

THURSDAY, NOVEMBER 27, 1884

## OVER-PRESSURE IN ELEMENTARY SCHOOLS

THERE has lately arisen a warm controversy about over-pressure in schools, and its alleged results. The points in dispute are unquestionably important, and deserve the careful thought of all those who are interested in the intellectual and physical development of the rising generation. The cry of over-pressure was raised some years ago with reference to middle-class schools, and during the discussion of the Proposals of the Education Department for the New Code it extended to elementary schools. The National Union of Elementary Teachers took up the subject at their meeting at Sheffield during the Easter week of 1882. In July they had an important conference with Members of Parliament at the House of Commons, and they have continued ever since to agitate for a relaxation of Government requirements. Their views were supported by the opinions of several medical men, and were gladly seized hold of by the opponents of the education of the people. The matter came before the Social Science Congress at Huddersfield and the Health Exhibition at South Kensington. It has been investigated and reported on by several School Boards. The *Times* has dealt with it in able leading articles, and the *Pall Mall* in prettily written "Idylls." The Education Department itself, and both Houses of Parliament, have been stirred by it, while the personal combat between Dr. Crichton Browne, one of the Lord Chancellor's Visitors, on the one side, and Mr. Fitch, one of the best known and most highly esteemed of Her Majesty's Inspectors, on the other, has added a flavour to the controversy.

The question is a large and complicated one. In dealing with it I have no intention of touching on any personal matters in dispute, nor of speaking of the pressure on School Board members, or on teachers. Our educational systems exist for the sake of the children, and must stand or fall according to the effect upon them. My remarks also will be restricted to public elementary schools, whether "voluntary" or "Board," though I do not believe that they are so open to the charge of over-pressure as many of our middle-class or higher schools.

The allegations are of the most serious order. It is not so much that here and there one poor child dies of disease brought on by over-work; but it is held that the bodies of our scholars are being systematically sacrificed to an abnormal development of their minds, and that there is growing up a generation whose nerves are over-strung, and who are becoming more and more liable to diseases of the brain and connected organs. The defenders of the present system, however, assert that these charges are enormously exaggerated, and that all reasonable precautions are taken against the occurrence of the evil.

In all this conflict it is difficult to find evidence of a scientific character; there is more rhetoric than argument, and even when the figures of speech are supplemented by statistics, the conclusions drawn from them seem open to question. There are, however, two conclusions which will scarcely be disputed by any one who has looked at the matter with any amount of impartiality.

(1) *That in all large schools there are children who are*

*in danger of over-pressure.* Take the typical case of a class of seventy children, starting with about the same attainments. The bulk of these will be average boys, or girls, as the case may be, fairly healthy and intelligent, not given to over-much study, but still ready to fall in with the requirements of the school. But there will also be some half-starved children, who often come without any breakfast, dull children—descendants of a wholly uncultured race—feeble children, and others averse to any restraint and constitutionally irritable, together with children who are weary with toil at home, or with hanging about late at night, or working early in the morning before they go to school. Besides these there are the exceptionally clever children, who are in danger of under-pressure, and the over-sensitive or ambitious, who are prone to over-work themselves if allowed the opportunity. It is evident that the general scope of the instruction must be adapted to the average of the class. To reduce it to the level of the physically or mentally weak would be a cruel wrong to the majority of the children, and an injustice to the public, who, by means of taxes, rates, or voluntary contributions, mainly support the school.<sup>1</sup> But this insures the possibility of more being expected from some of the other boys or girls than they have the power to perform. This danger is aggravated where, as in many country parishes, it is difficult to raise sufficient funds to provide a proper staff and appliances for teaching, while the very existence of the school is dependent upon each child earning as large a Government grant as possible. The danger is aggravated also by the shocking irregularity with which those children attend who are driven in from the streets. Happily elementary schools are usually exempt from one prolific source of over-pressure—competitive examinations. The annual Government examination is simply for a pass, and is looked forward to with pleasure by the majority of the children.<sup>2</sup> The practice of the more important bodies of management is, I believe, similar in this respect to that of the London School Board, which recognises no competition between one child and another, unless it be for the Scripture prizes and a few scholarships, which it administers for other parties.

