

There is rarely any excuse for this mistake, as it is nearly always possible to place the desks or seats in such positions as to avoid it; but it is still not uncommon to see class-rooms or study-rooms, even in buildings erected specially for school purposes, in which the only comfortable and safe pair of eyes is the teacher's. The conditions to be observed are simple enough: the room should be oblong, and should be lighted by high windows in one of the long sides, and the rows of desks should be parallel to the short sides, and should face so that the light may come from the left. A large square room, with windows on two or more sides, can never be properly lighted.

In erecting a building for school purposes, it involves little or no additional expense to provide windows of sufficient size, and in utilizing a house built for other purposes it is usually possible to enlarge the windows if necessary. The majority of school-houses are, at best, not models of architectural beauty; and, at any rate, this is a matter of secondary consideration where such grave practical interests are involved. Further, it should be remembered that "there is an architecture for schools as well as an architecture for palaces. One is not less worthy of study than the other, and we are at fault in taste as well as in hygiene if we forget that here real beauty consists, above all things in the perfect adaptation of a building to its uses." In some Austrian and Swiss schools the plan has been adopted of fixing shades at the bottom of the windows, so that they may be unrolled upwards instead of downwards. By this arrangement, when light is excessive, it can be modified by excluding the portion that is less useful and agreeable, and admitting only that which comes from above. Light striking below the top of the desk can reach it only by reflection, and is uncertain and confusing.

At night, a number of desks cannot be lighted to advantage by any one source of light, however brilliant. The same rule as to direction should of course be observed as in the daytime. Liebreich recommends the use of reflectors, and suggests that they might be so arranged as to act, at the same time, as ventilators. The vitiation of the atmosphere by the combustion of a number of lamps or gas-jets is not to be lightly considered. Ground-glass globes are condemned by all authorities as unsuitable for school purposes. The very property that makes them useful for the general lighting up of a room, that of diffusion, unfits them for this use.

The size and form of the desk, and its relation to the seat, are not without their effect upon the welfare of the eyes. To use desks and seats of the same pattern and size for a large number of children of all ages, is not more rational than the system of distribution of army clothing, by which, as Dickens complained, all the tall soldiers got the short pantaloons and the short soldiers got the long ones. If a child is uncomfortably seated, he is pretty sure to lean forward on the desk, thus bringing his eyes too close to their work, and, at the same time, overfilling their blood-vessels by gravitation.

As the muscles of the back become fatigued by sitting long in a constrained position, the tendency is to bend over more and more, and this faulty position, at first assumed for temporary relief, becomes, by frequent repetition, a confirmed habit, and may end in permanent deformity. Thus a relation is established between short-sight and spinal curvature, and either may promote or increase the other.

Another affection of the eyes that may result from improper arrangements for study, is that known to ophthalmic surgeons as "muscular asthenopia," a disturbance of the harmonious action of the muscles that move the eyes and direct them both to the same point of the book or paper. An excessive convergence to an object too close cannot be maintained without injurious strain, and

a direction of the axes of vision upwards or sidewise demands an unnatural, and therefore fatiguing, combination of muscular actions. It will be readily understood how the positions often assumed by children at school must necessitate one or even all of these conditions.

According to Liebreich, the most common and important defects in school furniture are the following:

"1. Want of, or unsuitable backs.

"2. Too great a distance between the seat and the desk.

"3. Disproportion, generally too great a distance, between the height of the seat and that of the desk.

"4. Wrong form and slope of the desk."

Illustrations of model desks and seats, proposed by Liebreich for remedying these defects, may be found in his lectures on school-life.

"The back ought to be straight, and consist of a piece of wood only three inches broad. If this is fixed at a proper height, viz., close above the hips, it supports the loins sufficiently to make it easy and comfortable for even the most delicate children to sit perfectly upright. The seat ought to be broad enough to support almost the whole length of the thigh, and the height of the seat such as to allow the sole of the foot, in its natural position, to rest on a foot-board. The edge of the desk must be perpendicularly above that of the seat, and just high enough to allow the elbow to rest upon it, without displacing the shoulder."

A flat desk promotes a stooping position, with its attendant evils of close sight and gravitation of blood to the eyes, and, besides, does not permit the direction of vision most favorable to the natural and most easy movement of the eyeballs. An inclination of forty or forty-five degrees is considered the best for reading, as, when the body is erect, the eyes are downwards and forwards; this brings the page about at right angles with the line of vision. This slope would be too steep for writing, and an angle of about twenty degrees is recommended. The inclination of the desk may be changed by a very simple mechanism.

Still more serious considerations (which it would be out of place to discuss here) are involved in this question of the construction of desks and seats. A distinguished orthopædic surgeon, Eulenberg, has stated that ninety per cent. of curvatures of the spine, not induced by local disease, are developed during school-life; and a number of high authorities have testified to the sad effects that crooked and stooping positions at school may have upon the heart and lungs and abdominal organs as well as upon the spine and the sight.

## Notes and News.

### ONTARIO.

Mr. R. Lewis, Head Master of the Dufferin School, Toronto, has been appointed teacher of elocution in Knox College.

Seaforth High School is doing good work under the energetic and able Principal, Mr. Chas. Clarkson, B.A. At the last intermediate examination five students succeeded in passing. The attendance has increased from 50 to 73. Although the school has been in existence only about a year, it has been found necessary to employ an assistant and two monitors to aid Mr. Clarkson.

During the last month the Listowel Public School had 473 pupils on its roll, with an average attendance of 368.

The following is the attendance recorded at the Ottawa public schools for the month of September:—Total average attendance, 1,568; total on roll, 1,977; average regularity, 79 per cent.

Mr. Beer has been re-appointed principal of the Perth public schools.

The Perth public schools have received a present from Mr. Matheson of a fine collection of minerals made by Dr. Wilson, now of Edinburgh.

Dr. Herbert Bayne, of Halifax, has been appointed Professor of Chemistry in the Royal Military College, Kingston.