

Table 2. MEAN ESTIMATE OF SURFACE AREA OF FREE WALL

Age period	No. of specimens	Right ventricle	Left ventricle
Full term	19	1.0	1.5
4-6 months	12	1.5	1.9

In an irregular cavity such as a cardiac ventricle, surface area will be related to volume in roughly the same way as in a sphere, where volume increases as the cube of the radius, and surface area as its square. Therefore, changes in surface area may be made to indicate changes in volume by raising them to the power of $3/2$. Thus the increase in the volume of the right ventricle in the period chosen would be indicated by $(1.5/1.0)^{3/2} = 1.8$, and that of the left ventricle by $(1.9/1.5)^{3/2} = 1.4$.

This suggests greater increase in the capacity of the right than of the left ventricle in the period chosen. At the period 4-6 months an adult type of circulation with equal ventricular outputs is certain. The inference can thus be drawn that the functional capacity of the right ventricle before birth is less than that of the left ventricle. As the foetal ventricles pump against the same peripheral resistance, a lesser capacity implies a lesser output. This conclusion is in accord with the belief that the general pattern of the circulation shown in the foetal lamb is repeated in the human foetus.

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¹ Dawes, G. S., Mott, Joan C., and Widdicombe, J. G., *J. Physiol.*, **126**, 563 (1954).

² Keen, E. N., *J. Anat.*, **89**, 484 (1955).

Delayed Implantation in the Grey Seal, *Halichoerus grypus* (Fab.)

EARLY in March 1870 a large grey seal cow was killed by Prof. W. Turner. "A large corpus luteum was in the left ovary but the uterus was empty¹."

On January 3, 1956, we killed a grey seal cow on the Pembrokeshire coast. A moderate-sized corpus

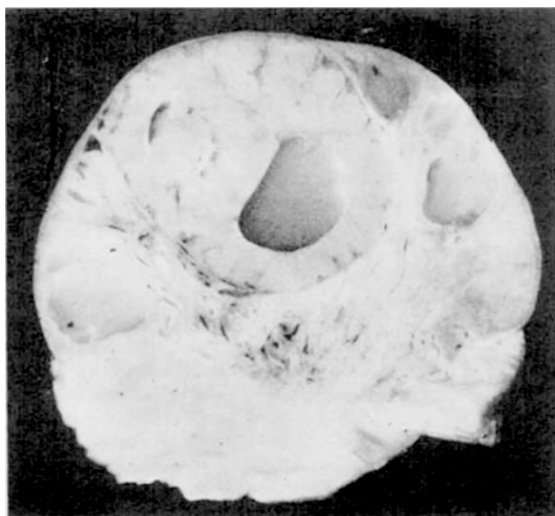


Fig. 1. Hand section of the left ovary, showing the corpus luteum with central cavity

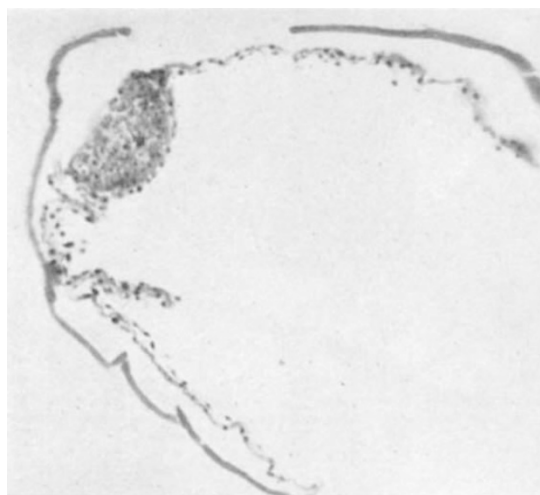


Fig. 2. Vertical section through the blastocyst, showing the zona (broken at one point), the trophoblast, primary endoderm and the inner cell mass

luteum, containing a central cavity, was found in the left ovary (Fig. 1). Externally the uterus showed no sign of pregnancy; but, in the left uterus, a blastocyst was found measuring 2.3 mm. by 1.8 mm., lying free in the lumen (Fig. 2). Its cells were virtually free of mitotic figures. The surrounding uterine epithelium and glands showed no evidence of impending implantation.

Three bulls all more than 90 in. in total length were shot at the same time. Two of these had the neck and shoulder development characteristic of sexually mature males. There were no sperm, however, in the testes or in the epididymes of any of the three bulls. Fertilization must therefore have taken place some time previously. Mating on the Pembrokeshire coast has been observed during September-October. Consequently delayed implantation seems apparent. Turner's original observation supports this conclusion.

Delayed implantation of the blastocyst has been previously recorded in two other Phocid seals; in the common or harbour seal by Fisher in 1954² and in the elephant seal by Gibbney in 1953³.

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¹ Turner, W., *J. Anat.*, **4**, 270 (1870).

² Fisher, H. D., *Nature*, **173**, 879 (1954).

³ Gibbney, L., *Nature*, **172**, 590 (1953).

A Culture Technique for *Venturia* spp. and a Turbidimetric Method for the Estimation of Comparative Sporulation

GROWTH and sporulation of *Venturia inaequalis* and *V. pirina* have been extensively studied in artificial culture. Miller¹ obtained objective measures of sporulation and also concluded that inoculum concentrations greater than 200,000 conidia per ml. had little effect on the final yield of conidia. Montgomery and Moore² grew cultures of *V. inaequalis*