Blood Platelet Count of Sucklings according to Arakawa's Reaction of Their Mothers.

121st Report of the Peroxidase Reaction.

By

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Introduction.

Our Department has already shown hematologically that lactating women secreting milk negative to Arakawa's reaction are in, or at least are inclined to, a state of avitaminosis B*.

Chiba and Abe,¹⁾ Chiba,²⁾ and Suzuki^{3) 4)} have shown the above mentioned conclusion on the basis of the prolonged short-timed peroxidase reaction of blood leucocytes, Kimura^{5) 6)} on the basis of the increased blood platelet count, Shiraishi⁷⁾ on the basis of increased reticulocyte count. Kokubo⁸⁾ reported that leucocytosis resulting from neutrophilia as well as from lymphocytosis and nuclear shift to the left were found in mothers secreting Arakawa-negative milk. Shiraishi⁹⁾ concluded that a very close relation existed between a remarkable prolongation of the short-timed peroxidase reaction of leucocytes in infants nursed with Arakawa-negative milk and a large

* B₁ is meant throughout the article.

1) M. Chiba and J. Abe, Tohoku J. Exp. Med., 1932, **19**, 479.

2) M. Chiba, Tohoku J. Exp. Med., 1932, **19**, 486.

3) T. Suzuki, Tohoku J. Exp. Med., 1934, **23**, 23.

4) T. Suzuki, Tohoku J. Exp. Med., 1935, **25**, 186.

5) J. Kimura, Tohoku J. Exp. Med., 1934, **23**, 494.

6) J. Kimura, Tohoku J. Exp. Med., 1935, **27**, 360.

7) Sh. Shiraishi, Tohoku J. Exp. Med., 1936, **28**, 44.

8) Y. Kokubo, Tohoku J. Exp. Med., 1936, **29**, 371.

9) Sh. Shiraishi, Tohoku J. Exp. Med., 1937, **31**, 268.

reticulocyte count in their mothers. Except for six reports^{1) 2) 3) 4) 9) 10)} concerning the short-timed peroxidase reaction of leucocytes of infants, three reports of blood finding from the side of babies have been published. Ohta and Suzuki¹⁰⁾ stated that a prolongation of the shortest peroxidase stain-time of blood leucocytes, a sign of avitaminosis B, would occur in infants with a high blood platelet count, another sign of avitaminosis B. Shiraishi and I¹¹⁾ examined the blood picture in 15 cases of infantile preberiberi in comparison with those of 5 cases of infantile beriberi and of 3 cases of B-avitaminotic dyspepsia, and observed a high blood platelet count in these cases. Further, by investigating 237 cases of blood platelets in infants I¹²⁾ obtained the result that in cases of sucklings fed on milk negative to Arakawa's reaction, anemia and thrombocytosis were seen, and that blood platelet counts were larger according as Arakawa's reaction became weaker.

In the present paper I desire to report on the relation between Arakawa's reaction of mothers and blood platelet count of infants, and further on the difference between the cases in which both infants and their mothers had not been taking any vitamin B preparation, and those in which infants and/or their mothers had been taking a vitamin B preparation.

Method of Experiment.

1. Materials. Out- and in-patients of our Pediatric Department during the time from summer of 1934 to spring of 1936.
2. Blood taking. Blood was obtained from an ear lobe and care was taken to avoid disturbance of babies as much as possible.
3. Method. Fonio's method with a slight modification was used. A couple of films were fixed with methyl-alcohol three minutes duration and then stained with Giemsa's stain (2 drops of the stain in 1 c.c. of distilled water) as long as 12 hours, so that platelets were stained quite distinctly.
4. Arakawa's reaction. All the cases were divided into 3 groups according to the intensity of Arakawa's reaction.
 - a. The normally or strongly Arakawa-positive group: Arakawa's reaction of milk from both breasts was normally or strongly positive in one minute.
 - b. Group with intermediate Arakawa's reaction: Arakawa's reaction was chemically positive but clinically negative.

10) F. Ohta and T. Suzuki, Tohoku J. Exp. Med., 1937, 31, 247.

11) Sh. Shiraishi and M. Shindo, Tohoku J. Exp. Med., 1938, 32, 470.

12) M. Shindo, Tohoku J. Exp. Med., 1939, 36, 258.

c. The Arakawa-negative group: Arakawa's reaction of milk from both breast was completely or almost completely negative after five minutes.

The different courses of Arakawa's reaction during 5 minutes were shown by special signs (Cf. Table 1) for simplification.

TABLE 1.

Table of signs for showing different Arakawa's reaction.

	1'	2'	3'	4'	5'		1	2'	3'	4'	5'
1.	1(##)	stands for	##	##	##	##	##				
2.	1(++)	"	++	##	##	##	##				
3.	2(++)	"	++	++	##	##	##				
4.	3(++)	"	++	++	++	##	##				
5.	4(++)	"	++	++	++	++	##				
6.	5(++)	"	++	++	++	++	++				
7.	1(+)	"	+	++	##	##	##				
8.	2(+)	"	+	++	++	##	##				
9.	3(+)	"	+	++	++	++	##				
10.	4(+)	"	+	++	++	++	++				
11.	5(+)	"	+	+	++	##	##				
12.	6(+)	"	+	+	++	++	##				
13.	7(+)	"	+	+	++	++	++				
14.	8(+)	"	+	+	+	++	##				
15.	9(+)	"	+	+	+	++	++				
16.	10(+)	"	+	+	+	+	++				
17.	11(+)	"	+	+	+	+	+				
18.	1(±)	"	±	+	++	##	##				
19.	2(±)	"	±	+	++	++	##				
20.	3(±)	"	±	+	++	++	++				
21.	4(±)	"	±	+	+	++	##				
22.	5(±)	"	±	+	+	++	++				
23.	6(±)	"	±	+	+	+	++				
24.	7(±)	"	±	+	+	+	+				
25.	8(±)	stands for	±	±	+	++	##				
26.	9(±)	"	±	±	+	++	++				
27.	10(±)	"	±	±	+	+	++				
28.	11(±)	"	±	±	+	+	+				
29.	12(±)	"	±	±	±	+	++				
30.	13(±)	"	±	±	±	+	+				
31.	14(±)	"	±	±	±	±	+				
32.	15(±)	"	±	±	±	±	±				
33.	1(-)	"	-	±	+	++	##				
34.	2(-)	"	-	±	+	++	++				
35.	3(-)	"	-	±	+	++	++				
36.	4(-)	"	-	±	+	+	++				
37.	5(-)	"	-	±	±	++	++				
38.	6(-)	"	-	±	±	+	++				
39.	7(-)	"	-	±	±	±	++				
40.	8(-)	"	-	±	±	±	±				
41.	9(-)	"	-	-	±	++	##				
42.	10(-)	"	-	-	±	++	++				
43.	11(-)	"	-	-	±	++	++				
44.	12(-)	"	-	-	±	±	++				
45.	13(-)	"	-	-	-	±	++				
46.	14(-)	"	-	-	-	±	±				
47.	15(-)	"	-	-	-	-	±				
48.	16(-)	"	-	-	-	-	-				

Explanation to the table:—

Take, for instance, the sign: 2(++). This stands for Arakawa's reaction with the course (++)1' (++)2' (##)3' (##)4' (##)5'. The sign does not express any prompt result of the reaction, so the prompt reaction of the sign: 2(++) may be (-)0', (±)0', (+)0' or even (++)0', but this will not matter much, as the result of the reaction in one minute is the most important.

