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On the anatomy of the breast - On the comparative anatomy of the mammary gland

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ON THE COMPARATIVE ANATOMY

OF THE

MAMMARY GLAND.

It is not my intention to give an extended view of the Comparative Anatomy of this organ, as it would be foreign to my original design, and if minutely pursued in its details would be attended with little utility. Indeed, the ordinary duration of the life of man would be insufficient for the study of the mammary structure in all the Mammalia, and I shall, therefore, content myself with the description of the gland in the classes of Graminivora, Carnivora, and Omnivora, in comparison with that of the human subject.

The mammary gland in other Mammalia bears a great resemblance in its secretory structure to that of the human female.

Generally there is a prominent nipple with the exception of the whale tribe, and ornithorynchus so far as I am informed.

The straight or mamillary tubes vary considerably in number. The cow, the ewe, and the goat, have one tube

in each teat, but in the rhinoceros there are twelve. The pig has two tubes in each teat; the guinea pig but one. The hare and rabbit several. In the cat and bitch there are several; in the porpoise only one.

The reservoirs in the Graminivora are enormously large; in the Carnivora, comparatively small. In the pig there is scarcely any reservoir; in the porpoise the great enlargement of the milk tube is a substitute for the reservoir.

The lactiferous tubes are arborescent, as in the human subject, in the guinea pig, the cat, the bitch, the pig, and the porpoise; but in many of the Graminivora there are reservoirs, cells, and canals, which form a foliage at their extremities where they terminate in the milk-cells. The rhinoceros is an exception.

In general, their *particular* organization is the same as in the human, *viz.*, mamillary tubes, reservoirs, ducts or canals, glandules, and milk-cells,

Their *common* organization consists of arteries, veins, absorbents, and nerves. The course of the arteries greatly varies. They are derived in the human subject from the subclavian and axillary. The first send the internal mammary artery to supply the breast; and the axillary, the thoracica longa, external mammary and thoracica suprema.

But in some Mammalia they spring from the epigastric,

when the gland is pubic or inguinal; from the axillary, the internal mammary, the intercostal, lumbar, and epigastric, when the glands are pubic, ventral, and pectoral; and this circumstance leads me to observe, that if arterial blood reaches the gland, the source of its supply is of little importance; and the same observation applies to the veins, as they terminate variously.

The absorbents of the gland are in all classes numerous, but more easily injected in the Carnivora than in the Graminivorous animals.

The nerves differ in their distribution, but as to sources, they obey one law, *viz.*, that they are composed of the two spinal roots and of the grand sympathetic nerve, and hence the ready sympathy which exists between the ovaria, uterus, and mammary glands.

The physiology of the organ is the same in all excepting the opossum tribe, in which the young one hangs from the nipples in the carrying-pouch which contains them*.

The milk is formed from the arterial blood and secreted into the milk-cells, around which the arteries ramify with infinite minuteness; whether they terminate by open mouths, or secrete from their surfaces, I have not yet been able to determine positively; but they divide with extreme

* See Morgan, Professor Owen, &c.

minuteness upon the mucous membrane of the milk tubes, and under very minute injections of the arteries, the cells are sometimes found filled with injection, but it is doubtful whether this may not arise from rupture of the coats of the arteries.*

From the cells the milk is carried forwards by their elasticity into the ducts, and by the vis a tergo of the secretion to the reservoirs, and here it is retained until the process of sucking commences, when the draught impels it still more.

The absorbents are designed to improve the quality and, under accumulation, to lessen the quantity of milk.

The nerves sympathetically connect the nipple with the gland, and the gland with the uterus and ovaria.

The milk is very similar in all species of the human female, as the negress makes an excellent wet-nurse to the European, and the milk of several animals will sustain and nourish the infant, and may be substituted for human milk; and the milk of one species of animal will sustain the young of some others, as the lamb is often reared by the milk of the cow.

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* I intentionally postpone saying more upon the subject at present, as I am still pursuing this minute investigation; but it is certain that the cells and milk tubes are not continuous with the arteries, their internal structure entirely differing; the one being lined with a serous, and the other with a mucous membrane, and the arteries being infinitely more minute than the cells and ducts.