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Editorial.

The Minnesota text-book scheme, concocted by one Ignatius Donnelly, and passed by a pliant legislature, without so much as one manly and honest protest from Mr. Superintendent Burt, has come to grief. Conceived in iniquity, brought forth in sin, and nursed in stupidity, its demise could not be otherwise than inglorious. The “contractor” has made herculean efforts to put the scheme in operation. He has dickered with publishers, bargained with obscure authors, and made frantic appeals for orders. But the orders do not appear to gladden his heart. The distinguished educators constituting the commission seem to have agonized over the problem of selection without any very brilliant result. In numerous cases the county commissioners, by whom most of the superintendents are appointed, have instructed the latter to disregard the law, while in some localities contracts for books, at greatly reduced rates, have been made directly with the leading publishing houses. The result is just what was foreseen and predicted by men of sense, that school-book matters are in dire confusion, many of the schools are unsettled by reason of the conflict of authority and opinion, and great injury has been inflicted upon the cause of education in the state.

At the State Teachers’ Association, whose annual meeting was held in Mankato during the last week in August, the school-book law was a leading topic of discussion. An elaborate report was made against it. The contractor was present, and was allowed freely to ventilate his views on the gravity of the situation. Correspondents on the ground inform us that during the debate upon the subject, words were hurled back and forth among the disputants like hot brick-bats. A series of resolutions was at length adopted, with but one dissenting voice, condemning the measure, pronouncing it subversive of the laws of trade, sump-tuous in its character, and impracticable in its execution. The resolutions close with a request to the next legislature to repeal the act and reimburse the contractor for whatever losses equity may seem to justify. These resolutions may be taken as the de-liberate expression of the intelligence of the state upon the merits of the case, and coupled with the pronounced opposition of boards of education and the adverse action of some of the county commissioners, will undoubtedly influence the legislature to repeal an act which is a disgrace to the statute books of the commonwealth.

And thus, signally and ignominiously, fails the second attempt of Minnesota to saddle “uniformity” upon the people. It is to be hoped, in the interests of education, that she will now learn wisdom through the teachings of a second dearly-bought experience. It is to be hoped that even her legislators will begin to comprehend that statutory laws can never repeal the laws of social and political economy, nor take from the people the inalienable right of private judgment in the management of affairs preeminently their own. It is to be hoped that the people themselves will, through their sad experience of the frailties of the average legislator, learn to discriminate between sound and sense, between ignorance and sterling honesty and intelligence, between ardent demagoguism and true statesmanship. As the illustrious reformer and author of this astutely concocted scheme has, after a conspicuously disputable public career, retired to the shades of private life, the people should inscribe high on the lintel of his door, requiescat in pace forever more.

The utter collapse of this Utopian scheme, in a state which will henceforth known in history, we fear, as the champion school-book reformer, together with the overwhelming defeat of similar measures in Wisconsin and other states, may be taken as indications of the decline of a mania for text-book uniformity under the specious plea of economy, that has prevailed throughout the country for several years past. As we have before intimated, Minnesota might have been spared the humiliation of her present position had her State Superintendent possessed the moral courage and energy requisite in such a responsible position. The fearless and manly stand taken by the Wisconsin Superintendent, reinforced as he was by the unanimous support of the educators of the state, illustrates what might have been accomplished in Minnesota had she not been burdened by a weak and timid leader at the head of her school system. When men are devoted to such positions, they are expected to become the guardians of the great public interests committed to their charge, rather than of their own personal popularity while in the midst of unreasonable and unreasoning clamors.

This is a painful subject to dwell upon, but as an advocate of sound principles in educational administration, the Weekly would be false to its trust if it shrink from the task of exposing the weaknesses of the system without regard to personal considerations. Educators for educational offices, true statesmanship in school legislation, men of nerve, men of power, men of honesty and self-sacrifice, rather than place-hunters and self-seekers for educational leaders! These alone will give us true success. These alone will defeat school-book abominations and preserve and build up a school system worthy of a great state and adequate to meet the demands of a great republic.

The increased number of teachers’ institutes held during the present season in the Western States is indicative of a more general interest in the professional work of the common school.
teacher. In a measure it is indicative of that educational revival which has been looked for and labored for by many. It evinces a willingness, at least, on the part of the common school teacher to devote more attention than formerly to the professional work of teaching. The institutes would not be held if there were not such a willingness apparent; and the full attendance reported from nearly all the states is further evidence of the prevalence of such an interest. In the state of Illinois eighty-six institutes have been held; in Iowa, ninety-one; in Wisconsin, thirty-eight; in Indiana, ninety-one, and a large number in several other states, including Kansas and Missouri. If these have all been faithfully attended by the teachers enrolled, and conscientiously conducted by the instructors, the aggregate good to the teaching done in the schools will be apparent in better results during the coming winter. Most of the work done at these institutes is ostensibly "normal" in its character; some of it is purely didactic, and some is scarcely more than poor school teaching. Teaching at institutes is itself becoming a profession, and only expert instructors should be charged with so responsible and important a work.

W.

HORACE MANN ON EDUCATION BY LAW.

It was shown in the Weekly for Aug. 9, that Herbert Spencer's argument against all education by the public, i.e., by taxation,—is founded on certain English notions, and falls to the ground before the American doctrine of common schools in a republic for the safety of the republic. Nearly thirty years ago, Horace Mann (our man, not the English one) constructed a very different argument. It was published in a "Revised and Enlarged Edition" of his Tenth Annual Report, prepared by appointment of the Mass. Legislature (pp. 212, Append. pp. 73). It was framed "for the purpose of strengthening the foundation on which our free school system reposes." As it has special relation to property, which is just now on the one side in peril from uneducated tramps and theoretical communists, and on the other is resitve under certain forms of school taxation, it is worth examining.

