sible that increased oestrone production accompanies the observable ovarian stimulation after A.P.L. treatment. Further work is required on this problem, and experiments are being undertaken in an attempt to clarify the situation.

Conclusions. While the mechanism of the inhibitory action of A.P.L. on lactation is not clear at present, it may be concluded that administration of large amounts of this hormone is effective in bringing about partial or complete cessation of milk secretion in the albino rat. The effect is measurable by routine weighing of the young and by histological examination of the mammary glands of the mothers. The results of this work confirm previous observations in which mice were employed as experimental animals.

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Excretion of Some Purgative Salts of Magnesium.

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There are few experimental studies recorded of the effect of ingestion of purgative salts of magnesium on the level of urinary and fecal magnesium. Hay[1] found that one normal man excreted through the kidneys in 23½ hours, 3.5% of the magnesium taken in a 20 gm. dose of magnesium sulphate. Yvon[2] found an increase of less than 5.0% in 24 hours in the urinary magnesium output after the ingestion of a similar dose of the same salt. Hirschfelder and Serles[3] reported that 7 normal men excreted from 40 to 44% (average 42.6%) of the magnesium taken in a single ordinary purgative dose of Epsom salt within 24 hours after ingestion. Haldane[4] recovered only 8% of the magnesium ingested in a 25 gm. dose of magnesium chloride.

Wry[5] recovered in one hour from the feces of a normal man 9.52 gm. or about 78% of the magnesium taken in a 12.25 gm. dose of magnesium sulphate; from the feces of another he recovered in one

1 Hay, M., *J. Anat. and Physiol.*, 1882-83, **17**, 222.

2 Yvon, M. P., *Arch. de Physiol., Normale et Path.*, 1898, **5**, 304.

3 Hirschfelder, A. D., and Serles, E. R., *J. Clin. Invest.*, 1932, **11**, 841; *J. Biol. Chem.*, March, 1934.

4 Haldane, J. B. S., *Biochem. J.*, 1925, **19**, 249.

5 Wry, H., *Arch. für Verdauungs-Krankheiten*, 1909, **15**, 210.

hour 12.5 gm. or 50% of the magnesium taken in a 25 gm. dose of the same salt. He observed that after 24 hours stools might still contain the purgative salt.

It is apparent from these figures that there is considerable divergence in the results on the excretion of magnesium. It was considered, therefore, worthy of further study. The experiments were carried out on 8 human subjects whose ages ranged from 20 to 30 years. All subjects were in good health and were kept on a fairly uniform diet during the experimental period.

Magnesium and calcium determinations were made for 3 to 5 days prior to the experimental period on 24-hour collections of urine to determine the average daily magnesium and calcium excretion by this path. The calcium was determined according to the method of Kramer and Tisdall[6] and the magnesium by the method of Briggs.[7] Results by the above methods checked with gravimetric determinations of calcium and magnesium by the methods of McCrudden.[8] Two samples of urine gave 7.6 mg. and 5.1 mg. of Ca with the gravimetric and 7.3 mg. and 4.9 mg. of Ca with the volumetric determination; 6.2 mg. and 3.5 mg. of Mg with the gravimetric and 6.1 and 3.5 mg. of Mg with the colorimetric determination. The average daily urinary excretion of magnesium of the 8 individuals ranged from 83.9 to 132.1 mg.; of calcium from 141.1 to 364.9 mg. Five, 10, and 15 gm. doses of magnesium sulphate and doses of magnesium citrate containing an amount of magnesium equivalent to the amounts in the various doses of magnesium sulphate were taken orally. A period of at least one week was allowed to elapse between each ingestion, and with 2 exceptions the salts were taken before the morning meal. Two consecutive 24-hour samples of urine were collected in each case. The periods were measured from the time of intake.

In addition, the urine and feces were collected simultaneously for two 24-hour periods in 2 cases following the ingestion of 15 gm. of magnesium sulphate. Urinary calcium and magnesium were determined as above and analyses of the feces for the same elements were made according to the methods of Kramer and Tisdall.[6] Analyses of 24-hour samples of feces were made for several days prior to the ingestion of the salt to determine the normal magnesium and calcium content. The latter experiment was performed to determine whether the magnesium which did not appear in the urine could be accounted for in the feces.

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[6] Tisdall, F. F., and Kramer, B., *J. Biol. Chem.*, 1921, **48**, 1.

[7] Briggs, A. P., *J. Biol. Chem.*, 1924, **59**, 255.

[8] McCrudden, F. H., *J. Biol. Chem.*, 1909-10, **7**, 83; 1911-12, **10**, 187.

TABLE I.
Effect of Mg Ingestion on Urinary Mg.

Mg. of Mg as $MgSO_4$ Ingested	Urinary Mg			
	mg.	%	mg.	mg.
1482	79.6	5.4	173.3	6.0
988	75.0	7.6	112.4	30.4
494	58.2	11.8	128.3	0.8
As Mg citrate				
1482	127.0	8.6	230.2	48.0
988	101.0	10.2	177.7	39.6
494	68.0	13.8	103.0	17.1
	average		range	

The data in Table I show that the oral intake of magnesium sulphate and magnesium citrate was followed by an increased excretion of magnesium in the urine. The amount of increase was directly proportional to the size of the dose and was greater following the administration of magnesium citrate. The percentage increase was inversely proportional to the size of the dose. In addition to the average results, the figures for maximum and minimum increase for each dose are given. The greatest percentage increase was 21.9% following the ingestion of 494 mg. of Mg as the sulphate. The intake of magnesium produced a variable effect on the level of urinary calcium (Table II). In most cases the level of urinary calcium was lowered, the decrease being greater following magnesium sulphate ingestion.

TABLE II.
Effect of Mg Ingestion on Urinary Ca.

Mg. of Mg Ingested	as Magnesium Sulphate		as Magnesium Citrate	
	Ca mg.	Ca %	Ca mg.	Ca %
1482	—24.8	—10.3	+12.3	+5.1
988	—35.1	—15.6	—27.7	—12.3
494	—30.0	—13.3	—8.9	—3.9
	average		average	

There was little or no retention of magnesium following the ingestion of a 15 gm. dose of magnesium sulphate by 2 subjects. Approximately 94% of the ingested magnesium appeared in the feces within 24 hours. In the case of the subject A, 100% of the ingested magnesium was recovered. Of this amount, 97.1% was recovered in the feces and 2.9% in the urine. In the case of subject B, 98.2% of the ingested magnesium was recovered. Of this amount, 90.5% was recovered in the feces and 7.7% in the urine. Subject A showed an increased calcium elimination of 735.1 mg. in the feces for the 48-hour period after ingestion and B showed an increased elimination of 1059.6 mg. for the same period.