Ascaridia galli infection: Hyperproteinemia resulted due to the increase in both albumin and globulin fractions, but more markedly in globulins and hence A G ratio was reduced.

Double infection: Hyperproteinemia resulted due to hyperalbuminia and the globulin level registered a drop thereby causing an elevation in A/G ratio.

Triple infection: The total protein level remained normal but the increase in albumins and depletion in globulins resulted in the elevation of A/G ratio.

Quadruple infection: The total protein level remained normal but the increase in albumins and depletion in globulins resulted in the elevation of A G ratio.

In Pullets:

Raillietina tetragona infection: The total protein and albumin levels did not alter but the globulin fraction increased and hence the A/G ratio registered a drop.

Raillietina echinobothrida infection: Hyperproteinemia resulted due to the increase in both albumin and globulin fractions, but more markedly in globulins and hence A/G ratio registered a drop

Raillietina cesticillus infection: Hypoproteinemia resulted due to the depletion in both albumin and globulin fractions, more markedly in globulins and hence the A/G ratio was elevated.

Ascaridia galli infection: Hyperproteinemia resulted due to the increase in both albumin and globulin fractions, but more markedly in globulins and hence the A/G ratio was elevated.

Double infection: Hyperproteinemia resulted due to hyperalbuminia, but the globulin level remained normal and hence A/G ratio was elevated.

Triple infection: Hyperproteinemia resulted due to the increase in both albumin and globulin fractions, but more markedly in albumins and hence the A/G ratio was elevated.

Quadruple infection: Hyperproteinemia resulted due to the increase in both albumin and globulin fractions, but more markedly in albumins and hence a slight elevation in A/G ratio was noticed.

To summarize, in healthy (uninfected) fowls, the pullets possess higher levels of total protein than cockerels. This was due to the higher quantity of both albumins and globulins, but the increase was more marked in globulins and hence the A/G ratio of pullets was lower than cockerels. In infected cockerels, hyper or hypoproteinemia was observed. The A/G ratio was elevated because of the depletion in globulins (hypoglobulinemia) and increase in albumins (hyperalbuminia). In infected pullets, mostly hyperproteinemia resulted due to the increase in both albumin and globulin fractions, but more markedly in albumins and hence the A/G ratio was elevated.

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PLACENTA OF RHINOCEROS (*RHINOCEROS UNICORNIS* L)

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THE knowledge of reproductive organs and their accessories is important in the study of the reproductive biology of a particular species of animal. The placenta is the transitory reproductive organ, developed in the uterus of the mammal after conception, which facilitates the supply of nutrition from

the mother to the growing embryo. It lodges the latter in an aquatic state, essential for prenatal development. Roberts[1] and Arthur[2] elaborated the morphological structure and placentation of several domestic animals.

The several aspects of biology of the *Rhinoceros unicornis*, the one-horned Rhinoceros available in North East India have not been elaborately studied. Although there are stray reports or popular articles, very little information regarding the different eco-biological aspects of the species is known. Young[3] reported that the uterus of Rhinoceros is bicornuate and the placenta is of diffuse type (epithelio-chorial) with a large allantoic sac. Rhinoceros is a perisso-dactyl-like soliped animal. In the present study, a placenta of a female Rhinoceros was procured from the Assam State Zoo, Guwahati, Assam and we report certain unique characteristics of the placenta of the *R. unicornis*. In fact this is the first report on the anatomy of the placenta of *R. unicornis*.

The placenta of the 16-year-old Rhino (height-1.5 m, length-2.6 m) was collected, after it gave birth to a male calf. It was cleaned and made free from the amniotic fluid and other exudates. It was thin in structure and became transparent after washing. The placenta of *R. unicornis* could be placed under indeciduate-type, as there was very little damage done to the maternal uterine tissue. The anatomical structure of the amniochorial surface to the villi are in apposition with endometrium – forming numerous villi and microvilli (figures 1–3). The weight of the placenta was 2400 g and the length of gravid and non-gravid horns is 102 cm and 48 cm respectively (figure 2). The umbilical cord is distinct and 5 cm in length. The area of attachment with the endometrium is found all over the amniochorial surface. The present study agrees with that of Roberts[1] and Arthur[2] on the placenta of the mare, where the villi are seen in the amniochorial surface and this was classified under diffuse-type of placenta. It is neither like that of primates nor ruminants, rather it simulates with that of horse or the pig where there is loose attachment of the placenta with the internal tissue of the uterus of the mother. It shows that there are less possibilities of bleeding and eruption of the uterine tissue sac. It is diffuse as in humans but unlike that in ruminant. The point of attachment between maternal placenta and foetal part is innumerable.

