

● Protein Needs

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a group of cows an artificial diet of purified carbohydrates; urea and ammonium salts as sources of nitrogen; a mineral mixture containing vitamins A and D, and later also E; and a little corn oil.

Milk from the cows on this diet contains the same nutrients — fat, nonfat solids, sugar, and proteins — as milk from cows on normal feed.

Altogether, six cows were on the test. Their milk yield reaches nearly the average level of Ayrshire cows in Scandinavian countries. Their calves are normal, and meat from the calves is of quality equal to that of cows on normal feeding. The calves themselves have been fed the ar-

tificial diet, and have shown good gains.

Virtanen says, "Our studies have shown that the most important flavor compounds of milk are formed in the cow." He is determining to what extent milk flavors come from synthesis within the cow and to what extent they come from feed. "Milk flavors can be classified into two groups: those transferred from feed to milk by way of the digestive route of the cow and those which are formed in the cow — in the rumen and in the liver or mammary gland — from carbohydrates, amino or fatty acids, and other chemical compounds in the feed," the scientist says.

Previous experiments in the United States and other coun-

tries and in his own laboratory had convinced Virtanen that it would be possible to develop in cows, by gradually changing their feed, a rumen microbial population capable, to a greater degree than normal, of using nitrogen from urea and ammonium to synthesize the essential amino acids which are the chief components of protein. He has now proved this to be true. Cows in his trials had their normal feed gradually taken away from them and the artificial feed gradually added while they were dry or becoming dry.

As the experiment has gone on, Virtanen has increased the daily portion of nitrogen in the feed. As he has done so, milk production has increased

to a peak so far of 9,460 pounds from a single cow in a year.

Every day each cow gets 20 pounds of compressed briquets containing purified starch, cellulose, sucrose, and urea and ammonium salts, 8 pounds of a wet paste rich in cellulose, and small amounts of corn oil and commercial preparations of vitamins A, D, and E.

At the beginning of the experiment, the cows were allowed to chew rye or wheat straw to improve rumination. Now cellulose strips impregnated with silicic acid have been substituted. But the cows are still allowed to chew hard rubber tubing to help the secretion of saliva.

● Fed. Land Bank

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ally, Brown reported, adding that in the past five years the local agency's business has doubled in volume.

The local office was moved from the Post Office building to its present location on W. Roseville Rd in 1957. Brown said The building, which is owned jointly by the Federal Land Bank and Production Credit Associations, houses 12 full-time employees; five of these spend most of their time working with customers away from the office.

Brown, who came to the Lancaster office as assistant manager in 1962 and has held his present post for the past two and one-half years, described the sole purpose of the Federal Land Bank System as "putting farm loans on a business basis at a reasonable, stabilized rate of interest."

Lenders traditionally regarded farmers as extremely poor business risks, Brown said, explaining that interest rates were set high to compensate for that risk with lenders' rates ranging from 10 percent annually to 10 percent per month. And terms of the loans were usually less than five years, he added.

With the help of the Land Banks, credit for the farmer has moved from being an oppressive liability to an important tool of production, Brown concluded.

HAZARD OF OVERWEIGHT

Our society, with an economy of plenty but a lack of physical activity, sets the stage in many cases of overweight, Miss Ruth J. Buck, Penn State extension foods and nutrition specialist, points out. Generally at middle age, persons experience the greatest difficulty in maintaining ideal weight although no age is spared the problem of unwanted pounds.

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