Mr. Mann set aside as insufficient—though possessing a certain value—the religious foundation on which the Pilgrims of Massachusetts rested their policy in 1642, of securing from all parents the teaching of their children "by themselves or others," and in 1647 their requirement that every township of fifty householders should maintain a common school free to "all such children as shall resort" to it. As they were Protestants he objects that more than half of Christendom on this ground would have abolished them. He sets aside also the necessity of intelligence to a republican government. All anti-republicans reject this ground. He sets aside, too, the argument from political economy and from morals. They are not sufficient to sustain free schools in most of Christendom. He proposes a new foundation:

"1. The successive generations of men, taken collectively, constitute one great commonwealth.

"2. The property of this commonwealth is pledged for the education of all its youth, up to such a point as will save them from poverty and vice, and prepare them for the adequate performance of their social and civil duties.

"3. The successive holders of this property are trustees, bound to the faithful execution of their trust by the most sacred obligations; and embezzlement and pillage from children and descendants have not less of criminality and have more of meanness than the same offenses when perpetrated against contemporaries."

Some would object to this as rhetorical. Others would suggest vagueness.—"social and civil duties," and "such a point as will save them from poverty and vice" are indefinite. But so is the safety of the state, which all republicans consider a sufficient reason for not tolerating utter ignorance of school-books. Any term you may apply to education is necessarily indefinite till you specify what branches and what books our children must study in order to secure either the objects Mr. Mann accepts as adequate, or those he rejects as insufficient. But none of these objects on this account make a school law void.

I will not follow out the argument of sixteen pages by which Mr. Mann supports his three points. He questions whether a man has any such indefeasible right to his property as to make it unjust in the government to assess a school tax upon him. He holds to the right of every human being to an education by natural ethics or law, and the consequent duty of government, i.e., the people. He points out how the individual right to property is modified by the fact that so small a proportion of it comes from labor and so much from natural elements, agencies, and laws, which are for all—each owner having only a life-lease; modified also by the rights, uses, and enjoyment of others; every generation thus having only a limited and defeasible right; modified also by the fact that it was largely produced by predecessors, and largely by them for all; each rising generation therefore has a right to the benefits of property with which its ancestors cannot interfere. And every outgoing generation must provide for the want of education, as for other wants, in the incoming one. "The claim, then, of a child to the benefit of a portion of pre-existent property begins with the first breath he draws." A government, then, without education, is a crime. The present generation must always administer property for the good of the next. That is the only security of the rights of the next generation. Part of the transfer to the next is in preparing it for its duties. He brings the argument to a sharp alternative.

"INFANTICIDE BY LAW OR FREE SCHOOLS!"

"In regard to the extent of the education to be provided for all, at the public expense, under a republican government," Mr. Mann names as the minimum, such "as is indispensable for a witness or juror, or voter in municipal or national affairs," etc., etc.

On this ground no one can sustain communism in any society that provides free common schools. The property inherited, produced, and gathered from the earth by any generation is not "pledged" to be divided up at the demand of rioters, but to be used (to a certain necessary extent) to prepare the children of all—the rioters and good citizens alike—for their common responsibilities in society. In Massachusetts, as long ago as 1849, there were "but two towns which did not voluntarily tax themselves for an amount of schooling many times greater than the law requires." A communist brought up and educated in such a town has nothing to complain of. If with his natural powers so improved at the public expense his industry or skill are not sufficient to secure him as much property as others, it is the fault of no one but himself. "Society, to this extent, is only a trustee managing an estate for the benefit of a part owner, or of one who has a reversionary interest in it." If it feels it can do no more than provide the minimum of education, it does this for all; and the advantage the more wealthy have of giving their children a maximum of any sort of education that may best suit their natural gifts furnishes no ground for plundering them. Public education, indeed, is one of the radical cures of
communism, unless it is based on ground that itself involves the principle of communism. Some eminent educators, like President Eliot, fear that this is really involved in some claims upon the public treasury, e.g., free books in schools, free tuition in universities, agricultural colleges, etc. Others see it in provisions incorporated into one or two Western state governments by law or constitution, giving higher institutions, no matter how far they may depart from the education of the people, a perpetual percentage of the annual taxation. It has been said that as we are now reaping the bad fruits of the spoils-of-office principle injected into our political blood forty years ago, so we shall ere long reap the fruit of this disguised communism insidiously introduced into public education. It is regarded as a poison at the fountain head.

Whether these things be so, or not, Mr. Mann’s doctrine of 1849, on which much of the movement for a quarter of a century now has been proceeding, must have some limit. Every individual is not to decide for himself how far society is a trustee for him or his children, and how large a share he is to have—and how long he is to have it—for purposes of education. Many think Mr. Mann’s “minimum” is also the maximum, or rather that there is but one thing for which men’s property is defensible to the state to be used in educating the children of all, viz., for the absolute safety of the state. The minimum, then, would be the least that would suffice to make a man a voter, a juror, and a witness. The maximum would be what would place him on a level with the mass in a republican in such respects. But the claim that any man has a right to the property of others to the extent of educating his child for any office in the state he might aspire to, or any avocation in society he might find it pleasant or profitable or popular to pursue, is simply the claim of the communist in a very thin disguise. It is a doctrine that will never check riots in France or here.

GEORGE F. MAGOUN.

Contributions.

A FEW FACTS IN REGARD TO SOUND.

LEWIS STINCHFIELD, Waupaca, Wisconsin.

