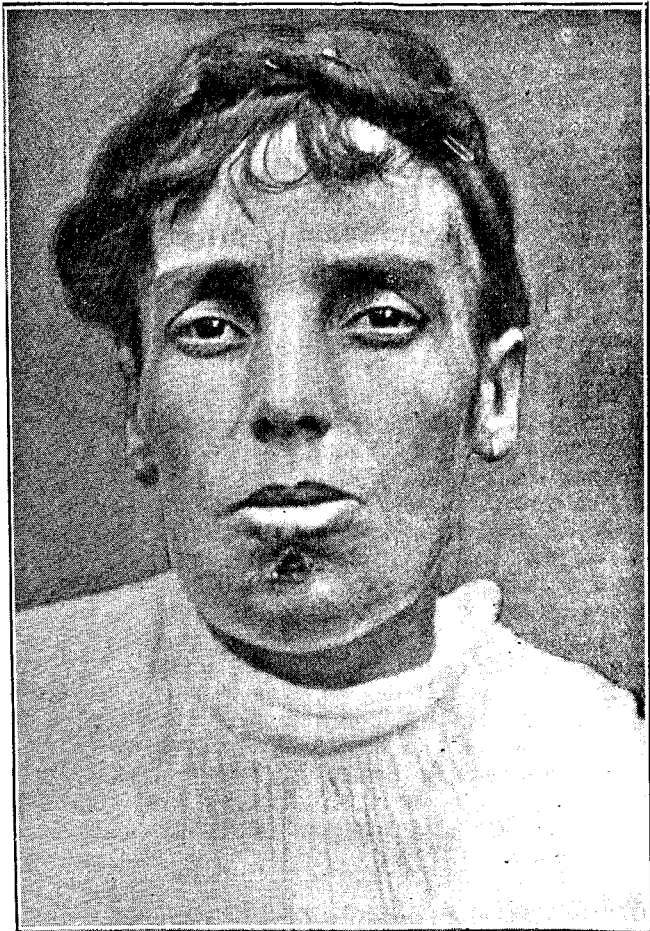


last summer. The woman applied for treatment at the Bourne Valley Dispensary. The appearance of the "sore" of which she complained was that of a large mature vaccine vesicle and on inquiry I learned that her baby had been vaccinated a fortnight before and that the arm had "taken" well. The exact manner in which the virus had been transferred could not be ascertained. The baby's finger-nail



seems the most probable instrument of inoculation. The lip, as the illustration shows, was much swollen and it was very painful; there was considerable constitutional disturbance—pyrexia, headache, &c. These symptoms subsided in a few days and the vesicle ran the usual course.

Parkstone.

A FURTHER CONTRIBUTION TO THE STUDY OF MENTAL FATIGUE IN SCHOOL CHILDREN.

BY DR. JOSEPH BELLEI,
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It is very useful to compare the mental fatigue produced in school children by the afternoon lessons (1) when there is only a short rest between the forenoon and the afternoon lessons and (2) when this rest is greater, in order to see if this last system of school hours is better than the first one. In my treatise on "Mental Fatigue in School Children" ¹ are collected the results that I obtained with regard to afternoon teaching when this began only three-quarters of an hour after the conclusion of the forenoon classes, the interval of rest being from 12 noon to 12.45 P.M. and I am therefore in a position to compare these results with those I obtained last year, in which the afternoon lessons began two hours after the conclusion of the forenoon classes, the interval of rest being from 12 noon to 2 P.M. During this time the poorer children received a meal supplied at the public expense and those who were better off went to their homes.

As in the year 1900 I used the dictation method in these researches and in order to be able to compare the results obtained at two different periods I employed last year at the

beginning and at the end of the afternoon classes the same dictation exercises as in 1900; I also took care that in the new one prepared for the experiments of last year the children should find the same difficulties as in the other two. The schools in which the trials were made were the same in which I experimented five years ago. The first dictation was given to the children at 2 P.M. when school was resumed for the afternoon classes, the second at 2.45 P.M., and the third at 3.30 P.M. during the last half hour of the lesson. For the correction and counting of mistakes I used the same method that I used in my work of 1900, reckoning separately mistakes and corrections made by the children. I also counted the children who did not make mistakes and divided the others into groups corresponding to the number of mistakes that they had made.

I do not report here the results obtained in all the classes but I have summarised them as if there were in all only two containing children of the average age of 11 years and eight months. I also show here the tables exhibiting the results obtained in 1900 in order that I may be able to compare the latter with the former and draw the conclusions that follow from the comparison.

TABLE I.—Boys' Schools: General Summary of Results of the Year 1905.

