thus comparable to the findings of Helmer for human subjects after the administration of a single dose of histamine.

The data of this report thus seem to justify the assumption that the rat is a subject with which studies of gastric function can be made that may have a bearing upon the mechanism of gastric secretion in man.

10760 P

Size of the Extracellular Compartment of Skeletal Muscle.

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The water of the animal body may be roughly divided into that contained within the cells, the intercellular fluid, and that contained in the fluid which bathes the cells but is not enclosed by the cell membrane, the extracellular fluid. There have been numerous attempts in recent years to determine the relative size of each of these compartments. In general, the methods employed consist of either (1) the determination of the amount of dilution of an injected, non-toxic foreign substance which does not enter the cell but is distributed uniformly throughout the extracellular water and (2) by the measurement of the amount of some normal constituent which is limited to and uniformly distributed throughout the extracellular water. Sodium thiocyanate has been suggested as a suitable substance for the first method[1-4] and chloride determination most convenient for the second method.[5-9]

1 Crandall, L. A., and Anderson, M. X., *Am. J. Dig. Dis. Nutr.*, 1934, **1**, 126.

2 Lavietes, P. H., Bourdillon, J., and Klinghoffer, K. A., *J. Clin. Invest.*, 1936, **15**, 261.

3 Brodie, B. B., and Friedman, Max M., *J. Biol. Chem.*, 1937, **120**, 511.

4 Wallace, S. B., and Brodie, B. B., *J. Pharm. and Exp. Ther.*, 1937, **61**, 397, 412.

5 Wallace, S. B., and Brodie, B. B., *J. Pharm. and Exp. Ther.*, 1939, **65**, 214.

6 Amberson, William R., Nash, Thomas P., Mulder, Arthur G., and Binns, Dorothy, *Am. J. Physiol.*, 1938, **122**, 224.

7 Hastings, A. B., and Eichelberger, L., *J. Biol. Chem.*, 1937, **117**, 73.

8 Peters, John P., *Body Water*, p. 133, 1935, Charles C. Thomas, Baltimore, Md.

9 Harrison, H. E., Darrow, D. C., and Yannet, H., *J. Biol. Chem.*, 1936, **113**, 515.

Following the intravenous injection of sodium thiocyanate in the cat we find that this substance distributes itself through about 25 to 40% of the body weight. In 2 experiments on anesthetized cats sodium thiocyanate (148 mg and 177 mg per kilo body weight) was injected intravenously, 60 minutes allowed for its dilution, carotid blood taken for sodium thiocyanate and chloride analyses and the animals then sacrificed by asphyxia. Each animal was dissolved in normal KOH, digested in nitric acid and an aliquot taken for chloride analysis. Assuming the total chloride content of the animal body, with the exception of the red blood cell, is in the extracellular compartment and is in equilibrium with the blood plasma, we find that the thiocyanate and chloride available volumes are quite similar (Table I).

TABLE I.
Volume of Extracellular Fluid in the Cat.

Exp. No.	Wt in kg	NaCNS available Vol./kg body wt	Chloride available Vol./kg body wt
1	1.98	288 ml	316 ml
2	1.65	288 "	320 "

The thiocyanate and chloride available volume of muscle was determined as follows: sodium thiocyanate, 124 to 155 mg per kg body weight as a 5% solution in distilled water, was injected intravenously into cats anesthetized with dial (60 mg per kg body weight intraperitoneally). Sixty minutes were allowed for the distribution of thiocyanate throughout its available fluid after which time 10 ml of blood were taken from the carotid artery for thiocyanate[1] and chloride[10] analyses. The animal was then killed by asphyxia. The various muscles taken for analysis were dissected out, carefully weighed, dried to constant weight in an oven kept at 105°C, dissolved in normal KOH and an aliquot of this taken for thiocyanate[8] and for chloride[10] analysis.

From these determinations the thiocyanate and chloride available water per 100 g of muscle is obtained as follows:

$$\text{Thiocyanate available volume} = \frac{\text{CNS in mM per 100 g of muscle}}{\text{CNS in mM per g of serum water}}$$

$$\text{Chloride available volume} = \frac{\text{Chloride in mM per 100 g muscle}}{\text{Chloride in mM per g serum water}}$$

The results from these determinations are shown in Table II.

[10] Sunderman, F. W., and Williams, P. J., *J. Biol. Chem.*, 1933, **102**, 279.

TABLE II.
Thiocyanate and Chloride Available Volume of Skeletal Muscle of the Cat.

	Experiment 12.				Avg Values			
Organ	Chloride available Vol. in ml/100 g organ	CNS available Vol. in ml/100 g organ	Chloride Vol. % total	NaCNS Vol. % total	Chloride available Vol. in ml/100 g organ	CNS available Vol. in ml/100 g organ	Chloride Vol. % total	CNS Vol. % total
Biceps f	11.5	12.3	15.0	15.8	13.2	13.6	17.2	17.8
Triceps b.	13.7	17.1	18.3	22.9	13.3	13.4	17.5	17.7
Gastrocnemius	11.9	13.9	15.6	18.4	12.4	16.2	16.2	21.2
Temporalis	16.0	21.0	20.9	27.4	15.3	16.8	22.5	21.9
Sternomastoideus	27.4	29.2	36.0	38.2	24.8	24.0	32.6	31.3
Trapezius	18.5	17.5	24.2	23.2	20.0	20.2	26.3	26.4
Diaphragm	24.1	21.2	31.4	27.6	29.3	32.9	38.0	42.9
Rectus a.	30.2	25.9	29.6	33.9	37.5	34.4	49.0	44.9
Heart	31.0	35.7	39.0	44.9	30.2	32.9	38.0	41.5

The total thiocyanate and chloride available volumes of the normal cat are of similar magnitude. This distribution is not exclusively extracellular, inasmuch as CNS and chloride penetrate the red cell,[11] the digestive glands and are found in excessive quantities in the subcutaneous tissues of the skin (to be published elsewhere). In the muscles, chloride and thiocyanate are distributed through approximately the same volume of fluid. This volume differs from muscle to muscle and to some extent from animal to animal for any given muscle. It is not improbable that this distribution, at least in the thick muscles, is limited to the extracellular compartment.

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A Method for Preservation of Oxalated Plasma Clot for Fibrinolytic Tests.

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Oxalated plasma usually loses its ability to form a clot upon addition of calcium chloride when kept in the icebox for 72 hours.

We have been testing the fibrinolytic power of hemolytic streptococci immediately after isolation and at regular intervals thereafter to observe any changes in this property and its relation to other biological characteristics of the organism. A susceptible plasma clot from an individual was used repeatedly, necessitating a considerable number of bleedings, resulting usually in loss of time and material. For these reasons we decided to search for a method to preserve plasma while retaining its ability to clot readily and maintaining its susceptibility to lysis unaffected. This has been accomplished by the following method:

Human blood from a susceptible person was obtained and distributed in 5 cc amounts into small glass bottles, each containing 10 mg of potassium oxalate in the form of the dry powder. After mixing well by gentle shaking, the plasma was separated by centrifugation. The susceptibility of this plasma to the lytic action of hemolytic streptococci was tested, employing the original technic of

[11] Gregersen, M. I., and Stewart, J. D., *Am. J. Physiol.*, 1939, **125**, 142.