fore not represented on the curves noted above. Three ring doves at 34, 35 and 36 days after injection with 1 unit (6 X lethal) gave normal average values of 143, 145 and 155 for these three days; one dove given 4.5 units showed a normal value (155) at 48 hours, but less (110) at 74 hours. One common pigeon (18 X lethal) gave values of 165 after 48 hours and of only 70 after 74 hours; this bird showed only 15 mgms. sugar after two hours and survived the treatment. Another common pigeon given 3.4 units (10 X lethal) gave a normal value (185) at 32 hours and less than one-half normal (70) at 58 hours. Some of these heavily dosed birds whose sugars were low at advanced periods had probably taken no food during a considerable preceding interval..

The fact that many of the ring doves and common pigeons given heavy dosage of insulin were not permitted to take food during about 20 hours preceding dosage, and that sugar samples representing values recorded in the curves were taken as much as 22 hours after injection, raises a question as to the bearing of this circumstance upon the sugar values obtained. Concerning this point it is noted that earlier studies[5] have indicated that inanition during 48 hours is practically without effect on the normal blood sugar of the pigeon. Only 7 of the 30 birds included in the curves presented (10-30 x lethal) were in any way restricted in their feeding either before or after injection of the extracts.

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Experimental production of streptococcus endocarditis with glomerular nephritis.

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In human patients subacute streptococcus endocarditis is a fatal disease. No authentic report of a recovery has even been published. The mechanism of production of this disease in

[5] Honeywell, *Amer. Jour. of Physiol.*, 1921, lviii, 152.

human beings displays two constant factors—injury to the valve and later infection. The injury is usually represented by either congenital valvular heart disease or rheumatic valvular heart disease. The later implantation of green streptococcus on this injury usually takes place through the medium of an infection of the middle ear or throat or some other locality where green streptococci normally breed. In experimental work Rosenbach recognized these two factors in 1878 and reproduced infection in the heart valve after puncture of the valve. Although a beginning was made so long ago, and more perfect instruments have been devised for injuring the valve, no attempt has been made to reproduce the disease completely and glomerular nephritis of the type which characterizes the disease in human beings has never heretofore been reproduced. All clinical efforts to obtain a cure of the disease have failed. It seems, therefore, that we must have the disease reproduced in animals and then thoroughly study its features if we are to expect a cure.

This work consists in injuring the aortic valve by inserting an appropriate instrument into the left carotid and then, after recovery, the animal is infected by intravenous inoculation of green streptococcus. The inoculated bacteria become implanted at the site of the valve injury and there set up a bacterial vegetation identical with that of human patients. Dogs were used in these experiments. Dogs living 12, 13 and 14 days failed to show any kidney lesion of the glomerular type although large infractions were common. A longer survival of the animal seemed essential for producing the kidney picture. The gross specimens exhibited here and the microscopic specimen showing the glomerular lesion are from a dog which lived 17 days. The glomerular lesion consists of partial thrombosis of the tuft with hyaline degeneration and with hemorrhage and infiltration with polymorph. leucocytes. One of the most important results of this work is that we have reproduced a bacterial infectious disease which is of sufficient duration to permit thorough study of many of the unknown factors of infection and immunity.