tion to assist them and share the joys of their triumphs. The third class—the drone who has been taken in hand by a "stern parent,"—is the curse of the school. He is the young man whose wants are never satisfied, who demands the greater part of a teacher's time in accomplishing nothing, who performs all the tricks that disturb the school; who must be watched, flogged three times a week, or expelled. Fortunately for those who have to do with evening schools, the number of the latter class is not large.

It will be observed by our statement, that many of the scholars are fatigued by the labors of the day, and have no time for study,—that the methods of teaching must of necessity vary considerably from those of the day school. A memorized lesson is out of the question, and, moreover, a teacher cannot divide his time among all grades of scholars, so as to give thorough drill and explanation to those who rank in classes. What is the method? So far as we are informed, no two schools have the same. What shall be the method? This is an open question that should be considered in educational conventions. We have experimented with but one, and, while it has its disadvantages it has its advantages. In a room of forty scholars and two teachers, we arrange them so that those in the alphabet are given work at the board copying a word or sentence of short words. The reading—the class being called to the floor—is so arranged that no two of the five are speaking at the same time. While one teacher is thus engaged, the time of the other is spent in passing from one desk to another, explaining and assisting individuals in mathematics. This method—the last fifteen minutes of the hour and a half being devoted to writing—serves to arouse the interest of the scholar, inasmuch, as it makes it certain that he is to be personally assisted and fully occupy the time of the teacher. It is open, however, to its objections, and is not put forward with a view of its adoption except by those who in the absence of another method, may think favourably of it.

Another important matter to consider in connection with evening schools is books. With the Readers now in use in the day schools, we find no fault. They cover the ground completely, and the moral lessons they contain are calculated to make a good and lasting impression upon the mind. The first three of the series (Franklin) are well enough for the beginners in the evening school. The fourth and fifth books should, in our judgement, be replaced with an attractively written work upon the history of the country, commencing with a condensed statement of colonial matters, taking up the Revolution of '76, and following on with important happenings to date. The scholar, who now, owing to limit of time, learns nothing of history, would thus be made familiar with something tangible and of special benefit to him in his search for knowledge. A book of this kind must, it seems to us, find favor with boards of education and superintendents.

The Franklin Written Arithmetic in use in the day schools is complete in every particular, and should be satisfactory where thoroughness is possible. For the pupils of an evening school, we should simplify it. We should strip it of drill tables, and condense the first fifty-six pages into twenty-five pages. retaining the slate exercises—which are the best we have ever seen for the development of the reasoning faculties of a scholar—and add others in each of the four rules. We should then take up a practical method of interest and follow on—making a book of about one hundred pages—with United States money, a few practical examples in percentage, and a complete system of single-entry book-keeping, with explanations concerning bank-checks, notes, drafts, etc. This suggestion will undoubtedly strike the average educator and book-maker as exceedingly raw; but were they situated so as to observe the struggle of young men who have had no opportunity to learn these things, and who realize that school-days are ending with them, they would change their minds. The conviction would come to them that there is a class—a large and a worthy class—who want to know some of the simplest and most practical methods of doing business; and when they have mastered it, and the wider fields open to them, they have the germ that will develop to their advantage and protection.

But we are making this article too long, and attempting to canvas too much in condensation. The evening school needs airing, and if we succeed in calling attention to it, so that boards of education and superintendents will recognize its claim, we shall be satisfied. It is not enough to clear the compulsory-education law by giving an evening school ninety minutes an evening, five evenings a week, twelve weeks in a year; in contrast with five hours a day, five days in a week, thirty six weeks in a year, and then declare that duty is done, and the letter and spirit of the law kept. It is right, it is just, that the poor, the laborer, the unfortunate should have as equal a chance as it is possible to give, and we respectfully submit that there is not a New England Manufacturing town or city that cannot do better, and that, too, without burdening that other and self-constituted, unfortunate class known as the tax-payer.

THE HIGHEST LAKE IN THE WORLD.

The lake that has the highest elevation of any in the world is Green Lake, in Colorado. Its surface is 10,252 feet above the level of the sea. Pine forests surround it, and eternal snows deck the neighboring mountain tops. One of these, Gray's Peak, has an altitude of 14,341 feet. The water of Green Lake is as clear as crystal, and large rock masses and petrified forests are distinctly visible at the bottom. The branches of the trees are of dazzling whiteness, as though cut in marble. Salmon and trout swim among them. In places the lake is two hundred feet deep.

Engineering, Civil & Mechanical.

THE RAUB CENTRAL POWER LOCOMOTIVE.

We present illustrations of a new system of constructing railroad locomotives, recently patented by the inventor, Doctor Christian Raub, of New York City. The object of this invention is to construct a perfectly balanced locomotive, in which the center of gravity is coincident with the vertical median line of the engine, and in which the motive power is located at the middle of the engine in a plane extending through the centre of gravity. These two objects being attained, it is hardly possible to overestimate the value of the invention, since the locomotive will then be constructed upon correct principles and according to natural laws. It works from its centre, and has its motive power situated in a plane extending through its center of gravity, and has therefore no dead weight.

It is not within the scope of this article to review the various attempts and experiments undertaken in the course of time in this direction, but it may be stated generally that the problem of locating the center of gravity in a railroad locomotive upon the centre of its base formed by the driving wheels, and to place the motive power at that centre, had not been solved before the invention of Dr. Raub; and probably the reason why these attempts have not been successful is, that the fact was not sufficiently realized that Stephenson's system was at variance with the principles above referred to, and that nothing short of a radical change of the whole system of construction could lead to success; any improvement upon the original design, no matter how great, could not overcome the faults or disadvantages which were inherent in the system as a whole.

Dr. Raub, in order to definitely locate the center of gravity, has constructed his engine in such a manner that each half of the total structure, whether divided longitudinally or laterally, is an exact counterpart or duplicate of the other half, both as regards weight or measure: the consequence of this is that the center of gravity is in the intersection of the longitudinal and transverse center planes of the entire locomotive, and by placing his motive power in the central transverse vertical plane ot the engine he has disposed the parts of his locomotive to the best advantage for economy and efficiency.

The engravings represent the invention so clearly as to require but little explanation. The whole engine rests upon an oblong platform which extends all around the structure, and which is made wider in the middle to support the engineer's cab, which will be as wide as the cabs now in use; at each side of the engine is a boiler extending longitudinally to the end of the locomotive, each boiler having a separate firebox, which is located in the cab. The boilers have ordinary flues, which terminate in a smoke chamber at the extreme ends of the locomotive, but instead of allowing the heat and gases to escape through smoke-stacks at the ends, as in the present locomotives, they are conducted through return flues of a larger size (as shown in Fig. 3) to an interior collecting smoke chamber, which thus collects the smoke and gases from both boilers, and allows them to escape through one common smokestack which stands above it. This collecting smoke chamber extends upward and downward vertically through the entire locomotive, and serves not only as a brace to the steam dome which surrounds its upper portion, but also gives an additional support and strength to the entire structure. The steam dome stands in the centre of the locomotive, its axis being the exact center of the engine. It is stif-