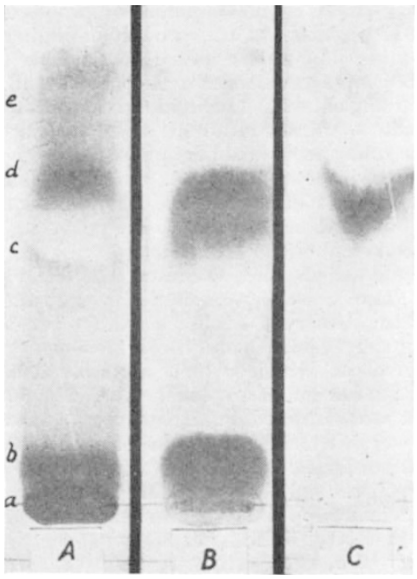

Fig. 3. Preparation II: without treatment (*A*); after purification with oxycellulose (*B*); adiuretin-free, purified with oxycellulose (*C*). Duration of the chromatographic run, 20 hr.

In the experiments described, recoveries of activities were followed by appropriate bioassay methods. The adrenocorticotropic hormone activity of the paper chromatographic components was measured routinely by a frog method modified by one of us[5], and the vasopressin activity was measured in the decapitated cat.

Details of this work will be published elsewhere.

E. Hegyeli
I. Molnar

Department of Organotherapy,
Research Institute for Pharmaceutical Industry,
Budapest, Hungary.

[1] Dixon, H. B. F., and Stack-Dunne, M. P., *Biochem. J.*, **61**, 483 (1955).
[2] Lyons, W. R., *Proc. Soc. Exp. Biol., N.Y.*, **35**, 645 (1937).
[3] Astwood, E. B., Raben, M. S., Payne, R. W., and Grady, A. B., *J. Amer. Chem. Soc.*, **73**, 2969 (1951).
[4] van Dyke, H. B., Chow, B. F., Greep, R. O., and Rothen, A., *J. Pharmacol. Exp. Therap.*, **74**, 190 (1942).
[5] Hegyeli, E., *Experientia*, **12**, 222 (1956).

Vacuolated Neurones in Sheep affected with Scrapie

Holman and Pattison[1] reported the occasional presence of homogeneous eosinophilic granules in vacuolated neurones of the medulla from sheep affected with scrapie. Palmer[2], in a recent communication, described similar eosinophilic bodies inside the vacuoles in eight sheep suffering from scrapie, and concluded that these bodies did not occur in vacuoles of healthy sheep. This observation of Palmer appears to be in contrast to the work of Zlotnik and Rennie[3], who carried out an extensive study of medullas from fifty-seven apparently healthy sheep; they recorded the occurrence of vacuolated neurones in a high proportion of the animals and observed inside some of the vacuoles eosinophilic bodies identical with these described by Palmer.

Eosinophilic bodies in non-vacuolated cells similar to these observed by Palmer in scrapie have been described by Brownlee and Wilson[4] in the cells of the spinal ganglia from healthy sheep and in animals affected with louping-ill. In my experience, apart from mitochondria and Golgi bodies, two other structures can be demonstrated in the neurones of the medulla from both healthy and scrapied animals. One body appears in the form of discrete granules of various sizes, the biggest being similar to a large nucleolus. These bodies are highly eosinophilic, but may be stained also with Heidenhain's iron hæmatoxylin. They are, however, negative in the following methods: Feulgen reaction, periodic acid – Schiff, Kurnick's methyl-green-pyronin, aldehyde fuchsin (Gomori's), and sudan IV in both frozen and paraffin-embedded material. The second structure encountered in the neurones of the medulla is in the form of aggregations of small granules often in a juxta-nuclear position. These granules are either absent or very scanty in young animals, but increase in numbers in sheep more than two years old. These bodies do not stain with eosin, phloxine or iron hæmatoxylin, but stain very well with aldehyde fuchsin (Gomori's), they are acid-fast, positive with periodic acid – Schiff reagent and give a very weak reaction with Feulgen's method; however, they may be stained with Schiff's reagent without prior oxidation or hydrolysis. In sudan IV they stain a brick-red colour in both frozen and paraffin-embedded sections.

J. Zlotnik

Animal Diseases Research Association,
Moredun Institute,
Gilmerton, Edinburgh.
March 7.

[1] Holman, H. H., and Pattison, I. H., *J. Comp. Path. and Therap.*, **53**, 231 (1943).
[2] Palmer, A. C., *Nature*, **179**, 480 (1957).
[3] Zlotnik, I., and Rennie, J. C., *J. Comp. Path. and Therap.*, **67**, 30 (1957).
[4] Brownlee, A., and Wilson, D. R., *J. Comp. Path. and Therap.*, **45**, 67 (1932).

Restoration of Sodium-deficient Frog Nerve Fibres by Onium Ions

Since guanidinium ions have proved to be able to restore conduction of impulses by sodium-deficient frog *A* fibres[1], it seemed desirable to ascertain whether other ionized compounds possessing a tetracovalent nitrogen atom (onium ions) also can substitute for sodium. An extensive, but not exhaustive, research has revealed that, in addition to guanidinium ions, five onium ions can restore conduction by sodium-deficient frog *A* fibres: formamidinium, aminoguanidinium, hydrazinium, hydroxylammonium and ammonium ions.

In all instances the active chemical species are the ions. This is obvious in the case of bases as strong as formamidine, guanidine or aminoguanidine and even in the case of ammonia, since the ionization of this base is practically complete at *p*H 7. In the cases of hydrazine and hydroxylamine the following observations prove that the activity is due to the hydrazinium or hydroxylammonium ions present in the solution.

A 0·01 *N* solution of hydrazine hydrochloride fails to restore sodium-deficient nerve fibres if the *p*H is adjusted to 7·8, but if the *p*H is adjusted to 7·5 the solution has approximately the same restoring ability as a 0·008 *N* solution at *p*H 7. In the absence of calcium ions the last solution and a 0·006–0·007 *N* solution of sodium ions restore the ability to conduct impulses to approximately one-fifth of the *A* fibres.