Sound admits of two definitions, one that it is a sensation on the ear, produced by vibrations of matter, and another that it is those phenomena which cause that sensation. The first is sound in the subjective sense, the second in the objective. As has been stated, the direct cause of sound is the vibration of matter. Wherever and under whatever condition matter is caused to vibrate there is sound in one sense or the other. But if there be no vibratory movement, there is sound in neither sense. Yet there may be vibrations without any perceptible sound, even in the presence of an ear; and conversely, there may be great noises without any manifest vibrations. We may stand in close proximity to an oscillating pendulum and yet be unaware of its presence, unaided by the sense of vision, or of touch—provided the number of vibrations is less than sixteen (or threabout) per second—that being the number requisite to produce the sensation of sound on the ear. Again, if we strike together two stones or blocks of wood, the sound of the concussion is very apparent, but the vibrations which are the cause of that sound are invisible. To prove that sound is produced by vibrations, strike the time of a steel fork—a pitch-fork is best—against a solid, and the vibrations which give rise to the sound that ensues are distinctly visible. The sound and the motion continue, each gradually decreasing, until finally the steel ceases to vibrate sixteen times per second, when the sound is no longer heard. (Authorities differ as to the fewest vibrations capable of producing subjective sound, their statements ranging it all the way from sixteen to thirty-two; but as there can be no common limit, all ears not possessing the same degree of acuteness, the writer here uses sixteen for convenience only).

As sound is produced, so is it conveyed. If a stick be thrust in water and swung to and fro, waves are formed which pass off from the center of disturbance in all directions. So when a body in air is by any means caused to vibrate, waves of air are sent therefrom which, striking against the tympanum of the ear, produce the sensation of sound—provided sixteen waves arrive per second.

The only difference between the waves of water and the sound waves of the air, other than that of the materials of which they are composed, is that the former vibrate vertically and the latter horizontally. In neither case is there any extended advance of material, but simply of motion.

The velocity at which a sound is conveyed depends, in the main, on the density and the elasticity of the medium through which it is transmitted. The more compact a body is the more molecules it possesses in a given space to be set into motion by the waves of sound, and hence if velocity depended on density alone it would be diminished as that property of the medium increased.

But there is another property of the medium that influences the velocity of sound, viz., elasticity, which tends to greatly increase the speed of the sound waves; and as this property is possessed by the dense media, solids and liquids, in a much greater degree than by the rare ones, as air and water fluids, its propulsive force in such media more than counteracts the negative influence of their density. Thus it is that the velocity of sound is greater in liquids than in air, and greater in solids than in liquids. The velocities in air, water, and iron, when at the same temperature (the freezing point), are ascertained to be respectively, 1,090, 4,700, and 10,000 feet per second. Of course the velocity of sound varies with the temperature as that alters the density of the medium.

The free passage of sound requires a uniform medium; for if it be otherwise the sound suffers losses of volume and speed by frequent refractions and refractions, the same as light is decreased in intensity under similar circumstances.

To illustrate the relative velocity in the passage of sound through air and through solids I will relate some personal experience.

A number of years since, when a companion and myself were perched on the top-board of a railroad fence—perhaps fifty rods apart—he chanced to strike the fence post a heavy blow with an ax. It occurred to me at once that there was something peculiar in the sound borne to my ear, and I asked him to repeat the blow. He did so, and I heard two different and distinct sounds, one apparently coming from the fence beneath me, the other through the air. I could not and did not attempt to explain the phenomenon at the time, and soon it was forgotten. But last winter, about the time this class was at work on the subject of Sound, a similar occurrence was brought to my notice. It was at the time of the excellent skating on Little Lake. I was adjusting my skates one evening about one hundred rods from a party of boys who were kindling a fire near the shore. With this end in view they were splitting boards appropriated from a fence near by, by striking them flatwise upon the ice. As a result of each blow, I heard two distinct and independent sounds; a strange echoing noise from the ice beneath quickly followed by the sharp report in the air. This time the phenomenon was repeated, and, as if the same blow that split the board had cleared the paths of memory, my thoughts reverted to the time when I was seated on the railway fence, and all was plain.

It was formerly accepted as a law that all sounds, however great the difference in intensity or loudness, traveled, in the same medium, with equal velocity; but recent experiments have been made that go to prove it erroneous—loud sounds produced by powerful disturbances having been found to outstrip lesser ones. Thus, a thunder clap is heard sooner than a pistol shot, the sounds traveling equal distances and through the same medium.

The intensity, quantity, or loudness of a sound is wholly dependent on the amplitude of the vibrations, that is, on the distance through which the particles of the vibrating body swing. In other words, of two vibrating bodies, whose molecules move through the greater space produces the louder sound—assuming, of course, that an equal number of vibrations are performed in equal time. It is evident that the difference between a loud sound and a low one lies in the force with which the sound waves strike the ear. Applying a law of motion, that the striking force of a moving body is its velocity times its weight we see that the striking force of sound waves is governed by their velocity alone, because weight, the other factor, is always the same. Now, if the vibrating particles of two bodies swing through unequal distances in equal time, it necessarily follows that those moving through the greater distance have the greater velocity. To sum up, we have shown that the loudness of a sound depends on the striking force of its waves; that this force depends on the velocity of the producing vibrations; and that their velocity depends on their width or amplitude. From these principles we deduce the general law as
given above—that the intensity of sound depends on the amplitude of the vibrations.

Let us now see how the intensity of sound is influenced by the distance which it travels. A sound is lessened in intensity directly as the molecules moved by the sound waves increase in number; and as these waves pass off from a sounding body equally in all directions, that is, in the form of a sphere, we may make the statement that a sound decreases inversely as the surface of the atmospheric sphere over which its waves are distributed. But the distance from the ear to the center of vibration is the radius of the sphere, and, as the surfaces of spheres are as the squares of their radii, we have the technical law—the intensity of sound diminishes inversely as the square of the distance.

