

results will be vainly looked for; and until the people, in disgust, will close the doors of the fruitless school.

Democracies have as yet never equalled the monarchical governments in providing properly for the higher education; but the impossibility of raising the standard of our common schools without provision for raising the standard of the teachers, will sooner or later arouse the people to its duty in this respect.

We are justly proud of the fact that almost every citizen can read his newspaper. But even in France attempts are being made to bring the education of the masses up to this level. We can only be sure of keeping in the front rank among the nations, if we liberally cultivate all talents in the nation; and no neglect will be more sure of speedy retribution than that of persistently withholding the rudiments of physical science from the common school, and a higher culture of science from our institutions of learning.—*Jour. Instruction.*

2. MARVELS OF THE MICROSCOPE.

The microscope is a *practical* educator of the most interesting and amusing character, and should be in every school. Miracles, instead of marvels, we are almost warranted in calling the wonders of creation, animate and inanimate—mites made monsters by the magic microscope! Once Sir Isaac Newton expressed an opinion that the utmost limit of magnifying power would be twenty-five diameters. How far behind realized facts fall the predictions of England's profound philosopher! To-day we have microscopic power capable of enlarging objects to our vision more than a billion times, and more distinct than they appear to the naked eye! But microscopic instruments of power so vast are adapted only to the wants of scientific savans. What we every-day people need is a microscope magnifying from twenty-five to one hundred diameters. For all every-day practical purposes the lower power is most useful and entertaining. With it, if it be a good one, a boy or girl of ten years may seize upon a fly, flea, bed-bug, mote or mite, clap it under the glass, and lo! what a marvel is presented! What a magic revelation of God's creative power comes instantaneously under the observant eye! What to the unaided vision was but a mere spec, or uninteresting insect, stands there hundreds of times enlarged, every feature distinctly visible, its entire organism revealed. An hour's study of insects under the microscope is worth more to any man, woman or child, than one month's reading of etomological books, because under the glass you have the object presented to the eye enlarged, and exactly as it really is, while in reading a description of the same object, the writer's meaning may be obscure, or he may be telling us what he has only read of himself. In short the microscope reveals

"Contrivance intricate, expressed with ease,
Where unassisted sight no beauty sees;
The shapely limb and lubricated joint
Within the small dimensions of a point;
Muscles and nerve miraculously spun,
His mighty work who speaks and it is done!"

The objects suitable for microscopic examination are innumerable. Take, for illustration, the foot of a common house-fly. We have all noticed the ease with which he walks on the ceiling with his feet up, and perhaps we have wondered at this; but the microscope reveals two small, sharp claws, by which he lays hold of protuberances, and on further examination we find that he has two pads, or spongy bodies, between his claws, which enable him to adhere to smooth surfaces. Remove his proboscis and place it beneath the lens, and it will be found to be a wonderful and beautiful object. Shave off the front part of one of his eyes, wash it in a drop of water, and then examine it, and you will find a multitude of small eyes through which the insect looks in different directions; for his eyes are stationary.—*Microscopist in Illinois Teacher.*

3. NEW METHOD OF PREPARING DIAGRAMS.

On Friday evening last Mr. Gilbert delivered an interesting and instructive lecture before the students of Victoria College, Yorkville, on a new method of preparing diagrams, for the illustration of lectures given before public assemblies. The process is an ingenious but easily acquired one. We describe it, believing it to be of considerable importance to those who are engaged in public education.

Take a sheet of tissue paper, varnish it with a weak solution of pale copal about two drops of the varnish to half an ounce of turpentine, allow it to dry, cut the paper to size required, trace the subject with a very fine sable brush and some thin lamp-black paint, either oil or water colour. (If the latter, add a very minute portion of ox-gall and gum water. The ordinary prepared tracings paper and pencilled outline may serve the purpose without the varnish.) Allow the tracings to dry, when any colour can be laid over the surface by the mode usually adopted with the slides of magic lanterns—which

however must be laid on the paper with very thin transparent varnish and colours. Place the subject thus prepared between two plates of glass and submit it to the same operation as common magic lantern slides—projecting the figure upon a sheet of white paper, secured by drawing pins either upon a board or a wall. Take a brush charged with lamp-black or tracing ink and proceed to trace the subject upon the paper which can be increased or diminished at pleasure.

