The electrodes proper were of Ag-AgCl prepared as described by Brown[4] and were constant to several microvolts during a run. The capillary electrodes were so arranged that fresh saline solution formed the contact for each measurement. Checks of the inherent electrode potential differences were made before and after each reading.

The sensitivity of the voltmeter and electrodes was slightly above 100,000 mm/volt with a wall galvanometer. Measurements were made inside a wire screen cage to reduce pick-up disturbances. Room temperature varied less than 2° F. from day to day. Fresh eggs having been collected from the nests in the morning were brought into the room and allowed to come to room temperature for at least four hours before being measured. Several groups of measurements were delayed until the following day and were found somewhat higher than those made on the day the eggs were collected.

The incubated eggs were measured immediately after having been removed from the incubator and opened. While being measured the eggs were close to the incubating temperature, which was maintained by a thermostatically controlled enclosure.

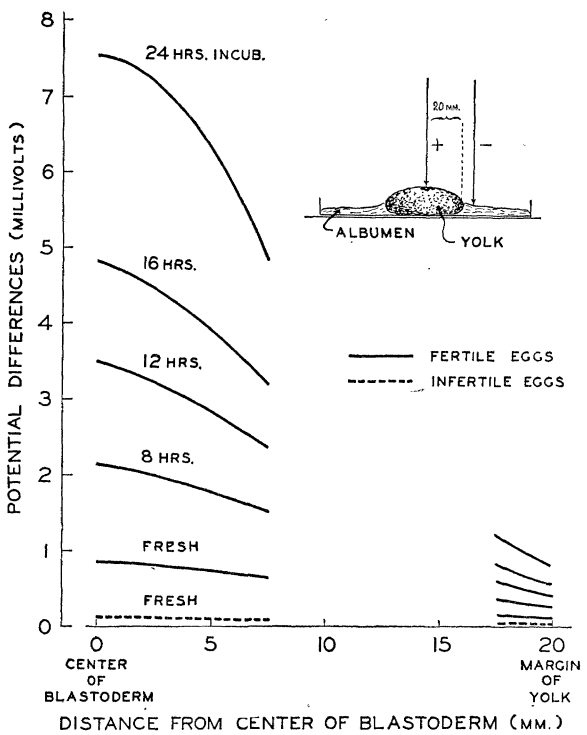

FIG. 1. The general trend of electrical potential differences of fresh and incubated eggs. One electrode was touching the albumen, while the other electrode was in contact with yolk at various distances from the center of the blastoderm.

[4] A. S. Brown, *Jour. Am. Chem. Soc.*, 56: 646–647, 1934.

The results of these observations are graphically shown in Fig. 1. There was evident an increase in potential differences with incubation, which was several times greater than through the shell.[2] On the same egg the differences decreased as the contact was moved away from the blastoderm, though some differences were still indicated at the margin of the yolk.

Most significantly in these measurements differences in electrical potential were found between fertile and infertile fresh eggs. Fertile eggs showed on an average of about 0.8 millivolt difference in potential, while with infertile eggs the difference averaged less than 0.2 millivolt.

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IMPLANTS OF EMBRYONIC TISSUE INHIBIT PARTURITION IN THE RAT

MASAO[1] described a tumor-like teratoma which he produced in mice by the inoculation of embryonic tissue. Histologically these tumors appeared to be identical with naturally occurring teratomata. The writer has subjected numerous albino rats to this procedure in the last two years. The production of these artificial teratomata is very simple. Rat fetuses about 18 days old were crushed fine enough so that the tissues could be passed through a gauge 18 hypodermic needle. A little mammalian ringer solution was added, and about 2 cubic centimeters of this material was injected into the visceral cavity. Care was taken to complete the operation as rapidly as possible. So far the embryonic tissue implanted in this manner has continued to grow in every instance. The rate of growth is rather slow. A weight of 3 to 12 grams has been attained at the end of one year.

Recently seven females 11 months of age which had carried these teratomata for six months were bred to a normal male. Their response was normal in every way except that parturition was inhibited. The fetuses developed normally, attaining the maximum size which the placentae allow and then died unless removed by hysterotomy. This experiment has been repeated on a group of ten females, and the same results were obtained.

It has been noted, however, that the implant of embryonic tissue must have had time to develop to a certain degree before parturition is completely inhibited. One rat with this implant present was able with difficulty to achieve the birth of her young. The same animal six weeks later was unable to evacuate the uterus. At the latter period the implant of embryonic tissue weighed 1.1 grams.

