uria was observed in 70 per cent of animals of this group. Quantitatively, the secretion of sugar was half that in the previous subgroup. No polyuria was observed. The blood sugar averaged 103 mgm. per cent.

(*c*) Alloxan was injected 5 min. after the injection of tetraethylammoniumbromide. Glycosuria was observed in 50 per cent of the experimental animals, while the maximum amount of sugar secreted during 24 hr. did not exceed 0·7 gm. No polyuria. The average blood sugar was 139 mgm. per cent.

(*d*) The rats were injected with alloxan 15 min. after the injection of tetraethylammoniumbromide. Glycosuria was observed in 60 per cent of the experimental animals. (The maximum amount of glucose secreted was 0·7 gm. in 24 hr.) The average blood sugar was 151 mgm. per cent.

(*e*) Alloxan was injected 30 min. after the injection of tetraethylammoniumbromide. Glycosuria developed only in one animal. (The maximum amount of sugar secreted was 0·5 gm. in 24 hr.) No polyuria. The average blood sugar was 149 mgm. per cent.

Our results support the views of Houssay *et al.* and direct attention to the great importance of the nervous system in connexion with alloxan diabetes. Lazarow's ideas[10] of the mechanism of the origin of alloxan diabetes are too simple.

Z. Brada

Research Department,
Masaryk State Institute for Radiotherapy,
Brno.
Oct. 27.

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Transport of Chloride through the Ruminal Mucosa

It seems obvious that the quantity and composition of the rumen fluid is of importance for microbial activity in the rumen. One of the main factors influencing the ruminal fluid is the properties of the rumen wall.

The rumen fluid is very different from blood plasma in its ionic composition. Phosphate and potassium are far more concentrated in the rumen than in plasma; but the chloride concentration in the rumen of goats, sheep and cows is usually only 0·2–0·1 of the concentration in plasma. This might be due to the low chloride content of the food and especially of the saliva.

However, if sodium chloride is introduced into the rumen, the elevated chloride level rapidly returns towards the initial level. Similarly, bromide and iodide introduced into the rumen seems to disappear rapidly and almost completely. These facts suggest that an active transport through the ruminal wall occurs. Such experiments are, however, difficult to interpret.

To investigate this matter more conclusively, rumen pouches have been made in a few young goats. The posterior ventral blind sac of the rumen has been separated. Care has been taken not to interfere with the blood supply.

The changes occurring in ruminal fluid and in salt solutions introduced into the rumen pouch have been studied. The results of an experiment with salt solutions are shown in the accompanying table.

Time		Concentrations (millimoles/litre)			
		Na^+	K^+	HPO_4^{--}	Cl^-
0	150 ml. introduced	160	—	31	86
4·5 hr.	39 ml. removed	156	traces	36	77
22 hr.	Pouch emptied, 45 ml.	152	27	70	28
Total introduced (millimoles)		24	0	4·65	12·9
Total removed (millimoles)		12·9	1·2	4·55	4·3

The experiments leave scarcely any doubt that chloride passes from the rumen as a result of active processes in the rumen wall. It seems probable that the same is true for sodium ions. Potassium ions, on the other hand, may pass in the opposite direction, and against the concentration gradient. Phosphate ions do not appear to pass through the epithelium in significant amounts in these experiments. Tracer experiments suggest, however, that phosphate may pass through the ruminal epithelium, though very much more slowly than chloride.

I. Sperber
S. Hydén

Royal College of Agriculture,
Uppsala 7. Oct. 27.

Urinary Porphyrins in Experimental Lead Poisoning

The porphyrin excreted in the urine of normal and of experimentally lead-poisoned rabbits has long been regarded as coproporphyrin. The recent development[1] of a chromatographic method for the separation of porphyrins according to the number of carboxyl functions has already revealed 3- and 5-carboxyl porphyrins in a number of pathological urines. We have investigated the urinary ether-soluble porphyrins of rabbits which received loading doses of 13·7 mgm./kgm. of lead chloride intravenously, and were then fed on a diet containing 250 p.p.m. of lead carbonate for periods up to four months. Urine was collected over periods of three days and preserved with toluene. The porphyrins were extracted with ether and acetic acid by the technique previously used by one of us[2], and estimated in 0·25 per cent hydrochloric acid with a Unicam spectrophotometer ($\lambda = 401$ mμ). They were chromatographed on paper at 7° C. by the method of Nicholas and Rimington[1] to characterize the porphyrins present.

The apparent porphyrin content of these urines increased with standing, as did that of the initial ether extracts (cf. Eriksen[3]). Addition of a trace of iodine to the ether extracts did not accelerate the appearance of red fluorescence in them or in 5 per cent hydrochloric acid shaken with them, in contrast to the behaviour of the precursor described by Watson *et al.*[4]. Quantitative estimates