

Development in relation to brain and nutrition.

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DEVELOPMENT IN RELATION TO BRAIN AND NUTRITION.

Dr. FRANCIS WARNER presented an elaborate report on this subject, which was taken as read. The examination of 5,344 pupils in schools, of which an analysis was published by a Committee of the British Medical Association last year, appeared to have established the usefulness of such work as a section of clinical and pathological inquiry, and had also demonstrated that it was possible by the methods thus employed, and by careful examination and analysis of results, to prepare a body of statistics demonstrating the relative frequency, and the distribution of certain physical conditions among school children. Such work appeared to be necessary as a preliminary to ascertaining their causation. Evidence had been obtained showing certain connections between conditions of development, nutrition, and nerve balance. The condition of children seen in public elementary schools had been contrasted with those in the pauper schools, and other exceptional groups of pupils. The analysis in the annexed tables was prepared from the report published last year.¹ The following conclusions were drawn from them :

1. Defects in development are most common in boys. Taking the whole group of pupils seen, defects of development were found in 399 cases—of the boys in 9.8 per cent., in girls 5 per cent. This law held good as one glanced down the percentages of Table I, column A. In the ten public elementary schools there were 2.2 per cent. of cranial abnormalities; in the pauper school 4.2 per cent. Evidently the pauper school received less well made children than the public elementary schools. The following facts, embodied in the table here appended, concerning the distribution of certain conditions between the series, were obtained from various hospitals. (See Table II.)

2. Defects in development have a causal connection with nerve signs. The group of 399 pupils with visible defects of development showed nerve signs in 36 per cent. and the 31 cases with triple defects showed 55 per cent. with nerve signs. In examining the details of Table I, Column C, as to the relation of nerve signs to

¹Report on Condition of School Children published by Cambridge University Press.

TABLE I.

DEFECTS IN DEVELOPMENT.	A. No. of Cases. Percentages of boys and girls on the totals severally.			B. LOW NUTRITION. No. of Cases. Percentage on Column A.			C. NERVE-SIGNS. No. of Cases. Percentage on Column A.			D. MENTAL DULNESS. No. of Cases. Percentage on Column A.		
	B.	%	T. %	B.	%	T. %	B.	%	T. %	B.	%	T. %
Whole group Boys 2,794—Girls 2,550—Total 5,344 ...	...	...	...	...	...	...	...	...	...	...	...	...
All defects of development ...	274	9.8	125	5	399	7.4	62	22.6	40	32	102	25
Cranial abnormalities ...	166	5.9	65	2.5	231	4.3	43	25	24	37	67	29
Palate defective ...	77	—	40	—	117	—	29	37	13	32	42	35
Ear defective ...	64	2.3	17	.68	81	1.5	17	26	4	23	21	26
Epicanthus ...	37	1.3	21	.82	58	1.0	6	16	5	24	11	19
Cases of triple defects ...	24	.85	7	.27	31	.58	11	46	6	85	17	55
Group of 10 Primary Schools—Boys 1,944—Girls 1,987—Total 3,931.	...	...	...	...	...	...	...	...	...	...	...	...
For the total of these cases ...	—	—	—	—	—	—	72	3.7	60	3.0	132	3.3
Cranial abnormalities ...	82	2.9	37	1.4	119	2.2	28	34	15	40	43	36
Pauper school—Boys 637—Girls 440—Total 1,077.	...	...	...	...	...	...	...	...	...	...	...	...
For the total of these cases ...	—	—	—	—	—	—	6	.95	7	1.5	13	1.2
Cranial abnormalities ...	32	5.0	14	3.2	46	4.2	3	9.3	2	14	5	11

Cases included in Column A are analysed in Columns B, C, D.

the sexes, this appears sometimes to the disadvantage of the girls—sometimes on the side of the boys; some explanation must be given. In the ten elementary schools 200 pupils showed nerve signs—boys 4.57 per cent., girls 5.58 per cent. After preparing statistics for the Committee, he (Dr. Warner) found that these nerve signs should be divided into two groups. There was a great difference in the nerve signs most common in primary schools and in the 4 exceptional schools; these were given in Table III. In the pauper school nerve signs were present in 4.6 per cent. cases—boys 5.8 per cent., girls 2.9 per cent.; they were twice as frequent in boys as in girls. Looking at Table III, it was found that “frontals overacting” and the “weak hand” were much more common among the paupers than among the elementary school children. This was probably associated with their low average

TABLE II.