Results.

The cases investigated were 345 in all, and 96 cases among them had already been taking vitamin B preparations. All the cases were divided into 3 groups according to the intensity of Arakawa's reaction. Normally Arakawa-positive cases were shown in Tables 2 and 3, cases with intermediate Arakawa's reaction in Tables 4 and 5, and completely or almost completely Arakawa-negative cases in Tables 6

TABLE 2.

Normally Arakawa-positive cases in which infants and their mothers had not been taking vitamin B preparation.

No.	Name	Sex	Age y=years m=months d=days	Diagnosis*	Arakawa's reaction		Red cell count per cmm. (thousands)	Blood plate- let count per cmm. (thousands)
					Right	Left		
1	E.A.	♀	91 d	P	1 (##)	1 (##)	5,620	290
2	K.M.	♂	11 m	D	1 (##)	1 (##)	4,650	410
3	S.A.	♀	8 m	D	1 (##)	2 (++)	5,800	271
4	K.O.	♀	1y 1m	R	1 (##)	1 (##)	5,100	280
5	K.I.	♀	5 m	He	1 (++)	1 (++)	5,950	310
6	K.H.	♂	4 m	Hi	1 (++)	1 (++)	4,800	293
7	K.S.	♂	10 m	He	1 (++)	1 (++)	5,310	460
8	J.J.	♀	3 m	H	1 (##)	1 (++)	4,000	337
9	Y.T.	♂	9 m	R	1 (++)	1 (++)	4,950	460
10	R.A.	♂	5 m	D	1 (++)	1 (++)	5,550	347
11	K.H.	♂	11 m	R	1 (++)	1 (++)	5,930	350
12	H.U.	♂	10 m	Br	2 (++)	2 (++)	4,350	249
13	T.S.	♂	5 m	He	1 (##)	1 (##)	4,270	320
14	E.T.	♀	7 m	I	1 (##)	1 (##)	3,850	159
15	M.S.	♀	9 m	A	1 (##)	1 (##)	5,370	234
16	J.S.	♂	5 m	R	1 (++)	1 (++)	5,270	373
17	Y.N.	♀	6 m	I	1 (##)	1 (##)	4,730	230
18	Y.I.	♀	38 d	A	1 (##)	1 (##)	6,950	341

* Remarks.

Abbreviation used in Tables 2, 3, 4, 5, 6 and 7.

A=Atrophy,	An=Angina,	B=B-avitaminotic dyspepsia,
Ba=B-avitaminosis,	Bp=Bronchopneumonia,	Br=Bronchitis,
C=Chondrodystrophia,	Cn=Constipation,	D=Dyspepsia,
Dc=Decomposition,	E=Eczema,	Ep=Empyema pleurae,
H=Hypotrophia,	He=Hydrocephalus,	He=Healthy,
Hi=Hernia inguinalis,	Hm=Heine-Medin's disease,	
Ht=Hydrocele testis,	Hu=Hernia umbilicalis,	Hy=Hypogalaktia,
I=Influenza,	Ib=Infantile beriberi,	Ic=Ileocolitis,
Id=Idiocy,	Im=Impetigo,	Ip=Infantile preberiberi,
Lc=Lues congenita,	N=Nephritis,	P=Pertussia,
Pb=Pharyngobronchitis,	Pc=Pyelocytitis,	Pe=Parotitis epidemica,
Ps=Pylorospasmus,	Psh=Pseudoheophilic hepatica,	
R=Rhinopharyngitis,	Si=Strophulus infantum,	St=Stomatitis,
Wn=Wry-neck,	?=Suspicion of	

and 7 respectively. Each group was divided again into two sub-groups:—The cases in which both infants and their mothers had not been taking any vitamin B preparation (Cf. Tables 2, 4 and 6) and the cases in which infants and/or their mothers had been taking a vitamin B preparation (Cf. Tables 3, 5, and 7).

TABLE 3.

Normally Arakawa-positive cases in which infants and/or their mothers had been taking vitamin B.

No.	Name	Sex	Age y=years m=months d=days	Diagnosis*	Arakawa's reaction		Red cell count per cmm. (thou- sands)	Blood platelet count per c.m.m. (thou- sands)	Administra- tion of vitamin B to	
					Right	Left			Mother	Infant
1	I. H.	♂	58 d	He	1(##)	1(##)	4,700	270	(+)	(+)
2	T.K.	♂	9 m	I	1(##)	1(##)	5,550	271	(-)	(+)
3	S. I.	♂	1 y 4 m	D	1(+)	2(+)	6,500	200	(-)	(+)
4	E.M.	♂	4 m	H	1(##)	1(+)	4,570	230	(+)	(+)
5	Y.K.	♀	3 m	Wn	1(+)	2(+)	4,440	242	(+)	(+)

* Cf. Foot note to Table 2.

1. Distribution of blood platelets and red cell count according to the intensity of Arakawa's reaction (Cf. Table 8).

From Table 8 it is seen that there was no difference of the average count (about 5,100 thousand cells) of erythrocytes between the normally Arakawa-positive group and the cases with intermediate Arakawa's reaction, but in the Arakawa-negative group red cell count showed a decrease, being 4,930 thousand cells on an average. Infants fed on milk negative to Arakawa's reaction were thus in a state of anemia, though the degree was slight.

As to blood platelet count, it was 301, 384 and 435 thousands according to the intensity of Arakawa's reaction. In the normally Arakawa-positive group it was within the normal value as will be mentioned in the next paragraph, while a considerable increase of blood platelet count was seen in the Arakawa-negative group.

2. Distribution of red cell count and blood platelet count according to the intensity of Arakawa's reaction and according as a vitamin B preparation had been taken or not (Cf. Table 9).

