TABLE I.

Patient	Adenine Nucleotide N	Purine N	Uric Acid
	Migraine Patients.		
1	12.1	—	2.9
2	—	4.1	—
3	12.1	3.3	—*
4	11.8	3.6	2.8
5	11.6	5.3	2.3
6	14.5	—	3.6
7	9.8	4.3	—
8	9.6	—	2.8*
9	12.1	4.3	3.1
10	13.0	4.0	2.8
11	11.5	3.5	3.2*
12	12.1	6.6	—
	Normal Patients.		
Subject			
1N	12.1	4.3	
2N	11.7	5.0	
3N	10.4	4.8	

*Blood drawn during attack of migraine.

The results are listed in Table I. In the migraine series the average values for adenine nucleotide nitrogen and purine nitrogen were 11.8 and 3.9 mg. per 100 cc. respectively. In the normal series the average values were 11.3 mg. per 100 cc. for adenine nucleotide nitrogen and 4.7 mg. per 100 cc. for purine nitrogen.

Although normal values cannot be established on the basis of 3 cases, the absence of variation between patients and controls indicates no departure from the normal in migraine. Since the entire group of 15 patients and controls show only slight variation in nucleotide and purine nitrogen, this study may be considered to indicate the normal fasting values for these constituents of the blood.

These studies are not suggestive of any abnormality of purine metabolism in migraine.

8131 P

Progestin in Control of Human Uterine Contractions. Significance in Prevention of Habitual and Threatened Spontaneous Abortion.

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The hormone progestin, extracted from the corpus luteum, has been used experimentally in the lower animals to inhibit uterine con-

tractions. Its use clinically has been reported in women who were aborting and in those with a history of habitual abortion. The apparent reason for its effectiveness in such cases is its antagonistic action to the oxytoxic action of pituitrin. We reported[1] a series of 19 cases, some of which were threatened abortions and some habitual abortions. These women had lost 69% of their babies in 38 previous pregnancies under ordinary management, while the same women lost only 26% of their babies when treated with progestin, but without morphine or other sedative.

To test out the effect of progestin on the contractions of the human uterus, a metreurynter bag was introduced into the uterus on the seventh day post partum and inflated sufficiently to stimulate weak uterine contractions, according to the method of Moir.[2] The bag was connected to a recording tambour by a long rubber tubing. The writing lever traced variations in uterine contractions on a slowly revolving drum. The effect of injections of estrin, progestin and pituitrin were studied.

The insertion of a bag into the human post partum uterus at the seventh day is very easily done without anesthesia, since the cervix is sufficiently patulous to admit the folded bag and yet has contracted sufficiently to prevent the bag from being extruded into the vagina after moderate inflation. At the seventh day post partum, sufficient involutionary changes have taken place to obliterate the lower uterine segment, hence we considered that the contractions measured were those of the upper uterine segment. Ivy, Hartman and Koff,[3] Adair and Davis,[4] and others have shown that the lower uterine segment has no contractile power. Young and older primiparae and multiparae were used.

In general, it may be said that there are many differences in the reactions of normal uteri which must be taken into account when evaluating the effect on uterine contractions of the injection of any stimulating or sedative substance.

The patients complained only slightly about the injections or the length of the experiment. There was no fever or untoward reaction clinically in any of these patients and they were discharged from the hospital in the usual number of days.

The normal response of a hollow organ to the presence of a

[1] Krohn, Leon, Falls, F. H., Lackner, Julius E., *Am. J. Obs. and Gyn.*, 1935, **29**, 198.

[2] Moir, C., *Brit. Med. J.*, 1932, **1**, 1022.

[3] Ivy, A. C., Hartman, C. G., and Koff, A., *Am. J. Obs. and Gyn.*, 1931, **22**, 388.

[4] Adair, Fred L., and Davis, M. E., *Trans. of Am. Assn. Obs. and Gyn. and Abd. Surgeons*, 1933, **46**, 168.

foreign body in its lumen is peristaltic contraction to expel the object. Peristalsis of the gastrointestinal tract and painful uterine contractions in women who pass endometrial tissue or clots during menstruation, are examples of this action.

The growing fetus and placenta must therefore stimulate the uterus to contract and expel its contents. That this does not occur in the majority of cases until the ninth month of pregnancy must be due to (a) deficient response of the uterus to the physiological stimulus, (b) under-production of the stimulating principles, or (c) to the action of some antagonistic substance which nullifies the action of the stimulating substance.

