High Blood Platelet Count in Lactants as an Early Sign of Avitaminosis B.

59th* Report of the Peroxidase Reaction.

By

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In a preceding paper¹⁾ I have shown that most of "healthy" mothers secreting human milk negative to Arakawa's reaction,²⁾ are in a state of avitaminosis B on the basis of the results of blood platelet count. Here a summary result is cited from the paper (Cf. Table I).

As was shown in this table (Table I), almost all the cases of strongly Arakawa-positive cases are of the platelet count from 100 to 400 thousands, and the majority of all the Arakawa-negative cases are of the count from 400 to 1,000 thousands.

TABLE I.

Distribution of Arakawa-positive and -negative cases according to blood platelet count.

Number of blood platelet	With strongly Arakawa-positive cases (52 in all)	With completely Arakawa-positive cases (48 in all)
100,000- 400,000	96.2% (50 cases)	18.8% (9 cases)
410,000- 700,000	3.8% (2 cases)	60.4% (29 cases)
710,000-1000,000	0	20.8% (10 cases)

* This is my 2nd report on the relation between avitaminosis B and blood platelet count.

1) J. Kimura, Tohoku J. Exp. Med., 1934, 23, 494.

2) T. Arakawa, Tohoku J. Exp. Med., 1930, 16, 118.

Average of blood platelet counts according to Arakawa-positive and -negative cases.

	Strongly Arakawa-positive cases (52 in all)	Completely Arakawa-negative cases (48 in all)
Number of blood platelets	266,000	560,000

* Table V (A) (B) in the preceding paper.

Errata in the 47th Report of the Peroxidase Reaction (Tohoku J. Exp. Med., 1934, 23).

1) Table V (B) should be as follows:

Average of blood platelet counts according to Arakawa-positive and -negative cases.

	Strongly Arakawa-positive cases (52 in all)	Completely Arakawa-negative cases (48 in all)
Number of blood platelets	266,000 instead of 256,000	560,000 instead of 575,000

2) In the 10th and 11th line respectively of P. 503:—
266,000 instead of 256,000
560,000 instead of 575,000

All the results shown in the preceding paper¹⁾ of mine concerned only strongly Arakawa-positive and completely Arakawa-negative cases, or, only those mothers whose milk was normally or strongly positive** to Arakawa's reaction or those lactants whose milk was completely negative.*** As to the intermediate case, i. e. the cases with human milk of different intermediate intensities of Arakawa's reaction it may not be difficult to suppose that they will come between both extremities. The present paper treats of the actual result of investigation.

Method of Investigation.

1. Materials. As stated above, mothers with human milk of Arakawa's reaction of different intensities were examined, though strongly Arakawa-positive and completely Arakawa-negative cases were also examined.

All the lactants were "healthy" and of course they had not been

** Arakawa's reaction of the intensity (+++ or ++ in one minute.

*** Arakawa's reaction of the intensity (—) in five minutes.

taking vitamine B preparations. However, I excluded mothers who had menses³⁾ at the time.

2. Platelet count. I used Lampert's⁴⁾ method. The ear lobe was cleaned with ether, and a cut was made with Frank's needle. Blood was taken into the "A-thrombit" and diluted with Tyrode's solution. After shaking the pipette for a few minutes, the sixth drop of the contents was examined for blood platelets. Blood taking took place between 10 and 11 A.M., when mothers were in a fasting state.

Results of Investigation.

100 cases were examined during 4 months beginning August 1933. All the results will be shown in Tables II, III and IV.

1. Distribution of Arakawa-positive and-negative and intermediate cases according to the platelet count. Strongly Arakawa-positive cases were not so numerous as in the preceding paper,¹⁾ but the majority of all the cases examined were of the count from 100-300 thousands, while a large majority of completely Arakawa-negative cases were of the count from 400-1,000 thousands. The above result is almost as described in the preceding paper.¹⁾

Now if one gives a glance at Table V, one will see that all the cases of intermediate reactions have fallen between the strongly (or normally) Arakawa-positive and the completely Arakawa-negative cases (Cf. Table V). And the result will further be shown more simply in Table VI (A) and in Figure, because all the strongly Arakawa-positive cases have come under the column 100-400,000, and the large majority of completely Arakawa-negative cases under the columns 410,000-700,000 and 710,000-1,000,000, while cases with intermediate reactions are partly (almost half the cases) under the column 100,000-400,000 and partly (slightly more than half the cases) under the column 410,000-700,000 (Cf. Table VI A).

