DEPARTMENT OF PRIMARY INDUSTRY

A COW makes milk only to feed her calf. However, Early Man soon discovered that, as well as being good for calves, milk was an excellent food for him – especially his babies and growing children.

Over the years, we have found out a good deal about the make-up of milk and what the cow needs to make it. However, the manner in which milk is actually made in the small glands of the udder still remains a mystery.

STRUCTURE OF THE UDDER

To understand how milk is made, we need to have some idea of the structure of the udder.

A cow's udder which, resembles a large glove, is really a bag divided into four separate quarters. Each quarter has a teat at the bottom, through which the milk is removed. Above each teat, a small cavity, known as the 'milk cistern', can store up to 280 ml or about half a pint of milk.

Most of a cow' s milk is stored in the thousands of canals, ducts and cells that go to make up an udder. When a cow is milked, milk drains from these ducts into the milk cistern.

If you use your imagination a little, the inside of the udder looks like bunches of grapes. The grapes being the milk making cells and the stems being the canals.

MAKING MILK

Each small cell in the udder is a milk production plant in miniature.

The cells are supplied with blood, from which they make milk. This process is called milk secretion.

During this process, the cells take the proteins from the cow's blood and convert them into milk protein (casein; albumin and globulin). Blood sugar (glucose) is changed to milk sugar (lactose). At the same time, the fats of the blood are converted into milk fats, which we know as cream.

Milk also contains calcium, phosphorus, vitamins and many other health-giving substances, which are extracted from the blood by the milk cells.

BLOOD SUPPLY

Naturally, large amounts of blood must pass through the udder for milk to be made. Something like 300 litres of blood must be pumped through the udder for every litre of milk produced.

The blood reaches the udder through large arteries that run from the abdomen to the udder, where they branch into smaller arteries that feed the milk-making cells.

FOOD SUPPLY

The milk making process is a continuous one, so, if proteins, sugars, and fats are continually removed from the blood, they must be replaced.

This replacement comes from the food the cow eats. For a cow to give large amounts of quality milk, she must get all the high-quality feed she can eat.

Healthy cows that are given plenty of cool, clean drinking water and pastures rich in plant protein, carbohydrates, and minerals convert these foods into their blood supply. This allows the tiny udder cells to continue making good quality milk.

Cows that are fed good quality food yield high-quality milk. Today's dairy farmers are well aware of this. They make special efforts to give their cows the correct food so that the milk you receive each day has the highest possible food value.

WHY WE NEED MILK

Milk is an essential part of your daily diet. If you are to be properly fed, you need -

- Protein to build muscle and to repair all your body cells.
- Fats to give you energy and to act as a container storing other important substances.
- Carbohydrates for energy.
- Calcium to build teeth and bones.
- Other minerals for growth and repair and for such continuous processes as digestion and heart-beat.
- Vitamins for continued good health.