Erythrocyte count in the Arakawa-negative group was, as stated above, smaller than the other two groups. But the influence of vitamin B will be seen in each of the three groups. An inclination, though very slight, to an increase of the count will be seen in the subgroup with vitamin B.

In each group of Arakawa's reaction, thrombocyte count showed a decrease in the subgroup with vitamin B. The difference between the two subgroups in each group was 74,000, 46,000 and 79,000 according to the intensity of Arakawa's reaction respectively. And the

TABLE 4.

Cases with intermediate Arakawa's reaction in which infants and their mothers had not been taking vitamin B preparation.

No.	Name	Sex	Age y=years m=months d=days	Diagnosis§	Arakawa's reaction		Red cell count per cmm. (thousands)	Blood platelet count per cmm. (thousands)
					Right	Left		
1	M.H.	♂	47 d	Ip	2(±)	2(±)	5,810	530
2	Y.S.	♂	5 m	R	1(±)	6(-)	4,750	304
3	Y.A.	♀	4 m	D	16(-)	10(±)	4,470	538
4	M.N.	♂	8 m	R	1(±)	8(-)	6,000	282
5	Y.Y.	♂	5 m	I	10(±)	1(+)	4,800	370
6	S.N.	♂	6 m	Si	4(±)	3(±)	5,350	327
7	A.T.	♀	9 m	I	8(-)	15(-)	5,880	380
8	K.O.	♂	2 m	R	10(-)	1(±)	4,180	375
9	K.H.	♂	11 m	D	11(-)	1(±)	5,860	430
10	R.T.	♂	9 m	Br	10(±)	5(+)	5,000	420
11	Y.K.	♂	8 m	D	8(-)	1(+)	4,910	270
12	S.N.	♂	3 m	R	*	*	4,870	420
13	Y.W.	♂	36 d	E	13(±)	1(+)	4,370	374
14	S.T.	♂	3 m	D	3(±)	3(±)	5,050	310
15	S.M.	♂	5 m	R+D	13(±)	1(+)	4,670	313
16	K.A.	♂	7 m	Lc	10(±)	11(±)	3,750	520
17	T.T.	♀	4 m	B	11(±)	9(-)	5,110	390
18	J.S.	♂	36 d	Psh	10(-)	2(-)	2,030	278
19	S.N.	♂	9 m	D	14(±)	15(±)	4,430	425
20	M.K.	♂	9 m	Lc	1(±)	1(+)	5,740	411
21	T.S.	♀	9 m	D	1(±)	16(-)	5,750	218
22	M.W.	♀	12 m	H	11(-)	13(-)	4,600	331
23	Y.K.	♀	37 d	E	5(±)	5(±)	3,930	266
24	S.I.	♂	1 y 1 m	R	2(-)	3(±)	4,500	290
25	E.I.	♂	7 m	R	5(+)	1(±)	4,830	350
26	Y.Y.	♂	9 m	D+An	11(±)	1(±)	5,280	270
27	K.T.	♂	9 m	R	1(±)	1(±)	4,990	278
28	H.M.	♀	35 d	Hy	8(±)	11(-)	4,580	254
29	K.K.	♂	10 m	Hm	1(±)	3(-)	5,560	311
30	H.K.	♀	12 m	Bp	*	*	4,110	200
31	K.T.	♂	4 m	I	2(-)	**	5,150	311
32	K.S.	♀	6 m	D+A	10(±)	15(-)	4,870	380
33	S.K.	♂	35 d	Ip	11(-)	11(-)	4,100	553
34	S.Y.	♂	6 m	D	14(-)	9(±)	5,440	370
35	K.S.	♂	8 m	C	***	***	4,470	431
36	S.S.	♂	2 m	B	11(-)	16(-)	4,600	511
37	Y.T.	♀	10 M	I	6(+)	5(-)	4,750	680
38	M.F.	♀	9 m	Ip	6(-)	16(-)	4,530	472
39	E.T.	♀	52 d	B	15(±)	7(±)	6,180	721
40	K.G.	♂	1 y	B	6(±)	6(±)	5,240	688
41	J.T.	♂	4 m	B	4(-)	4(-)	4,300	637
42	A.T.	♂	9 m	Hm	1(±)	1(+)	5,190	330
43	M.A.	♀	5 m	D	13(-)	13(-)	7,250	400
44	T.K.	♂	3 m	D+E	****	14(-)	4,050	365
45	H.Y.	♂	1 y 2 m	D	1(+)	6(±)	5,030	313
46	K.S.	♂	1 y 4 m	D+De	16(-)	6(-)	5,600	480
47	J.S.	♂	11 m	D	5(±)	4(-)	5,200	460
48	Y.S.	♀	1y 3m	Ic	12(±)	12(±)	4,800	230
49	K.T.	♂	5 m	P	2(±)	2(±)	6,200	420
50	S.I.	♂	1y 4m	D	2(±)	1(+)	6,500	222

TABLE 4. Continued.