If the average figures of the strongly Arakawa-positive, intermediate, and completely Arakawa-negative cases are given in Table VI B, then the cases with strong (or normal) Arakawa's reaction have shown an average of 267,000, the intermediate cases an average of 428,000, and the completely Arakawa-negative cases an average of 586,000. The relation among the three is thus 10:16:22, or if rounded off, $1:\frac{3}{2}:2$ (Cf. Tables V, VI, VII and Figure).

3) T. Ootsuka, *Kyotofuritsu Ikadaigaku Zasshi.*, 1932, 6, 2434.

4) H. Lampert, *Verh. Dtsch. Ges. inn. Med.*, 1931, 43, 92.

TABLE II.
Blood platelet count in lactants with milk of strong Arakawa's reaction.

Blood platelet counts in various diseases										
Number of experiment	Month of experiment	Diagnosis of infant	Age of infant m=month y=year	Arakawa's reaction						Number of mother's blood platelet per cmm.
				right			left			
				(0') (1') (2') (3') (4') (5')		(0') (1') (2') (3') (4') (5')				
No. 1	August	Dyspepsia and hypotrophy	9 m.	(-)	(+)	(+)	(+)	(+)	(+)	290,000
No. 2	"	Atrophy and amblyopia	9 m.	(+)	(+)	(+)	(+)	(+)	(+)	190,000
No. 3	"	biodysentery	7 m.	(+)	(+)	(+)	(+)	(+)	(+)	260,000
No. 4	"	Hypotrophy and anemia	5 m.	(+)	(+)	(+)	(+)	(+)	(+)	220,000
No. 5	September	Paralysis of left leg	11 m.	(+)	(+)	(+)	(+)	(+)	(+)	250,000
No. 6	"	Rhinitis and dyspepsia	11 m.	(+)	(+)	(+)	(+)	(+)	(+)	340,000
No. 7	October	Pyelocystitis	1 y. 1 m.	(+)	(+)	(+)	(+)	(+)	(+)	220,000
No. 8	"	Abdominal tumor	2 m.	(+)	(+)	(+)	(+)	(+)	(+)	320,000
No. 9	"	Poisoning of mother's milk	11 m.	(+)	(+)	(+)	(+)	(+)	(+)	320,000
No. 10	November	Angina and bronchitis	1 y.	(+)	(+)	(+)	(+)	(+)	(+)	290,000
No. 11	"	Cystitis	1 y. 3 m.	(+)	(+)	(+)	(+)	(+)	(+)	240,000
		Anemia		(+)	(+)	(+)	(+)	(+)	(+)	

TABLE III.
Blood platelet count of lactants with milk of Arakawa's reaction of intermediate strengths.