Sounds may be properly classified as noises and musical sounds—though it is sometimes difficult to distinguish between them. A single musical note differs from a noise in that it is produced by extremely rapid vibrations, of uniform width, succeeding one another at regular intervals. If the vibrations causing the most hideous noise imaginable be made to conform to these conditions, that noise is such no longer, but a musical note.

Pitch in sound is a term usually applied to musical notes produced by the vibrations of cords, and used with reference to their height or shrillness. This property or quality of a sound depends, essentially, on the rapidity of the vibration. But when vibrating cords are in question the pitch is modified by a variety of conditions which we will briefly note.

It is found by actual experiment: 1. That the vibrations in a given time increase inversely as the length of the cord; 2. That they increase directly as the square root of the cord’s tension; and 3. That they increase inversely as the square root of the cord’s weight.

The preceding conditions all modify the number of vibrations in a given time; and, as their number governs their rapidity, which in turn determines the pitch of the note produced, it follows that if we would raise the pitch of a musical note we must do one or all of three things to the vibrating cord which causes that note—decrease its length, decrease its weight, or increase its tension, that is, stretch it tighter.

The varying tones of the human voice are all made by the vocal cords acting under these different conditions.

SPREADING REFORM.—II.*

In the next place, as the science of etymology will be in no wise injured by a phonetic system, how will it be with the historic character of the language? Let me ask, what do you mean by historic spelling? In what sense can the present spelling of English be called Spenser’s time, these words were written with an island was current in Shakespeare’s time. Indeed if you will look into this matter, I am sure you will be surprised if you find how much mere chance, ignorance, and caprice have had to do with which we now cherish as a precious legacy. The historical and etymological character of our spelling is more than three-fifths fiction.

Says Max Müller—“If anybody will tell me at what date we are to consider etymological spelling to begin, whether at 1500 A. D., or 1000 A. D., or at 500 A. D., I am willing to discuss the question. Till then I beg leave to say that etymological spelling would play greater havoc in English than phonetic spelling, even if we were to draw the line not more than 500 years back.” Surely these replies ought to be conclusive against the argument that a system of phonetic spelling would force us to lose sight of the history and origin of our words.

1. If such were to be the effect it would be no argument against the reform, since the object of language is to serve the convenience of the masses, and not to aid the student of roots and modifications. 2. A large part of what we call the historical and etymological character of the language is a matter of error or fiction. 3. For the philologist what there is of historical continuity in our speech, of true suggestiveness in the forms of our words, would be interfered with to a very slight extent, if at all; while for the great mass of English writers and speakers—that is for those who know and care nothing about the history or origin of our words—there would be no loss whatever.

But since we are now considering the mainstay of these opponents of spelling reform, another consideration should be presented which is perfectly conclusive upon this point. These opponents seem to imagine that the moment we adopt a new mode of spelling, all the old literature is to be blotted out of existence. This would not be the case at all. Of the English language we have abundant monuments since from before the time of King Alfred. Likewise out of the vast quantities of literature which have been produced in the last three centuries, there would be most abundant monuments preserved of the present condition of our language. Is it not the height of absurdity to assert that the etymologist of the future would be put in danger of losing his trial when pursuing a fugitive root or modifications? But furthermore, and the climax of the answer to these etymological objections, “The chief difficulty with these old monuments which we have as illustrations of the history of our language is the fact that they are so little regarded as of the phonetic principle. The Omuralm, of the Semi-Saxon period (1150-1250), is of little value for its matter. But as a linguistic monument it is of the highest value, from the fact that its author was a phonetic fanatic, and wrote his tedious poem in a consistent mode of spelling of his own, and thus throws a vast amount of light upon the condition of the spoken language of his time.” Whitney. Prof. March in his address as President of the American Philological Association, in 1874, makes this assertion, and it cannot be disputed—“A changeless orthography destroys the material for etymological study, and written records are valuable to the philologist just in proportion as they are accurate records of speech as spoken from year to year.” Thus if the would-be friends of the etymologist wish to do him the greatest injury possible; if they wish to increase his labor in the future by ten-fold and then to make that labor worthless, all they have to do is to allow the divergence to continue to increase between our written and spoken language, to prevent the adoption of a phonetic system of spelling. On the other hand, if they wish to be of infinite service to the student of language in the centuries to come, as the author of the Omuralm has done the greatest service for the student of to-day, they will become advocates of the phonetic reform.

Another objection to phonetic spelling can soon be disposed of. It would be impossible by the eye to discriminate between words which are pronounced alike but have a different spelling and meaning, for example, meet, meat, and meta; to, too, two. How little we really depend upon this difference will be seen when we consider how many cases there are in which words of different meanings are spelled and pronounced alike, and yet without causing us the slightest trouble. We have found, to find, to establish, and to mould or cast;
The Educational Weekly.

167.

The English language is as much characterized by the number of vowels, to which together and to part auditory: hear, brain, and to carry: der, a wheel, a lap, to sail around, a seat, the theater, the driver's seat on a coach, and a kind of wood. Who is ever puzzled for a moment to know how to pronounce these words? It is the connection of the word and not its form upon which the mind rests for its interpretation. Right, right, rail, and weight, all sound alike; and if, in the hurry of conversation, we have no trouble in deciding what is meant, how could there be any danger in the slow process of reading a sentence? We really have not the slightest need of these homonymous words and could well spare them.

Now, are not these answers most satisfactorily and triumphantly? If you will look into the matter you will find that all of these learned arguments against phonetic spelling amount to nothing. There is absolutely but one argument against it; and that is one worthy of most respectful attention, and of more cogent presentation than any anti-reformers have thought it worth while to give to it. That argument is not one of principle at all, but of purer and simple conservatism. "The language is wise; we have learned it. With all of its imperfections it accomplishes its purpose. We have become so accustomed to its anomalies that they have ceased to trouble us, it may be." This argument is a valid one, and has weight; and there is no other to stand by its side.

