recovered by us in 1937 and 1938, accounting for 35% of our typed organisms. Types 13, 15, 25, 27 and 28, together accounted for 25%. Types 4 and 22, which had been predominant in 1935-36, were recovered only occasionally. Type 10 (N.Y.5) was the only type not recovered in New York City during these 4 years. In contrast, types 10, 8, and 1 were most prevalent in the throat flora of Tokyo during this period of study.[6]

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Concentration of Prothrombin in Blood of Babies (3 to 7 Days Old).

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The ease with which nutritional deficiency states develop in young infants suggests the advisability of studying their prothrombin level, since it is now known that vitamin K is required for the synthesis of this clotting factor.

Blood was obtained by venipuncture from normal healthy infants varying in age from 3 to 7 days. The prothrombin was quantitatively determined by the senior author's method[1] on both the undiluted plasma and on plasma diluted with an equal volume of saline solution. Typical cases of this series are presented in Table I.

The results plainly show that the prothrombin concentration in the blood of the babies studied was essentially the same as that of normal adult blood. It was found, however, that the prothrombin diminished in infants' blood more rapidly than from that of adults, and curiously in a few bloods, such as Case 3, the decrease of prothrombin was strikingly rapid when the plasma was diluted.

These findings are completely at variance with those reported by Brinkhous, Smith and Warner.[2] In their series the prothrombin concentration of the bloods of the 3 babies who were less than 11 days old were 27, 36, and 44% of normal. Furthermore, even in infants 2 months old, they found that the prothrombin was less than

[6] Kodama, T., personal communication.

[1] Quick, A. J., *J. A. M. A.*, 1938, **110**, 1658.

[2] Brinkhous, K. M., Smith, H. P., and Warner, E. D., *Am. J. Med. Sci.*, 1937, **193**, 475.

TABLE I.

Case	Age of infant, days	Clotting time in seconds (Quick's method) Undiluted plasma	Plasma diluted with equal vol. saline sol.
1	3	11	15
2	3	11½	15½
3	3	12	16*
4	4	12	15½
5	4	12	15
6	5	11	15
7	5	11	15
8	7	12	15½
Normal control†		11-11½	15

*Clotting time after standing 5 minutes was 25 seconds.
†Adult blood.

50% of the adult level. In view of the exceedingly low incidence of hemorrhage in very young infants, such low prothrombin values seem rather surprising. It must be remembered that the methods of both Smith and Quick are empirical and based on certain unproved assumptions. Smith and his coworkers take for granted that high dilution of plasma does not alter the prothrombin, but does inactivate the normal antithrombin. The latter has been shown to be either serum albumin or a substance closely associated with this fraction,[3] and it is conceivable that there may be a sufficient difference in the serum proteins of the newborn from that of adults to modify the antithrombic action. Further study is necessary before it is possible to account for the singular results obtained by Smith and his coworkers. In view of the fact that the author's method has proved itself a sensitive and delicate test for determining prothrombin reduction in sweet clover disease,[4] vitamin K deficiency in the chick,[4] in the rat,[5] in chloroform poisoning,[1] and in certain cases of obstructive jaundice,[1, 6] it seems reasonable to believe that it would not fail to disclose a low prothrombin level in babies if such actually existed.

[3] Quick, A. J., *Am. J. Physiol.*, 1938, **123**, 712.

[4] Quick, A. J., *Am. J. Physiol.*, 1936, **118**, 260.

[5] Greaves, J. D., *Am. J. Physiol.*, 1939, **125**, 429.

[6] Quick, A. J., Stanley-Brown, M., and Bancroft, F. W., *Am. J. Med. Sci.*, 1935, **190**, 501.