Number of experiment	Month of experiment	Diagnosis of infant	Age of infant m=month y=year	Arakawa's reaction						Number of mother's blood platelet per cmm.	Remark of mother
				right			left				
				(0') (1') (2') (3') (4') (5')		(0') (1') (2') (3') (4') (5')					
No. 1	September	Rhinopharyngitis	10 m.	(-) (±) (+) (++) (++) (++)		(-) (±) (+) (+) (+) (+)		450,000			
No. 2	"	Dyspepsia	1 y.	(-) (±) (++) (++) (++) (++)		(-) (+) (++) (++) (++) (++)		320,000			
No. 3	"	Dyspepsia	2 m.	(-) (++) (++) (++) (++) (++)		(-) (+) (++) (++) (++) (++)		650,000			
No. 4	"	Stomatitis	1 y. 5 m.	(±) (++) (++) (++) (++) (++)		(±) (++) (++) (++) (++) (++)		300,000			
No. 5	"	Dyspepsia	1 y. 1 m.	(±) (++) (++) (++) (++) (++)		(±) (++) (++) (++) (++) (++)		410,000			
No. 6	"	Rhinitis	2 m.	(-) (++) (++) (++) (++) (++)		(±) (++) (++) (++) (++) (++)		260,000		Berberi 7 years ago	
No. 7	October	Rhinopharyngitis and dyspepsia	5 m.	(-) (++) (++) (++) (++) (++)		(±) (+) (++) (++) (++) (++)		270,000		Berberi 5 years ago	
No. 8	"	Rhinopharyngitis and dyspepsia	10 m.	(-) (-) (±) (+) (+) (+)		(±) (++) (++) (++) (++) (++)		330,000		Berberi 4 years ago	
No. 9	"	Rhinopharyngitis and infantile beriberi?	9 m.	(-) (-) (-) (-) (-) (-)		(-) (±) (+) (+) (++) (++)		540,000			
No. 10	"	Rhinopharyngitis	10 m.	(-) (-) (±) (±) (±) (+)		(+) (++) (++) (++) (++) (++)		460,000			
No. 11	"	Infantile preberiberi and hydrocele	2 m.	(-) (±) (+) (+) (+) (++)		(-) (-) (-) (-) (-) (-)		550,000			
No. 12	"	Bronchopneumonia	1 y.	(-) (-) (-) (-) (-) (±)		(-) (-) (-) (-) (±) (±)		510,000		Berberi 8 years ago	
No. 13	"	Bronchitis	6 m.	(±) (+) (++) (++) (++) (++)		(±) (+) (++) (++) (++) (++)		370,000			
No. 14	"	Dyspepsia	8 m.	(-) (-) (±) (±) (+) (+)		(-) (-) (-) (-) (-) (±)		340,000			
No. 15	"	B-avitaminotic dyspepsia	7 m.	(-) (-) (±) (±) (++) (++)		(-) (-) (-) (-) (-) (+)		350,000			
No. 16	November	B-avitaminotic dyspepsia	1 y. 5 m.	(-) (+) (+) (++) (++) (++)		(-) (++) (++) (++) (++) (++)		300,000			
No. 17	"	Dyspepsia	1 y. 7 m.	(±) (++) (++) (++) (++) (++)		(±) (++) (++) (++) (++) (++)		320,000			
No. 18	"	Dyspepsia	1 y. 5 m.	(-) (-) (±) (+) (++) (++)		(-) (-) (-) (-) (-) (-)		430,000			
No. 19	"	Rhinopharyngitis anemia	1 y. 5 m.	(-) (-) (-) (-) (-) (-)		(-) (+) (++) (++) (++) (++)		450,000			

