On the anatomy of the breast - Plate X: The mammary gland of the porpoise

Sir Astley Paston Cooper, Bart.
PLATE X.

The Mammary Gland of the Porpoise.

Fig. 1. View of the glands injected. Divided into two glands, one placed on the right, and the other upon the left side of the anus and vulva.
The extremities of the nipple have a ligature upon them.
The tube from each nipple opens into a large duct, which serves the purpose of a reservoir.
The tube entering into the substance of the gland, sends off at angles of different degrees, branches of lactiferous ducts.
At the terminations of the lactiferous tubes, the glandules appear.
In these glandules, small but numerous cells are found, which are drawn in fig. 5 magnified twenty times, and which were taken from another preparation of the gland in a state of lactation.
Mr. Erle, surgeon at Cromer, in Norfolk, had the kindness to send me, at my request, the posterior part of the abdomen of a porpoise, and I was so fortunate as to receive it in November last, in a lactating state.
The subject of fig. 1 he sent me twelve months before.
I have injected and preserved them both.

Fig. 2. Shows the situation of the clefts in the skin, which contain the mamillæ, and which are placed on each side of the anus and os externum vaginae. They are considerably smaller than nature in this drawing, but figs. 1, 3, and 4, are of the natural size.

Fig. 3. One of the clefts a little open, to show the end of the mamilla buried in it.

Fig. 4. Shows the cleft more open, exhibiting the nipple and its orifice projecting into it. These clefts are placed in their natural direction in the long axis of the animal, but fig. 2 is not.
I have had no opportunity of comparing the milk of the porpoise with that of the whale: but in the latter animal it appears that the milk is very abundant. Mr. Watson observed that when whales were driven on shore in Scapay Bay, the young ones continued to swim round their dams until the returning tide left them also dry. During this interval, he noticed some of them hanging to the teats of their mothers; and when they separated, the milk flowed from the teats in considerable quantity. It was white, and as it flowed appeared of the consistence of cow's milk; but upon standing, it seemed to throw up cream, so as to become more thick in its appearance. As he walked around the animals, pools of milk were distinctly visible. The moans of the mothers, when the young were removed, were piteous: this induced one of his servants to lift a small whale, and to apply it to the mother's teat, of which it immediately laid hold.

To Dr. Golding Bird, to whom I have already very imperfectly stated my acknowledgements, I am indebted for an analysis of the milk of the porpoise. I obtained the fluid, by squeezing the breasts of the second porpoise which I received, and as it appeared to differ from any other milk that I had seen in the fatty matter which it contained, I sent a vial of it to Dr. Bird, who wrote to me the letter which I subjoin.

"Dec. 5, 1839.

"Dear Sir Astley,

"I have at length completed my examination of the porpoise's milk, or rather cream, for it did not betray the slightest inclination to separate into cream and skim-milk; and after keeping it for a few days, the whole, even in a closed vessel, solidified into a kind of cream-cheese.

"The quantity at my disposal was, as you are aware, but small, and consequently anything like an elaborate analysis was impracticable.

"The milk faintly reddened litmus paper, exposed to heat it did not coagulate, and hence contained no free albumen; but the addition of acetic acid caused a deposition of curd, as in the case of cow's milk.
The weight of the bottle and the milk was . . . 406·9 grains.

containing the same bulk of

distilled water . . . . . 406·0 

The weight of the bottle itself was . . . 338·6 

Hence the specific gravity of this milk was but 1·0044.

'13 grains of the milk, on being evaporated, left some curd or casein, but mixed with a large quantity of fluid yellow oil; an intolerable odour resembling that of putrid herrings was evolved during the evaporation.

'The extract thus left weighed 5·8 grains, from which ether dissolved 3 grains of oil; consequently, but 2·8 grains consisted of curd.

'The saline matters present were the alkaline chlorides and sulphates, soluble in water; and the phosphates of lime and magnesia, insoluble in that menstruum. From this examination, it appears that porpoise's milk, of specific gravity 1·0044, consists of—

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (grains)</th>
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<tbody>
<tr>
<td>Curd or casein mixed with small portions of saline matter</td>
<td>21·53</td>
</tr>
<tr>
<td>Fatty or oily matter, possessing a strong fish-like odour</td>
<td>23·00</td>
</tr>
<tr>
<td>Water and volatile matters possessing a pungent odour (phocenic acid?)</td>
<td>55·47</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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</tbody>
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'The very low specific gravity of this milk in all probability arises from the large quantity of oil or fat present as compared to curd. The curd obtained from the specimen of milk you favoured me with, I have sent for your inspection: it still contains traces of fat.'

Professor Owen informs me that some milk which he obtained from a porpoise felt like butter upon the tongue.