As a result of our experiment we are unable to demonstrate any changes in tone in the hind limb of the goat following the removal of the 2nd to the 5th lumbar sympathetic ganglia.

4057

Transplantation of Placental Tissue.

MERLYN G. HENRY AND H. W. MOSSMAN. (Introduced by W. E. Sullivan.)

From the Anatomical Laboratory, University of Wisconsin.

Frankl,[1] using mice, showed that "a successful transplantation of a placenta (fetal portion) on a pregnant animal causes persistence of colostrum secretion" beyond the normal period following the birth of the young. Unless the transplants were removed the litters born to engrafted mothers died "evidently from starvation." Stimson[2] and others report in women with retained placenta, suppression of the secretion of true milk. Our first attempts, without knowledge of these results, were made to obtain living grafts of the fetal or trophoblastic portion of rabbit and rat placentae. In all cases neither gross nor microscopic examination gave evidence of growth after implantation. Since Frankl's results have been used in interpretating the relation of the placental hormones to lactation, and because our experiments, which extended over a period of about a year, have been discontinued, it seems desirable to report our work briefly.

We used trophoblastic tissue (fetal placenta) from rabbits varying in stages of pregnancy from 2 weeks to near full-term, and from rats during mid and later pregnancy. Thin slices of tissue were implanted subcutaneously and intramuscularly, and intraperitoneally in both rats and rabbits. Emulsions of placental cells in Locke's solution were injected into the ear vein of rabbits, and subcutaneously, intramuscularly, and intraperitoneally into both rabbits and rats. Host animals have been, the female from whom the tissues were taken, other females both young and mature, males, and in the case of the rat, also young, about one-fourth grown. Extirpation and implantation in the case of both rabbits and rats was done aseptically under chloral-urethane anesthesia administered by stomach-tube and supplemented by ether. Animals were killed and

[1] Frankl, Oskar, *Am. J. Obstet. and Gynec.*, 1923, vi, 399.

[2] Stimson, C. M., *Am. J. Obstet. and Gynec.*, 1922, iv, 413.

examined at varying times from 3 days to one month after grafting. Microscopic examinations were made only in cases where gross findings indicated some chance of viability of the graft.

The following details of our technique should be mentioned. Placental emulsions were made either by squeezing the tissue through sterile gauze into Locke's solution maintained by a water-bath at approximately body temperature, or by quickly cutting a small bit of tissue lying on gauze into a pulp by a few rapid strokes with a razor and then transferring it to Locke's. This emulsion was taken up by a warm Luer syringe through a 20 gauge needle and injected immediately. In a few cases small amounts of tissue were injected successfully without dilution. The time from the removal of the tissue to the injection was not more than 2 or 3 minutes. After injecting, some of the emulsion remaining in the syringe was forced through the needle onto a slide and a smear made. These were dried, fixed in formalin or Bouin's, and stained with hematoxylin and eosin as a check on the actual nature of the material injected They showed scattered maternal and fetal blood cells and trophoblastic tissue ranging from cells with one nucleus to small masses containing dozens of nuclei. For grafts small pieces of fetal placenta between one and 2 millimeters in thickness were made with a razor, the blood and serum removed with gauze moistened in Locke's solution, and the piece laid in the previously prepared bed within less than 2 minutes from the time of extirpation. The beds were always made "dry", *i. e.*, free from oozing, before the graft was placed. Excess pressure and tension upon the graft after implantation was guarded against by so arranging the position of the pocket that the sutures in the fascia and skin did not fall directly over it. When microscopic sections of the grafts were made the paraffin method was used, sections were cut 7 to 10 micra, and stained in hematoxylin and eosin.

While we were not experienced in the technique of transplanting we feel that by following the relatively simple principles of asepsis and grafting as given by Neuhof[3] and others, our methods were certainly good enough to give us reason to expect some viable transplants, unless these are unusually difficult to obtain from trophoblastic tissue. Only a few of our cases became infected. Frankl states that one-third of his cases became infected. Many so far uncontrolled factors may influence the behavior of placental transplants, such as the age of the placenta and the stage in the oestrous or pregnancy cycle of the recipient. We believe that more carefully controlled experiments will have to be made before it can be said

[3] Neuhof, Harold, "Transplantation of Tissues," 1923.

with any certainty that normal trophoblastic tissue will or will not grow as a graft outside the uterine mucosa.

Since submission of this manuscript Prof. Frankl in a personal communication has made clear that grafts which he called successful lived until the time of sectioning without showing necrotic changes, but did not show actual growth.

4058

Reaction of White Blood Cells to Specific Precipitate.

H. W. CROMWELL. (Introduced by Paul F. Clark.)

From the Laboratory of Medical Bacteriology, University of Wisconsin.

When fresh citrated normal rabbit blood is mixed with the specific precipitate obtained by combination of antigen with antibody, the polymorphonuclears, the large mononuclears, and apparently, also the large lymphocytes become extensively vacuolated. The cells are often so crowded with vacuoles that they appear swollen and the nuclei are pushed to one side. Similar vacuolation though not so extensive, is also seen in the peripheral blood of a highly immune animal about 2 hours after intravenous injection of the specific protein. The reaction apparently occurs regardless of the antigenic protein used since it has been found with the specific precipitates of crystalline egg albumin, excelsin, human ascitic fluid, human seminal fluid, and horse hemoglobin. When the normal blood is mixed with the antigen only, a little vacuolation occurs occasionally in the mononuclear types of cells, the polymorphonuclears remaining entirely unaffected. No vacuolation occurs at all when the blood is mixed with the supernatant serum after removal of the specific precipitate by centrifugation.

It is considered that the vacuoles probably do not represent degeneration processes because: (1) although the changes are best seen after 1 or 2 hours, they are well marked within 15 to 30 minutes; (2) the cell morphology remains distinct, the vacuoles clear-cut and the nucleus and cytoplasm retain their normal reactions to Wright's stain. It is suggested that these changes may be due to the phagocytosis of the specific precipitate.