		2 y. 3 m.	(-) (+) (++) (+++) (HH)	(-) (±) (+) (++) (++)	460,000	Berberi last year
No. 20	Rhinopharyngitis stomatitis	1 y. 8 m.	(-) (+) (++) (HH) (HH) (HH)	(-) (±) (+) (++) (++) (HH)	350,000	
No. 21	Bronchitis with angina	8 m.	(-) (-) (±) (+) (+) (++)	(-) (-) (±) (+) (+) (+)	490,000	Berberi last year
No. 22	Rhinopharyngitis	5 m.	(-) (-) (±) (±) (+) (+)	(-) (-) (±) (±) (±) (±)	520,000	
No. 23	Infantile beriberi	1 y.	(-) (±) (±) (±) (++) (++)	(-) (-) (-) (-) (-) (-) (-)	610,000	
No. 24	Rhinopharyngitis	1 y. 3 m.	(-) (±) (±) (±) (++) (++)	(-) (±) (+) (-) (-) (-) (-)	470,000	
No. 25	Feeble mindedness	1 m.	(-) (-) (-) (-) (-) (-) (±)	(-) (-) (±) (+) (+) (+) (+)	550,000	
No. 26	Infantile preberiberi	1 y. 9 m.	(-) (-) (-) (±) (+) (+)	(-) (-) (-) (-) (-) (±) (±)	520,000	
No. 27	Stomatitis	7 m.	(-) (-) (-) (±) (+) (+)	(-) (-) (-) (-) (±) (+) (+)	500,000	Mastitis (left side)
No. 28	Bronchopneumonia dyspepsia	1 y. 1 m.	(-) (-) (+) (+) (++) (++)	(-) (-) (-) (-) (-) (-) (-)	370,000	
No. 29	Atrophy	1 y.	(-) (-) (±) (+) (++) (++)	(-) (-) (-) (-) (±) (+) (+)	590,000	
No. 30	Dyspepsia with atrophy	1 y. 3 m.	(-) (±) (+) (++) (++) (HH)	(-) (-) (±) (±) (+) (+) (+)	360,000	
No. 31	Bronchitis with B-vitaminotic?	1 y. 9 m.	(-) (++) (HH) (HH) (HH) (HH)	(-) (+) (++) (HH) (HH) (HH)	340,000	
No. 32	Dyspepsia with rhinopharyngitis	1 y. 4 m.	(-) (-) (-) (-) (-) (±)	(-) (-) (±) (±) (+) (+) (+)	520,000	
No. 33	Dyspepsia.	1 y. 1 m.	(-) (++) (++) (HH) (HH) (HH)	(-) (+) (++) (HH) (HH) (HH)	350,000	
No. 34	Rhinopharyngitis with laryngitis	5 m.	(-) (-) (±) (±) (±) (+)	(-) (±) (+) (+) (+) (+) (+)	510,000	
No. 35	Rhinopharyngitis mit dyspepsia	2 y. 8 m.	(-) (±) (+) (+) (++) (++)	(-) (±) (±) (+) (+) (+) (+)	430,000	
No. 36	Hypotrophy, dyspepsia	4 m.	(-) (-) (-) (-) (-) (-)	(-) (±) (+) (+) (++) (++)	290,000	
No. 37	Dyspepsia B-vita-minotic	4 m.	(±) (++) (HH) (HH) (HH) (HH)	(-) (±) (±) (±) (±) (±)	400,000	
No. 38	Acute bronchitis	6 m.	(-) (-) (±) (+) (+) (++)	(-) (+) (++) (++) (HH) (HH)	380,000	
No. 39	Dyspepsia with rhinopharyngitis	11 m.	(-) (-) (-) (±) (±) (+)	(-) (-) (±) (+) (+) (+) (+)	410,000	Berberi 7 years ago
No. 40	Acute bronchitis with rhinopharyngitis	1 y. 8 m.	(-) (-) (-) (±) (+) (++)	(-) (-) (-) (±) (+) (+) (+)	590,000	
No. 41	Rhinopharyngitis	9 m.	(±) (HH) (HH) (HH) (HH) (HH)	(-) (++) (++) (HH) (HH) (HH)	310,000	
No. 42	Dyspepsia, anemia and abdominal tumor	1 y. 7 m.	(-) (-) (±) (+) (+) (++)	(-) (±) (+) (+) (++) (++)	440,000	
No. 43	Bronchitis	1 y. 11 m.	(-) (-) (-) (-) (-) (±)	(-) (-) (-) (-) (-) (-) (-)	480,000	
No. 44	Pulmonary tuberculosis?					

TABLE IV.
Blood platelet count of lactants with completely (or almost completely) Arakawa-negative milk.