Thus diagrams which would cost much labour and expense can be executed in two or three hours without any previous knowledge of drawing, and at very trifling cost. During the lecture, which was very happily delivered, the students warmly applauded Mr. Gilbert. At its close the Hon. John Rolph and Dr. Berryman complimented him upon the successful and useful exhibition he had given them, and urged upon the students the prosecution of means thus offered them of extending their spheres of interesting and practical utility.—*Globe.*

4. THE HEALTH OF BOYS AND GIRLS.

A boy romps and laughs, plays at athletic games, whips tops, runs races, climbs trees, leaps and jumps, and exercises all his muscles in turn. He lolls in his chair, and assumes any attitude he pleases at his desk. He has from his game a sufficient appetite to eat heartily, and out of school hours he feels no restraint. The girl on the contrary, never romps, runs races, whips tops, &c. She only sits upright and walks, thus developing, and sometimes all but destroying, only one set of muscles. She cannot shake off for a moment the feeling of constraint, and she naturally loses appetite, becomes languid, faint and low. The boy comes into rude contact with those above, below, and around him. He has to endure "chaffing," to learn to hold his own, to fight if need be. Even in his games his mind has to be active. He has to think about the most judicious way of fielding when Tom is at the wickets, or for looking out when Dick kicks the football. This develops his intellect, and teaches him his place in his own world. The girl, on the contrary, is so hedged in with protection, that she has no power of her own, and she cannot learn life, for the book is kept closed to her. Let us at this moment pause awhile, for memory recalls to our mind the name and nature of many a blooming woman whom we have admired for their loveliness, their good sense, their genuine worth, and speaking professionally, for their thorough healthfulness. How have they been brought up? Why almost invariably in the country, living with their brothers, and sharing their sports in a feminine way—riding or walking, irrespective of dirty lanes; boating, playing bowls, or croquet, swinging, lolling under the greenwood tree, eating as much as they liked, and only under the restraint during the period when they were with Miss Tuteur or Professor Guitarro. They have had perhaps, a single year at a finishing school to enable them to break off naturally a few objectionable habits, and to part with a few undesirable acquaintances, and to pass with ease from the girl to the woman. When such a one leaves school she does not think of it as a place of punishment to be avoided. She has most probably acquired a fondness for her music, or painting, or found sufficient interest in German or Italian to continue its study. Her mind, with its healthy tone unspoiled by the incessant worry of school, seeks for occupation rather than for inglorious repose. To such a one brothers will tell their little adventures, and whether she have beauty of face, or elegance of form, or be in reality somewhat plain, she is voted "a brick," and as such takes an honored place in the domestic architecture. The conclusion to be drawn from the foregoing remarks is inevitable—viz., that if we wish to preserve the health of our daughters we must not overwork them. The horseman does not put a filly to labor at a period when he would allow her brother, of the same age, to be idle in the field.—*Lancet.*

5. SHORT-SIGHTED CHILDREN.

Dr. Hermann Cohn, of Breslau, Prussian-Poland, has brought out a curious volume detailing the results attending the examination of the eyes of 10,060 school children: "The proportion of short-sighted children was 17.1 per cent, or 1,730 among 10,060. No village children were found so defective until they had been some time at school—at least half a year. There were in proportion four times as many short-sighted children in the town (Breslau) as in the country, and short-sightedness increased generally with the demands made upon the children. Dr. Cohn attributes the evil in a great measure to the bad construction of school benches, which forces the children to read with their books close before their eyes, and with their heads held downward. The obstinate adherence to the ancient Gothic character in printing and writing, to which Englishmen are generally inclined to attribute the prevailing near-sightedness of Germans, is not alluded to by Dr. Cohn."