NUTRITION

From Now On: Vitamins

Food factors such as B_{12} promise to not only bring better health to the sick but also to help farmers grow more meat faster and cheaper.

By WATSON DAVIS

Twenty-second in a series of glances forward in science.

➤ IS it more wonderful to rescue those dying of pernicious anemia or to give the farmer a means of growing more meat faster and cheaper in order to feed more people?

One of the latest vitamins, twelfth in the B series, does both—and more.

In 1926 one of the great discoveries in medicine was made by Minot, Murphy and Whipple—made Nobelists for their achievement—that eating of liver relieves the symptoms of this blood disease. The effective chemical in the liver, or at least one of them, turned out to be a red crystalline material, which was called vitamin B_{12}. It is, on a weight basis, we are assured, the most potent therapeutic compound known to medicine.

The conquest of any human disease, even in these days of many such achievements, is notable. But the possibilities of the use of this B_{12} substance in raising food are even more exciting commercially and agriculturally.

For putting weight on hogs and making chickens grow and produce eggs, some food of animal origin, such as fish meal, skim milk, etc., has long been known to be desirable. It contains what is called APF, or animal protein factor. The vitamin B_{12} seems to substitute for APF to a large extent and it is being used in animal feeding, converting an all-vegetable diet into the equivalent of the one that contains animal proteins.

The same microorganism that produces streptomycin, one of the four most successful antibiotic disease fighters, can be made to yield B_{12} as the result of fermentation. Thus the supply of the vitamin is no longer dependent upon animal production.

Even little children who are under par in school ask for second helpings and improve in vigor, alertness and general behavior when fed very small amounts of B_{12}. It may put weight on our population as well as provide more food for our youngsters to eat.

In the intensive search for things to give a growth kick to animals being raised on our farms, it was discovered just a few months ago that one of the other new medical antibiotics, aureomycin, can team up with B_{12} in the feed to give a cheaper protein supplement. Aureomycin and B_{12} used together make the pigs and chicks grow even faster than B_{12} alone.

Even more recently a third compound, a derivative of arsonic acid, was discovered by the U. S. Department of Agriculture to give an additional impetus to growth.

What happens in animals is likely to apply equally well to human beings. These newer supplements can be expected to affect human medicine and well-being as well.

Such complex and involved developments in nutrition as the recent history of B_{12} and related substances assures us that there is still much more to be learned about the food we eat and give our animals.

In the future, we may expect:

A. Additional food factors perhaps in the B vitamin family will be discovered, with the consequence that diseases will be countered and nutrition will be improved.

B. Parts of the world where foods of animal origin are scarce and costly will benefit in the near future from these newly discovered factors in food, just as the longer recognized A, D, C and B_1 vitamins have vastly improved the fare of millions.

C. In our own agricultural economy, more high-grade protein food production, such as meat, will be possible in the near future through use of soybeans, cottonseed meal, and wheat middlings supplemented by B_{12} and similar non-animal factors.

Science News Letter, August 26, 1950

ENGINEERING

Coal Gains in Electric Field, Loses in Others

➤ COAL, which has lost ground to fluid fuels in many heating and power jobs, has been growing in importance yearly in the electric power utilities.

This field represents the form by which coal can best compete with the fluid fuels, according to Bertrand A. Landry of Battelle Memorial Institute, Columbus, Ohio.

How coal is losing out in other fields to liquid fuels and natural gas was pointed out by him at the Annual Midwest Power Conference held by the Illinois Institute of Technology. Among other matters he discussed necessary steps to improve coal's position.

Reasons for the decline in coal's relative position were given by him as its increasing price, the greater convenience of fluid fuels, the interruptions to day-to-day supplies due to strikes, and the rising standards with regard to air pollution.

The questions of convenience and of air pollution can be met in part at least. Research and development have shown, in recent years, that substantial improvement over conventional methods of handling and of burning coal and of disposing of ashes could be achieved, he stated.

Research and development over the last 10 years, he added, has established that domestic equipment can be designed and manufactured in which coal can be burned nearly smokelessly for domestic heating. The application of overfire air jets to boiler furnaces has also been studied and rationalized.

Coal seems to be the preferred fuel in the electric power utilities, he indicated. The total consumption for electricity is now twice what it was in 1939, he declared. Over 40,000,000 tons more coal is now being required yearly to meet this increase. Greatly added tonnage will be needed for electric plants under construction and for other plants that will be required in the future to satisfy the increasing demands for electricity.

"It is, therefore, definitely to coal's advantage to promote the use of electricity in all its varied applications," he asserted. These applications stretch from running giant electric motors to minor household gadgets, and might include clearing sidewalks of snow and ice.

Science News Letter, August 26, 1950

PHYSICS

Atomic Cloud Height Figured from Cumulus Data

➤ HOW high an atomic cloud will rise can be figured from data applicable to any ordinary, much less dangerous cumulus cloud. By doing this, Dr. Lester Machta of the U.S. Weather Bureau has figured that the original Los Alamos atomic cloud rose 39,800 feet.

A cloud rises because it is warmer than the surrounding air and it stops rising because it cools, both by expansion and by the entrance of outside air into the cloud.

An atomic cloud does a super cooling job. It starts out at least 1,000,000 degrees centigrade and almost instantly cools down to about 3,000 degrees centigrade, by radiation. Then the usual meteorological effects take over.

The heat of the cloud brings in tremendous amounts of air and at the same time the cloud expands. As this is going on, the cloud rises, getting to 30,000 feet in about eight minutes.

By that time it is almost as cool as the surrounding air and shortly thereafter, when its temperature equals the surrounding air, it stops.

Dr. Machta, in the BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY (June), has figured out the height to which an atomic cloud would rise, using mathematical formulae based on the cooling rate of an ordinary cloud.

Science News Letter, August 26, 1950