Number of experiment	Month of experiment	Diagnosis of infant	Age of infant m = month y = year	A r a k a w a ' s r e a c t i o n						Number of mother's blood platelet per cmm.	Remark of mother
				right			left				
				(0') (1') (2') (3') (4') (5')	(0') (1') (2') (3') (4') (5')	(0') (1') (2') (3') (4') (5')	(0') (1') (2') (3') (4') (5')				
No. 1	August	Dyspepsia with decomposition	1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	340,000	Beriberi 7 years ago		
No. 2	September	Dyspepsia with decomposition	8 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	540,000			
No. 3	"	Feeble mindedness	2 y. 1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	520,000			
No. 4	"	Osteochondritis and syphilis	2 m.	(-) (-) (-) (-) (-) (±)	(-) (-) (-) (-) (-) (±)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	560,000			
No. 5	"	Infantile preberiberi	1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	900,000			
No. 6	"	Dyspepsia	3 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	320,000			
No. 7	October	Hereditary syphilis icterus	1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	540,000			
No. 8	"	Infantile preberiberi	1 y. 7 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	380,000			
No. 9	"	Infantile preberiberi	1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	400,000			
No. 10	"	Infantile preberiberi	2 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	480,000			
No. 11	"	Redch extremitaten?	1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	540,000			
No. 12	"	Broncho-pneumonia	1 y. 1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	510,000			
No. 13	"	Infantile preberiberi	1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	520,000			
No. 14	"	Syphilitic osteochondritis	1 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	580,000			
No. 15	"	Infantile beriberi	4 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	450,000			
No. 16	November	Angina and bronchitis	1 y.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	570,000			
No. 17	"	Infantile beriberi	1 y. 5 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	550,000			
No. 18	"	Dyspepsia	10 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	430,000			
No. 19	"	Infantile beriberi	1 y.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	910,000	Beriberi 4 years ago		
No. 20	"	Avitaminotic dyspepsia and infantile preberiberi	11 y. 3 m.	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	(-) (-) (-) (-) (-) (-)	670,000			

[illegible]

TABLE V.

Distribution of A r a k a w a-positive, -intermediate and -negative cases according to the blood platelet count.

Number of blood platelet	Strongly* A r a k a w a-positive cases (11 in all)	Cases with inter- mediate A r a k a w a's reaction (44 in all)	Completely (or almost completely) A r a k a w a-negative cases (45 in all)
100,000- 200,000	9.2% (1 case)	0	0
210,000- 300,000	63.6% (7 cases)	11.4% (5 caess)	0
310,000- 400,000	27.2% (3 cases)	31.8% (14 cases)	8.9% (4 cases)
410,000- 500,000	0	29.5% (13 cases)	11.1% (5 cases)
510,000- 600,000	0	22.7% (10 cases)	51.1% (23 caess)
610,000- 700,000	0	4.5% (2 cases)	8.9% (4 cases)
710,000- 800,000	0	0	11.1% (5 cases)
810,000- 900,000	0	0	6.7% (3 cases)
910,000-1000,000	0	0	2.2% (1 case)

* Strongly A r a k a w a-positive (and normally A r a k a w a-positive) cases (also in Tables I, VI, VII and IX).

TABLE VI (A).

Distribution of A r a k a w a-positive, -intermediate and -negative cases according to the blood platelet count.

Number of blood platelet	Strongly A r a k a w a-positive cases (11 in all)	Cases with inter- mediate A r a k a w a's reaction (44 in all)	Completely (or almost completely) A r a k a w a-negative cases (45 in all)
100,000- 400,000	100% (11 cases)	43.2% (19 cases)	8.9% (4 cases)
410,000- 700,000	0	56.7% (25 caess)	71.1% (32 cases)
710,000-1000,000	0	0	20.0% (9 cases)

TABLE VI (B).

Average according to A r a k a w a-positive -intermediate and -negative cases of blood platelet counts.

	Strongly A r a k a w a-positive cases (11 in all)	Cases with inter- mediate A r a k a w a's reaction (44 in all)	Completely (or almost completely) A r a k a w a-negative cases (45 in all)
Number of blood platelet	267,000	428,000	586,000

TABLE VII (A).

Distribution of Arakawa-positive, -intermediate and -negative cases according to blood platelet count.

Number of blood platelet	Strongly Arakawa-positive cases (63 in all)	Cases with intermediate Arakawa's reaction (44 in all)	Completely (or almost completely) Arakawa-negative cases (93 in all)
100,000- 200,000	15.9% (10 cases)	0	0
210,000- 300,000	60.3% (38 cases)	11.4% (5 cases)	4.3% (4 cases)
310,000- 400,000	20.6% (13 cases)	31.8% (14 cases)	9.7% (9 cases)
410,000- 500,000	1.6% (1 case)	29.5% (13 cases)	18.3% (17 cases)
510,000- 600,000	1.6% (1 case)	29.9% (10 cases)	35.5% (32 cases)
610,000- 700,000	0	4.5% (2 cases)	1.8% (11 cases)
710,000- 800,000	0	0	8.6% (8 cases)
810,000- 900,000	0	0	8.6% (8 cases)
910,000-1000,000	0	0	3.2% (3 cases)

TABLE VII (B).