Trial.	Hours (P.M.).	Average age.	Written letters.	Mis-takes.		Differences.	Auto-cor-rections.		Boys who did not make mis-takes.		Average of mistakes for every boy.	Below the average.	
				Total.	Per cent.		Total.	Per cent.	Total.	Per cent.		Total.	Per cent.
1	2	11 years and 8 months.	97,474	330	0.338	—	63	0.064	157	48.1	1.01	244	74.8
2	2½		96,368	811	0.841	+ 0.503	111	0.115	50	15.7	2.55	192	60.5
3	3½		98,820	849	0.859	+ 0.018	140	0.141	57	17.5	2.62	190	58.6

Boys.—Table I. shows in a concise form the results obtained last year in schools for boys. It will be seen that after three-quarters of an hour of lessons the boys made a percentage of mistakes 0.503 greater than the corresponding number obtained at the moment of the beginning of lessons after the midday rest. Also the percentage of auto-corrections was 0.051 higher at 2.45 P.M. than at 2 P.M. and the percentage of the boys who did not make mistakes fell from 48.1 at 2 P.M. to 15.7 at 2.45 P.M. At 3.30 P.M. the percentage of mistakes augmented only by 0.018 and that of auto-corrections by 0.026, while the percentage of boys who did not make mistakes rose from 15.7 to 17.5. The general results are that from the moment of the beginning of the afternoon lessons at 2 P.M. to the moment of the end of the school at 3.30 P.M. the percentage of mistakes augmented by 0.521 and that of the auto-corrections by 0.077, while the percentage of the boys who did not make mistakes diminished by 30.4 and the average of mistakes for every boy went from 1.01 to 2.62.

TABLE II.—Boys' Schools: General Summary of Results of the Year 1900.

Trial.	Hours (P.M.).	Average age.	Written letters.	Mis-takes.		Differences.	Auto-cor-rections.		Boys who did not make mis-takes.		Average of mistakes for every boy.	Below the average.	
				Total.	Per cent.		Total.	Per cent.	Total.	Per cent.		Total.	Per cent.
5	12½	11 years and 4½ months.	87,600	640	0.730	—	69	0.078	61	20.89	2.19	162	55.4
6	2½		89,340	1348	1.508	+ 0.778	124	0.138	17	5.86	4.64	174	60.0

From Table II. it will be seen that in the year 1900, during the same period of time—namely, after two hours of lessons—the percentage of mistakes for every boy augmented

¹ Bologna: Regia Tipografia, 1901. A short article of mine on the same subject appeared in THE LANCET of May 11th, 1901, p. 1330.

by 0·778, and that of auto-corrections by 0·060, whilst the percentage of children who did not make mistakes diminished by 15·03. The average of mistakes for every boy went from 2·19 to 4·64. Between the results obtained in 1900 and those obtained in 1905 there are differences which required to be analysed. In the year 1900 the percentage of mistakes was 0·257 higher than in 1905, whilst the percentage of the auto-corrections was a little smaller. The percentage of boys who did not make mistakes after two hours of lessons was higher in the year 1905 than in 1900, but was higher in relation to those who did not make mistakes at the beginning of the afternoon lessons than to those who made mistakes at the end of the afternoon lessons. In the year 1905 the difference in the percentage between the results obtained at 2 P.M. and those obtained at 3.30 P.M. was 30·6, whilst after the same period of time in the year 1900 it was only 15·03. The average of mistakes for every boy was higher in the year 1900 than in the year 1905, but it was higher also at the beginning of the afternoon lessons immediately after the midday rest and therefore the difference, although great, is less than appears at first sight. From this it may be concluded that the work done by the boys during the afternoon lessons was in 1905 a little better than in 1900, although also in 1905 after only a quarter of an hour's work a great number of mistakes were found.

TABLE III.—*Girls' Schools: General Summary of Results of the Year 1905.*

Trial.	Hours (P.M.).	Average age.	Written letters.	Mis-takes.		Differences.	Auto-cor-rections.		Girls who did not make mis-takes.		Average of mistakes for every girl.	Below the average	
				Total.	Per cent.		Total.	Per cent.	Total.	Per cent.		Total.	Per cent.
1	2	11 years and 8 months.	55,614	177	0·318	—	36	0·064	78	41·9	0·95	78	41·9
2	2½		54,112	349	0·644	+0·326	46	0·085	46	25·8	1·96	83	46·6
3	3½		58,865	434	0·737	+0·093	73	0·124	41	21·2	2·249	129	66·8

Girls.—Table III., which summarises the results obtained in the girls' schools in 1905, shows that after three-quarters of an hour of lessons—namely, at 2.45 P.M.—the girls made a number of mistakes higher than at 2 P.M., corresponding to a percentage of 0·322. The percentage of the auto-corrections went from 0·064 at 2 P.M. to 0·085 at 2.45 P.M. The percentage of girls who did not make mistakes was 16·1 less at 2.45 P.M. than it was at 2 P.M. At 3.30 P.M. the percentage of mistakes was higher by only 0·093 and that of the auto-corrections by 0·039, whilst that of the girls who did not make mistakes diminished by 4·6. Therefore it results that from 2 P.M. to 3.30 P.M. the percentage of mistakes augmented by 0·419 and that of the auto-corrections by 0·060, whilst that of the girls who did not make mistakes diminished by 20·7. The average of mistakes for every girl went from 0·95 to 2·24.

