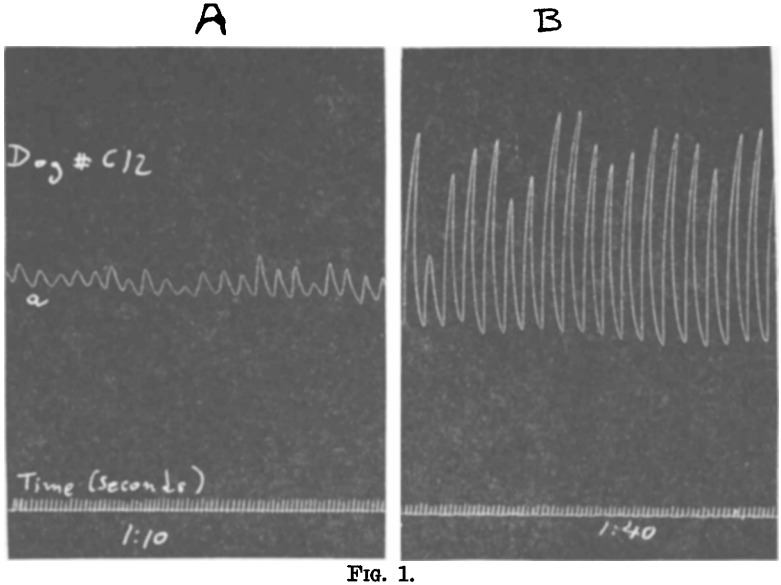

FIG. 1.
Effect of spinal anesthesia on intestinal activity of dog *in vivo*. Upper record (a), intestinal contractions. Time in second intervals. Spinal anesthesia was performed between A and B.

Surgeons have spoken of the "quiet belly" during this form of anesthesia due to the retraction of the abdominal contents. This increase in tone and peristalsis may lead to a rupture of a weakened segment of intestine, as actually happened in 2 cases of intestinal obstruction which were given spinal anesthesia at our clinic in Bellevue Hospital.

Conclusion. Spinal anesthesia causes an increase of intestinal contractions in the normal, unmedicated, dog.

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Uterine Effects from Single Treatments of Stilboestrol and Ethinyl-Estradiol in Monkeys.*

EARL T. ENGLE AND ROGER C. CRAFTS.
From the Department of Anatomy, College of Physicians and Surgeons, New York.

This report deals with the bleeding interval of estrogen-withdrawal in monkeys, following a single administration of an estrogen. Diethyl-stilboestrol and ethinyl-estradiol were used.†

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† The stilboestrol used in this study was diethyl-stilboestrol, for which we are greatly indebted to Dr. J. A. Morrell of E. R. Squibb & Sons. The ethinyl-estradiol was furnished through the courtesy of Mr. Robert Mautner of the Ciba Corporation.

Zuckerman and Palmer,[1] and Bishop, Boycott and Zuckerman[2] have shown that successive injections of stilboestrol cause proliferation of the monkey endometrium, with bleeding as a withdrawal effect.

The present series of experiments was performed on adult female rhesus monkeys which previously had been ovariectomized. Estrogens were administered orally, intramuscularly, and by pellets. Vaginal lavages were made to determine day of uterine bleeding.

Crystalline stilboestrol was administered in sesame oil either orally or intramuscularly. The same material was also made up in the form of 10 mg and 20 mg pellets, which were placed subcutaneously. Ethinyl-estradiol (Ciba) was given orally in the form of 1 mg tablets.

Single doses of stilboestrol varying from 1 mg to 200 mg were given orally (in 5 cc of oil) or intramuscularly (in ½ cc of oil). The time that elapsed before uterine bleeding was noted. There were 23 observations with this method. Stilboestrol was found to elicit typical estrogenic effects in the sex skin. With the larger doses the skin over practically the whole body of the monkey became oedematous. The results are shown in Fig. 1. Three features are particularly noticeable:

1. With the larger doses bleeding was not delayed significantly longer than with the low doses.

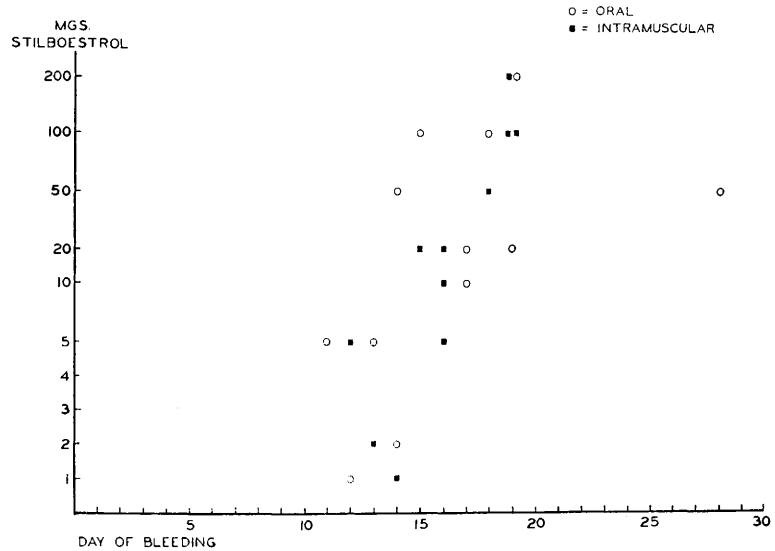

FIG. 1.

[1] Palmer, A., and Zuckerman, S., *Lancet*, 1939, **1**, 933.

[2] Bishop, P. M. F., Boycott, M., and Zuckerman, S., *Lancet*, 1939, **1**, 5.

2. Oral administration is as effective in prolonging the interval before bleeding as the intramuscular injections.

3. There was no sign of illness or toxicity during or after the treatment.

Pellets containing 10 mg, 20 mg, or 50 mg of stilboestrol were placed subcutaneously in the region of the thigh. One pellet was used in both the 10 mg and 20 mg doses; in the 50 mg doses, two 20 mg and one 10 mg pellets were used. Marked sex skin responses were obtained in every case. The results are shown in Table I. Monkeys

TABLE I.
Ovariectomized *Macacus rhesus* Monkeys Treated with Stilboestrol. Pellets Were Placed Subcutaneously in Thigh.

Monkey	Date of treatment	Wt, g	Stilboestrol in pellets subcutaneously	Uterine bleeding Days after treatment
573	6-12-39	5750	10 mg	55
481	5-31	5200	20 mg	21
561	6-12	3900	20 mg	No bleeding after 85 days. Tremendous sex skin response, fading day 70.
588	5-31	4000	2-20 mg + 1-10 mg	No bleeding after 95 days. Tremendous sex skin response, fading day 85.
520	6-12	4300	2-20 mg + 1-10 mg	Died (TB) on day 65—no bleeding—good sex skin response, fading day 60

An explanation for the early bleeding in monkey 481, as compared with the others in this series, is not available. As far as could be determined, the pellet was not broken or disturbed.

561 and 588 did not bleed, probably due to the gradual involution with the decrease in estrogen The length of time that the sex skin response was maintained demonstrates the continuance of estrogenic action for periods up to 60 or 70 days.

Ethinyl-estradiol[3, 4] in tablet form of 1 mg and 2 mg was given orally in one treatment to 3 monkeys and in 2 treatments to one animal (Table II). It is apparent that 1 mg of this material exerts as prolonged an action, as judged by time elapsing before uterine bleeding, as any dose of stilboestrol given orally or intramuscularly, and that a single treatment is as effective as 2 separate treatments.

Summary. Adult ovariectomized *Macacus rhesus* monkeys were treated with stilboestrol and ethinyl-estradiol.

A. After single oral or intramuscular doses of stilboestrol, vary-

[3] Inhoffen, H. H., and Hohlweg, H., *Die Naturwissenschaften*, 1938, **6**, 96.

[4] Clauberg, C., and Üstün, *Zentr. f. Gynäk.*, 1938, **62**, 1745.

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.

K. C. SWAN, R. E. TRUSSELL AND J. H. ALLEN. (Introduced by W. R. Ingram.)

From the Departments of Ophthalmology, Obstetrics and Gynecology, College of Medicine, State University of Iowa.

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-