Admitting this argument, the question reduces to this, "are the advantages to be gained sufficient to justify us in attempting to overthrow a system every item of which is consecrated by usage and cherished in predilection?"

In the first place there is the practical inconvenience which we suffer both in learning and using the language. This is one of the weightiest matters, and appeals especially to us as teachers. And yet we have become so accustomed to the bristlies that we hardly realize how much of our learning time is taken up with mastering orthographical intricacies. We do not realize how much harder it is for us to read at all in the first place, and then how much harder it is for us to read and write readily and correctly, than it would be if we wrote as we speak. What a relief it would be if we were sure of the pronunciation of every word we meet, and of the spelling of every word we wish to use! How much time and patience would be saved in the school-room if spelling-books and spelling lessons could become things of the past!

Then look also at the difficulties which foreigners encounter in trying to acquire our language. The English language, often the simplicity of its gram, matical structure, would be one of the easiest in the world to learn, if it were not for its abominable spelling. As it is, a stranger may acquire the spoken tongue by mouth and ear; or he may acquire the written tongue by grammar and dictionary. But in either case, one tongue being learned, the other tongue will be almost as strange to him as if he had never heard or seen its counterpart. He really has to acquire two different languages! (Whitney.)

The education of the freedmen or the Indians in our own country is hindered by our eccentric spelling more than by any other one cause. The spread of the English language in China and Japan is greatly retarded by the same cause. Missionaries complain that the missionary work of the world is hindered by our irregular spelling. If we wish the English language to spread, and to do for the world-people, we have no right to have it fixed down to possess. Prof. Whitney says, with such a millstone about its neck.

We may laugh as we will at this matter of spelling reform as expressed in dollars and cents; but this pecuniary argument is by no means an insignificant one. In the first place consider that all teachers below the high school grades have to spend from one-quarter to one-eighth of their time in teaching our children to read and spell. These teachers receive from thirty to sixty dollars per month. On the lowest estimate, there is thus spent fifty dollars per year, in the case of every teacher, for the drill-work in reading and spellings of which work, at least nine-tenths is made necessary by our absurd and irregular orthography. In Cincinnati there are over five hundred teachers to whom this estimate will apply. There you have $25,000 per year spent in a way that is unnecessary, and which might be turned to some good account. There are at least $15,000,000 spent in our country every year in the effort to teach a system of spelling that is false and inconsistent; in which, instead of utilizing natural forces, and proceeding according to the current of the child's common sense and feeling of analogy, we labor directly against it. And to make the matter worse, when the money is spent and the instruction given, our children after all are not enabled to read and spell their own language.

Then look at the matter of printing. Upon the most moderate reform, omitting simply silent and unnecessary letters, about seven per cent of the number of letters is saved, consequently saving seven per cent of the cost of type-setting and book making. We look upon seven per cent as a good rate upon investments. Is it not worth while to attend to it here? Suppose $25,-000,000 (a very low estimate) is the annual cost of production in books, newspapers, and periodicals. There would be an annual saving of over four and a half millions. But more than this. All this matter has first to be written, and here our seven per cent saving must come into the account again.

3. A consistent spelling would awaken and educate the latent sense of the community. "As things are now, the English speaker comes to the study of a foreign written language at a disadvantage when compared with those to whom other tongues are native. He has been accustomed to regard it as only natural and proper that any given sound should be written in a variety of ways, and that any given sign should possess a number of different sounds. It requires a special education to give him the inking of the truth that every letter of our alphabet had originally, and still preserves in the main, outside of our own language, a single unvarying sound. That the phonetic sense of the community needs training, there is no better evidence than the fact that the English speaker has his sense of the fitness of things dulled by a vicious training that he is capable of regarding an historical spelling as preferable to phonetic spelling; that he can possibly think it better to write our words as we imagine somebody else pronounced them a long time ago, than as we pronounce them ourselves." (Whitney.)

4. Instead of a phonetic spelling contributing to the alteration and damage of the language, it is charged, "it would exert a conserving influence, and tend to uniformity and fixedness of pronunciation. So loose and uncertain is now the tie between writing and utterance, that existing differences of pronunciation make us of the opinion that the cover of an orthography which fits them all equally well. The largest part of our coming force is spent upon the visible form alone. We do not give much heed to the audible form. We had spelling matches in abundance, but not pronouncing matches. Whereas, if our spelling and pronunciation were more strictly in accord, every effort to preserve the spelling would likewise tend to perpetuate the pronunciation. A phonetic orthography would become an authoritative and intelligible standard of pronunciation, and thus directly tend to remove the more marked differences of usage between cultivated speakers of different localities." Thus phonetic spelling would operate as a protector and preserver of our mother tongue.

From a strictly educational point of view, there is an argument more serious than all others. "It is the actual mischiefs done by subjective minds to the illogical and tedious drudgery of learning to read and write English as spelled at present. Everything they have to learn in spelling and pronunciation is irrational; one rule contradicts another, and each statement has to be accepted simply on authority, and with a complete disregard of all those rational instincts which lie dormant in the child, and which it is the highest function of education to awaken by every kind of healthy exercise. "I know," continues Max Müller, "there are persons who can defend anything, and who hold that it is due to this very discipline that the English orthography is what it is; that it retains respect for authority; that it does not require a reason for everything; and that it does not admit that what is inconceivable is therefore impossible. Even English orthodoxy has been traced back to this hidden source. A child accustomed to believe that t-b-e-o-u-g-h is though, and that t-h-e-o-u-g-h is through will afterwards believe anything.