No.	Name	Sex	Age y=years m=months d=days	Diagnosis	Arakawa's reaction		Red cell count per cmm. (thousands)	Blood platelet count per cmm. (thousands)
					Right	Left		
51	H.S.	♂	71 d	D	1(+)	5(±)	4,300	322
52	K.I.	♀	10 m	Ep	5(±)	6(±)	6,750	540
53	Y.I.	♀	6 m	Bp	11(±)	4(+)	6,900	420
54	K.T.	♀	8 m	D+A	7(±)	6(-)	6,950	900
55	K.S.	♀	1 y 1 m	N	9(-)	9(-)	4,400	423
56	J.O.	♂	31 d	Lc	13(±)	14(-)	5,630	440
57	T.K.	♂	9 m	I	7(+)	7(+)	7,850	780
58	K.S.	♀	6 m	He	4(+)	1(+)	4,250	215
59	S.T.	♂	6 m	Si	6(+)	11(±)	5,330	540
60	H.E.	♂	12 m	B	1(+)	1(+)	6,100	430
61	K.N.	♀	8 m	R	3(+)	7(±)	4,970	200
62	M.K.	♂	6 m	D	1(±)	1(++)	5,970	401
63	Y.M.	♂	1 y 6 m	A+D	12(-)	11(±)	6,400	360
64	T.K.	♀	8 m	O	1(+)	1(+)	6,250	320
65	K.K.	♂	1 y 1 m	D	1(-)	6(+)	7,350	630
66	J.K.	♂	45 d	D	5(±)	1(++)	4,430	250
67	K.I.	♀	75 d	Ba	2(+)	2(+)	4,200	515
68	T.K.	♀	4 m	R	1(++)	4(+)	5,700	400
69	R.K.	♀	5 m	A	1(++)	15(±)	7,500	380
70	K.S.	♂	75 d	R	5(±)	13(±)	6,500	399
71	R.M.	♀	7 m	R	4(±)	1(++)	4,800	470
72	N.K.	♂	1 y 2 m	R	5(±)	5(±)	4,850	330
73	H.S.	♂	4 m	R	15(±)	7(±)	4,950	460
74	T.I.	♀	6 m	Ep	13(±)	5(±)	4,900	330
75	K.T.	♂	6 m	B	12(±)	4(-)	5,300	300
76	T.K.	♂	1 y 2 m	B	14(-)	2(+)	5,450	475
77	Z.E.	♂	11 m	A	1(+)	1(+)	6,850	270
78	T.S.	♀	49 d	Ip	5(±)	5(±)	4,800	460
79	K.S.	♂	7 m	Hi	1(+)	1(++)	4,910	330
80	M.I.	♂	45 d	Hi	16(-)	6(-)	4,300	480
81	S.I.	♂	3 m	R	3(±)	16(-)	5,240	145
82	R.K.	♂	10 m	Hy	5(±)	6(-)	5,200	390
83	S.O.	♀	11 m	He	1(++)	1(+)	5,230	190
84	Y.I.	♂	3 m	B	14(-)	1(±)	4,100	201
85	S.S.	♂	41 d	B	1(±)	7(-)	5,030	160
86	R.K.	♀	7 m	I	9(-)	9(-)	4,800	328
87	R.K.	♀	7 m	R	12(-)	11(±)	5,490	414
88	M.A.	♂	7 m	P	12(±)	1(+)	4,990	558
89	R.O.	♂	9 m	I	3(-)	5(±)	5,800	290
90	K.T.	♂	9 m	Ip	4(±)	4(±)	4,910	474
91	K.O.	♂	5 m	E	1(±)	1(±)	6,410	460
92	K.T.	♂	4 m	R	14(±)	14(±)	4,830	385
93	S.O.	♂	2 m	Ps?	3(-)	13(-)	4,100	365
94	T.I.	♀	4 m	E	1(++)	*	5,210	390
95	S.A.	♂	10 m	Lc	7(-)	7(-)	5,130	754
96	K.K.	♀	9 m	R	7(-)	16(-)	5,790	329
97	S.H.	♂	10 m	D	15(-)	14(±)	6,210	537
98	T.K.	♀	5 m	Br+Hi	14(±)	14(±)	4,680	364
99	S.H.	♂	8 m	D	1(+)	7(-)	5,270	364
100	T.H.	♀	43 d	Hu	8(±)	15(-)	4,050	388
101	Y.S.	♂	1 y 3 m	P	8(-)	1(±)	4,740	257
102	R.S.	♀	46 d	Hg	1(+)	1(+)	5,200	317
103	T.K.	♂	6 m	Im	11(±)	6(+)	4,930	362

TABLE 4. Continued.

No.	Name	Sex	Age y=years m=months d=days	Diagnosis§	Arakawa's reaction		Red cell count per cmm. (thousands)	Blood platelet count per cmm. (thousands)
					Right	Left		
104	T.O.	♂	3 d	D	1(-)	10(-)	4,200	308
105	K.M.	♂	4 m	E	4(-)	15(-)	4,740	392
106	T.M.	♂	4 m	Br	5(±)	16(-)	5,900	413
107	R.M.	♂	3 m	D+Le	14(-)	11(-)	5,300	180
108	S.F.	♂	4 m	Bp	8(-)	5(±)	4,980	453
109	M.I.	♂	9 m	I+D	13(-)	13(-)	5,500	357
110	T.K.	♂	2 m	Ht	1(±)	16(-)	3,400	290
111	M.S.	♀	11 m	I	1(+)	1(+)	5,480	617
112	J.S.	♂	7 m	R	1(±)	5(-)	4,790	360
113	H.Y.	♂	7 m	R	16(-)	11(±)	4,900	330
114	S.O.	♀	49 d	B+St	13(-)	15(-)	4,400	290
115	M.S.	♂	6 m	R	16(-)	1(±)	4,350	310
116	R.N.	♀	4 m	D	*****	16(-)	5,830	345
117	J.M.	♂	3 m	Id.	16(-)	1(+)	4,600	430
118	H.T.	♂	3 m	R	14(±)	14(±)	4,830	385
119	T.S.	♂	11 m	I+H	7(±)	16(-)	5,270	250
120	K.U.	♂	9 m	R	11(-)	11(-)	5,740	321
121	Y.M.	♂	2 m	H+Hi	13(-)	13(-)	3,590	260
122	Y.T.	♂	5 m	I	13(-)	13(-)	4,750	314
123	K.H.	♀	3 m	D	16(-)	11(-)	2,450	198
124	K.I.	♂	7 m	P	15(-)	11(-)	6,180	303
125	N.S.	♀	5 m	D	11(-)	12(-)	4,480	521
126	T.S.	♀	47 d	Pe	11(-)	16(-)	4,100	478
127	R.Y.	♂	3 m	E+Br	1(+)	1(+)	4,450	453
128	K.N.	♂	10 m	Bp	5(+)	14(±)	5,380	414
129	K.M.	♂	8 m	R	1(++)	11(-)	4,960	359
130	S.K.	♂	4 m	Pb	9(+)	7(-)	4,800	410
131	K.I.	♂	5 m	A	3(-)	1(±)	4,710	350
132	N.K.	♂	9 m	R	3(+)	5(+)	5,800	440
133	K.O.	♂	4 m	B	14(-)	7(-)	4,350	660
134	M.M.	♀	3 m	Ib	11(+)	11(+)	5,000	950
135	K.T.	♂	2 m	A	11(-)	16(-)	5,800	481
136	K.K.	♂	10 m	Pe	6(±)	6(±)	4,510	550
137	J.W.	♂	1 y 4 m	Ep	3(+)	3(+)	4,450	790
138	K.T.	♂	5 m	P	2(±)	2(±)	6,200	382
139	Y.I.	♂	3 m	B	1(++)	1(+)	4,100	200
140	R.G.	♂	5 m	R	1(±)	1(±)	4,930	370

§ Cf. Foot note to Table 2.

1' 2' 3' 4' 5'
 * + ## ## ## ##
 ** ± + ## ## ##
 *** - ++ ## ## ##
 **** ++ ++ ++ ++
 ***** ± ++ ## ## ##

difference of thrombocyte count was much more striking than that of red cell count.

3. Distribution of Arakawa-positive, intermediate and negative groups according to blood platelet count (Cf. Tables 10 and 11).

TABLE 5.

