before the start of the infection. On the second day the count rises, although the counts in the non-surviving animals tend to lag behind. By the third day the mononuclears in all animals or groups increase to a greater or less degree regardless of what the outcome will be, and this increase is usually maintained. In those animals that develop a negative culture on the fourth or fifth day the mononuclears usually remain low (at about the same level as before infection) up to the day before the negative culture, and on this date these cells show a definite increase.

It may then be assumed that changes in the number of mononuclear cells in the circulating blood during the earlier periods of the infection (during the first 24 hours) cannot be associated with and will not serve to predict the eventual outcome of the infection.

As regards the relationship of the increase of the mononuclears just before recovery the fact that a rise in these cells occurs at this same general period in most groups regardless of the outcome, raises doubt as to the interpretation of this reaction. It may be noted, however, that reaction of the mononuclears in animals recovering may be one of two types: (1) In the group that recovered on the fourth or fifth day there may be a definite association with an increase in the number of mononuclears as shown by the earlier low level and the sharp rise just before recovery; (2) in those animals that do not recover until after the fifth day, there does not appear to be any association between a rise of the mononuclears and immediate processes of recovery. If the mononuclear leucocytes are of importance in recovery from pneumococcal infection, it seems possible that their rôle is more definite in the first type of reaction, while in the second type of reaction they are less important.

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Serum Amino Nitrogen Concentration in Different Parts of the Vascular System.

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During investigations on amino nitrogen transport in the body a few studies were made on the amino nitrogen level in blood as it courses the vascular system. The observations were on dogs under

nembutal anesthesia after they had been fed Purina Dog Chow exclusively for one to 2 weeks and then fasted 24 hours. Venous blood samples, except those from the femoral vein, were obtained by passing a long straight cannula with a closely fitting stilet through an opening in the external jugular vein, down through the right auricle to the lower part of the inferior vena cava. Specimens were first taken from the lower and upper parts of the inferior vena cava (below and above the renal veins). With a little manipulation the cannula could then be placed and held snugly in a branch of the hepatic vein and venous blood from the liver thus obtained. Finally samples were removed from the right heart and superior vena cava. Three workers could obtain the 7 samples of blood, including the arterial, almost simultaneously. Blood was promptly centrifuged and amino nitrogen determinations made on the serum in duplicate by a modification of the Folin method.

The results are presented in Table I. In 4 (Nos. 1 to 4) the amino nitrogen in the venous blood from the liver was definitely lower than the arterial level. These have been averaged to contrast with 7 (Nos. 5 to 11) in which blood from the liver was approximately the same as the arterial. The averages are recorded graphically in Fig. 1. The magnitude of the changes is noteworthy.

There was, as a rule, a distinct rise in amino nitrogen concentration as blood passed from artery to the femoral vein and a further rise in the lower part of the inferior vena cava. Above the renal veins there was a decided fall. Renal amino nitrogen clearance studies have presented figures high enough to account for this drop. The concentration in the superior vena cava blood was only slightly

TABLE I.

Serum Amino Nitrogen in mg per 100 ml. Duplicate Determinations were as a Rule Identical and Only Those Figures Marked (?) Varied More than 0.2 mg.

	Femoral Artery	Femoral Vein	Lower, Inf. Vena Cava	Upper, Inf. Vena Cava	Hepatic Vein	Superior Vena Cava	Right Heart
1	5.1	5.7	6.7	6.7	4.8	5.6	5.1
2	5.9	6.1	6.3	5.7	5.2	5.9	5.9
3	5.2 (?)	6.1	5.6	4.8	4.4	5.4	5.2
4	5.4	5.5	6.4	5.5	5.0	5.6	5.4
Av.	5.4	5.8	6.2	5.7	4.8	5.6	5.4
5	4.3	4.8	4.8	4.5	4.2	4.1	4.3
6	4.6	5.9	6.0	4.7	4.7	4.7	4.4
7	5.7	5.7	6.7	5.7	5.8	5.8	5.6
8	4.8	5.3	5.5	4.9	5.1	5.0	4.9
9	4.9	5.2	5.5	5.1	5.0	5.0	4.9
10	4.6 (?)	5.1	4.8	5.1	4.9	4.9	4.9
11	5.1	5.7	5.8	5.1	5.1	5.5	5.1
Av.	4.9	5.4	5.6	5.0	5.0	5.0	4.9

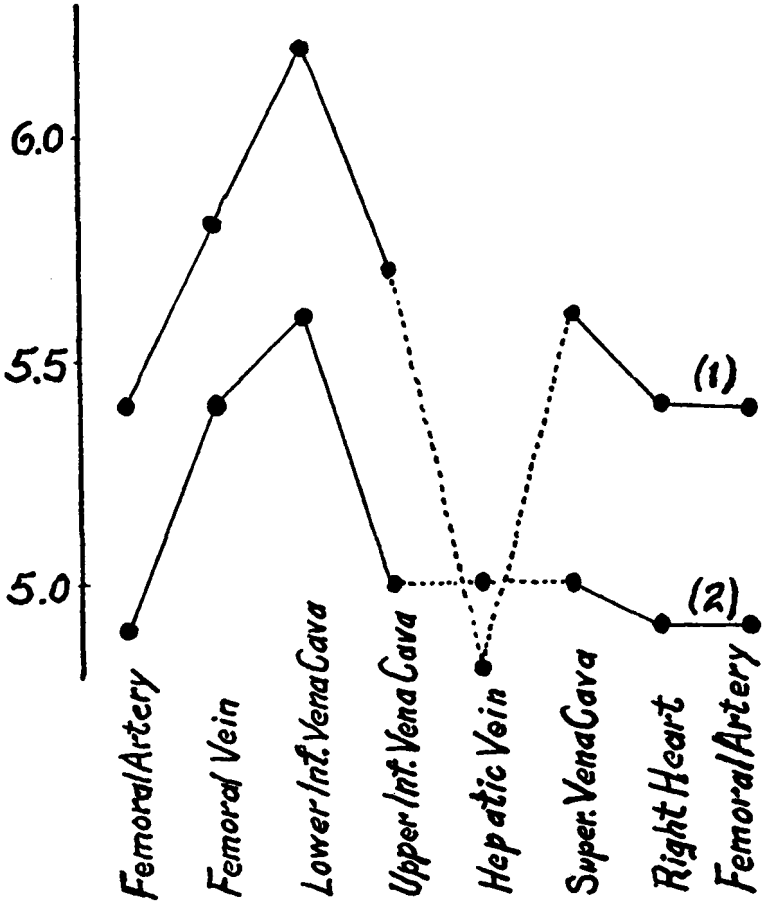

FIG. 1.

Showing relative concentrations of serum amino nitrogen of arterial blood and of blood from various parts of the venous system. In group (1) the concentration in blood from the liver was lower than the arterial level. In group (2) they were at the same level.

greater than in the arterial. That of the right and left (arterial blood) side of the heart was usually the same, thus indicating no change in amino nitrogen level in the pulmonary circuit.

Comparing (Fig. 1) those experiments in group (1) in which the amino nitrogen concentration in the blood from the liver was distinctly lower than the arterial level (suggesting rapid removal by the liver) with those of group (2) one notes no striking difference except that the average level of amino nitrogen was definitely higher in the former.