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fat and protein in the milk, as long as the 10 essential amino acids are fed in addition to the 20 other acids the cow can produce in order to create protein chains.

As far as the largest producer of protein in cow, he listed microbial action in the rumen first, accountable for 80 percent of the protein which ends up in the milk. About 20 percent of the protein in milk comes from serum proteins (those from the blood stream).

He listed other contributors of milk protein in order of effectiveness after microbial protein as soybean meal in an undigestible bypass form, fish meal, brewer's grain, blood meal, distiller's grain, meat meal and corn gluten meal.

He said therefore it was important to consider the pH, the feeding of TMRs, or feeding hay followed by grains.

Feeding hay first, is believed to allow for the creation of a mat or bolus on which the microbes feed and convert starches into chemicals which are then used by the liver to make lactose. This situation allows rumen pH to be more stable and not drop to the acidic level which would reduce the microbes good for fat production and the other type creates the 10 essential amino acids from the feed.

Too high a pH interferes with the protein microbes, while too low a pH interfere with the fat microbes. A third microbe becomes more beneficial to protein production at the lower pH. He said the ideal then is try for a rumen pH around 6 in order to mutually maximize both fat and protein in the milk.

Speaking on managing and designing cow stalls for comfort was Dan McFarland, a multi-county agriculture engineer.

According to McFarland, there are a number of aspects to consider when modifying or constructing a cow barn, in addition to deciding on the general type of stall.

McFarland made no judgements on whether stanchions or free-stall set ups were better, but rather said that each type had its benefits and drawbacks, depending on operational strategy.

He recommended stall be long enough for the cow breed, allowing for example a 7-foot, 6-inch length stall from rear curb to front for Holsteins (8 feet along a solid wall); an open front; head space for forward lunging, which is the predominate preference of cows studies, of 2-feet, 4-inches to 3-feet, 4 inches; 45-degree sloping brisket boards from 8-inches to 12-inches high; step-up heights to the stall from 8 inches to 12inches; stall widths of 48 inches; 66-inches from base of brisket board to rear curb of stall; and a top rail, preferably floating.

He also said that the "U"-shaped partitions, or "loops", and variations thereof, were preferable.

However, he said that having the bedding too low can cause the animal to entrap itself, as can inadequate head room for forward lunging.

He said that a farmer gave him a good rule of thumb for determining the height of the upper rail of a partition and the height of the low-

er rail. He said that when the cow is standing, the upper rail should be just below cow-eye level and that when the cow is lying down, the lower rail should be in the same relationship to the cow's eye.

For choice of bedding, he reviewed the numerous applications which are being used, ranking concrete the least favorable for cow comfort and clayey earth being the most preferable by cows.

However, concrete offered the least labor to maintain, while earth required the most.

He did show slides of a farmer who has devised an earthen bed leveler that is mounted to the front of a small front-end loader and requires very little time to level all the beds in his free stall operation.

McFarland also said that having the stalls built downhill on a 3-percent to 5-percent slope encourages cows to all lie down in the same direction, which is seen as a method of creating additional cow comfort and helping to prevent cows from stepping on each others

teats. Though it is not a common occurrence, it can happen.

The most important aid to cow comfort however, was attention to regular and daily stall maintenance procedures, he said.

Also, McFarland said that

ground limestone is not good for bedding because it serves as a suitable environment for bacteria and fungus, whereas limestone tailings, which are different, can be used effectively.

## Farmer Announces Candidacy

MT. JOY (Lancaster Co.) — Wayne H. Miller, Mt. Joy has announced his candidacy for State Representative of the 37th district. His decision comes after long deliberation about the current candidates positions and current economic trends in the 37th district. Miller feels his talents can best be utilized as the next state representative for the approximately 60,000 residents of the new district.

Miller was born into an agricultural and farming family. He

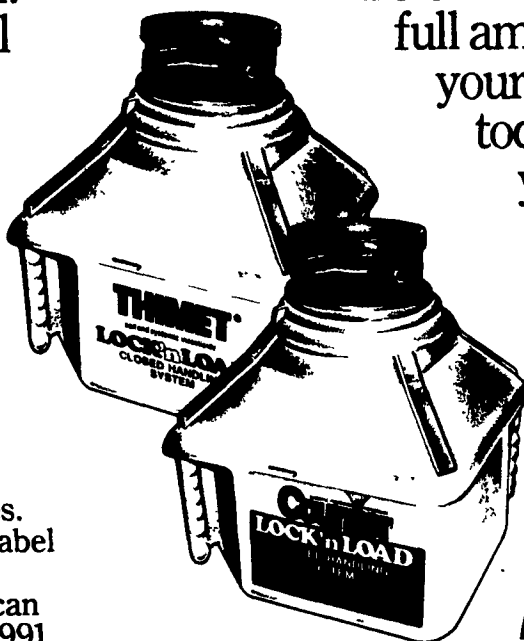
resides today on the 160 acre family farm. He was educated in the local school system and graduated from the Lancaster Mennonite High School in 1956.

In 1959 he married Yvonne B. Hauck. They are the parents of 4 children and the grandparents of 2. In 1959 Wayne and Yvonne served together in the alternate service program at the Maine Medical Center, Portland, Maine, where Wayne was an operating room technician for two years.

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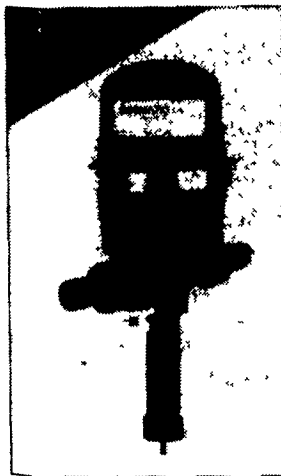
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