Cases with intermediate Arakawa's reaction in which infants and/or their mothers had been taking vitamin B.

No.	Name	Sex	Age y=years m=months d=days	Diagnosis	Arakawa's reaction		Red cell count per cmm. (thou- sands)	Blood platelet count per cmm. (thou- sands)	Administra- tion of vitamin B to	
					Right	Left			Mother	Infant
1	T.Y.	♂	6 m	Im	3(±)	3(±)	5,140	415	—	+
2	R.S.	♂	12 m	B	15(±)	13(±)	5,800	480	—	+
3	S.O.	♂	2 m	Ps?	7(±)	4(—)	4,200	351	+	+
4	T.K.	♂	6 m	Im	7(±)	6(+)	4,930	362	—	+
5	T.A.	♂	3 m	An	11(—)	11(—)	4,630	219	+	+
6	S.F.	♂	4 m	Bp	3(±)	2(—)	4,650	530	+	+
7	T.A.	♀	8 m	D	4(—)	4(—)	5,150	267	+	+
8	M.I.	♂	9 m	D	*	*	5,450	279	+	+
9	Y.Y.	♀	34 d	Br	6(—)	14(—)	4,920	320	+	+
10	K.Y.	♀	7 m	R	14(—)	6(+)	5,640	226	+	+
11	M.K.	♂	5 m	A	10(±)	7(—)	5,530	403	+	+
12	K.N.	♂	1 y 1 m	Br	1(+)	7(±)	4,500	343	+	+
13	E.I.	♂	9 m	I	*	11(±)	5,240	293	+	+
14	S.H.	♂	4 m	R	3(±)	4(—)	4,770	363	+	+
15	H.T.	♂	5 m	D	11(—)	6(±)	4,220	233	—	+
16	F.M.	♂	1 y 3 m	Bp	7(—)	7(—)	5,060	448	+	+
17	H.U.	♂	10 m	Br+D	9(—)	9(—)	4,300	349	+	+
18	K.I.	♂	7 m	P	10(—)	3(±)	4,930	345	—	+
19	M.M.	♀	4 m	D	**	2(—)	4,750	415	+	+
20	A.N.	♀	1 y 3 m	R	8(±)	10(—)	5,190	326	—	+
21	M.L.	♂	9 m	D	14(—)	1(+)	4,980	290	+	+
22	S.U.	♂	10 m	Br	8(+)	3(—)	5,050	362	+	+
23	N.S.	♀	53 d	P	11(+)	11(+)	5,200	580	+	+
24	S.M.	♂	3 m	Hu	5(±)	15(±)	5,800	560	+	+
25	J.O.	♂	2 m	Lc	16(—)	14(±)	6,500	271	+	+
26	T.K.	♂	9 m	R	1(+)	1(+)	6,950	350	—	+
27	K.S.	♀	6 m	I	7(±)	7(±)	5,250	340	—	+
28	Y.I.	♀	6 m	Bp	15(—)	7(—)	8,100	370	+	+
29	K.T.	♀	8 m	D	6(±)	4(—)	5,850	360	+	+
30	K.S.	♀	1 y 2 m	N	7(+)	7(+)	4,350	351	—	+
31	K.T.	♂	5 m	B	16(—)	6(—)	4,800	420	+	+
32	A.I.	♂	9 m	D	13(±)	2(+)	6,600	400	+	+
33	K.I.	♀	1 y 1 m	Ep	2(+)	2(+)	5,750	300	+	+
34	S.I.	♂	1 y 4 m	D	1(+)	1(+)	6,350	201	—	+
35	K.S.	♂	1 y 4 m	D+Dc	14(—)	2(—)	5,700	450	—	+
36	K.G.	♂	12 m	B	16(—)	12(±)	5,140	502	+	+
37	J.T.	♂	4 m	B	16(—)	14(±)	4,450	451	+	+
38	N.S.	♀	61 d	P	2(+)	5(+)	4,300	450	+	+
39	K.T.	♀	9 m	D	8(—)	8(—)	7,100	340	+	+
40	K.S.	♂	8 m	Ps?	***	1(±)	5,250	220	+	+
41	S.S.	♂	3 m	E	2(—)	11(±)	4,670	280	+	+
42	Y.T.	♀	11 m	Bp	3(±)	1(+)	4,270	490	—	+
43	M.F.	♀	9 m	H	3(±)	1(+)	4,270	491	—	+
44	S.K.	♂	2 m	Ip	7(—)	6(±)	3,930	264	—	+
45	S.Y.	♂	6 m	D	1(±)	14(—)	5,040	514	—	+
46	N.W.	♀	1 y 1 m	D	1(±)	14(—)	6,100	301	—	+
47	K.T.	♂	10 m	Hm	1(+)	3(±)	5,220	277	—	+
48	J.I.	♂	3 m	H	16(—)	11(±)	3,530	193	—	+
49	H.K.	♀	1 y	Bp	1(±)	1(+)	5,520	290	—	+

TABLE 5. Continued.

No.	Name	Sex	Age y = years m = months d = days	Diagnosis	Arakawa's reaction		Red cell count per cmm. (thou- sands)	Blood plate count per cmm. (thou- sands)	Administra- tion of vitamin B to	
					Right	Left			Mother	Infant
50	S.N.	♂	9 m	D	1(±)	1(±)	4,490	280	—	+
51	M.M.	♂	6 m	D	12(—)	11(±)	5,350	221	—	+
52	Y.K.	♀	3 m	Wn	10(±)	15(±)	4,260	290	+	+
53	N.T.	♀	1 y 1 m	D	****	1(±)	5,680	251	—	+
54	H.Y.	♂	7 m	R	14(—)	6(—)	5,640	226	+	+

§ Cf. Foot note to Table 2.

	1'	2'	3'	4'	5'
*	±	+	+	+	+
**	—	+	+	+	+
***	+	+	+	+	+
****	±	+	+	+	+

One will see by glancing over Tables 10 and 11, that most cases of the strongly or normally Arakawa-positive group fall in the least number (0—350 thousands) of thrombocytes; as to the subgroup with vitamin B, all the cases fall in the least number. There is not a single case belonging to the submaximal (551—650 thousands) or to the maximal (over 650 thousands) of thrombocytes in the strongly or normally Arakawa-positive group, whereas in the completely or almost completely Arakawa-negative group, 10% of the subgroup without vitamin B belong to the maximal number of thrombocytes. But in each group the subgroup with vitamin B shows an inclination to move to the small number of thrombocytes.

Comment.