Distribution of Arakawa-positive, -intermediate and -negative cases according to the blood platelet count.

Number of blood platelet	Strongly Arakawa-positive cases (63 in all)	Cases with intermediate Arakawa-reaction (44 in all)	Completely (or almost completely) Arakawa-negative cases (93 in all)
100,000- 400,000	96.8% (61 cases)	43.2% (19 cases)	14.0% (13 cases)
410,000- 700,000	3.2% (2 cases)	56.7% (25 cases)	65.6% (61 cases)
710,000-1000,000	0	0	20.4% (19 cases)

TABLE VII (C).

Average according to Arakawa-positive -intermediate and -negative case of blood platelet counts.

	Strongly Arakawa-positive cases (63 in all)	Cases with intermediate Arakawa-reaction (44 in all)	Completely (or almost completely) Arakawa-negative cases (93 in all)
Number of blood platelet	267,000	428,000	573,000

Fig. 1. Distribution of Arakawa-positive, -intermediate and -negative cases.

In the preceding paper,¹⁾ it has been shown that "healthy" mothers with completely Arakawa-negative reaction are already in a state of avitaminosis B. Now how about those cases with Arakawa's reaction of intermediate strengths? I shall come to this problem in the next paragraph.

2. Distribution of platelet count of intermediate cases according to the strength of Arakawa's reaction. All the examined cases in this paper are divid-

ed into 7 groups according to the strength of Arakawa's reaction, and the average figure of the platelet count of each group is given. Then the result will be as in the following table (Cf. Table VIII).

The table (Table VIII) will show at a glance that even among the cases with intermediate reactions, the blood platelet count is different according to the intensity of Arakawa's reaction, though unfortunately the cases in each group are not uniform in number and the cases

TABLE VIII.*

Distribution of intermediate cases according to the strength of the reaction and the average platelet count of each group.

	Arakawa's reaction (divided in 7 groups)						Number of materials	Average platelet count	
	(0')	(1')	(2')	(3')	(4')	(5')			
Negative	(-)	(-)	(-)	(-)	(-)	(-)	93 cases	573,000	Count smaller ↓
	(-)	(-)	(-)	(±)	(+)	(+)	9 "	519,000	
	(-)	(±)	(+)	(+)	(+)	(+)	18 "	443,000	
	(±)	(+)	(++)	(++)	(++)	(++)	17 "	365,000	
	(+)	(++)	(++)	(++)	(++)	(++)	14 "	314,000	
	(+)	(++)	(++)	(++)	(++)	(++)	29 "	263,000	
Positive	(++)	(++)	(++)	(++)	(++)	(++)	20 "	238,000	

* This table is compiled of not only all the few cases with equal reaction on both breasts but also all the cases with different reaction; in the latter the Arakawa reaction was expressed in the mean intensity. This is not necessarily unreasonable if the paper of Takamatsu (the 45th Report of the Peroxidase Reaction) is taken into consideration.

with actually equal reactions on both breasts are only but few in number. But it is very interesting to see, as the arrows in the table show, that the average platelet count becomes smaller, as the Arakawa reaction becomes stronger.

As stated above at the beginning of the present paper, it is not difficult to suppose that the cases with Arakawa's reaction of intermediate strengths will, with respect to blood platelet count, come half-way between the strongly Arakawa-positive and the completely Arakawa-negative cases. But such a result as shown in Table VIII was more than I had expected. A general rule can be made on the basis of the result in this table: The weaker the Arakawa reaction, the larger is the blood platelet count.

Now is a case with an intermediate reaction already in a state of avitaminosis B? If we consider the platelet count of 100-300 thousands as normal, then the group of Arakawa's reaction* (+)(+)(+)(++) on both breasts—or the group with the average count 314,000—should be already in a state of B-avitaminose, or at least on the brink of B-avitaminosis. Or, some cases belonging to the group may be healthy and the others will already be B-avitaminotic.

