THE EFFECT OF VARIATION OF THE DIET IN RHEUMATIC CHILDREN.

BY

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It is frequently asserted, apparently more as a conviction of faith than as a conclusion of reason, that deficiencies or errors in the balance of diet are important factors in the ætiology of rheumatism in children.

A general survey of a large number of clinical cases has left us sceptical of the truth of this assertion and, as previous investigations^{1,2} in Birmingham had shown that rheumatism in children did not occur so frequently in homes in which neglect of the children was obvious, as it did where there was evidence of their satisfactory care, we have hitherto believed that the influence of food was unlikely to be great.

A small investigation was recently undertaken at the Baskerville School for rheumatic children in Birmingham in order to discover whether any important alterations in the blood chemistry could be produced by changes in the diet.

In November, 1928, a group of 22 children, all convalescent from rheumatism and most of them with signs of carditis, were selected for investigation, and estimations of the blood *pH*, carbon dioxide, urea, non-protein nitrogen, and uric acid were made. The children were then divided into two equal groups, to one of which was given a high protein diet, and to the other one rich in starch; similar estimations of the blood were made after they had been kept on these diets for about five months (in a few cases the second estimations had to be made after an interval of three months).

The details of the dieting were as follows :—

PROTEIN GROUP.

Breakfast. Bacon, corned beef, dripping, eggs, a little porridge occasionally, fish, beef sausage.
Dinner. Meat, green vegetables, egg custard and fruit.
Tea. Brown bread, butter, fruit, jam (a little).
Supper. Brown bread and butter.

STARCH GROUP.

Breakfast. Bread and butter, bread and milk, porridge in large quantities, cereals, a little bacon once weekly.
Dinner. Very little meat, a large quantity of potatoes, soups thickened with flour, cornflower pastries, milk puddings.
Tea. Cakes, bread and butter, jam.
Supper. Bread and butter.

Both groups had an average of half a pint of milk daily.

The specimens for estimation were taken at similar times and as far as possible in unchanged conditions; the results are shown in Table I and II. In each case the results in columns 'a' were obtained at the beginning of the experiment and those in columns 'b' at the end.

The result shows that there is no distinct difference in the constitution of the blood in the two groups; the small drop in the blood-urea values is due to a change in laboratory technique.

TABLES I & II.

BASKERVILLE DIETING EXPERIMENTS: NOV. 1928—MAR. 31st, 1929

(excluding 2 weeks at Christmas).

Sex	Age	Prev. time in school	pH		CO ₂		UREA		Non- PROTEIN N		URIC ACID	
	Nearest year	Months	a	b	a	b	a	b	a	b	a	b

TABLE I. *Protein Group.*

F.	12	2	—	—	61.52	68.46	34.4	26.0	34.1	34.9	3.69	2.66
M.	12	10	7.48	7.46	63.36	63.66	—	—	32.3	31.1	3.87	3.75
M.	10	4	7.43	7.38	61.18	60.20	—	—	31.5	35.5	—	—
F.	11	2	—	—	—	—	28.9	25.0	33.3	34.2	—	—
M.	11	6	—	—	—	—	31.9	27.0	—	—	—	—
F.	10	6	7.43	7.47	57.61	54.22	—	—	33.2	30.0	—	—
M.	11	6	7.48	7.44	60.83	62.52	36.4	27.0	36.3	30.4	—	—
M.	12	2	7.36	7.53	64.60	60.83	27.5	31.0	32.4	35.7	4.68	3.00
F.	12	2	7.45	7.50	—	—	37.0	33.0	38.2	31.4	—	—
F.	15	6	—	—	60.64	67.62	35.0	22.5	36.8	32.6	—	—
F.	11	10	7.40	7.47	—	—	35.0	28.0	27.8	39.2	4.94	4.48
Mean	11.44		7.43	7.46	61.4	61.5	33.3	27.4	33.6	33.5	4.29	3.47

TABLE II. *Starch Group.*

F.	10	2	7.39	7.46	60.77	55.76	35.1	24.0	—	—	—	—
F.	12	1	—	—	—	—	—	—	28.4	31.1	3.40	2.38
M.	9	2	—	—	56.31	59.97	32.6	27.0	31.2	38.7	—	—
F.	9	2	7.48	7.53	60.07	62.70	—	—	39.7	34.5	—	—
M.	8	10	7.45	7.38	62.27	57.70	34.0	29.0	32.0	27.7	3.45	3.66
F.	9	8	7.44	7.44	63.62	56.35	—	—	30.0	27.7	2.89	3.28
M.	8	6	7.48	7.46	59.3	57.3	—	—	29.7	26.3	3.28	5.00
F.	10	2	7.48	7.42	—	—	29.0	27.0	28.6	32.2	3.71	2.11
M.	12	2	7.45	7.51	—	—	—	—	36.1	30.8	4.33	2.14
M.	9	10	7.43	7.40	61.17	59.97	31.0	35.7	32.6	32.8	3.84	3.84
M.	12	25	7.45	7.46	59.30	62.64	—	—	30.6	37.0	4.67	3.36
Mean	9.9		7.46	7.45	60.35	59.02	32.3	28.5	31.9	31.9	3.70	3.22

DISCUSSION.

The protein group had a higher average age, 11.4 years; that of the starch group was 9.9 years. The average gain in weight in the protein group was 1.8 pounds; that of the starch group was 2 pounds. The normal increase for a period of 5 months for children of the age of the protein group is 2 pounds and for those of the age of the starch group 3 pounds, the difference being attributable to the difference in age.

It is possible, therefore, that the high protein diet led to a greater increase in weight, but with so few cases no reliable conclusion in this direction can be drawn.

The incidence of febrile attacks (that is the number of times that the temperature reached 99 degrees or over) in the two groups was practically equal. In the protein group the average was 8 and in the starch group 6. It is much more likely that the increased incidence of fever in the protein group was due to the fact that 9 of the 11 children had signs of carditis, whereas in the starch group only 7 of them were so affected. In addition, in the protein group only 3 children had had their tonsils completely removed against 6 similarly treated in the starch group. No difference in general progress could be distinguished between the two groups.

SUMMARY.

22 rheumatic children living in identical conditions were divided into two equal groups, to one of which was given a high protein diet and to the other a high starch diet. Blood analysis at the end of 5 months showed no appreciable difference between the two groups in respect of pH, CO₂, urea, non-protein nitrogen or uric acid. No difference in the clinical progress of the two groups could be determined, but there was perhaps a slightly greater increase in weight in the protein group.

These results lend no support to the belief that diet is of material importance in the ætiology or course of rheumatism in children.

REFERENCES.

1. Thomson, A. P., *Birm. Med. Rev.*, Birmingham, 1926, *n.s.*, I, 1.
2. Thomson, A. P., *Arch. Dis. Child.*, Lond., 1928, III, 20.