	Total Number	Percentages of Boys and Girls on the Totals severally.			
		Boys.	Per Cent.	Girls.	Per Cent.
Cleft palate and hare-lip	207	121	58.4	86	41.5
Defects of bladder and urethra ...	35	34	97.1	1	2.7
Congenital defects of heart	16	9	56.2	7	43.3
Talipes	249	161	64.6	88	35.3
Pseudo-hypertrophic paralysis ...	34	34	100.0	—	—
Chronic hydrocephalus	56	33	58.9	23	41.0
Deaf-mutes (report of Royal Com- mission)	14,874	8,043	54.0	6,831	45.2
Epilepsy	335	199	59.4	136	40.6
Chorea	502	188	35.4	314	62.5
Rickets	1,783	1,071	60.0	712	44.2

of development. On the other hand, the “nervous hand” was more common among the neurotic children in the public elementary schools.

3. Defects of development have a causal connection with nutrition. In the primary schools the average percentage of low nutrition was 3.3—boys 3.7, girls 3.0—but among the children with cranial abnormalities the percentage rose to 36.0—boys 34.0, girls 40.0. In the pauper school there were fewer cases of low nutrition; but still, this condition was about ten times higher in pupils with cranial abnormalities. This law was well illustrated in Table I, Column B, the lowest nutrition being in examples of triple defects and defective palate, the conditions mostly associated with nerve signs and mental dulness.

4. Defects of development have a causal connection with mental dulness. This association was seen in highest degree in the case of triple defects, 51 per cent.; next in pupils in pauper school with cranial abnormalities, 48 per cent. In the elementary schools the

badly made heads produced only 22 per cent. of mental dulness. This might in part be due to the fact that rickets was unequally distributed—a condition that might cause defect of cranium without being associated with causes of mental dulness. In elementary schools the 119 cases of cranial abnormalities showed 24.3 per cent. of rickets (29 cases); in the pauper school there was only 17.4 per cent. of rickets (8 cases).

TABLE III.

NERVE SIGNS.	B. 1944 G. 1987—T. 3931 10 Public Elementary Schools. No. of Cases. Percentage on Totals severally.						B. 850 G. 563—T. 1413 *4 Exceptional Schools. No. of Cases. Percentage on Totals severally.					
	B.	%	G.	%	T.	%	B.	%	G.	%	T.	%
Nervous Hand	44	2.2	69	3.4	113	2.8	25	2.8	5	.88	30	2.1
Weak Hand	10	.52	22	1.1	32	.83	16	1.8	6	1.0	22	1.5
Finger Twitches	20	1.04	27	1.3	47	1.1	25	2.9	10	1.7	35	2.4
Orbicular Muscle of Eyelids Toneless	14	.75	11	.55	25	.63	4	.47	1	.1		
Frontals Overacting ...	41	2.1	2	.10	43	1.0	68	8.0	13	2.3	81	5.7
Lordosis	15	.77	41	2.0	56	1.4	18	2.1	5	.88	23	1.6

* These four Exceptional Schools include the large Pauper School; two Certified Industrial Schools; and 50 dumb children.

These and like observations and statistics might serve to contrast the general character of the pauper school with the others. In the former the percentage of cranial defects was double that in elementary schools, and this was chiefly among boys, but their nutrition did not suffer nearly as much as in elementary schools. They presented nearly as large a percentage of nerve signs as in the primary schools, but they were nearly twice as common among boys as girls. The pauper child was less well developed, and the condition appeared worse among boys than girls.