The normal platelet count of an infants, according to Baar and Stransky¹³⁾ is 200—300 thousands, and according to Keilmann¹⁴⁾ the count is a very low one 48—192 thousands. Jarcho¹⁵⁾ reported that "blood platelet count in normal newborn infants may show wide variation. In the majority of cases, the count is between 150,000 and 250,000." Merrit and Davidson¹⁶⁾ stated that blood platelet at

13) H. Baar and E. Stransky, Die klinische Hämatologie des Kindesalters, Leipzig and Wien 1928, 44.

14) K. Keilmann, Mschr. f. Kinderheilk., 1922, 23, 383.

15) J. Jarcho, Arch. Pediatr., 1930, 47, 230.

16) K. Merrit and T. Davidson, Am. J. Dis. Child., 1933, 46, 990.

TABLE 6.

Arakawa-negative cases in which infants and their mothers had not been taking vitamin B preparation.

No.	Name	Sex	Age y=years m=months d=days	Diagnosis*	Arakawa's reaction		Rell cell count per cmm. (thousands)	Blood plate- let count per cmm. (thousands)
					Right	Left		
1	N.T.	♂	1 y 1 m	D	14(-)	16(-)	4,310	520
2	M.H.	♂	1 y 3 m	D	14(-)	14(-)	5,210	441
3	K.O.	♀	50 d	H	8(-)	16(-)	4,430	410
4	Y.S.	♀	65 d	A+Hc	16(-)	16(-)	4,220	540
5	K.H.	♂	1 y 1 m	D	16(-)	15(-)	6,400	480
6	I.H.	♂	49 d	Ib	16(-)	16(-)	4,600	513
7	J.K.	♂	9 m	D	16(-)	15(-)	8,560	480
8	M.K.	♀	1 y 5 m	B	16(-)	15(±)	5,200	599
9	K.H.	♀	1 y 2 m	R	16(-)	8(-)	4,900	468
10	Y.O.	♀	3 m	P?	16(-)	15(-)	5,650	580
11	S.S.	♀	40 d	Ip	14(-)	14(-)	4,800	271
12	M.M.	♀	27 d	Ip	16(-)	16(-)	5,050	560
13	Y.Y.	♂	1 y 6 m	R	16(-)	16(-)	5,300	562
14	M.S.	♂	43 d	Ip	16(-)	16(-)	4,200	350
15	K.T.	♂	5 m	B	16(-)	15(-)	5,000	520
16	Y.O.	♂	1 y 3 m	R	16(-)	16(-)	5,900	249
17	K.O.	♂	5 m	Ip	15(-)	15(-)	5,850	1,080
18	S.T.	♂	10 m	B	16(-)	16(-)	4,850	379
19	S.W.	♀	6 m	D	15(-)	15(-)	4,850	485
20	A.K.	♀	8 m	A	8(-)	8(-)	6,960	490
21	S.A.	♂	3 m	H	16(-)	16(-)	3,700	418
22	M.S.	♀	2 m	Ip	14(-)	16(-)	3,900	341
23	S.A.	♀	9 m	An	15(±)	16(-)	4,550	220
24	R.S.	♂	1 y	B	16(-)	16(-)	4,050	606
25	K.H.	♀	3 m	R	16(-)	14(-)	3,150	350
26	S.H.	♂	11 m	Hm	16(-)	16(-)	5,690	410
27	K.O.	♂	4 m	Ip	16(-)	16(-)	4,580	430
28	J.K.	♂	5 m	Br	8(-)	15(±)	5,500	327
29	K.S.	♂	9 m	I	16(-)	16(-)	4,730	329
30	Y.N.	♀	4 m	D	16(-)	16(-)	4,480	454
31	K.Y.	♀	3 m	A	16(-)	16(-)	4,460	429
32	T.A.	♂	2 m	An	16(-)	16(-)	4,780	300
33	T.A.	♀	8 m	I+D	16(-)	16(-)	5,370	507
34	M.S.	♀	5 m	Br	16(-)	8(-)	4,880	479
35	S.M.	♀	1 y 1 m	D	16(-)	15(-)	4,930	301
36	K.O.	♂	2 m	Hu	14(-)	16(-)	4,900	344
37	Y.Y.	♀	25 d	Br	16(-)	16(-)	5,100	349
38	S.M.	♂	5 m	Br	16(-)	16(-)	5,450	611
39	T.T.	♂	4 m	R	15(-)	15(-)	5,290	397
40	S.K.	♂	50 d	Hi+Hu	16(-)	16(-)	3,650	232
41	M.I.	♀	54 d	Hu	16(-)	15(-)	4,300	323
42	S.T.	♂	4 m	D	15(-)	15(-)	4,750	273
43	J.T.	♂	31 d	H	16(-)	16(-)	5,700	390
44	T.M.	♀	2 m	P	16(-)	16(-)	6,860	536
45	T.W.	♀	3 m	Bp	16(-)	16(-)	4,490	818
46	K.N.	♂	1 y 1 m	Br	12(-)	6(-)	5,250	709
47	T.K.	♂	9 m	R	12(-)	16(-)	5,910	445
48	K.H.	♀	6 m	An	16(-)	16(-)	7,600	506
49	K.M.	♂	1 y	H+Hi	16(-)	16(-)	4,250	270
50	K.N.	♂	10 m	Cn	16(-)	16(-)	4,830	299

TABLE 6. Continued.

