

PHYSIOLOGY

Means Found for Measuring Amount of Vitamin B Needed

A MATHEMATICAL formula which will enable scientists to determine how much vitamin B you need in your diet to protect you from beriberi and which will show whether your ordinary dietary contains enough of this precious anti-neuritic vitamin was reported to the National Academy of Sciences meeting by Prof. George R. Cowgill of Yale University.

Heretofore the only way of telling whether a diet contained enough vitamin B to protect against beriberi has been the rather negative method of observing whether or not persons living on that diet developed the disease.

Using a vitamin B concentrate prepared from yeast, and determining the minimum amount of the substance required each day by a mouse, a rat, a pigeon and a dog, Prof. Cowgill was able to arrive at his formula expressing the vitamin B requirement per day.

Tested by Four Methods

"The vitamin B requirement may be regarded, provisionally, as proportional to the total metabolism multiplied by a factor correcting for age," he said.

The formula was worked out on the requirements of animals which could be determined directly, but Prof. Cowgill reasoned that it could also be applied to man and tested this theory by four methods: using the formula to estimate the daily vitamin need of men of different body weights; by calculating the vitamin B content of various representative human diets, expressing the results in terms of equivalents of vitamin B concentrate used in the animal tests; by noting, on the basis of these calculations, whether the diets should have allowed or prevented human beriberi; and comparing these results with the observed facts concerning the incidence of this disease.

For example, a man weighing 154 pounds and living on an average American diet would be receiving a daily vitamin intake equivalent to 8.2 grams of the test concentrate. Such a man's requirement, according to the formula, would be 6.47 grams, and therefore, he should not develop beriberi. Actually, beriberi occurs very rarely in the United States, which seems to prove the ac-

curacy of the calculations and the formula on which they were based.

A similar result was obtained using the average German dietary, which agrees with the fact that beriberi is also rare in Germany.

A study of the data in North China dietaries shows that the factor of safety is even greater in this case than in Germany and America. This finding is in agreement with the fact that in contrast to the Southern Chinese, who eat large amounts of white rice and among whom beriberi is very prevalent, the Northern Chinese people make liberal use of cereals, soybeans, vegetables and fruits and show relatively few cases of beriberi.

A study of the exclusive meat diet eaten by the explorer, Vilhjalmur Stefansson, for over a year without the appearance of beriberi showed that the diet was adequate, although the factor of safety against beriberi was only moderate.

Prof. Cowgill reported other similar instances in which his calculations of a dietary's vitamin B content agreed with its known action in producing or preventing beriberi.

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FORESTRY

Forest Fire Fighters Drill Their Own Wells

MICHIGAN forest fire fighters last season developed a system of obtaining water for fighting ground fires by drilling shallow wells when no other nearby source was available. On many occasions it was found possible to sink a well from three to eight feet into the ground in a short time and thus obtain sufficient water to keep a ground fire or a muck fire under control.

The use of this system, of course, depends upon the height of the water table. When it is low the pump system cannot be used, but in ordinary seasons it has been found that a well point sunk a few feet into the ground will furnish enough water to fill portable tanks and pails. An ordinary "pitcher" pump or a gasoline pump is used to lift the water to the surface.

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BOTANY

Nature Ramblings

By FRANK THONE



WINTERBERRY

CHRISTMAS is already occupying a considerable place in the thoughts of children, and therefore of necessity in the activities of those who cater to the Christmas trade. Even now the gatherers of holly and other Christmas greens are beginning to get their wares together, for in many cases these decorations must be shipped hundreds of miles, which takes a lot of time. Holly grows wild throughout the South, and extends along the Atlantic seaboard as far as the southern end of New England, but inland it does not grow at all.

We have become so used to thinking of holly as a mild-climate plant that it surprises us a little to learn of a native American holly that thrives perfectly well in the winter climate of the North, even in the upper Mississippi Valley. We do not recognize it as a holly, because it does not have the hard, glossy, prickly leaves of our old familiar Yuletide friend, and because its softer foliage changes color and drops off in late autumn, in orthodox fall-leaf fashion. But the winter-berry is a true holly none the less, as will be recognized in a moment if one examines the round, red, glistening berries with which its slender stems are beset.

The winterberry does not reach tree size, as the Christmas holly does; it is never more than a tall and somewhat straggling bush. It is found from Nova Scotia south to Florida, and westward as far as Missouri.

Like most of our other bright-berried shrubs, the winterberry has suffered considerably from the depredations of commercial collectors. The American Wild Flower Preservation Society urges that private individuals refrain from taking it, and that they refuse to buy it when it is offered on the market.

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