

THE SECRETION OF MILK.

Professor Pembrey gave a lecture on the above subject on May 10th, reported in *St. Bartholomew's Hospital Journal*, in the course of which he said that the subject of the secretion of milk had been somewhat neglected by physiologists, which seemed to him strange in consideration of the fact that the gland which secretes it is of such importance that a large class of animals—the mammals—had been named in virtue of their possessing the gland.

Of the theories which have been put forward to explain the characteristics of the mammary gland, the one which holds that it is a modified sebaceous gland is best supported by evolution and embryology. Moreover, the fact that caseinogen, which is so abundant in milk, is found in no other structure in the body except in the sebaceous glands, where it is found in minute quantities, is strongly in favour of the sebaceous gland theory.

It is important to bring the principles of evolution to bear on problems such as this. For instance, the duck-billed platypus is a mammal which lays eggs. Its mammary glands have no nipples, the young simply licking the specialised skin to obtain milk. The development of this mammary glandular tissue after the laying of eggs completely does away with the theory that there is a foetal hormone causing secretion. Again, in marsupials the mammary glands develop before the placenta. Thus it is unreasonable to suppose that any property of the placenta is responsible for the secretion of milk.

If one takes the composition of milk one finds some interesting points about each constituent, viz:—

Caseinogen is synthesised in the gland, and its formation precludes any possibility of milk being of the nature of a transudate.

Lactose is of no use to the mother; indeed it is excreted by the kidneys when it gets absorbed into her blood. But it is of great use to the child.

Fat is indeed like the adipose tissue of the animal, but there is evidence that it also is synthesised in the gland. A bitch can be fed on proteins, but its milk will be rich in fat.

The *salts* of milk bear no resemblance in proportion to the salts of blood of the mother, but resemble closely those of the offspring.

It is evident that the woman who can suckle her child and who does not do so commits a three-fold crime in that she deprives the baby of the exact foods which are needful, she robs the community of a healthy child, and also she deprives herself of the benefits which accrue from lactation. How nicely the quality of the milk is adjusted to the needs of the offspring can scarcely be over-emphasised. The animals whose young grow most rapidly supply the richest milk. There can be no substitute for breast-milk, speaking in the physiological sense.

Once started, how is the secretion maintained? Here suction plays a very important part. If a mother has only a little milk, the treatment is to

put a lusty infant to suck at the breast, and the milk will come. It is not biological that a woman can have a child and yet be unable to feed the child. Often, when little milk is forthcoming, the child is kept from the breast, but, since retention is the first stage of prevention, what little milk supply there was dries up. Lactation can continue for a considerable period, sometimes up to the birth of the next child.

Diet exerts a considerable influence on the secretion of milk. Probably so many animals show increased lactation in spring because they feed at that time on growing grass, which is rich in proteins—the diet which is the most stimulating to secretion. In foreign countries where wet-nurses are employed, it is found that one woman can rear three children easily if a sufficiency of protein and fat are taken as food. Hard exercise and muscular work have an inhibitory influence on the secretion of good milk. It is unreasonable to work a cow, and at the same time to expect her to calve and suckle and eventually to provide good meat.

There are great differences in the quality of milk in the various species, or even individual differences in one species. There are butter-cows and cheese-cows, and also cows which supply vast quantities of dilute milk which can be sold by the gallon. In breeding it is found that part of the strain for milk-producing goes through the male, so that the male is of some use even in the matter of lactation.

Another question of interest is that which probes the method of formation of milk. Fatty degeneration of the mammary epithelium or of the peripheral part of the gland-cells has been suggested, but this could not account for the gallons of milk which a cow can give. Moreover, microscopically, there is not the large amount of cell division found such as would be required if the tissue were being constantly replaced. It is necessary to assume that the mammary gland takes up protein and fats and synthesises the milk constituents.

The value of lactation to the mother must not be overlooked; indeed it is fully realised by the less educated classes. Many mothers continue lactation a long while in order to lessen the frequency of their becoming pregnant. The influence of lactation on involution of the uterus is well recognised.

We have waited too long for the millennium which was to come with increased knowledge. We should accept the guidance of biology and recognise that what is wanted is not germ-free milk, but milk containing all the substances needed by the infant, and those in the right proportions; such milk can be provided by the infant's mother.

NEW RULES OF CENTRAL MIDWIVES' BOARD.

The New Rules of the Central Midwives' Board come into force on July 1st, and copies may be obtained on or after June 27, from Messrs. Spottiswoode, Ballantyne & Co., Ltd., 1, New Street Square, E.C. Price 8d. by post.