No.	Name	Sex	Age y=years m=months d=days	Diagnosis*	A r a k a w a's reaction		Red cell count per cmm. (thousands)	Blood plate- let count per cmm. (thousands)
					Right	Left		
51	S.O.	♂	1 y	Bp	16(-)	15(-)	4,980	401
52	M.M.	♂	4 m	D	16(-)	16(-)	4,650	770
53	Y.U.	♀	51 d	B	16(-)	16(-)	5,170	532
54	S.T.	♂	52 d	Br	16(-)	16(-)	4,380	280
55	N.O.	♀	4 m	Pb	15(-)	16(-)	4,670	421
56	H.I.	♀	10 m	Bp	16(-)	16(-)	4,800	503
57	I.H.	♂	49 d	Ib	16(-)	16(-)	4,690	510
58	N.S.	♀	41 d	P	16(-)	16(-)	5,300	700
59	H.H.	♂	2 m	Ip	16(-)	16(-)	4,500	751
60	S.M.	♂	3 m	Ip+Hu	14(-)	16(-)	5,300	830
61	K.T.	♂	4 m	Ba	16(-)	16(-)	4,450	499
62	K.T.	♂	5 m	B	16(-)	15(-)	5,000	520
63	H.O.	♂	1 y	R+Hi	15(-)	15(-)	5,800	344
64	A.I.	♂	9 m	D	15(-)	16(-)	4,300	320
65	J.T.	♂	10 m	D	16(-)	15(-)	5,550	380
66	H.T.	♀	3 m	B	15(±)	16(-)	6,300	600
67	S.W.	♀	3 m	D	16(-)	15(-)	4,600	501
68	M.M.	♀	6 m	Ib	15(-)	8(-)	5,410	570
69	G.H.	♂	1 y	R+Le	16(-)	16(-)	5,250	351
70	Y.I.	♂	3 m	H	16(-)	16(-)	3,240	663
71	T.S.	♀	4 m	H	15(-)	16(-)	3,820	502
72	S.E.	♂	7 m	Ip	14(-)	16(-)	4,580	351
73	R.G.	♂	2 m	Lc	16(-)	16(-)	4,690	463
74	N.W.	♀	1 y 1 m	D+De	16(-)	16(-)	5,780	422
75	S.O.	♂	10 m	Hu+A	16(-)	16(-)	4,380	398
76	K.M.	♀	38 d	B	16(-)	16(-)	5,490	340
77	K.S.	♂	5 m	B	16(-)	15(-)	5,250	391
78	A.S.	♀	59 d	Hm	14(-)	14(-)	4,270	503
79	S.S.	♀	3 m	Bp	16(-)	15(-)	2,450	490
80	S.N.	♂	46 d	Pc+Le	15(-)	15(-)	3,050	256
81	T.T.	♀	1 y	D	12(-)	12(-)	4,500	463
82	A.H.	♂	2 m	Wn	16(-)	8(-)	3,600	300
83	Y.K.	♂	2 m	D	15(-)	15(-)	3,900	209
84	Y.T.	♂	47 d	R	15(-)	16(-)	4,340	311
85	T.H.	♀	8 m	D	14(-)	15(-)	5,420	510
86	T.M.	♂	10 m	D	12(-)	15(-)	5,250	390
87	Y.N.	♀	2 m	H+E	16(-)	15(±)	3,580	299
88	M.M.	♀	27 d	Ip	16(-)	16(-)	5,050	560
89	Y.T.	♂	1 y	D	12(-)	12(-)	5,820	473
90	R.K.	♀	1 y 2 m	R	16(-)	16(-)	4,580	423
91	T.O.	♀	6 m	Br	12(-)	12(-)	6,700	760

* Cf. Foot note to Table 2.

birth were found to have a mean value of 227,000. After a rise in the third month, their mean value throughout the remainder of the first year is 344,000 with a standard variation of 66,000. In the cases of Japanese infants, Sakai's¹⁷⁾ count is a very high one, namely 700.5—

17) M. Sakai, Zika Zassi, 1920, No. 245, 831.

TABLE 7.

*Arakawa-negative cases in which infants and/or their mothers
had been taking vitamin B preparation.*

No.	Name	Sex	Age y=years m=months d=days	Diagnosis*	Arakawa's reaction		Red cell count per cmm. (thou- sands)	Blood platelet count per cmm. (thou- sands)	Administra- tion of vitamin B	
					Right	Left			Mother	Infant
1	K.U.	♂	37 d	H	12(-)	12(-)	3,250	260	+	-
2	M.M.	♀	3 m	Ip	14(-)	14(-)	5,500	330	+	-
3	K.T.	♀	4 m	D	16(-)	16(-)	4,900	440	-	+
4	H.K.	♂	35 d	A	16(-)	16(-)	5,600	410	+	-
5	S.A.	♂	3 m	H	16(-)	14(-)	3,950	390	-	+
6	Y.H.	♂	9 m	H	16(-)	16(-)	6,100	440	+	+
7	T.M.	♂	4 m	Br	16(-)	16(-)	4,800	443	+	+
8	R.K.	♂	10 m	P	12(-)	16(-)	6,100	300	-	+
9	K.Y.	♀	2 m	A	16(-)	16(-)	4,160	296	+	+
10	T.T.	♂	9 m	Lc	14(-)	16(-)	4,900	390	-	+
11	T.A.	♀	8 m	D	15(±)	15(±)	6,350	342	-	+
12	I.M.	♂	9 m	D	12(-)	14(-)	6,300	259	+	+
13	M.S.	♀	5 m	Br	16(-)	14(-)	3,500	300	+	+
14	T.A.	♂	2 m	R	16(-)	16(-)	4,760	290	+	+
15	S.S.	♀	5 m	Br	8(-)	12(-)	6,000	490	+	+
16	S.M.	♂	5 m	Br	16(-)	16(-)	4,400	370	+	+
17	H.Y.	♂	7 m	R	16(-)	14(±)	5,120	280	+	+
18	M.K.	♂	5 m	D+A	16(-)	16(-)	4,850	351	-	+
19	N.Y.	♂	2 m	R	16(-)	16(-)	3,900	247	+	-
20	F.M.	♂	1 y 3 m	B	14(-)	16(-)	5,480	322	+	+
21	T.O.	♀	3 m	D	14(-)	14(-)	4,760	293	+	-
22	D.K.	♂	6 m	A	8(-)	8(-)	5,600	416	+	+
23	S.O.	♂	48 d	E	16(-)	16(-)	3,350	311	+	-
24	J.T.	♂	3 m	H	16(-)	16(-)	3,750	230	-	+
25	K.N.	♂	10 m	Br	15(-)	14(-)	5,070	400	+	-
26	J.O.	♂	2 m	Lc	16(-)	16(-)	5,500	390	+	-
27	Y.I.	♀	6 m	Bp	15(-)	8(-)	8,100	371	-	+
28	T.O.	♀	6 m	Bp	16(-)	16(-)	5,250	810	+	+
29	A.I.	♂	9 m	D	16(-)	16(-)	5,450	510	+	+
30	H.T.	♀	3 m	D	16(-)	16(-)	6,250	553	+	+
31	S.W.	♀	4 m	D	16(-)	16(-)	4,450	370	+	+
32	E.M.	♂	4 m	B	16(-)	16(-)	4,000	280	+	-
33	K.I.	♂	4 m	H	16(-)	15(-)	3,330	263	-	+
34	F.M.	♂	1 y 3 m	Ep	8(-)	14(-)	4,850	368	+	+
35	T.O.	♀	6 m	Br	16(-)	16(-)	5,100	730	+	+
36	T.S.	♀	4 m	R	16(-)	16(-)	4,260	423	-	+
37	S.O.	♂	10 m	A+Hi	16(-)	16(-)	4,830	360	-	+

* Cf. foot note to Table 2.

878.7 thousands and my own result⁽¹²⁾ was 299 thousands on an average. Thus I may well assume 250—350 thousands as a normal platelet count.

