Under the experimental conditions employed rabbit antirabic serum injected intraperitoneally into mice showed a marked protective power against intracerebral inoculation of rabies street virus even when serum was administered as late as 4 days after virus.

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A Pannus-forming Infection of Sheep Eyes.

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This preliminary report is concerned with the description of a disease of the conjunctiva and cornea of sheep, of natural occurrence, which results in the formation of a pannus, not unlike that in human trachoma.

The farmer from whom I obtained my diseased sheep first noticed the non-purulent infection of the conjunctiva and nictitating membrane, evidenced by congestion, edema, epiphora, as fall weather and near-freezing temperatures prevailed. Examination by him of the large flock allowed about 200 infected animals to be isolated, 10% of which had marked vascularization of the cornea. Two weeks later, when I was asked to examine the flock, less than 1% were not infected. Probably 80% suffered clinical pannus formation, and 5% superficial ulcers at the tip of the pannus. Hypopyon ulcer was seen in only those that were so blinded as to be unable to prevent injury to the cornea in trying to graze and follow the flock. No perforation of the cornea was seen. A representative animal, moderately infected, was removed to the laboratory for research purposes.

Animals in the locality had, during the summer, been infected with equine encephalitis, gangrenous stomatitis (calf diphtheria, necrobacillus, or actinomyses necrophous-Bergey's classification) and contagious ecthyma. Adjoining farms enjoying identically good pasture and climatic conditions, suffered the above 3 infections, but none had sheep with infected eyes. An Indian boy who had attended the sheep during lambing was examined, but showed no evidence of clinical trachoma.

A number of organisms have been cultivated from conjunctival

scrapings; these have been common saprophytic bacteria. In smears of material removed by scraping, and stained by Giemsa's method, many epithelial cells can be seen to contain structures identical, morphologically, with *Rickettsia conjunctivæ,* as described by Coles.[1] The disease can be transmitted from sheep to sheep but we have not, so far, been able to cause infection in other animals. In sheep, definite evidence of infection is present in 48 hours after inoculation, the conjunctiva resembling that of inclusion blenorrhea. Experimental transmission proceeds more rapidly when the room temperature is below 60°. Follicles are not a prominent feature and are confined to the fornix. Within 4 days, large arteries with "rocket-like" tips are invading the *substantia propria* near Bowman's membrane, more advanced from above than below but, to a degree, completely around the limbus. The arteries appear more superficial than the veins when the circulation is studied with slit-lamp and corneal microscope. Beyond the largest, most rapidly advancing vessel tips are often seen small accumulations of cells that give the appearance of having advanced ahead of the endothelial lining. In none of the experimental infections has the pannus extended beyond the limit of the pupil; of those occurring naturally in the field, many showed eyes in which the pannus from above and below intersected at the center of the cornea. Pathological examination of one such eye showed some interstitial vascularization. In moderately vascularized corneæ, the vessels are confined to the superficial stroma. Slit-lamp examination during the early stages of rapidly progressing pannus suggest that the vessels start in an arrangement similar to the spacing of the corneal nerves. This disease offers an excellent opportunity for the study of pannus formation.

The description of the infectious agent, extensive remarks concerning observations made with the slit-lamp, and pathological findings will be published at a later date.

[1] Coles, J. D. W. A., 17th Report of the Director of Veterinary Services, Onderspoort, Pretoria, South Africa, 1931, Sec. II, 175.