tial to health. Now, what is this atmosphere? It is a compound of two gases, *-oxygen* and *nitrogen*, *-* in the proportion of one part of the former to four parts of the latter. Although fourfifths of the atmosphere consist of nitrogen, we do not withdraw any of it by breathing. It is the oxygen alone that acts chemically on the blood in respiration. All living bodies must breathe oxygen or die; and all animal functions are maintained by the incessant play of affinities between the atmosphere and the organs.

How does the atmosphere of a school-room become vitiated? The body lives by converting dead organic matter into its own substance. This matter is removed from the influence of life as rapidly as it is brought under it. The removal is effected by the union of oxygen with the matter. The oxygen is received into the lungs in breathing; therefore by every breath we so far vitiate the air around us. At each breath we exhale eight or nine per cent. of carbonic acid gas:-the air is unfit for respiration if it contain more than three and a half per cent. of this gas. It is a well-known fact that to inhale the gas arising from burning charcoal in a close room, is often fatal. Charcoal is carbon, which, in the act of combustion, unites with the oxygen of the air, forming carbonic acid gas. Being heavier than common air, it falls to the floor, and, if generated in sufficient quantity, fills up the room, displacing the air above it, as does water poured into a vessel.

That we are constantly sending forth carbonic acid gas from the lungs, may be demonstrated by a very simple experiment. Inhale atmospheric air through the nostrils, and exhale by the mouth through a tube into a tumbler of limpid lime-water, which will soon become turbid like milk and water. Set it by for awhile, and when the water is again clear, a white precipitate will be observed at the bottom of the tumbler. Decant the water, and evaporate the sediment to dryness; the white powder is carbonate of lime, which may be tested by sulphuric acid.

Besides the carbonic acid gas and water emitted from the lungs, the skin also excretes oily matter, and salts of ammonia, soda, potassa, with acetic acid, carbonic acid, and water. Thus by the act of breathing and by emanations from the surface of the body, we are constantly vitiating the air around us; and in proportion to the vitiation of the atmosphere by the breath and exhalations from the skin, it becomes capable of receiving and transmitting the seeds of disease. It should be remembered in connection with this topic, that an ordinary lamp consumes as much oxygen while burning, as a man in health while breathing; and that, if there is a store in the room to warm it, the fuel requires its share of oxygen for combustion, all of which must be drawn from the air of the room. Hence, we infer that the supply of fresh air must equal the consumption, or mischief will ensue.

The ventilation of a school-room should be so conducted as to secure a full supply of fresh, dry, and moderately warm air; always remembering that the chief bad airs are the heavy carbonic acid gas, and the light hydrogen gas; and, therefore, to allow of their escape, there should be an outlet near the floor, and another near the ceiling, in accordance with Emerson's mode of ventilating buildings.

Rooms that are not furnished with suitable warming and ventilating apparatus, must be ventilated nevertheless, and that by the best means available, or evil consequences are sure to follow to those who resort thither. Let there be two, or even three ten-minute recesses in each half day, when the doors and windows may be thrown open, and the children sent out to exercise and breathe in the free air.

In the management of windows for purposes of ventilation, many teachers evince a sad want of good judgment and discretion, forgetting that by opening a *wide* space at the top of a window, it allows two currents of air to pass,—an upper warm current flowing out, and a lower cold one rushing in and pouring down, like a waterfall, upon the devoted heads of the little victims who may be seated near. A space of one inch at the top of each window, and a little space at the bottom, will do the work much more effectually and safely. And in the matter of regulating the temperature of the room, the teacher's *feelings* should not be used for the thermometer, but it should be determined by a good Fahrenheit hung four feet from the floor, and remote from the source of heat. If 64° feels cold to the teacher, it must be owing to some morbid condition of the system. Never allow the wearing of overcoats, shawls, capes, tippets, and the like, in the school-room, when the thermometer indicates the right temperature. The reason is obvious.

