrate from four tons of spinach," Dr. Daft suggests. "They also discovered that this vitamin is especially abundant in green leaves of many kinds."

This vitamin is still in the not-quite-discovered stage because so far scientists have been working with concentrates, not with the pure folic acid. Consequently some of the effects attributed to the vitamin may be due to some impurities, that is, other still undiscovered vitamins associated with folic acid.

Folic acid is said to increase the growth rate and restore the color of hair to rats; to influence the hatchability of eggs; to be essential for normal growth and for hemoglobin formation and normal feathering in young chicks; and to be necessary for the formation of white blood cells in monkeys.

A second new, almost discovered, vitamin was obtained from cream. Scientists at Oregon State College started with 15 gallons of pale yellow cream and ended up with 1/10,000 of an ounce of a pale yellow oil, yet this oil has almost two-thirds of a certain activity which was in the original 15 gallons of cream.

The Oregon researchers have not named their new vitamin yet. They call it just "A dietary factor essential for guinea pigs." But the 1/10,000 of an ounce they got from 15 gallons of cream is powerful enough to cure the stiff legs of two million guinea pigs. Whether it will have any effect on human stiff legs or any other human ailment has not yet been determined.

Very often vitamins discovered through their effects on animals turn out to be needed by humans, but establishing that fact is often one of the last steps in vitamin research, even though it is one of the biggest reasons for the work.

One of the important lessons for humans learned from vitamin research is the necessity of eating a varied diet with not too many highly refined foods. If you put a rat or guinea pig or chicken on a purified diet, even with doses of all the known vitamins in pure form, the animal generally gets sick. This is because his diet is lacking some important still undiscovered food constituent. Humans who limit their diet to one or two favorite foods, even if they take vitamin pills, are in danger of getting sick because they, too, may be missing some still undiscovered vitamins that are in the foods they don't eat. The more varied the diet, the better the chances for not missing important, undiscovered food elements.

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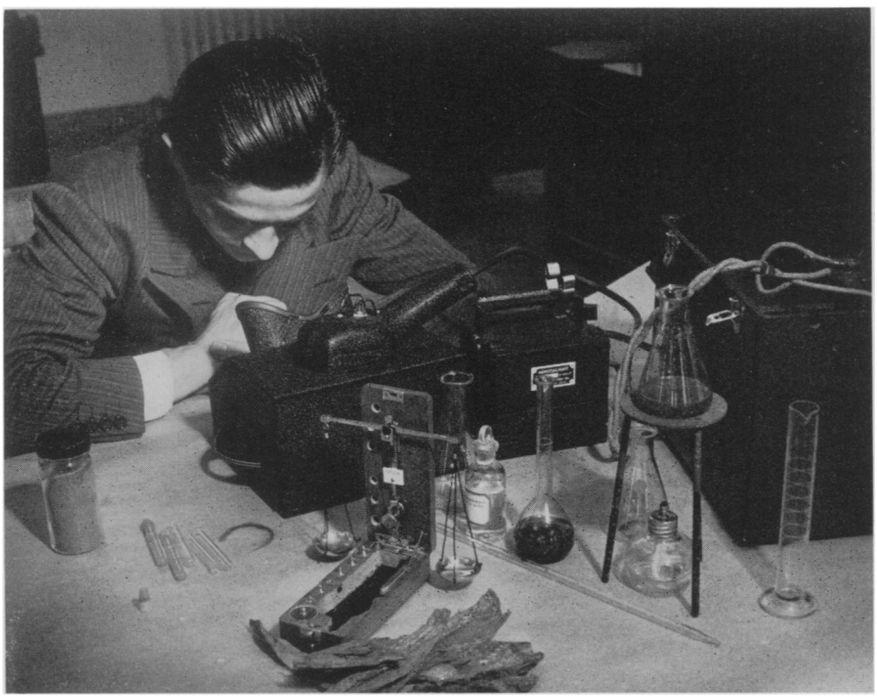

FOR FIELD TEST—This kit will be used to analyze newly discovered stands of cinchona for concentration of quinine.

PHARMACY

New Portable Unit Tests Cinchona Bark for Quinine

➤ QUININE content of newly discovered cinchona stands can now be analyzed on the spot by a new portable device, instead of sending bark samples to remote laboratories.

The first four units have just been shipped to South America to speed development of quinine sources and for initial tests under field conditions.

Knowing that quinine fluoresces or glows under ultraviolet light, Martin S. Ulan, Rutgers University pharmacy instructor and consultant to the BEW Office of Imports, went to work with associates to develop a machine that would make laboratory testing of cinchona bark unnecessary.

Starting with an instrument used to test fluorescent minerals, the scientists threw away the galvanometer and substituted a set of tubes each containing a different strength of quinine solution; each with a different degree of fluorescence. By comparing these with an unknown sample the quinine content can be calculated.