Does not Lord Lytton, from this standpoint, express the matter most justly when he characterizes our system as a "flying, round-about, puzzle-headed delusion, confusing the clear instincts of truth, and born of the devil?" It was well said by an eminent speaker in the London Conference, May 27, that no person in full possession of his faculties and in full exercise of his common sense could spell the English language. "The child can put no trust in the symbol—he cannot believe his eyes; he can put no trust in the sound—he cannot believe his ears." There is no attainment so hard to acquire as learning to read, and there is nothing which has so little value for us as a means of sound mental discipline.

A pupil in an English school was asked in an examination paper, "Why is the tropic of Cancer so called, and why is it situated twenty-three and a half degrees from the equator?" The answer, constructed on a basis of pure logic, was: "The tropic of Cancer is so called from a Latin word, cancer, meaning a crab, because there are a great many crabs in that portion of the globe; and it is situated twenty-three and a half degrees from the equator, because there are more crabs there than anywhere else." Another pupil, asked to define the word "buttermilk," wrote out its meaning; "A female who makes butter."
SAFE and sufficient it is to say, the most intelligent citizens are most law-abiding, and the way to universalize and to perpetuate the peace and tranquil repose of the public is to educate in due time all the children in soul and mind and body as the future citizens of the republic—that republic where the high school is for the public good, in the very strongest sense, and in the most direct manner. We argue this point solely to benefit candid parents whose opinion is not yet formed on the subject. First, we quote a few, and lay before the facts as shown at Indianapolis, in the statement of Messrs. Bell, Brigham, and Merritt in January last. The statement says: "It is charged that the high school is for the children of the wealthy. Such is not the fact. The children of those of limited means are educated at the high school and have the benefit of its advantages, as the following table will show:"

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number present</td>
<td>405</td>
<td></td>
</tr>
<tr>
<td>Number having neither father nor mother</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Number having no father</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Number expecting to be teachers</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Others depending on themselves for a livelihood</td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>

Now, as a candid thinker, parent or guardian, to you we appeal to look at the statistics given as to the number of the four last classes. Do you make it 240? Is not that about 24 out of every 40, i.e., 3 in 5? Next, we, law before you consider candidly, the following classification by the same gentlemen.

"Occupation of parents—Actors, 2; agents, 40; banker, 1; bakers, 2; book-keepers, 6; engineer, 1; contractors, 10; dress-makers, 5; doctors, 16; editors, 5; farmers, 14; hotel keeper, 1; hackman, 1; janitor, 1; jewelers, 3; laborers, 5; lawyers, 13; liveryman, 1; manufacturer, 23; merchants, 64; mechanics, 41; ministers, 6; millers, 5; musician, 1; pork-packers, 1; police, 4; photographers, 3; pawn-broker, 1; painter, 1; postmaster, 1; railroad officials, 5; railroad employees, 4; teachers, 9; tailors, 5; without occupation, 59. No one will question the fact that the efficient school system has attracted immigration to our city.

We argue that you must see clearly as you look closely and repeatedly through this array of facts, 1, that the high school is peculiarly the means of the education, as President Lincoln said of government, “of the people, by the people, and for the people,” that it “may not perish from the earth; 2, that it educates its pupils, above and beyond the education which lower schools center, to be radiating centers of influence; 3, that it enriches the citizenship and homes of and community with a much more enlightened and cultivated a class, prepared as such in all the walks of public or of private life, as husbands and wives, as parents and teachers, as voters and tax payers; to strengthen inestimably the community of which they are the members by all their augmented power of mind and soul, and during all their subsequent life.

The high school is expressly fitted to do just such a measurably public service to the vast rank and file of our scholars in lower grades as West Point does for the army, and Annapolis for the navy. The comparison is very much in favor of the high school, however, in several vital points, viz.: the much greater number of students, the greater ease of access in location and in prerequisites, the lesser expense, the benefit to all classes or pursuits directly and continually (not during war, only), and the admission of both sexes. In all our cities and larger towns where once duly established and, in time, understood, it stands as secure in the affections and enthusiasm of the citizens as Gibraltar stands against any besieging fleet.

If we have argued this point so as to satisfy your judgment, reader, candid but hitherto indifferent, we beg you henceforth to become a warm advocate and cordial co-worker with all your influence for the high school, for it can be strong, and efficient, and beneficial only as far as parents and the friends of education cooperate to sustain it by their personal efforts at home at all proper times, and by thus creating a tidal wave of public opinion in favor of the true ‘people’s college,’ since only a small part of its students ever graduate into higher institutions, while thousands more never get so high as this for want of proper appreciation of its many and marked advantages. Enlighten others, if you get light yourself. Do not take away the ray of knowledge, lest the ‘Woe’ of the Master fall upon you.

Musical Department

Editor, W. L. Smith, East Saginaw, Mich.

"MUSICANS AS MEN OF MORALITY.