(2) *That in a large number of instances the circumstances of school life are more favourable to health than the home life.* Before the days of compulsory education many thousands of children passed a joyless existence shut up in close and often fetid rooms, or turned out in all weathers into the streets or alleys. Now these children are brought into warm, well-lighted, and well-ventilated school-rooms, where habits of cleanliness and self-respect are inculcated, and where both their bodies and minds are duly exercised. This is especially the case in the newly-constructed Board schools. It is difficult to show this improvement by statistics of health, but we have the statistics of death. The Registrar-General, having been applied to on this matter, reported that "the death-rate of children (from five to fifteen years of age) in 1861-70 was 6.3 per 1000. It fell in 1871-80 to 5.1 per

<sup>1</sup> So far from the majority of the children being over-pressed, it is admitted by Dr. Crichton Browne that 70 or 80 per cent. can accomplish the annual work required by the Code easily.

<sup>2</sup> An attendance-officer, formerly a schoolmaster, has just written to me as follows:—"I have ever found the children looking anxiously and joyously forward to the day of examination, so much so that it would be nothing short of absolute cruelty to deprive any of those dear little souls of their long-hoped-for privilege."



1000, a decline of 19.05 per cent.”; that “the main part in this fall was due to diminished mortality from the chief zymotic diseases”; that death from other diseases had also declined, “whereas the death-rate from nervous affections remained unaffected,” or, possibly, slightly increased. A diminution of 19 per cent. in the death-rate is a great gain, and that this is not to be wholly or mainly attributed to improved sanitary conditions in their dwellings is shown by the fact that the diminution of mortality is much smaller in children under the school age.<sup>1</sup> But the question arises, granted that going to school is in the main favourable to health, what about these nervous diseases? Is their probable increase the result of increased attendance at school during the last decade? Dr. Crichton Browne has drawn out and discussed at great length the statistics of lunacy and the mortality from hydrocephalus, cephalitis, diabetes, nephritis, Bright’s disease, uræmia, rheumatic fever, and rheumatism, and shows that during the five years 1876–80 there was an increase of these diseases. But the remarkable fact comes out that this increase has affected all ages. The increase of death from diseases of the kidneys has been greater among persons of twenty years and upwards, and the increase from inflammation of the brain and its membranes has been greater among children under five years of age than among those who have attended school during the period in question.

But the statistics of disease would be more valuable than those of death. Unfortunately they scarcely exist. Dr. Crichton Browne has, however, tabulated the results of his inquiries on this subject in eleven London schools. In regard to headache, to which he has naturally paid great attention, he has arrived at the startling conclusion that “as many as 46.1 per cent. of the children attending elementary schools suffer from habitual headache.” He analyses the nature of these headaches very fully, but to ask a class of children to hold up their hands in response to the question, “How many boys or girls here suffer from headaches often, or now and then?” is far from being a scientific method of procedure. His tables of comparison between the different Standards seem to me more valuable as evidence. If any real mischief is going on in our schools, it will betray itself in the evil being more apparent among those children who have been longest at school. In the case of short-sightedness, which, from investigations on the Continent, Mr. Brudenell Carter’s inquiries at home, and other sources of information, we know to be a growing malady, the increasing percentage from Standard I. to Standard VI. is very apparent from Dr. Browne’s table, rising, as it does, from 2.5 to 9.2. In the case of headache there is a slight increase; but in the case of sleeplessness and neuralgia or toothache there is a very marked decrease. No doubt the inquiry is a very complex one, and it is impossible to separate the different factors in the result, but these tables certainly invalidate rather than support the opinion that the nervous systems of the children in our primary schools are being seriously undermined.