This test, conducted in a few minutes in the heart of the jungle, is expected to be nearly as accurate as more complicated laboratory procedures. Simple instructions included with the new device can be followed by a layman without technical training.

Science News Letter, April 10, 1943

PHYSICS

Sheets as Well as Blankets Necessary for Soldiers

➤ SHEETS as well as blankets are needed by the Army to keep soldiers sleeping in the open warm and comfortable. The combination of a light blanket and two sheets gives greater body comfort than a single heavy blanket, without necessarily increasing the total weight.

Air permeability is the reason. Wool blankets permit more air to pass through them than do cotton sheets of the ordinary grade. Even one sheet with a blanket is preferable to a heavier blanket alone. These are the conclusions of scientists at the National Bureau of Standards, where tests of the air permeability of sheets, blankets and their combinations have been carried on.

"The thermal transmission in still air," states Herbert F. Schiefer of the Bureau, "decreased considerably when one or two sheets were used in combination with a blanket. The average decrease in thermal transmission for all the blankets tested was 7% when the sheet was used under the blanket, and 15% when the sheet was used over the blanket, and 19% when the blanket was used between two sheets."

The thermal transmission tests were made in still air and in air moving at 15 miles an hour. With blankets alone the heat lost in moving air was 100% greater than in still air. In combination with sheets it was only 37% greater.

A medium-weight blanket and two water-proofed cotton sheets is recommended as standard equipment for lifeboats and liferafts at sea, replacing the present equipment of blankets alone.

Science News Letter, April 10, 1943

AERONAUTICS

Midwest Plants Ready

Warbirds start to hatch from huge airplane factories in the prairies after year of record-breaking construction. City mushrooms around plants.

See Front Cover

➤ FREEDOM'S EAGLES are beginning to stretch their wings from two great new nests, built on the wind-swept, horizon-filling prairie. One is the plant of the Douglas Aircraft Company, just finished after a year of record-breaking construction by the Austin Company, outstanding architectural and engineering firm. The other is the Army's own Midwest Air Depot, which lies side by side with the Douglas plant, the two together constituting a veritable city of aircraft workers, with a present population of some 22,000—and many more to come.

At the Douglas plant, celebration of the first anniversary of the groundbreaking has just been held. Last March, the Austin Company laid the first foundations of what has since become a tremendous brick structure. In November, the first unit was occupied; now C-47 planes are coming out of the wide delivery doors. The plant will be devoted exclusively to the production of C-47 transport planes — the "Flying Trains" of the Army Air Corps, that carry troops, munitions, weapons, supplies of all sorts. They will fly in huge flocks, from a hundred unnamable Shangri-Las to destinations which the Axis wishes it could guess. And after the war, the same plant will continue to turn out flocks of new transport planes for peacetime commerce.

For the great brooder of tomorrow's wings is designed for permanency. Its walls are massively built, with heat- and cold-resisting properties equivalent to eighty inches of solid brick, although due to a type of construction that must remain a military secret their actual thickness is only a fraction of that figure. The wide-spanned roof, with untrammeled floor space beneath, permits the big C-47's to be wheeled around like a perambulator in a nursery, and will accommodate even larger planes if that becomes desirable.

Lighting is spectacular in its efficiency. Lines of fluorescent tubes run the full length of the main assembly area—probably the longest lines of light anywhere in the world. Other lines come in at right angles, indicating the flow of materials, under them the planes slowly grow, like embryo birds in the shell, until at last they hatch through the wide doors at the end, test their engines with a roar on the outdoor concrete apron, and then wheel out onto the Army airfield's runways to swoop up "into the wide blue yonder."

On the other side of the flying field are the great hangar-type shops of the Midwest Air Depot, where the Army Air Corps' planes, in particular the big bombers, come home from Australia and Africa and India and all the fighting fronts of the world for healing of honorable battle wounds and preparation for further battles to come. Right now Flying Fortresses and Liberators are there, whose weight of wrath the submarine nests at Lorient have felt, and braggart Rommel's battered host, and the Japs at Rabaul and Rangoon. Their war-experienced crews often come with them, and the men and women who do the overhauling learn at first hand how our powerful fighting eagles can be given still more power.

Science News Letter, April 10, 1943

INVENTION

Steadier Mortar Bomb Is Alien Invention

➤ A STEADIER-FLYING bomb for smoothbore mortars is the invention of a Belgian, Jean Wauters of Brussels, on which patent 2,315,145 has been issued, and promptly taken over for the duration by the Alien Property Custodian.

Distinctive feature about this projectile is a rather heavy, detachable tail containing the propellant charge. This falls off as soon as the bomb is clear of the bore, leaving the missile with its center of gravity farther forward and hence capable of more accurate flight.

Another feature is a groove around the waist of the bomb, in which a loosely-fitting ring is free to roll. This is thrust up by the pressure of the firing charge, making a better seal between projectile and bore and thus increasing muzzle velocity and range.

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