TO THE EDITOR OF THE MUSICAL DEPARTMENT:

I

The last number of the valuable Weekly, your interesting department contains an article on “Musicians as Men of Morality,” which will without doubt be productive of much good. It is indeed true that musicians should have, as the first requisite, a good moral character. But as this is equally true of all professions, of all teachers, and of every man and woman, I ask your permission to supplement what you have said, by noting some other things that musicians ought to possess as well as good morals. The question is not so much whether or not that the impression is so general that musicians are inclined to immorality and dissipation, more than other men? In looking over the records of the past, we find that the great masters of music were, without exception, men of truth, of integrity, and of real nobility of heart; great in character as well as in music. The glorious names of Bach, Handel, Hayden, Mozart, Beethoven, Mendelssohn, von Weber, and the rest of them, have never had the slightest breath of suspicion raised against them. Their characters are as pure and honest, and open to investigation as is their immortal music. Turning our attention to the leading musicians in this country at the present time, Darius, Buck, R. B., Johnson, Carl Zerrahn, B. J. Lang, J. K. Paine, G. F. Brister, W. H. Root, Theodore Thomas, L. W. Wheeler, George L. Osgood, Eugene Thayer, H. C. Eddy, J. C. D. Parker, and a host of others; and in my own state of old Michigan, take the special teachers of music in our schools, and I have no doubt many teachers who are not in the schools, and we find them all (for I am personally acquainted with nearly all I have mentioned) noble, true, honest men, as well as artists, shining lights to their pupils and ornaments to the communities in which they live. Returning to the question, then, Why is it that the idea still prevails that musicians are immoral? I unhesitatingly give this answer, viz.: Because the term musician has been very often, if not generally, misconceived. Every bar-room and saloon singer who could sing a song in oratorio and a song, every fiddler for dances who could dance in time and keep his feet a-flying, every chorister who could “raise and fall the eight notes,” or who could, on a Sunday, be “heard above the whole choir”—such a wonderful voice had he—and teachers who scarcely knew the rudiments of notation, those, forsooth, have been called our musicians. It may have been somewhat excusable, a few years ago, to acknowledge such persons as our musicians, that being the best we could do, but now, in this musical age, with advantages for improvement and instruction all around us, our musicians must be not only men and women of some literary culture and in possession of good individual character, but they must also have some years of earnest musical study. Admitting that first of all a music teacher should be a good man, next he should by all means know something of his special science, be skilled in his art to a certain degree, not satisfied to needs no premium, but it must not be allowed to make up for its members who were woefully deficient in the first principles of morality as have other professions, not excepting the clergy, but how much to avoid far greater disgrace by exhibiting talent in our profession.

Dear Editor, to quote from Mr. Buck, “Would not a state of things which exclude (from teaching) such as have not the music or passion of music, and the necessary knowledge which thy hand must learn.”
Practical Hints and Exercises.

Editor, Mrs. Kate R. Ford, Kalamazoo, Mich.

SCHOOL MANAGEMENT.

Prof. J. Baldwin, Principal of Kirksville Normal School, Mo.

CLASSIFICATION.

THE proper classification of a school is a most difficult work. To adjust the school to the course of study, to determine what is best for each pupil, and to arrange all in suitable classes, requires the most searching scrutiny and the clearest judgment.

PRINCIPLES.

So much depends upon the right classification of a school, that the teacher cannot afford to grope in the dark. It behooves him to study the subject profoundly, and to think down to the underlying principles.

1. Criteria. Age, ability, and scholarship determine the classification. Other things being equal, older pupils are classed higher than younger, and strong, bright pupils, higher than delicate or dull ones. The reasons are apparent. To consider scholarship alone is a fatal error.

2. Adaptation. The pupil must be placed in a class adapted to his capacity. Each pupil should be a success in his class. Success inspires confidence and stimulates to effort. It is generally better to class a pupil below rather than above his true position.

3. Basis. Reading and arithmetic form the best basis for classification, as in the district school all pupils study these branches. Other studies may be worked up or reviewed in connection with these. Due weight should be given to the pupil’s advancement in other branches.

4. Uniformity. The studies must be kept abreast. It is not uncommon to find a pupil well advanced in arithmetic, but ignorant of the first principles of geography; or good in grammar, but deficient in arithmetic. Such pupils should be so classed as to give their chief energies to the branches in which they are deficient.

5. Number of Classes. The classes should be as few as is consistent with good grading. Upon this principle depends largely the efficiency of the ungraded school. Numerous classes fritter away the time of the teacher without producing satisfactory results.

PLAN.

The young teacher may well feel appalled when he first meets his forty or fifty pupils of all stages of advancement. To reduce chaos to system is for him an herculean task. A well-digested plan of work will help amazingly.

1. Proceed from the Higher to the Lower Classes. First organize the highest class in the branch, then the next lower, and so on, till all the classes in that branch are organized. As lessons are assigned classes as soon as organized, the elder pupils will be engaged while the younger pupils are being classified.

2. Take First the Branches that Embrace the Entire School. It is probably better to organize the reading classes first, then the arithmetic, then the grammar, then the geography, and so on till all are organized.

3. Give Each Class a Short Drill. This will enable you to form some notion of the true standing of the pupils. Besides, it will create an interest and stimulate the class to prepare the lesson assigned.

4. This rough classification is temporary. You can call out such as think they are prepared to go into the class. Say to them that you will promote such as you find deserving, and that you will place in a lower class such as are not prepared. So manage that most of the changes will be promotions. In any case you find deserving, and that you will place in a lower class such as are no true musician who reads them, and incite him to greater endeavors and higher attainments.

FREDERICK H. FEASE.

MICHIGAN STATE NORMAL SCHOOL, Sept. 6, 1877.

Illustration.

Only the inexperienced need details. A single example may illustrate:

Teacher—All who are prepared to read in the fifth reader, will please raise their hands.

CLASS—Ten pupils raise their hands.

Teacher—Take your readers. At signals take places as directed.

CLASS—The pupils pass to places at the board.

Teacher—Please write your names on the board.

CLASS—Each writes his name.

Teacher—Turn to page 120. Read as called.

CLASS—Each one reads a short paragraph. The teacher, during the reading, makes out a roll of the class and grades each member on the reading.

Teacher—Turn to page 35. You may prepare two verses each. Be prepared to spell each word and give its meaning. At signals take seats.

Class—The class pass to seats and prepare the lesson assigned.

Teacher—Those who are prepared to read in the third reader, please raise their hands, etc., etc.