TABLE IV.—*Girls' Schools: General Summary of Results of the Year 1900.*

Trial.	Hours (P.M.).	Average age.	Written letters.	Mis-takes.		Differences.	Auto-cor-rections.		Girls who did not make mis-takes.		Average of mistakes for every girl.	Below the average	
				Total.	Per cent.		Total.	Per cent.	Total.	Per cent.		Total.	Per cent.
5	12½	11 years and 8 months.	36,300	108	0·297	—	26	0·071	58	50·87	0·94	71	62·50
6	2½		37,453	266	0·710	+0·413	46	0·122	23	18·40	2·12	82	65·60

The results obtained in the year 1900 and set out in Table IV. show that during two hours of lessons the percentage of mistakes augmented by 0·413 and that of the

auto corrections by 0·051, whilst that of the girls who did not make mistakes diminished by 32·47. The average of mistakes for every girl augmented by 1·18. The differences between these two trials are so little that one can conclude that the results obtained from the girls were identical in the year 1905 and in the year 1900.

From the two tables which summarise the results obtained in 1905 it will appear that in respect of quality there is very little difference between the children's school work done at 2.45 P.M. and at 3.30 P.M., but that, on the other hand, there are great differences between the school work done at 2 P.M. and at 2.45 P.M. The fact that the quality of the school work is almost the same at 2.45 P.M. and at 3.30 P.M. proves that after three-quarters of an hour of afternoon lessons (even if there is a two hours' interval between the forenoon and afternoon classes) the children are so tired that their work is full of mistakes and becomes only a little worse after another hour of lessons. As the results obtained in the boys' schools and in the girls' schools were identical, it may be said with certainty—as I have already mentioned in my observations on mental fatigue—that although the children are after the mid-day rest in a condition of mind capable of accomplishing the best work of the day, nevertheless they cannot support three-quarters of an hour of mental application without betraying mental fatigue. Again, the results obtained in the year 1905, when there was a rest of two hours between the morning and the afternoon lessons, are almost identical with those obtained in the year 1900 when this rest was only of three-quarters of an hour's duration. It is therefore obvious that the first method of teaching presents no real advantages over the last one.

The conclusions at which I arrived in the year 1900 are accordingly confirmed by these later researches and I feel myself entitled to repeat with more certainty than ever the following words with which I closed my book upon mental fatigue in school children: "The work done by the children during the afternoon lessons is, on account of the great mental fatigue that it involves, of no advantage to their instruction but is full of danger to their health."

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A CASE OF GLANDERS.

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A MAN, aged 37 years, a porter in the meat market, was admitted into the Royal Free Hospital on Jan. 5th, 1903, under the care of Mr. James Berry, to whose kindness I am indebted for permission to publish this case. The illness apparently began on Dec. 1st, 1902, with a slight attack of pleurisy, which lasted ten days, after which the patient resumed work. While out walking, however, on Dec. 16th he was seized with severe pain in the left leg and for the next three weeks was treated and sent into hospital as a case of acute rheumatism.

On admission the temperature was 102·4° F., the pulse was 96, and the respirations were 26. There was no swelling or inflammation of the hip or leg, but much pain on movement of the thigh; there was tenderness in the region of the hip-joint and down the back of the leg, especially behind the knee; the leg was easiest in the position of semi-flexion. On Jan. 14th severe pain was felt in the right arm and the elbow-joint became swollen; definite swellings also appeared above and below the joint in the subcutaneous and muscular tissues extending half-way up the arm and a quarter the way down the forearm. The skin was reddened and pitted deeply on pressure and the condition resembled that of cellulitis. Some crepitations were heard over the lungs. The temperature ranged from 102° to 104° and the patient was obviously very ill. The case was now regarded as one of septicæmia. The left ankle and right knee-joint became successively swollen and painful. On the 19th, five days before death, pustules appeared on the right arm over the swollen areas; these were discrete at first, with hard indurated base, varying in size from that of a pin's head to that of a split pea; later these became confluent, breaking down to form serpiginous ulcers. On the 20th a swelling appeared on the left cheek, which fluctuated, and the left eyelids became