TABLE II.
Ovariectomized *Macacus rhesus* Monkeys Treated with Ethinyl-estradiol Tablets (Ciba). Each Tablet Contains 1 mg.

Monkey	Date of treatment	Wt, g	Ethinyl-estradiol tablet, orally	Uterine bleeding Days after treatment
574	5-18-39	3700	1 mg	18
574	6-12	3700	1 mg	20
589	6-12	3730	2 mg	19
574	4-24, 4-28	3700	1 mg on 2 days	18 after first day

ing from 1 mg to 200 mg, uterine bleeding occurred in from 11 to 28 days.

B. Oral treatments of stilboestrol appear to exert as prolonged an estrogenic action, as judged by time elapsing before uterine bleeding, as intramuscular injections.

C. Small doses (5-10 mg) of stilboestrol appear to be as effective as large doses (100-200 mg).

D. After oral treatments of ½ mg of ethinyl-estradiol uterine bleeding occurred on days 18-20.

E. No toxic or other untoward effects could be observed, even in heavy doses.

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pH of Secretion in Normal Conjunctival Sac Determined by Glass Electrode.

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Adequate quantities of secretion for pH analyses can be collected from the conjunctival sac with little discomfort to the subjects. However, there are 2 components, the viscid corneo-conjunctival film and the watery secretion of the lacrimal gland. Because of the differences in physical properties, a homogeneous solution is not formed and clinical methods of collection do not insure *in vivo* proportions of the 2 components. Therefore, an *in situ* method of determination is preferable. The use of glass electrodes placed in the conjunctival sac to determine the pH of the secretions *in situ* is reported for the first time.

In this study determinations were made of the pH of the con-

junctival surfaces of 88 normal adults. A blunt, cylindrical, "L"-shaped electrode was designed to fit into the lower fornix of the conjunctival sac. This electrode was made by Dr. A. E. Cameron* and was used in conjunction with the Cameron pH electrometer. The manufacturer's claim for this apparatus is accuracy to a change in pH of 0.02; however, the *in vivo* readings probably were accurate only to 0.1. The saturated aqueous solution of potassium chloride used to complete the circuit was found to cause conjunctival irritation, but the quantity and duration of contact of this irritant with the conjunctiva were minimized by using an agar bridge impregnated with the solution. The use of a local anesthetic was not necessary and was found to interfere with the results. Failure to completely cover the electrode by conjunctival secretions and contact of the electrode or agar bridge with the skin of the lids were found to result in errors on the acid side. The stimulation of lacrimation by introduction of the electrode into the conjunctival sac resulted in a gradual shift of the reading toward the alkaline side (Table I).

TABLE I.
Effect of Lacrimation on pH of Conjunctiva. Determinations Made at 2-minute Intervals.

Exp.	Subject No.	1	2	3	4	5	6	7	8	9	10	Avg
1.	Initial pH	7.42	7.30	7.30	7.40	7.36	7.17	7.43	7.20	7.24	7.38	7.32
2.	During lacrimation	7.93	7.50	7.60	7.43	7.42	7.49	7.48	7.40	7.32	7.48	7.50
3.	Continued lacrimation	7.92	7.75	7.93	7.61	7.54	7.52	7.61	7.62	7.46	7.68	7.66

However, by minimizing trauma to the lids and conjunctiva and avoiding contact with the cornea, a stable determination could be made on the first eye before the onset of evident tearing. The determinations on the opposite eyes were made after one to 3 minutes to coincide with the period of tearing. In 82 of 88 experimental subjects, an increased alkalinity was found in the second eye, in 6 subjects there was no change. The mean pH for the conjunctival secretion of the eyes of 88 normal adults before lacrimation was $7.23 \pm .013$ but during lacrimation the mean pH was $7.44 \pm .021$. On 2 of the authors, 15 determinations were made over a period of 8 months without evidence of injury to the eyes, even though a transitory hyperemia of the conjunctiva followed each determination.

Summary. The pH of the conjunctival surfaces can be determined by placing a specially designed glass electrode in direct contact with the conjunctiva. The method is adaptable to clinical use. A study on 88 normal adults is reported. The results indicate that stimulation

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of lacrimation results in increased alkalinity of the conjunctival surfaces. A larger series must be studied to establish normal values of pH prior to the onset of lacrimation for it is possible that, with further experience and speed of manipulation, the initial pH determination will show a smaller range and a more nearly neutral reaction.

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Fertility Study of Fresh Eggs by Radio Frequency Conductivity and Dielectric Effect.

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Observations by Romanoff and Grover[1] indicate that as measured by an audio frequency bridge the electrical conductivity of yolk and albumen of fertile eggs decreased while of infertile eggs increased from the beginning of incubation. This suggested the possibility of observations on the whole egg showing differences between fertile and infertile eggs if a radio frequency circuit were used and effects due to eddy current losses observed.

Also work by Romanoff and Sullivan[2] on the refractive index of egg albumen show some differences in fertile from infertile eggs in early stages of incubation. This difference might be observed as an effect due to change in dielectric constant and more easily measured at radio frequency.

Fertilization occurs at least 21 hours before the egg is laid. During this time the development, initiated by fertilization, presumably has stimulated some enzymatic activity and set up chemical changes within the egg.[3] Therefore, there may be some measurable physiochemical difference in fresh fertile and infertile eggs, though this never has been demonstrated.

Apparatus and methods. A radio frequency circuit consisting of a variable condenser, inductance coil and thermoammeter (Fig. 1A), was driven by a link-coupled stable 5-watt generator at frequencies ranging from the 14.0 to 14.4 megacycles.

The method followed was to observe the effect on maximum current and resonant frequency in the radio circuit by introducing an

[1] Romanoff, A. L., and Grover, H. J., *J. Cell. and Comp. Physiol.*, 1936, **7**, 425.

[2] Romanoff, A. L., and Sullivan, R. A., *Ind. and Eng. Chem.*, 1937, **29**, 117.

[3] Needham, J., *Chemical Embryology*, 1931, p. 247.