sufficient to present to the mind a clear conception of the complicated structure. Its various parts so nicely adjusted and well adapted to each other—its tremendous power and extreme velocity, could never be understood or appreciated unless it was thus seen and studied.

It is thus a question of great moment, how far material objects can be brought to assist in the improvement of the schools? Or, in other words, What tools can be put into the teacher's hands to enable him to do the most and best service, in the least time, and with the most economical expenditure of funds?

School apparatus may be enumerated under two classes. The first embraces those things which should be considered indispensable, and which no school should be without; the second contains such articles as may be considered exceedingly useful, though not absolutely essential, and also such as are most highly finished and expensive.

As the school law requires certain branches of science to be pursued in every section, we would distinguish that apparatus as belonging to the first class, which is necessary to demonstrate, illustrate, or teach those branches, viz.: Geography, grammar, arithmetic, reading, writing, and spelling, and also to assist in the management of the school. The large majority of the schools would require a complete set of apparatus adapted to this end; and some might even go further, and secure some of the instruments enumerated in the second class.

Those embraced in the second class, would consist of such *materiel* as would be used in the teaching of any particular branch of science, other than those named in the school law, as natural philosophy, chemistry, physiology, &c.

In the first place, the first-class apparatus will be treated of, because much that it includes would be applicable to schools of the highest grade.

"The bell strikes one. We take no note of time
But from its loss."
"Time is dealt out by particles;
To give it then a tongue is wise in man."

THE CLOCK AND TIME TABLE.—The habit of correct observation cannot be cultivated in a better way than by a constant reference to time. In school this is particularly the case. Every day has its appointed duties, and every hour its special exercise. To secure punctuality, regularity, harmony, and good order, a clock, which may now be obtained for a small sum, should be placed in some conspicuous position in the school-room. A time-table or programme of the class duties should also be neatly written, or printed in large letters, and hung up in an accessible place.

THE BELL.—A little hand-bell should accompany the clock, as a conservator of order, and will, if judiciously managed, save the teacher many an effort of the lungs. For opening the school, in changing classes, and at dismission, it is a sovereign remedy for noise and confusion. Sometimes a single clip of the clapper, accompanied by a glance of the teacher's eye, will speak a language "louder than words." For ordinary purposes, a simple twenty-five cent bell will be amply sufficient, and much preferable to the spring-bell, which is sometimes used.

THE ROLL AND REGISTER.—The school law requires a record of the attendance of the scholars, to be kept by the teacher, to be carefully preserved for future reference. To carry out the law in its letter and spirit, a register should be obtained by the Trustees, from the Local Superintendent, ruled according to the prescribed form, and sufficiently large to extend through a number of years. They should require it to be kept neatly and accurately, by the teacher, and presented regularly for inspection. A book of record of this kind, kept as contemplated, would exert a beneficial influence upon all connected with the school. To the trustees it would afford, at a glance, the comparative merits of one school with another, and of the present with the schools of the past. To the parent it would exhibit the attendance of the child, and its character. The pupil, knowing the permanence of the record, would strive to appear to the best advantage upon its pages. And lastly, the teacher could refer to it as one evidence of his neatness, regularity, and faithfulness.

THE THERMOMETER.—To ascertain the degree of temperature in the school-room (always a consideration of importance), there should be at least one thermometer. By means of the ventilators, the teacher may regulate the temperature, and prevent those extremes of heat and cold so injurious to health and prejudicial to comfort. The temperature should, if possible, range between sixty and seventy degrees. Thermometers, in tin cases, range in price from fifty cents to one dollar and fifty cents.

Thus far we have treated of those things which are important to preserve order, punctuality, and comfort. We will now refer to the apparatus necessary for teaching the required elementary branches.

APPARATUS FOR THE LITTLE ONES.—It would be an easier task to select and use the apparatus of a college, than to make choice of those things suitable for the "little ones" of the school.

"The earth was made so various, that the mind
Of desultory man, studious of change
And pleased with novelty, might be indulged."

The school-house should also be "made so various." If children be well taught in school, efforts must be made to satisfy their desire after novelty and variety. They must be interested; and to interest them, they must have constant employment.