In so important a matter as the health of the rising generation we should welcome any additional knowledge that may be the outcome of this controversy; but the point of practical importance is how to maintain to the

<sup>1</sup> This matter is discussed in the *Statistical Journal* for June 1883 and June 1884.

utmost the beneficial results of our educational system, and at the same time avoid the danger of over-pressure in individual instances or under specially unfavourable circumstances.

The provisions of the Mundella Code and the recent Instructions to Her Majesty’s Inspectors ought to be fully carried out. In Article 8 of the Code managers are stated to be held responsible “for the care of the health of individual scholars, who may need to be withheld from examination or relieved from some part of the school work throughout the year.” In Article 109 it is stated: “The inspector will also satisfy himself that the teacher has neither withheld scholars improperly from examination, nor unduly pressed those who are dull or delicate in preparation for it at any time of the year; and that, in classifying them for instruction, regard has been paid to their health, their age, and their mental capacity, as well as to their due progress in learning.” The local managers are also considered the best judges of the special circumstances which render it inexpedient to require home lessons. But how are managers to judge of the health of individual children? The proposal that a monthly record of the height, weight, head and chest girth of all the children should be kept in every school is not likely to be adopted, on account of the enormous additional expense which it would entail; but it would not seem impracticable to draw up some simple regulations for teachers or managers which might enable them to detect an anæmic or neurotic condition or the incipient stages of nervous malady.

A guard ought to be set against those practices which tend to over-pressure. These are pretty well known to practical teachers. The London Board has during the last two or three years taken several steps in this direction. The teachers used to be paid partly from the Government grant, and thus had a pecuniary incentive to press forward the feeble, so as to insure their passing the examination. There were great difficulties in altering these arrangements, but it was accomplished at the close of last year. It is a common practice to prolong the hours of teaching, especially shortly before the inspector’s visit; this was objected to by the London Board four years ago, and now is forbidden. Home lessons are left optional with the teachers and the parents. Improved physical exercises for girls have been introduced. The Education Department has been induced to diminish the excessive requirements of the Code in regard to needlework. Arrangements also are being made for relieving the pupil-teachers to a large extent from their labours in the schools.

It is to be hoped that one beneficial result of this discussion will be an increased perception of the necessity of variety in the subjects of instruction. In the words of Mr. E. N. Buxton, Chairman of the London Board, “It is monotony which kills; indeed, we look to a wholesome variety as a means of welcome relief.” Happily the Code now requires “varied and appropriate occupations in infant schools;” and this is largely insisted on in the recent Instructions to Her Majesty’s Inspectors. The dreary monotony of the three R’s in the 1st Standard and in backward schools should be relieved by object-lessons or other interesting occupations, and literary studies should be balanced by the elements of science as well as by drawing,



singing, drill, and cookery or handicraft. It is a matter of common experience that whatever increases the vigour or quickens the intelligence of children enables them to acquire book-learning in a much shorter space of time. In whatever points educationists may differ, there will be a general agreement that the bodily senses of our young working-class population ought to be developed as well as their mental faculties, and that it is highly important for them at least to know something of the world in which they live and of the materials and natural forces with which they work.

J. H. GLADSTONE

*THE DISTRIBUTION OF THE METEOROLOGICAL ELEMENTS IN CYCLONES AND ANTICYCLONES*

*Sur la Distribution des Éléments Météorologiques autour des Minima et des Maxima Barométriques.* Par H. Hildebrand Hildebrandsson. Présenté à la Société Royale des Sciences d'Upsal le 10 Mars, 1883. (Upsal, 1883.)

