of time was recorded on the same film with the ballistocardiogram. A large variety of "systolic" ejection curves was secured by pushing or striking the piston in various manners. We have over 40 such experiments in 4 cadavers. When the ejection velocity curve was smooth and reached maximum velocity early in "systole" the ballistic form resembled that found in healthy persons during life, except that there was no H wave and I was smaller in relation to J than usual. When maximum velocity was attained late, or when the curve was not smooth, the ballistic form was highly abnormal. So the form of the ballistocardiogram was completely dependent on the shape of the aortic velocity curve and the results conformed in general to our expectations from theoretical considerations.

The knowledge gained will permit a more exact interpretation of abnormal ballistic forms in physiological terms.

Heating of human muscle tissue by micro waves. S. M. HORVATH, R. N. MILLER (by invitation) and B. K. HUTT (by invitation). *From the Department of Physical Medicine, Graduate School of Medicine, University of Pennsylvania.* The present modes of local heating are extremely inefficient in respect to their ability to penetrate deeply into tissues. It has been shown, however, that the employment of high frequency electrical energy can heat deeply and presumably quickly (although this latter point has defied experimental proof). While short wave diathermy (waves of several meters) is not readily adaptable to the heating of small areas, recent availability of generators producing wave lengths in the centimeter range which can be focused on small areas offers a tool which could provide such localization. The evaluation of Micro Wave energy sources as a means of providing deep and localized heating of tissues was made on eight subjects. These waves were directed at the outer lateral surface of the thigh for a period of fifteen minutes with the power loads varying in different experiments from 32 to 112 watts. Surface, subcutaneous and muscle (1 to 2 inches) temperatures were measured prior to and immediately following the application of the heat source. Observations were continued for periods of one to two hours. Due to the properties of the waves it was not feasible to measure temperatures with thermocouples during the exposure. In general the increase in temperature in the surface, subcutaneous and muscular tissues was roughly equivalent, a matter of 3° to 4°C. In a number of instances subcutaneous temperatures were appreciably higher than elsewhere in the area, and values as high as 44°C. were recorded. All temperature changes were definitely localized in the sense that no increases were observed outside the area immediately under the directors employed to project the high frequency waves. As far as is known at present, their maximum depth of penetration appears to be approximately two inches. Muscle temperatures of the opposite side of the thigh did not differ appreciably from control values. No changes in body (rectal) temperature were observed even when exposure periods were lengthened to thirty minutes.

Statistical analysis of filtration rate and renal plasma flow in normal dog and man. C. RILEY HOUCK. *From the Departments of Physiology, New York University College of Medicine, New York and the University of Tennessee College of Medicine, Memphis, Tennessee.* The filtration rate (creatinine clearance) and the effective renal plasma flow (para-aminohippuric acid clearance) in 75 normal, trained, fasted, conscious female dogs have been analyzed. Related to surface area, filtration rate has a mean of 84.4 cc./min./m²; range, 43–133; standard deviation, 19.1; coefficient of variation (100 × standard deviation/mean), 22.6. Plasma flow has a mean of 266 cc./min./m²; range, 139–430; standard deviation, 66; coefficient of variation, 24.8. The coefficient of correlation (r) between these functions is 0.79. Related to body weight, filtration rate has a mean of 4.29 cc./min./kg; range, 2.15–8.32; standard deviation, 1.01; coefficient of variation, 23.6. Plasma flow has a mean of 13.51 cc./min./kg; range, 8.05–22.43; standard deviation, 3.26; coefficient of variation, 24.1. The coefficient of correlation is 0.73. In a comparable analysis in 61 normal men (data from H. W. Smith, Lectures on the Kidney, University of Kansas, Lawrence, 1943), filtration rate has a mean of 75 cc./min./m²; range, 51.4–103.2; standard deviation, 12.7; coefficient of variation, 16.9. Plasma flow has a mean of 403 cc./min./m²; range, 198–546; standard deviation, 78.5; coefficient of variation, 19.5. The coefficient of correlation between these functions is 0.82. The dog has a greater filtration rate than man on a surface area basis, but a smaller effective renal plasma flow. Therefore, the filtration fraction (filtration/flow) in the dog (0.317) is higher than in man (0.186). The correlation between filtration and flow seems only slightly better in man than in the dog.

Chemical studies of sex steroid balance in human subjects. F. D. HUMM (by invitation) and W. T. SALTER. *From the Laboratories of Pharmacology and Toxicology, Yale University School of Medicine, New Haven, Connecticut.* When the sex steroid hormones in the urine are evaluated for normal subjects, cancerous individuals and patients exhibiting various endocrinopathies, characteristic values are obtained by chemical methods. In the normal female, near the menstrual period the value for "estroid" excretion is frequently close to the normal male range; whereas