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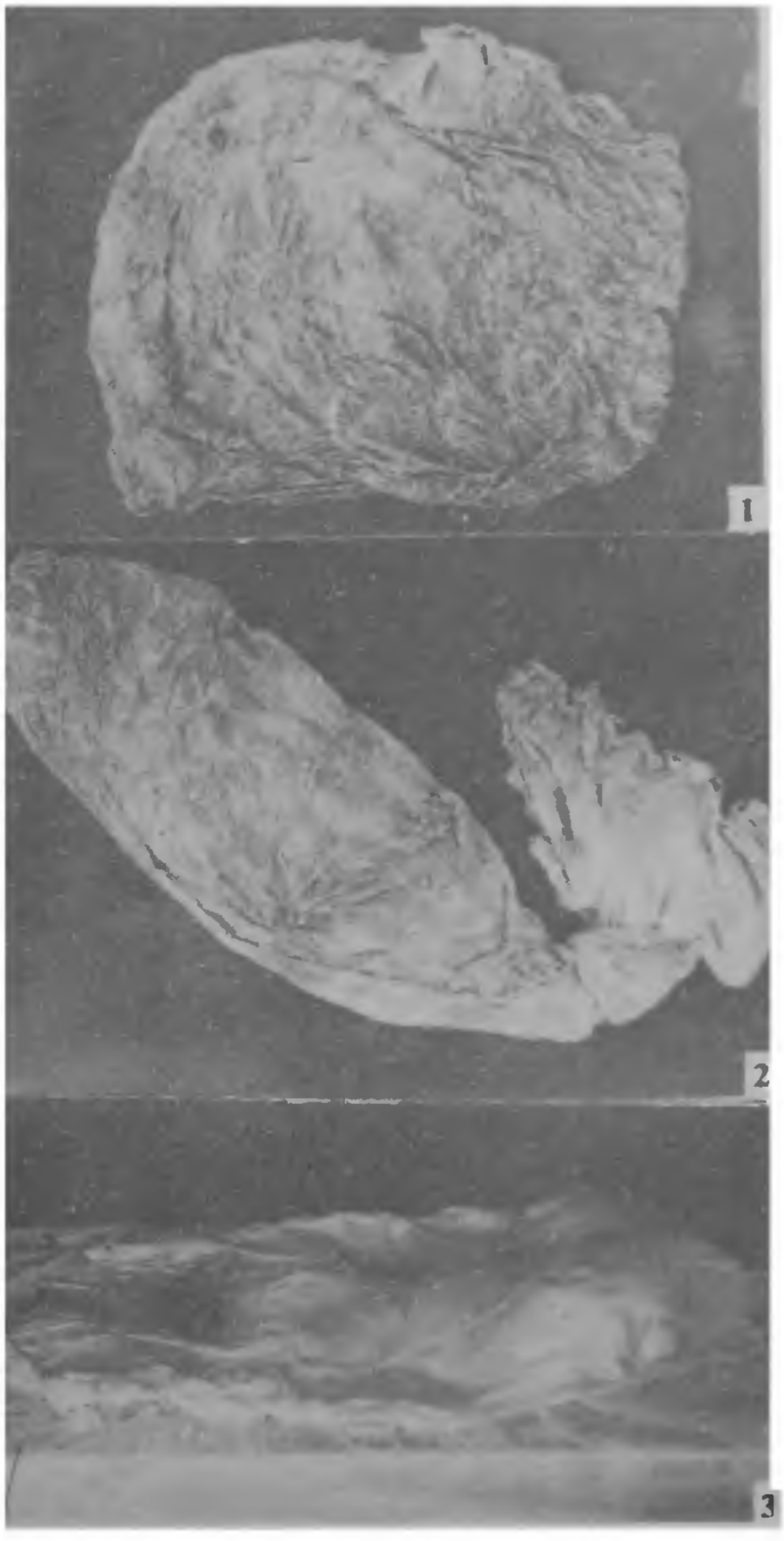

Figures 1–3. Placenta of *Rhinoceros unicornis* **1.** showing the amniochorial surface with numerous villi and microvilli; **2.** with gravid and nongravid horn; **3.** umbilical cord of the placenta.

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