animals and their tank controls were as nearly of a size as was possible. Animals used varied from twenty one to thirty one inches. Injections were of two kinds, intraperitoneal and intramuscular. In every case gonads and pituitaries were recovered.

One series of animals received injections of Antuitrin S purchased from Parke Davis and Company. The doses indicated are total quantities that the animal received during the periods of daily injections.

75 rat units in 2 injections
115 rat units in 4 injections
125 rat units in 5 injections
225 rat units in 9 injections

None of these animals showed any gross or microscopic evidence of gonad stimulation.

A second series consisted of only two experimental eels and controls. These received injections of fresh macerated frog pituitaries. The first eel was twenty one inches in length and received a total of nine frog pituitaries in four daily injections. The second eel was twenty three inches in length and received a total of fourteen pituitaries in five injections.

Neither of the eels showed any evidence of gonad stimulation either macroscopically or microscopically.

These preliminary experiments have been entirely negative but are not conclusive. Longer periods of injections with more appropriate hormones and proper dosages are still anticipated as likely agents to produce mature eggs and sperm. There is little doubt that the chances for success are considerably greater with eels of large size that are more nearly sexually mature. Difficulty will still be encountered in obtaining both male and female eels simultaneously, but this is not unsurmountable. With these facts in mind, the problem will still be pursued with the hope that more favorable results will ensue.

CULTIVATION EXPERIMENTS WITH *BALANTIDIUM COLI* FROM THE PIG

E. CLIFFORD NELSON

Department of Zoology, University of Maine

Intestinal content filtrates or extracts contain factors which are potent promotors of growth and multiplication for *Balantidium coli* in vitro. It seems likely that these factors are important as growth and multiplication promotors in the intestine. Investigation of these factors should throw light on the important question of host-parasite relations.

The data here presented primarily concern the growth and multiplication properties of rat intestinal content extracts. .5% Ringer dilutions were made of the contents of (1) lower

large intestine (fecal pellets), (2) cecal contents, (3) lower small intestine, (4) upper small intestine, (5) stomach of the rat. Growth and multiplication of *Balantidium coli* was obtained only in the supernatant fluid from the fecal pellets and the cecal contents. A dilution of .05% of the cecal contents did not maintain life and a .25% dilution maintained life but did not promote multiplication. .5% dilution produced good growth and the effectiveness of the extract increased above this. Maximum growth was reached at a dilution of about 2%.

Casein added to .25% cecal extracts did not induce multiplication. This would tend to indicate that the factor which is missing as a result of the dilution is not the protein. Vitamin B_1 additions were not effective either.

Collodion bag filtrates were not effective so the factor is apparently not ultra-filter passing.

FURTHER WORK ON THE EFFECTS OF ANESTHETICS ON CHROMOSOME AND POLAR BODY BEHAVIOR IN THE EGGS OF THE SNAIL *NASSA*

GAIRDNER MOMENT

Goucher College

In a previous study on the relationship between mitosis and meiosis and of the latter to polar body formation (Moment 1938), eggs were anesthetized with chloral hydrate from ten minutes after the extrusion of the first polar body until the controls were undergoing their first cleavage. When returned to sea water such eggs form either a single giant second polar body or two second polar bodies which appear simultaneously side by side. The work since then has yielded the following additional information. As in the previous study, Feulgen's reaction was used to stain the chromosomes throughout.

The number of chromosomes in *Nassa (Ilyanassa) obsoleta* is 36 in the haploid condition. This was determined by counts of the early anaphase plates at the time of the formation of the first polar body when 36 pairs of chromosomes can be distinguished on each plate. By cutting off the antipolar (yolk) lobe with a fine glass needle so that the eggs rotate with the animal pole uppermost, it is possible to confirm this by counts of the chromosomes on the anaphase plates of the second maturation spindle.

Eggs fixed when the others were placed in the anesthetic, (i.e., ten minutes after the first polar body had been extruded) showed that at this time the first polar body and the egg cytoplasm are completely separated from each other by a membrane. The chromosomes remaining within the egg still form