WITH the publication of the first synoptic weather-maps in Europe and America about the middle of the present century, the scientific study of the great movements of the atmosphere and other phenomena of weather may be considered as having commenced. This method of inquiry soon taught us that in different parts of one and the same barometric depression or cyclone, very different climatic conditions prevailed. In the front part of the depression the weather is warm, moist, and clouded, whilst in the rear it is cold, dry, and clear. Further inquiry showed equally distinct types of weather characterising different parts of high-pressure areas or anticyclones. So close indeed are these relations that the study of weather resolves itself very much into an examination of the phenomena attending cyclones and anticyclones. If we could certainly prognose the distribution of atmospheric pressure over North-Western Europe on, say, Saturday next, we could for the same time forecast pretty correctly the weather over this part of the earth. Similarly, if we could forecast that the easterly tracks of the cyclones of the coming winter were to be south of the Channel, we could forecast a severe winter for the British Islands; and on the other hand if the path taken by these cyclones would be to the north of these islands, an unusually mild winter would certainly follow. Hence the supreme importance of any accession to our knowledge respecting cyclones and anticyclones. This is what Prof. Hildebrandsson's laborious and able paper does in various directions.

The direction and velocity of the wind as noted at Upsala at the surface of the earth, in the region of the lower clouds, and in the higher region of the cirrus, the temperature of the air, the amount of cloud, the frequency of rain, the transparency of the air, and the occurrence of fog are examined with reference to forty-three different sections or areas into which the author has partitioned cyclonic and anticyclonic systems according to the direction of the barometric gradient and the height of the barometer, three of these forty-three sections being the central areas of the cyclone and the anticyclone, and the space separating two cyclones which are not far apart.

As regards the direction of the wind it is shown that the angle made by the wind with the barometric gradient is greater in summer than in winter; greater at stations near the sea than at inland places; greater in cyclonic than in anticyclonic regions; and that the angle is the maximum, or the wind approximates most nearly to a circular course, when the gradient is directed towards the east, and the minimum when directed towards the west. The angle obtained for Upsala, which is nearly  $50^\circ$ , is greater than that obtained by Loomis for the United States, but less than what Mohr has found for Norway and Clement Ley for the British Islands. The observations made on three small islands were also examined, viz. Utklippan, a little to the south of Karlskrona, Wäderöbod, north-east of Jutland and a few miles off the Swedish coast, and Sandön, a low sand-bank about thirty-four miles north of Gothland, at which stations the angles are respectively  $64^\circ$ ,  $65^\circ$ , and  $74^\circ$ . Here the influence of the sea on the angle made by the wind with the gradient is very striking, being about a half more at the strictly insular position of Sandön than at Upsala.

The angle is at the maximum in the three islands when the gradient is directed towards the east, and the minimum when directed towards the west, as at Upsala, and as Clement Ley has shown for England, Hoffineyer for Denmark, and Spindler for Russia. One remarkable result is, however, shown with reference to each of the three islands, viz. the angle shows a well-pronounced secondary maximum when the gradient is directed towards the north-west. It is premature to attempt an explanation of the different degrees of the incurving of the wind upon the centre in the different parts of a cyclone, until similar results have been worked out for a large number of well-selected individual stations, and until a more definite knowledge is arrived at regarding the relative prevalence of ascending and descending aerial currents in the different sections of the cyclone and anticyclone.

The velocity of the wind is the minimum near the centres of cyclones and anticyclones, and in the middle space between the cyclones. From the central region of the anticyclone, the velocity of the wind increases as the barometer falls, and the maximum velocity is reached on approaching the calm central region of the cyclone. With respect to the gradients, the greatest velocity appears to occur when the gradient is directed towards the north and the least when the gradient is towards the west or the south-west.

In the region of the lower clouds, the wind takes a direction to the right of that of the wind at the surface of the earth. In other words, at this height the winds tend to follow the course of the isobars drawn for the sea-level pressure, with however two noteworthy exceptions. When the gradient is directed towards the west, the angle exceeds  $90^\circ$ ; but when directed towards the south or south-east, it is markedly less than  $90^\circ$ .

In the higher region of the cirrus clouds, the winds blow centrifugally from the region of the cyclone towards that of the anticyclone. The velocity is least in the vicinity of the central region of the cyclone, but it steadily increases as it approaches and flows over the region of the anticyclone. The centrifugal movement is greater in