CAUSES OF DEFORMITY.—Auy remarkable deviation from the characteristic symmetry of the human form constitutes deformity, and is chiefly seated in the bones. The bones serve as the frame-work for the other parts of the body, surrounding and protecting the vital organs; and, in connection with the muscles, are the agents of locomotion. Bone is composed of two different substances,—gelatine, or animal matter, and *lime*, or earthy matter. The animal part predominates in early life; the two are about equal in middle life; and in old age there is more lime than gelatine, hence their liability to be broken. The bones increase in size and strength by use, and become weak by disuse. In infancy and childhood they are comparatively soft, more liable to bend than to break; they therefore require much more care

for their shape and growth than those of mature age. They are notfitted for labor and sovere exercise; neither will they bear long-con-tinued exertions or positions with impunity. "Just as the twig is bent, the tree inclines," is as true of the animal as of the plant; hence, in sitting, the child should either find rest for the entire length of the thigh bone, from hip to knee, upon the bench or chair, or the lower portion should be supported from the knees and legs by the feet rest-ing easily on the floor. In order to secure this position without restraint, the seats for children at school should be of such height as to keep the thigh bone in a horizontal position The seat being right, the writing-table or desk should be so adjusted as to allow the forearms to rest easily upon it without elevating the shoulders, or bend-ing the chest. If the seat and desk are adapted to the occupant, the sitting postures of the child can be more easily controlled by the We are aware that there is an attempt at graduating the teacher. height of desks and chairs according to the ages of the children in the several grades of schools. This is good as far as it goes; but the stature of children not being uniform with the age, and children not being classified strictly according to either, but rather by their mental qualifications, it becomes necessary to provide the individual child with such a chair and desk as suits him exactly, no matter what his rank may be in the scale of intellectual acquirements.

The *muscles*, which are the organs of motion in the body, must also be used, that their size and strength may be adequate to the demand made upon them. Rest must follow exercise, at or before the sense of fatigue, for long continued tension of a muscle exhausts its power, enfeebles its action, and eventually destroys its contractility. This physiological fact will serve to show that those who impose constrained postures upon children, as means of punishment, such as long standing on a small base, on one or both feet; holding an object with the extended arm, or with the teeth, or upon the head; pinioning the limbs; or any mode whereby painful fatigue is induced, are, to say the least, guilty of wanton barbarity or unpardonable ignorance, and are out of place in the school room.

Besides guarding against deformity in the limbs, the teacher should be upon the alert to ward off a much more serious evil in another quarter,-the spine and chest. The spine, or back-bone, consists of twenty-four separate bones pleed one on the other, with a substance resembling India-rubber between them. A canal extends through its entire length, containing the spinal marrow, which sends off in pairs the nerves of voluntary motion, and many of those nerves that give power to the lungs, the heart, and the stomach. These bones, in early life, are in part composed of an elastic substance, and are always of a porous texture. The peculiar organization of the spinal column renders it capable of much motion and very liable to deformity during the first twenty years of life. Its natural form is straight laterally, but curved backward in the chest and forward in the loins. The ribs and breast bone form the frame of the chest, a cavity which contains the heart and lungs. It is so contrived by the all-wise Architect, as to afford the requisite space for these vital organs freely to perform their functions.

When we consider the degree and nature of the service which this single long column, the spine, is called upon to perform, —that it supports the entire weight of the head, neck, and arms, and the principal part of the trunk; and at the same time gives lodgment to the spinal marrow, we may readily perceive that any causes, which affect the health and produce general debility, must operate powerfully on this part of the system. The spine, when weakened, gradually yields under its load, loses its natural curves, and acquires others; and these curves will be proportioned, in their degree and permanence, to the producing causes.

A distortion of the spine is necessarily accompanied by a distortion of the trunk of the body. That part of the column which supports the right arm is commonly the first to become affected, because of the elevation and action of the right arm in writing and drawing. It causes a bending towards the right shoulder, thus raising it higher than the left. This curvature to the right, in the upper portion of the spine, is accompanied, as a consequence, by a curvature to the left in the lower part, causing a projection of the left hip. Nor does the mischief stop here. As the ribs are connected with, and supported by, the spine, any movement of the latter must carry the former with it; hence, the ribs of the right side are pushed forward, causing a deformity in the forepart of the chest, and those of the left side are forced inwards or backwards. Thus this cavity, which was formed for the lodgment of the heart and lungs, and nicely adapted in its shape and dimensions to their necessities, is distorted and contracted; and, as a consequence of this encroachment upon the healthy action of these important organs, we need only mention-shortness of breath, palpitation of the heart, and the usual phenomena of dyspepsia, to indicate the duty of the teacher in this particular. He should be watchful of the postures which his pupils assume while seated at their studies, their attitudes when standing, and the ordinary carriage of the body in walking. He should repeatedly caution them to avoid all bad positions, while at work, such as bending the head, neck and