[1] *Jap. Jour. Cancer Res.*, 22: 28, 1928.

In his review of the factors concerned with the duration of pregnancy Snyder[2] has pointed out that parturition is under endocrine control. King[3] and others have shown that an extract of pregnancy urine will prolong the gestation period in the rat. It has been known for some time that urine from women afflicted with certain tumors such as hydatidiform mole and chorionepithelioma reacts positively in pregnancy tests. Also urine from men suffering from teratoma of the skin of the testes gives positive results in this test. It would seem, then, that these embryonic implants also secrete a chemical substance which is similar to the prolan contained in pregnancy urine, and as a result the presence of this tissue in the body affects the gestation period in the same manner as the injection of pregnancy prolan.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN ARRANGEMENT OF APPARATUS FOR THE ISOLATION OF MONOCHROMATIC LIGHT OF HIGH INTENSITY AT λ, 254 mμ[1]

WHEN monochromatic light is isolated by a monochromator, focal isolation or an optical train using filters, the light available for photochemical work represents only a small fraction of the total light produced by the source at that wavelength. This has been overcome sometimes by placing the actinic system, to be studied, in a vessel which surrounded both the light source and a suitable filter. Such an ensemble, however, requires that the volume of the actinic system be large unless the absorbing layer is made unduly thin. Sometimes the filter has been dispensed with and the actinic system allowed to contact the light source; but then, temperature control has been troublesome. The arrangement of apparatus given in Fig. 1 overcomes some of these difficulties by working in from the light source—in this case, a mercury "resonance" lamp. Any other source, however, may be used if it operates in a similar environment.

The lamp was constructed of quartz tubing coiled cylindrically like one previously used at M. I. T. to produce Raman spectra.[2] It differed from that lamp by having the axis of the coil parallel to the electrodes rather than perpendicular to them. This modification permitted the lamp to operate in a conducting liquid, such as water, with the axis of the coil vertical and the electrodes dry. Stray light from the tubing extending beyond the coil was eliminated by wrapping these parts in aluminum foil. The coil consisted of four complete turns of 1 cm tubing, which formed a cylinder 7 cm i.d. and 8 cm high. The electrodes were iron cylinders coated with a mixture of the carbonates of Ba, Ca and Sr. These carbonates were subsequently decomposed by being heated in a vacuum with an induction furnace, followed by flushing the red-hot electrodes and quartz tubing with a discharge through hydrogen. The cold lamp was then filled with argon at a pressure of 1 cm of mercury, and after introducing about half a gram of mercury the lamp was sealed while a discharge was passed through. It was lighted by a transformer rated to deliver 120 milliamperes at 5,000 volts when connected to a 110-volt A. C. line. The leads from the secondary were made as short as possible and were well insulated.

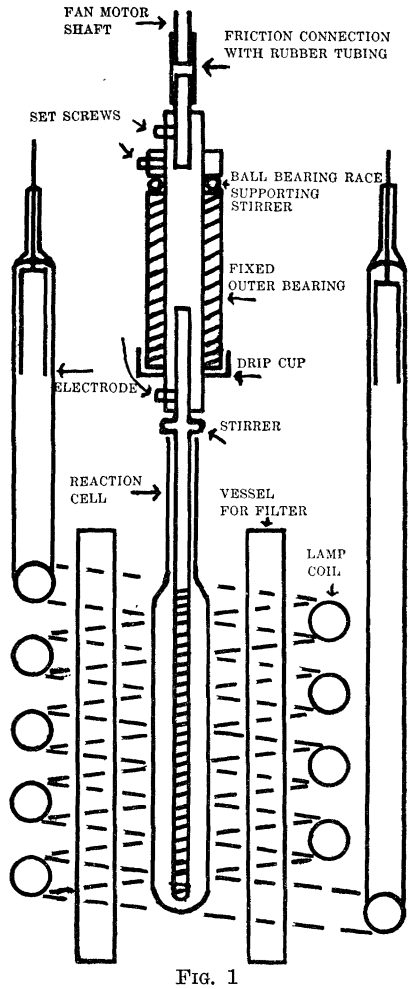

FIG. 1

[2] *Physiol. Rev.*, 18: 578, 1938.

[3] *Am. Jour. Physiol.*, 122: 455, 1938.

[1] Contribution from the Research Laboratory of Physical Chemistry, Massachusetts Institute of Technology, No. 430.

[2] Harris, Ashdown and Armstrong, *Jour. Am. Chem. Soc.*, 58: 852, 1936.