Rotation of the ventricular electrical axis could be the result: (a) of mechanical factors that change the position of the ventricle; (b) of a change in the position of the leads that causes a relative rotation of the heart; (c) of damage to one part of the ventricular musculature with collapse, the contraction of scar tissue, or dilatation of the damaged area; (d) of thickening of one part of the ventricular musculature.

The work of Pardee,[1] Willius[2] and others suggests that most large Q-waves are caused by the mechanism described in "C" above, but in any particular electrocardiogram there is no more reason for considering a large Q-3 or a large Q-1 of itself indicative of coronary artery or myocardial disease than there is for regarding a deep S-3 as always indicative of hypertrophy of the left ventricle.

7063 P

Antistreptolysin Titre of the Serum in Acute Glomerular Nephritis.

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Todd[1] has demonstrated that the serums of animals immunized with *S. hemolyticus* develop a significant amount of an antibody which inhibits the activity of the streptococcal hemolysin. The serums of animals immunized to a number of other bacteria (pneumococcus, hemolytic staphylococcus, non-hemolytic streptococcus, and *B. diphtheriae*) do not contain appreciable quantities of this antihemolysin.

In subsequent studies Todd[2] working in conjunction with Coburn and Pauli[3] showed that there was a consistent increase in the antistreptohemolysin titre (termed antistreptolysin by Todd) in human serums *after* hemolytic streptococcus infections. This antibody did not appear in significant amounts in the serums of patients convalescing from such other infections as lobar pneumonia, hemolytic staphylococcus osteomyelitis, joint tuberculosis and measles. The presence of high antistreptolysin titres in the serums of patients with rheumatic fever was additional immunological evidence lead-

[1] Todd, E. W., *J. Exp. Med.*, 1932, **55**, 267.

[2] Todd, E. W., *Brit. J. Exp. Path.*, 1932, **13**, 248.

[3] Coburn, A. F., and Pauli, R. H., *J. Exp. Med.*, 1932, **56**, 609.

ing to Coburn and Pauli's hypothesis that *S. hemolyticus* initiates the rheumatic process.

Todd found that at least 0.01 cc. of the serum of a normal individual without a recent hemolytic streptococcus infection was required to neutralize the hemolysin unit he utilized. He observed that as little as 0.0008 cc. of the serum of patients convalescing from hemolytic streptococcus disease contained the same neutralizing dose of antistreptolysin. Todd has described the antihemolysin titres of serums by recording the reciprocals of the fractions of the neutralizing doses of the serums as units. Thus a neutralizing dose (N.D.) of 0.01 cc. is equivalent to 100 units of antistreptolysin. He considers this value the upper limit of normal in the serums of healthy individuals without a preceding hemolytic streptococcus infection.

TABLE I.
Antistreptolysin Titre of Sera in Acute Glomerular Nephritis.

	N.D.* cc.	Units of antistreptolysin	Preceding infection	Associated Organism	Days between serum withdrawal and onset of preceding infection	Days between serum withdrawal and onset of acute nephritis
1	.001	1000	Pharyngitis	Hem. Strep.	38	24
2	.003	333	Mastoiditis	" "	58	43
3	.007	144	Peritons. Abscess	" "	8	6
4	.006	166	" "	No Hem. Strep.	24	13
5	.001	1000	Pharyngitis	" " "	63	57
6	.008	125	Peritons. Abscess	Hem. Strep.	26	14
7	.01	100	" "	No Hem. Strep.	17	8
8	.002	500	Pharyngitis	" " "	22	13
9	.003	333	"	Hem. Strep.	28	10
10	.003	333	Sinusitis	" "	22	12
11	.002	500	Pharyngitis Cervical adenitis	" "	14	14
12	.004	250	Mastoiditis	" "	18	20
13	.007	144	Otitis media	" "	46	27
14	.003	333	Pharyngitis	" "	30	15
15	.0008	1250	Otitis media Cervical adenitis	" "	24	21
16	.004	250	Pharyngitis Cervical adenitis	No Hem. Strep.	21	11
17	.005	200	Sinusitis	Hem. Strep.	31	23
18	.005	200	Peritons. Abscess Cervical adenitis	" "	41	29
19	.005	200	Pharyngitis	No Hem. Strep.	43	20
20	.01	100	"	Hem. Strep.	52	38
21	.006	166	None	No Hem. Strep. in throat culture		30
22	.007	144	Otitis media	Hem. Strep.	29	19

*N.D. Fraction of a cc. of the patient's serum required to neutralize 2.5 Minimal Hemolytic Doses (M.H.D.) of streptolysin.
100 units of antistreptolysin is equivalent to the N.D. expressed as 0.01 cc.

The accompanying table shows the degree of the antistreptolysin titre* of the serum 6-57 days after the onset of acute glomerular nephritis in 22 unselected cases. A throat or upper respiratory infection preceded the onset of acute nephritis in 21 of these patients. Fifteen of these infections were associated with the presence of the hemolytic streptococcus in the pharynx.

Twenty of the 22 serums from this group of cases contain a sufficiently high antistreptolysin titre to be indicative of a recent hemolytic streptococcus infection. The remaining 2 serums contain 100 units each of the antibody. These data offer strong additional evidence to the concept that acute glomerular nephritis in New York City is chiefly related to a preceding hemolytic streptococcus infection.

7064 P

Blood Cytology of Normal Rabbits as an Index of Their Reaction to Experimental Syphilis.

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The possibility that the blood cytology might furnish indices of resistance and susceptibility to disease has been considered in the studies on the blood of rabbits carried out in this laboratory. The procedure has been to make a series of blood counts on groups of young adult male rabbits over a period of weeks or months; the animals were then inoculated with some pathogenic agent, or were kept under observation until a spontaneous disease, such as snuffles, developed. Upon the basis of careful clinical and postmortem examinations, the severity of the disease in each rabbit was quantitatively estimated. An attempt was then made to ascertain whether any relationship existed between the conditions found in the blood before inoculation and the severity of the disease which developed. For these analyses, the mean preinoculation blood cell values for each animal were used. In the case of a transmissible malignant tumor, certain definite relationships were found, some of which have been

* All the streptolysin determinations were made through the kindness of Miss Ruth H. Pauli.