

Our Prize Competition.

We have pleasure in awarding the 5s. prize this week to Miss S. A. G. Lett, Exning, Newmarket, for her article printed below on the subject—

WHAT IS THE FUNCTION OF THE PLACENTA?

The function of the placenta may be described as a three-fold one:—

1. The placenta serves as lungs to the foetus.
2. Is the means of supplying nourishment to it, and
3. It serves as an excretory organ.

It is very certain that life for the foetus cannot exist without the placenta and the cord which is the means of communication between the two. For instance, if a cord is sufficiently knotted to obstruct this means of communication the death of the foetus will ensue.

It is not, however, the placenta which nourishes the foetus. The placenta is only the means of conveyance and circulation of the maternal blood, which is the real source of life for the foetus. Therefore, should the placenta become prematurely detached from the uterine wall it becomes useless, and the death of the foetus results.

It is not here intended to describe the placenta, but in order to understand its function some details must of necessity be entered into. The placenta has two sides, the maternal and the foetal.

The maternal side is spongy, its interspaces being filled with blood, which is carried to and fro in continuous motion by the uterine arteries and veins. This is the side which is in contact with the uterine wall.

The foetal side is chiefly composed of innumerable little villi (chorionic villi) which dip like little fingers into the maternal blood.

In order to understand the uses of these little villi we must now turn our attention to the umbilical cord. This cord contains three blood vessels, two arteries, and one vein. These two arteries convey the blood, containing all waste material, from the foetus to the placenta. Here they divide into several branches, which in their turn divide and divide again until, as very minute branches, each enters a villus, travelling to the free end of it, and then turning back like a loop and leaving the villus close to the spot where it entered. Now several of these tiny branches go to form one blood vessel; then several blood vessels to form a larger blood vessel, until finally they all enter into the umbilical vein, which conveys the blood direct to the foetus. The blood thus conveyed to it is purified, containing oxygen and materials for the nourishment of the

foetus, which it has gained in its circulation through the villi, which, as we have already seen, are in direct communication with the maternal blood.

Thus, the placenta is an organ whose function is to bring the blood of the foetus into relation with the blood of the mother, without any direct mixing of the two, thereby supplying to the foetus means of circulation, respiration, and excretion.

The papers sent by Miss M. Atkinson, Miss M. Myers, Miss A. English, Miss K. S. Stewart, Miss T. Fellows, Miss M. Foster, Miss E. Douglas, and Miss Emily Marshall are highly commended.

Miss Kathleen S. Stewart, explaining the foetal and maternal sides of the placenta, writes:—"The foetal surface is that to which the umbilical cord is attached, and is smooth and glistening, being covered with the amnion; this part is derived from the chorion, the villi of which penetrate into the maternal part of the placenta. The villi are vascular and non-vascular. The former project into the blood spaces of the decidua serotina, and the latter are smaller processes which fix the chorion to the uterine mucous membrane. The vascular villus is made of a capillary loop lying embedded in connective tissue, the blood vessels being derived from the umbilical vessels.

Miss E. M. Simpson writes: "The blood is the life, and through the agency of the placenta, by means of the interchange which takes place in the villi between the fluids and gases of the maternal and foetal blood, the foetus is nourished, and its waste material eliminated. It will be seen, therefore, that a healthy placenta means a pure blood supply, and a well nourished child, disease of the placenta means an impoverished, ailing, or sick child. Abortion, or death of the foetus may also result from the diseased placenta.

Miss Emily Marshall writes that "the placenta which nature supplies and implants in the upper or middle part of the uterus, inside, supplies nourishment and transfers oxygen during the stages of development of the child in the womb. . . . Directly the child is born it no longer needs the placenta, for as soon as respiration is established it gets the oxygen from the air into the lungs, and nourishment is provided in the usual way."

Miss M. Atkinson defines the placenta as "the medium of attachment between the mother and ovum. . . . By the dipping of the villi of the chorion into the blood filled

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