of maximal leucocyte depression. Changes of the magnitude noted cannot be considered significant in view of the observation that day to day protein excretion in individual rats varied widely and not necessarily in the same direction as the general trend.

Discussion. It is apparent from our experiments that pretreatment of young Wistar rats with nitrogen mustards failed to protect against the development of nephrotoxic nephritis produced by intravenous injection of rabbit antirat kidney serum. In the 2 groups of animals injected with nephrotoxic serum of either "mild" or "moderate" potency both the pretreated animals and those receiving serum alone exhibited approximately the same degree of proteinuria after the first 14 days of the disease. Although the rats pretreated with HN_2 and injected with a nephrotoxic serum capable of producing a "severe" nephritis excreted less protein during the 8 weeks of observation than the untreated rats injected with the same serum, all the surviving animals manifested evidence of chronic nephritis. The small number of animals permits no statistical evaluation of the apparent difference within this group.

Although HN_2 failed to prevent the occurrence of nephritis, some modification of the early phase of the disease was apparent. The delay of approximately 14 days in the onset of marked proteinuria in the pretreated animals suggests that the HN_2 may have interfered with the initial antigen antibody reaction in the kidney in such a fashion as to delay the manifestations of this combination. Nitrogen mustards are reported to have no effect on antigen-antibody reactions *in vitro* (11), but this does not preclude such interference *in vivo*.

Nitrogen mustards are known to exert profound inhibitory effects on the metabolism of various tissues, including renal tissue, of experimental animals(14). It is possible that this property of HN_2 might effect a reduction in proteinuria during the period of its maximal action. This would account also for the delay in onset of increased proteinuria, but it is not consistent with the failure of nitrogen mustard to reduce regularly the abnormal proteinuria of rats with chronic nephritis.

Conclusions. 1. Pretreatment with nitrogen mustards failed to protect rats injected with nephrotoxic serum against the development of acute or chronic nephritis but did appear to modify certain early manifestations of the disease. 2. No consistent effect on the proteinuria of rats with chronic nephritis was produced by the administration of nitrogen mustards.

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Antibiotic Effects of Circulin Against Certain Gram-negative Plant Pathogens. (18693)

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Circulin, a mixture of polypeptide antibiotics produced by *Bacillus circulans* Q-19, (like the polymyxins to which it is closely related) is very active against gram-negative bacteria, both *in vivo* and *in vitro*(1-4).

This note calls attention to the fact that among the organisms inhibited *in vitro* are

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TABLE I. Comparison Between the Inhibitory Effects of Circulin and Streptomycin Against Certain Bacterial Plant Pathogens.

Organism	Strain	Inhibited by μg per ml of C*	S*	Ratio of inhibiting concentrations C/S
Agrobacterium tumefaciens	59	50	100	0.5
Erwinia amylovora	178	3.1	0.2	15.5
E. atroseptica	E-25	6.2	100	0.06
E. carotovora	C-3	3.1	50	0.06
Xanthomonas beticola	72	3.1	50	0.06
X. campestris	W	0.8	50	0.02
X. phaseoli	W	0.4	50	0.01
X. translucens f.sp. *hordei*	P	6.2	0.4	15.5
X. translucens f.sp. *hordei-avenae*	XT-6	12.5	12.5	1.0

* The observations were made after 72 hours incubation. The preparation of circulin sulfate (C) used assayed 5300 units/mg, and contained at least two components, circulins A and B. The streptomycin sulfate (S) used contained 855 units/mg.

also several plant pathogens.* Table I, for illustration, compares the antibiotic activity of circulin and streptomycin, as determined essentially by a method previously described (1). In almost all cases circulin was more effective than was streptomycin. These preliminary data appear sufficiently promising to justify more extensive work in the greenhouse and in the field. Crude broths containing circulin, probably adequate for field trials can be prepared rather easily(1).

Summary. Circulin possesses high *in vitro* activity against several gram-negative plant pathogens.

* The cultures used in this study were kindly furnished us by Dr. Curt Leben, of the University of Wisconsin, and Dr. W. H. Burkholder, of Cornell University.

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Effects of Modified Human Globin in Normal Human Subjects.* (18694)

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To assess the value of any substance which is to be administered intravenously for the emergency treatment of shock, it is imperative that its effects on the blood flow through the kidneys of normals be determined. It would be unwise to accentuate the renal ischemia which is known to exist in the shock state. By the same token, any substance which is to be administered as a possible therapeutic measure in diseases known to involve renal functional disturbances, must have its effects on the kidney determined.

It is the purpose of this communication to report the absence of deleterious effects of infusions of human globin on certain renal functions in normals, and also the absence of any effect on the agglutinability of the red blood cells of patients receiving this substance. For unlike gelatin, globin does not make blood typing difficult.

Methods and procedure. In the present study, a group of 6 convalescent patients with no evidence of renal disease were observed. All subjects were tested at least 10 hours after their last meal and hydrated with 500-1000 cc of water by mouth at least 1-2 hours before the start of the procedure. The continuous

* The globin was supplied through the courtesy of Dr. Gilbert Bayne of Sharp and Dohme, Glenolden, Pa.