not extract the factor found in the menopause or castrate urine. By using our new method, 16 cases, partly surgical castrates, X-ray castrations, and spontaneous menopause were studied.

The luteinizing factor was found in the urine of 6 out of 9 surgical castrates, in 3 of 5 spontaneous menopause cases and in 1 of 2 X-ray castrates, 62.5% of 16 cases. Luteinization was produced with from 25 to 100 cc. of urine. With diminishing quantities of extract, the luteinizing reaction disappeared, the follicle-stimulating effect becoming more marked. Fluctuation in excretion was noted in individual women, equal quantities, varying between strong luteinizing, follicle-stimulating and negative effect.

In 3 cases examined, the luteinizing factor was demonstrated in the blood.

No demonstrable correlation between the symptoms complained of and the quantity or quality of the gonadotropic hormone excreted in the menopause, whether spontaneous or induced (surgical or X-ray) could be noted. Two patients who had no symptoms, excreted 10 to 40 R.U. per liter of both factors. Four cases with mild symptoms excreted 10 to 55 R.U. per liter of only follicle-stimulating factor. In the 10 cases with severe symptoms, no correlation was apparent.

8223 P

Micromethod for Determining Insect Hemolymph Specific Gravity (Periplaneta americana Linn).*

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This is a preliminary report of a falling drop method (based on Stokes's law) that permits the determination of the specific gravity (S.G.) of a single drop of insect hemolymph (4.85 $mm.^3$ or less) within the temperature range of 15°C.-40°C., with an average accuracy of ±0.0021 (1 determination) or ±0.0008 (mean of 10 determinations), and with an average determination time of about 8 minutes. The diameter of the hemolymph drop at a beeswax-mineral oil surface is measured with a calibrated ocular micrometer scale. The hemolymph drop, surrounded by oil, is sucked into a

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glass tube and thus transferred to the sedimentation cylinder. The time required for the drop to sediment through a given falling distance in mineral oil is measured and converted to falling time at 25°C. by means of conversion factors calculated from the equation

$$t_2 = \left(\frac{n_2 k_2 (p_s - p_m)_1}{n_1 k_1 (p_s - p_m)_2}\right) t_1 \qquad (1)$$

in which n is the viscosity of the oil medium, p_s is the S.G. of the drop, p_m is the S.G. of the oil medium, t is the falling time and the subscripts $_1$ and $_2$ refer respectively to the experimental temperature and to 25°C. The correction factor, k, for fluidity of the drop, was defined by Hadamard[1] as $k = (2n + 3n')/(3n + 3n')$, where n is the viscosity of the medium and n′ is that of the drop. This variable factor was found to be $k_2 = 0.6692$ at 25°C. By means of curves that show falling time-specific gravity difference relationships for drops of various sizes at 25°C., the drop-medium S.G. difference is found and is added to the S.G. of the medium to obtain that of the hemolymph at 25°C. The curves were calculated by means of the equation

$$t_2 = \frac{9ns(1 + 2.4\ d/D)\ (1 + 1.65\ d/h)k}{2g\ a^2\ (p_s - p_m)} \qquad (2)$$

which is derived from Stokes's law

$$V = \frac{s}{t} = \frac{2g\ a^2\ (p_s - p_m)}{9n} \qquad (3)$$

In these equations, d is drop diameter, D is diameter of the container of the medium, h is the height of the column of the medium, g is the gravitational constant, a is the radius of the drop, s is the falling distance, V is the falling velocity and n, k, p_s, p_m and t_2 have the meanings already given them. The factors $(1 + 2.4\ d/D)$ and $(1 + 1.65\ d/h)$ correct for side wall and end effects of the container of the medium.[2]

The S.G. values of single hemolymph drops from 250 cockroaches, *P. americana,* were determined with this method. The means and standard deviations are 1.0163 ± 0.0112 (entire group), 1.0150 ± 0.0113 (150 adults), 1.0182 ± 0.0108 (100 nymphs), 1.0149 ± 0.0114 (125 males) and 1.0175 ± 0.0109 (125 females). The adult-nymph difference was and the male-female difference was not found to be statistically significant.

[1] Hadamard, J. S., *C. R. Acad. Sci.,* 1911, **152**, 1735.

[2] Barr, G., A Monograph of Viscometry, 1931.

This method is applicable to hemolymphs of other insects and other invertebrates and to animal or plant fluids available only in minute quantities. Successive determinations on individual insects under varying conditions can be made with no serious injury to the animal.

8224 C

Fasting Blood Sugar in Rats.

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It was found that the blood sugar during fasting falls more rapidly in women than in men.[1]

The study has been continued on rats. The animals were divided into 3 groups; the first group was fasted 12 hours, the second, 24 hours, and the third, 42 hours. Water was allowed during the fast. At the close of the fasting period, the rats were decapitated, and the blood sugar determined in duplicate by the Shaffer-Somogyi method.

The values found are shown in Table I.

TABLE I.

Fasting period		Males	No. of rats	Females	No. of rats
12 hours	Min.	79.69		77.36	
	Max.	100.19		101.82	
	Aver.	89.96	9	94.81	12
24 hours	Min.	70.60		61.74	
	Max.	85.28		89.94	
	Aver.	78.83	7	77.07	14
42 hours	Min.	65.47		52.66	
	Max.	75.72		82.02	
	Aver.	71.14	3	68.45	17

The total fall for the female rats was 27.8%; of this 67% occurred between 12 and 24 hours; the total fall for the male rats was 20.9%; of this, 59% occurred between 12 and 24 hours.

These results agree with those found in men and women in that the blood sugar falls more rapidly in females during fasting.

[1] Greisheimer, E. M., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 1067.