A comparison of Tables I and III shows that the serological examination, because it is quantitative, gave a better differentiation of the strains. Schueffner and Mochtar[8] found in numerous experiments that guinea pigs that had recovered from infection with one strain of leptospira were protected against strains which serologically were unrelated.

[8] Schueffner, W., and Mochtar, A., *Z. f. Bakt. Abt. 1, Orig.*, 1926-27, **101**, 405.

Summary. A study has been made of strains of leptospira recovered from an outbreak of leptospirosis among cattle in New Jersey and a strain isolated from an outbreak of the disease in Palestine. Sera from recovered cattle as well as sera from immunized rabbits were used in agglutination and lysis tests and it was found that all the New Jersey strains reacted alike while the Palestine strain belonged to another serological group.

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Effect of Antihistamines on Loss of Adhesiveness of Corneal Epithelium After Injection of Histamine.

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In a previous paper[1] we described the effect of histamine on the adhesiveness of the corneal epithelium of excised bovine corneas. In amounts from 0.5 to 1.0 μg per cornea (600-800 mg wet weight) histamine caused a marked decrease in epithelial adhesiveness. In contrast to other agents which decrease adhesiveness by disruption at the stroma epithelium boundary, histamine seems to effect the detachment of the upper layers of the epithelium from the basal one.

In view of the relatively high amounts of histamine required for this effect (about 10 - 100 times more than for relaxation of cats intestine) and of the gradual culmination of epithelial loosening it seemed desirable to compare the action on the corneal epithelium of histamine alone and of mixtures of histamine with certain antihistamines. The same technic was used as described previously.[2] Between 0.04 to 10 μg of the antihistamines were injected together with a constant amount of 2 μg of histamine in a total volume of 0.2 ml per cornea. At this concentration the antihistamines were found to have no effect on the adhesiveness of the corneal epithelium. On injection of 50 μg per cornea or more, toxicity with loosening of the epithelium was observed for all antihistamines tested so far. The indicated amount of histamine was sufficient to cause loosening in all samples. The corneas were incubated for 12 - 15 hours at 28 - 30°C. The adhesiveness was tested with a simple scraper which allows a semi-quantitative determination of the adhesiveness, the amount of removable epithelium being a function of the adhesiveness and of the weight on the scraping blade.[2] The procedure was simplified in the present series of experiments by keeping the pressure on the scraper constant (60 g) and recording the removal of more than 2/3 and of less than 1/3 of the epithelium of the corneal test strip. After injection of histamine alone there was always under these conditions a removal of more than 2/3 of the epithelium. If antihistamines were injected simultaneously the loss of adhesiveness was reduced to less than 1/3 depending upon the concentration of the respective compound.

In Table I our results are summarized designating protection with removal of less

[1] Herrmann, H., *Bull. Johns Hopkins Hosp.*, 1948, **82**, 208.

[2] Herrmann, H., and Hickman, F. H., *Bull. Johns Hopkins Hosp.*, 1948, **82**, 182.

TABLE I.
Antagonism to Loosening of Corneal Epithelium After Injection of Histamine in its Dependence Upon Concentration of Antihistamines.

Amt of antihistamine per cornea in μg	Pyribenzamine	PTDA (01013)	Antistine
10.0	++		+++
5.0	++++++		++ - -
2.5	++++ -	++++	
1.0	++++	++++++++++++	- - - - - -
0.6	++++		- - - -
0.4	++++++++++++		- - - -
0.3	+++		
0.2	++++++ - - - -	++++ - - - - -	
0.1	++++ - -	++ - -	
0.08	++++ - -		
0.04	+ - - - -	- - - - - - - -	

+ Indicating removal of less than 1/3 of epithelium (protection).
- Indicating removal of more than 2/3 of epithelium (non-protection).
Each sign stands for one cornea tested. Amount of histamine injected per cornea: 2 μg.

than 1/3 with + and absence of protection with removal of more than 2/3 of the epithelium with —. It can be seen that pyribenzamine and N-(2-pyridyl)-N-(2-thenyl)-N′, N′-dimethylethylenediamine hydrochloride* provide protection in concentrations of less than 1/10 of that of histamine while the protection by Antistine requires a concentration of 2-5 times that of histamine.

* This compound is commercially designated as 01013 and is listed in the table by the initials PTDA.

Summary. The loosening of the upper layers of the epithelium of the excised bovine cornea by histamine is prevented by simultaneous injection of certain antihistamines. Three compounds found to be effective are Pyribenzamine, 01013, and Antistine.

We are indebted for the supply of the antihistamines to Dr. B. N. Craver of the Ciba Pharmaceutical Products, Inc. (Pyribenzamine, Antistine), and to Dr. K. K. Chen of Eli Lilly Co. (01013).

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Serum Polysaccharide Level in the Normal State.*

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Several investigations concerning the polysaccharides of serum in both normal and pathological conditions have recently been published. Seibert and Atno,[1] and Seibert, Seibert, Atno, and Campbell[2] have presented results of quantitative studies using the carbazole method. Hinsberg and Merten[3] published results using an acid hydrolysis procedure while Lustig[4] *et al.* have reported several studies using an orcinol method. Nil-

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1 Seibert, F. B., and Atno, A. J., *J. Biol. Chem.*, 1946, **163**, 511.

2 Seibert, F. B., Seibert, M. V., Atno, A. J., and Campbell, H. W., *J. Clin. Invest.*, 1947, **26**, 90.

3 Hinsberg, K., and Merten, R., *Z. Klin. Med.*, 1938, **135**, 76; *Brit. Chem. Physiol. Absts.*, 1939A, III, 357.