moval. The 6th, from its color, had evidently died more recently. The average formalin length was 5.2 cm.; the average weight 8.2 gm. The control was 4.5 cm. long and weighed 6.5 gm. Other evidences of postmature development are shown by the appearance of the vibrissae, the skin, the tails, and the extremities. There was no blood in the lumen of the uterus and the placentae appeared normal.

Conclusion. Prolongation of pregnancy with development of fetuses of excessive size was regularly observed in rats following a single injection of 75 rat units of urine extract administered 4 days before term.

7462 C

Sodium, Potassium, Calcium, Magnesium and Phosphorus Content of Skeletal and Cardiac Muscle, Bladder and Uterus.

WALTER WILKINS. (Introduced by C. S. Robinson.)

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Few values are given in the literature for the distribution of mineral substances in the different kinds of muscle from the same animal.

Table I contains the results of the analysis of skeletal muscle (taken from the shoulder), right and left ventricle, uterus and bladder of 2 beef animals. The analyses were made by the methods de-

TABLE I.

	Mg. per 100 gm.				Milli-equivalents per kilo					mg. per 100 gm.	mMols per kilo
Tissue	Na	K	Ca	Mg	Na	K	Ca	Mg	Sum of indiv. bases	Total P	P
Beef No. 1											
Sk. Mus.	42	330	2.7	19.1	18.3	84.4	1.35	15.7	120	224	72.2
R. V.	88	248	4.3	15.9	38.2	63.4	2.15	13.1	117	238	76.8
L. V.	79	283	3.8	14.7	34.4	72.4	1.90	12.1	121	239	77.1
Uterus	219	114	10.7	9.1	95.3	29.1	5.35	7.5	137	69	22.2
Bladder	134	304	5.1	11.9	58.2	77.7	2.55	9.8	148	107	34.6
Beef No. 2											
Sk. Mus.	55	335	3.0	16.5	23.9	85.7	1.50	13.6	125	179	57.8
R. V.	92	283	4.6	16.3	40.0	72.4	2.3	13.4	128	228	73.5
L. V.	78	292	3.7	17.4	33.9	74.7	1.8	14.3	125	238	76.8
Uterus	216	98	8.2	6.5	93.9	25.0	4.1	5.3	128	61	19.8
Bladder	133	268	6.3	11.4	57.8	68.6	3.1	9.4	139	100	32.2

scribed by Cullen and Wilkins,[1] on duplicate ashings which afforded sufficient material for duplicate determinations of most of the substances in each ash.

Of all the tissues, the uterus was uniformly the richest in sodium and poorest in potassium. The total phosphorus content of both uterus and bladder was decidedly lower than that of skeletal and heart muscle. The findings for skeletal and heart muscle, including certain small constant differences in the composition of the right and left ventricles, were in general agreement with those reported by Cullen, Wilkins, and Harrison[2] and Wilkins and Cullen[3] for human tissues. These authors made no analyses of human bladder and uterus. It is recognized that the presence of blood introduced a slight error but this probably does not invalidate the result.

While the concentrations of the individual bases in the 5 tissues show much variation the sums of the bases in milli-equivalents vary within a comparatively narrow range.

7463 C

Effect of Hydrogenated Fat on Abnormal Carbohydrate Respiratory Quotients of Rats on a Fat-Deficient Diet.

LAURENCE G. WESSON AND FLORENCE C. MURRELL. (Introduced by P. D. Lamson.)

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One of us reported[1] that extremely small amounts of fats have an influence on metabolism greatly in excess of their effect as fat *per se* because of a possible new dietary factor present in the fats. Evans and Burr[2] announced the discovery of a syndrome characterized by subnormal growth and retardation or suppression of ovulation, which developed in rats maintained on a fat-deficient diet. Burr and Burr[3] described additional symptoms of this fat deficiency disease in rats as scaly skin, necrotic tail, and hemorrhagic kidneys, and recognized[4] the fat-contained dietary factor as linoleic acid. A

1 Cullen and Wilkins, *J. Biol. Chem.*, 1933, **102**, 403.

2 Cullen, Wilkins, and Harrison, *J. Biol. Chem.*, 1933, **102**, 415.

3 Wilkins and Cullen, *J. Clin. Invest.*, 1933, **12**, 1063.

1 Wesson, L. G., *Am. J. Physiol.*, 1927, **81**, 513; *J. Biol. Chem.*, 1927, **73**, 507.

2 Evans, H. M., and Burr, G. O., PROC. SOC. EXP. BIOL. AND MED., 1928, **25**, 390.

3 Burr, G. O., and Burr, M. M., *J. Biol. Chem.*, 1929, **82**, 345.

4 Burr, G. O., and Burr, M. M., *J. Biol. Chem.*, 1930, **86**, 587.