THE SLATE.—Every child old enough to attend school should be furnished with a small, neat, well bound slate. All children love to draw figures and make marks with the chalk or pencil. If the propensity which affords them so much amusement, be properly directed, it will save them many a weary hour at school. If parents were confined six hours a day, with but little intermission, listening to their teacher of sacred things, in the church: or if the father were obliged to sit for several days constantly as a juror,—a slate and pencil, a picture, would afford great relief. Letters, words, and figures may be written, and pictures may be copied during the time which, without these amusements and employments, would be spent in idleness, restlessness, or mischief. Several kinds of slates are now in use. The lighter, stronger, and more beautiful the article, the more it will be prized and used.

TABLET LESSONS AND PICTURES.—To the great comfort of teachers and saving of primers, the pages of the first national reading-book in use has been printed in sheets, so as to be stretched on pasteboard. A class may recite from these with pleasure and profit. When not in use, the children may copy the words and letters on their slates. Cards, called "chalk drawings," to be used by children as copies at the black-board, are very useful and beautiful. They represent the object—a horse or a flower, as the case may be—on a black ground with white lines, so that they appear as if drawn with chalk on the black-board. The primary and secondary colors should be painted on cards, to teach children to distinguish colors, and to cultivate their taste for the beautiful.

BUILDING BLOCKS.—For the purpose of illustrating the principle of gravitation, about one hundred blocks, each one inch thick, one inch wide, and two inches long, should be provided. Many practical arithmetical difficulties might be explained by reference to a construction by the blocks; but the chief excellence of such a set would consist in the amusement and employment it would afford the "little ones." While the teacher was busy teaching a class, they would be no less busy in quietly building those little houses.

OBJECT LESSONS.—To complete the list of those things deemed indispensable for the use of the teacher and the benefit of the "little ones," there should be provided a strong box, to contain a cabinet, or *omnium gatherum*, selected from everywhere—picked up in any place. Common-place things should there have a place. Whole volumes might be written on the simple texts there contained, which could be gathered in an hour; for, as Shakespeare says, there are "sermons in stones, and good in everything." For

"Truths,
That 'tis our shame and mis'ry not to learn,
Shine by the side of every path we tread
With such a lustre, he that runs may read."

This box should contain silk, muslin, flannel, linnen, oil-cloth, felt, drugget, brick, pottery, china, glass, iron, steel, copper, lead, tin, brass, pewter, a type, a ring, a needle, a pin, a button, steel pen, paper, parchment, leather, morocco, kid, buckskin, cocoon, hair, wool, hemp, flax, wax, gum, bean, pea, clove, coffee, cinnamon, wheat, oats, barley, buckwheat, sponge, shells, &c Such a box would contain a mine of truth to be had for the taking.

Much philosophy can be gathered from boys' toys. A top, a kite, a bat and ball, a marble, a bow and arrow,—all illustrate some principle or principles of mechanical law. An ingenious, thinking teacher will, if many of these things are not provided to his hand by those who ought to furnish them, make them himself rather than be without them. And besides these, any teacher can afford a syphon, a magnet, a prism, a lens, etc.

THE BLACK-BOARD is the greatest time and labor-saving invention that can be introduced into the school. It may be put to an almost infinite degree of service, from the simple teaching of the alphabet, to the most abstruse problems in mathematics. Writing, spelling, punctuation, geographic diagrams, algebra, geometry, arithmetic, philosophical figures and drawing, may all be taught with this invaluable auxiliary. If the blacked surface be sufficiently large, a dozen, or twenty, or forty pupils if necessary, may be exercised at once, and the rapidity and accuracy with which such exercises may be performed, would perfectly astonish those who are not familiar with this mode of illustration and practice. No school-house should be without black-board accommodation for at least a dozen pupils. Twenty-four feet in length will accommodate that number, but more room would be better. A board should also be prepared for the special use of the teacher. The permanent black-board on the wall, with descriptions for preparing the various kinds of surface used for this purpose, and for crayons or chalk, wipers, etc., comes under the head of School Furniture. These have been fully treated of in the preceding chapter. The movable or frame black-board, however, would seem to com-