It has been conceded by most observers that the substance which causes uterine contractions is pituitrin (posterior lobe extract), or some closely allied substance. Its physiological effect, both in initiating and re-enforcing uterine contractions is well known. Hisaw[5] has demonstrated that progestin inhibits uterine contractions in the experimental animal. Morell[6] showed that the injection of progestin nullifies the effect of pituitrin. Corner and Allen[7] conclusively proved that the lutein hormone is essential to prevent abortion of early pregnancy. Miklos[8] revealed that progestin in excess prolongs gestation.

Oestrin on the other hand, according to Brouha and Simonnet,[9] sensitizes the uterus to pituitrin, acting in this way as an antagonist to progestin. Hirst,[10] Hofbauer,[11] Halban,[12] Antecki and Zwolinski,[13] Wolfsohn,[14] Weinzierl,[15] *et al.* have used various preparations of the extract of corpus luteum in the treatment of threatened or habitual abortion in women, but none of these have used a standardized dosage of progestin.

In our experimental work we used one rabbit unit ampoules of progestin carefully standardized. This inhibited uterine contractions and prevented the oxytoxic action of 1 cc. of pituitrin given

[5] Hisaw, F. L., with Fevold, H. L., and Meyer, R. K., *Physiol. Zool.*, 1930, **3**, 135.

[6] Morell, with Mazer, Charles, and Goldstein, Leopold, *Clinical Endocrinology of the Female*, W. B. Saunders Company, 1932, 62.

[7] Corner, G. W., and Allen, W. M., *Am. J. Physiol.*, 1929, **88**, 326.

[8] Miklos, L., *Z. f. Gynäk.*, 1930, **54**, 1755.

[9] Brouha, L., and Simonnet, H., *Compt. rend. Soc. de biol.*, 1927, **96**, 96.

[10] Hirst, J. C., *A Manual of Gynecology*, Philadelphia, 1925, W. B. Saunders Co.

[11] Hofbauer, J., *Zentralbl. f. Gynäk.*, 1920, **44**, 777.

[12] Halban, J., *München. med. Wchnschr.*, 1921, **68**, 1314.

[13] Antecki, S., and Zwolinski, T., *Polska Gazeta Lekarska*, 1928, **46**, 845.

[14] Wolfsohn, H., *Med. Welt.*, 1932, **6**, 1616.

[15] Weinzierl, E., *Med. Klin.*, 1933, **29**, 563.

intramuscularly to women in the seventh day of the puerperium. This inhibiting action occurs whether progestin is given before the injection of pituitrin or after such injection has started the uterine contractions. Under the latter condition, the inhibiting effect becomes apparent in a few minutes and lasts for at least 2 hours.

8132 P

Presence of Vitamin C in Saliva.

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The presence of Vitamin C has been demonstrated in various body tissues: adrenal,[1] pituitary,[2] ovary,[3] and tumors;[4] also the following fluids: blood serum,[5] cerebral spinal fluid,[5] aqueous humor,[5] and urine.[5, 6]

Van Eekelen, *et al.*, reported biological tests of Vitamin C in urine.[7] Johnson and Zilva fed urine to guinea pigs and found the biological value to equal the titrated value.[8]

Saliva was secreted by chewing paraffin and 7.5 cc. of saliva was acidified with 2.5 cc. of 20% trichloracetic acid, then filtered. Two cc. of the filtrate was titrated with 2-6-dichlorophenolindophenol which was prepared by dissolving 10 mg. of the dye in 50 cc. of water. This was then standardized against an ascorbic acid (Cebione, Merck) solution, which had been previously standardized against a standard iodine solution. The estimation was made by titrating the dye solution into 2 cc. of filtrate until a definite pale pink color was obtained.

KSCN was found not to interfere with the titration.

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1 Harris and Ray, *Biochem.*, 1933, **27**, 303

2 Gough and Zilva, *Biochem.*, 1933, **27**, 1279.

3 Same as No. 2.

4 Boyland, *Biochem.*, 1933, **27**, 802.

5 Van Eekelen, M., Emmerie, A., Josephy, B., Wolff, L. K., *Klin. Wnschr.*, 1934, **13**, 564.

6 Harris, Ray, and Ward, *Biochem.*, 1933, **27**, 2011.

7 Van Eekelen, M., *et al.*, *Tagung des Niederlandischer V. reins fur Physiologie und Pharmakologie*, Dec. 18, 1933.

8 Johnson and Zilva, *Biochem.*, 1934, **28**, 1393.