From this standard, platelet count of normally Arakawa-positive group was quite ordinary, and when babies and/or their mothers had been taking vitamin B preparation, platelet count was only slightly

TABLE 8.

Distribution of blood platelets and red cell count according to the intensity of Arakawa's reaction.

Arakawa's reaction	Blood platelets per cmm.	Red cell count per cmm.	Cases
Normally Arakawa-positive cases	301,000	5,140,000	23
Cases with intermediate Arakawa's reaction	384,000	5,130,000	194
Completely or almost completely Arakawa-negative cases	435,000	4,930,000	128

TABLE 9.

Distribution of red cell count and blood platelet count according to the intensity of Arakawa's reaction and according as a vitamin B preparation was taken or not.

Arakawa's reaction	Administration (+) or no administration (-) of vitamin B preparation	Blood platelets per cmm.	Red cell count per cmm.	Cases
Normally Arakawa-positive cases	—	317,000	5,140,000	18
	+	243,000	5,150,000	5
Cases with intermediate Arakawa's reaction	—	397,000	5,100,000	140
	+	351,000	5,190,000	54
Completely or almost completely Arakawa-negative cases	—	458,000	4,920,000	91
	+	379,000	4,940,000	37

over normal limit even in Arakawa-negative group (Cf. completely or almost completely Arakawa-negative cases in Table 9).

As to the literature concerning blood platelet count in the cases of infantile beriberi or B-avitaminosis, Kurimoto, Aoyama and Sakai¹⁸⁾ stated simply an increase of thrombocytes without showing the actual number, and Kohda¹⁹⁾ said that platelet count was in the upper limit of physiologic variation. In the preceeding paper I¹²⁾

18) Y. Kurimoto, T. Aoyama and T. Sakai, Zika Zassi, 1922, No. 263, 124.

19) S. Kohda, Zika Zassi, 1935, No. 420, 607.

TABLE 10.

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

Arakawa's reaction	Administration (+) or no administration (—) of vitamin B preparation	Blood platelets per cmm. (thousands)					Cases
		0—350	351—450	451—550	551—650	Over 651	
Normally Arakawa-positive cases	—	78 % (14 cases)	11 % (2 cases)	11 % (2 cases)	—	—	18
	+	100 % (5 ")	—	—	—	—	5
Cases with intermediate Arakawa's reaction	—	27 % (38 ")	29 % (40 cases)	31 % (43 cases)	10 % (14 cases)	(5 cases)	140
	+	56 % (30 ")	28 % (15 ")	13 % (7 ")	4 % (2 ")	—	54
Completely or almost completely Arakawa-negative cases	—	28 % (26 ")	22 % (20 ")	30 % (27 ")	10 % (9 ")	10 % (9 cases)	91
	+	43 % (16 ")	43 % (16 ")	5 % (2 ")	3 % (1 case)	5 % (2 ")	37

TABLE 11.

The result shown in Table 10, simplified.

Arakawa's reaction	Administration (+) or no administration (—) of vitamin B preparations	Blood platelets per cmm. (thousands)		
		0—350	351—550	551—
Normally Arakawa-positive cases	—	78%	22%	—
	+	100 "	—	—
Cases with intermediate Arakawa's reaction	—	27 "	49 "	14%
	+	56 "	41 "	4 "
Completely or almost completely Arakawa-negative cases	—	28 "	52 "	20 "
	+	43 "	49 "	8 "

pointed out platelet count was 400 thousands in the Arakawa-negative group and 477 thousands in avitaminosis B.

In my own result in this paper, thrombocyte count showed an increase, as above mentioned, according to the weakness of Ara-

kawa's reaction. And so it can be said that sucklings fed on milk negative to Arakawa's reaction were in a state of avitaminosis B from the standpoint of thrombocytosis alone.

From the fact that in the same group of Arakawa's reaction platelets were smaller in the group of infants and/or their mothers taking vitamin B, it is evident that there was a close relation between vitamin B and blood platelet count, as was also pointed out by Kohda.¹⁹⁾

In the Arakawa-negative group anemia was seen in a slight degree. This agrees with the finding of Takasu²⁰⁾ and Kurimoto, Aoyama and Sakai,¹⁸⁾ but is opposed to that of Fukushima²¹⁾ who reported an increase of red cell count in a slight degree.

I should have experimented on "healthy" infants with no complaint, but it is very difficult to collect a large number of such materials. In the present paper I excepted serious cases which might affect the platelet count to a high degree. But I did not expect to see such a striking difference of platelet count between Arakawa-positive and Arakawa-negative groups as obtained in the present investigation. I expected to be able to see such an inclination only in these sick infants.

It is noteworthy that blood platelet count showed an increase as Arakawa's reaction became weaker, in spite of the possibility, that the platelets of these sick infants might have been influenced by the type, severity, and stage of their disease.

In the near future I will report again of the relation between blood platelet count and Arakawa's reaction in the course of such diseases in which platelet count will not be influenced by the disease itself.

Summary.

1. Blood platelet count of infants showed an increase in the case of mothers with negative Arakawa's reaction, being 435, 384 and 301 thousand thrombocytes in the Arakawa-negative group, in the group of intermediate Arakawa's reaction, and in the normally Arakawa-positive group respectively.

2. Red cell count was 5,140 and 5,130 thousand cells in the strongly Arakawa-positive group and in the group of intermediate Arakawa's reaction, while a slight anemia was seen in the Arakawa-

20) K. Takasu, Tokio Igaku-kwai Zassi, 1903, 17, 395.

21) T. Fukushima, Nyuji-gaku Zassi, 1932, 12, 371.

negative group showing 4,930 thousand on an average.

3. In the cases in which infants and their mothers had not been taking vitamin B preparations, platelet count was within normal (317 thousands) in the Arakawa-positive group, but an increase of platelet count (397 thousands) was seen in the cases with intermediate Arakawa's reaction, and the maximal average count (458 thousands) occurred in the Arakawa-negative group.

4. In the cases in which infants and/or their mothers had been taking vitamin B preparations, blood platelet count was a moderate surplus over the normal limit even in the Arakawa-negative group.

Conclusions.

An increase of blood platelet count was seen in infants fed on milk negative to Arakawa's reaction. When infants and/or their mothers had been taking a vitamin B preparation, the platelet count was only moderately over the normal limit even in the Arakawa-negative group. There is thus a close relation between blood platelet count of infants and Arakawa's reaction of their mothers.

It is to be added here that infants of the completely Arakawa-negative mothers have a reduced red cell count, in spite of the fact that those of mothers with intermediate Arakawa's reaction are of almost the same red cell count as those of Arakawa-positive mothers.