It has again been made probable that only strongly or normally Arakawa-positive cases can generally be said to be free from avitaminosis B, while mothers with weaker reactions are generally in a state of avitaminosis B, in spite of their assurance that they are "healthy."

Appendix.

By way of appendix, I have arranged the infantile cases of all the materials examined in the preceding and present papers, according to the intensity of Arakawa's reaction and the kinds of diseases, and although I do not expect to draw a conclusion from this small table, it is interesting to note a rough distribution of infantile dyspepsia and infantile beriberi among others (Cf. Table IX).

Remarks.

It is a matter of course that a given case with A.R. (−)(−)(−)(±)

* Arakawa's reaction (+)(+)(+)(++) (++) Arakawa's reaction (+) 1' (++) 2' (++) 3' (++) 4' (++) 5'.

(+)* may show a lower platelet count than another with A. R. (-)(-)(±)(+)(+). Besides, the former case with A. R. (-)(-)(-)(±)(+) may secrete human milk with A. R. (-)(-)(±)(+)(+) the next day: Arakawa's reaction is not, in most cases, very strictly constant as will be seen from Prof. Sato and Moriwaki's paper,** read under the title: Proposal of Function Test of Mammary Glands, in April, 1934, in the General Meeting of the Japanese Pediatric Society, Tokyo, but, as has been shown by Uga⁵⁾ (the 56th Report on the Peroxidase Reaction), reliably constant. The present work treats rather with groups with different reactions, not with individual cases. As to individual cases subject to more or less remarkable daily fluctuation of Arakawa's reaction, we shall be able to report in a future treatise.

TABLE IX.

Distribution of Arakawa-positive, -intermediate and -negative cases according to diagnosis of infants.

Diagnosis of infant	Strongly Arakawa-positive cases (63 in all)	Cases with intermediate Arakawa-positive cases	Completely (or almost completely) Arakawa-negative cases (93 in all)
Dyspepsia	30.1% (19 cases)	38.8% (17 cases)	30.1% (28 cases)
Infantile beriberi	0	9.1% (4 cases)	29.6% (21 cases)
Congenital syphilis	0	0	16.2% (11 cases)
Bronchitis	4.8% (3 cases)	13.6% (6 cases)	5.4% (4 cases)
Rhinopharyngitis	14.3% (9 cases)	20.5% (9 cases)	3.2% (3 cases)

Summary.

In a preceding paper¹⁾ of mine I have stated on the basis of blood platelet count that most of "healthy" mothers secreting milk completely negative to Arakawa's reaction are generally in a state of avitaminosis B. In the present paper cases with human milk with intermediate Arakawa's reaction have been investigated. And as was expected, those cases have shown intermediate figures of blood platelet count between those of the strongly Arakawa-positive and the completely Arakawa-negative cases.

The result may be shown better by a small table accompanying (Cf. Table X).

* A. R. (-)(-)(-)(±)(+) . . . Arakawa's reaction (-) 1' (-) 2' (-) 3' (±) 4' (+) 5'.

** The original will be published in the near future in this journal.

5) Y. Uga, Tohoku J. Exp. Med., 1935, 25, 564.

TABLE X.

Arakawa's reaction	Blood platelet count
Group of completely negative reaction	570,000
„ very very weak reaction	520,000
„ very weak reaction	440,000
„ weak reaction.....	360,000
„ moderately positive reaction	310,000
„ strong reaction (or normal reaction) ...	260,000
„ (very) strong reaction	240,000

It has been stated on the basis of blood platelet count that cases with these intermediate reactions are in a state of B-avitaminosis and that even the cases with (+) (++) (++) (###) (###) (###)* are probably on the brink of avitaminosis B.

Conclusions.

“Healthy” mothers who secrete milk completely negative to Arakawa's reaction are, as shown in my preceding paper,¹⁾ in a state of B-avitaminosis. And “healthy” mothers with milk of Arakawa's reaction of intermediate strengths are, as shown on the basis of platelet count, either in a state of B-avitaminosis or on the brink of B-avitaminosis.

* Arakawa's reaction is positive in such a way as (+) 0' (++) 1', (++) 2', (###) 3', (###) 4', (###) 5'.