But it is unnecessary to give further details. In a similar manner each class may be organized and put to work. During the afternoon each class will have a short, lively recitation. On the second day you may enter upon your regular work, with a well prepared programme. As the recitations progress, you make the necessary changes in the classes. Wise and prudent management will overcome all obstacles.—American Journal of Education.

THAT "OLD PUZZLE" SOLVED.

TO THE EDITOR OF THE WEEKLY:

I am perfect in July 5, our friend De Armond, in referring to our criticism of his fictitious solution of the equations \( x^2 + y^2 = 11 \), and \( x^2 + y^2 = 7 \), as given in your issue of May 10, says:

"Our friend, Mr. Davison, proclaims in italics that no less than twenty-seven times have we asserted that \( x = 3 \) and \( y = 2 \), before we reach the equations giving the values of these unknown quantities. This sweeping statement, like his reasoning, is an illustration of the reckless use to which figures and words may be put."

We certainly do not intend to misrepresent our friend De Armond in his "reckless use of words and figures," hence, to be more concise, we will say that his original solution contains the value of \( x \) and \( y \), just twenty-four times; and the value of \( x \) and \( y \), was produced three times.

His pretended solution, as given in your issue of July 5, is also clearly based on a previous knowledge of the answers, and solves nothing. Why does he not give the solution of the equations \( x^2 + y^2 = 20 \) and \( x^2 + y^2 = 10 \) by his method. The reason is obvious, for he cannot guess either value of \( x \) or \( y \), he cannot even make a beginning to solve these equations by either of his fictitious methods of solution; although he informs us "There is no excluding the number that happens to be the answer."

We will represent the known quantities in the above equations by \( a \) and \( b \).

The equations then become \( x^2 + y^2 = a \) and \( x^2 + y^2 = b \); these two primary equations readily take the form of \( x^2 - a = -x \) and \( x^2 - b = x \).

By squaring each of these two last equations, and substituting the values of \( x \) and \( y \), as thus found in the two primary equations, we readily obtain the two following general equations:

\[
\begin{align*}
& x^2 - a = -x \\
& y^2 + 4 = 2a
\end{align*}
\]

Substituting values of \( a = 11 \) and \( b = 7 \) in (1), it becomes

\[
\begin{align*}
& x^2 - a = 11 \\
& y^2 + 4 = 22
\end{align*}
\]

This being an equation of the fourth degree contains four values of \( x \); hence it is impossible to solve it by one complete quadratic equation, but it may be resolved into its two equivalent complete quadratic equations, which will then give all of the values of \( x \); or, all of the values of \( x \) may be found by the general rule for the numerical solution of higher equations, as given by Geo. R. Perkins, late Professor of Mathematics and Principal of State Normal School, Albany, N. Y., in his higher algebra.

Taking the coefficients of the equation (3), and supplying the missing term, we obtain one of the values of \( x \), as follows:

\[
\begin{align*}
& x^2 - a = 11 \\
& y^2 + 4 = 15
\end{align*}
\]

We will now divide equation (3), with its term independent of \( x \), changed to the left, by \( x - 3 \), as follows:

\[
\begin{align*}
& x^2 - a = 11 \\
& x^2 + 3x = 11
\end{align*}
\]

\[
\begin{align*}
& x^2 + 3x = 11 \\
& x^2 + 3x = 111
\end{align*}
\]

We will now divide equation (3), with its term independent of \( x \), changed to the left, by \( x - 3 \), as follows:
We now have an equation of the third degree which contains the three remaining values of \( x \), one of which we proceed to find as follows:

\[
x^3 + 2x^2 - 13x = 38 \quad \text{or} \quad x^3 + 2x^2 - 13x - 38 = 0
\]

\[
\begin{align*}
3 & \quad 18 \\
6 & \quad 5 \\
3 & \quad 27 \\
9 & \quad 32 \quad \text{trial divisor.} \\
3 & \quad 625 \\
12 & \quad 385 \quad \text{true divisor.} \\
5 & \quad 1088 \\
8 & \quad 458 \quad \text{true.}
\end{align*}
\]

\[
\begin{align*}
6.58442834034x & = 2086\overline{8}000 \\
6.5844284304x & = 2086\overline{8}000
\end{align*}
\]

\[
\begin{align*}
-1 & \quad 38 \quad \text{false.} \\
-1 & \quad 38 \quad \text{false.} \\
-1 & \quad 38 \quad \text{false.} \\
-1 & \quad 38 \quad \text{false.}
\end{align*}
\]


dividing the divisor and then multiply. The trouble was, then we have had the

The Educational Weekly. [Number 36

A HISTORY of the United States of America. By Josiah W. Leeds. (Philadelphia: J. B. Lippincott & Co.)—This book is deserving of more than a passing notice. Being informed, before the title page, that it "contains some important facts mostly omitted in the smaller Histories," we were naturally anxious to be made acquainted with these "important facts." Our curiosity was further increased when we read in the Preface the following:

"This persistent indoctrination of warlike ideas resulted in producing an intensely partisan feeling, so that the very name of "British," or "Mexican," became a hateful sound to our patriotic apprehensives. Indeed, our principal concern seemed to be, to learn how much greater was the battle-loss in killed and wounded on the part of the British than was that of the Americans. It is not too forcible an expression to say, that there was begotten in our youthful minds something of the malignant sentiment of murder." (Italics are ours.)

About 300 pages—two-thirds of the book—are taken up with Colonial History, and the "important fact most omitcd" in other Histories is the unjust and cruel treatment heaped upon the "savage" Indian by his "Christian" brother. The author, evidently a Quaker, pleads the cause of the Indian most earnestly. Puritans, Romanists, Episcopalians, and Dutch Reformers—all have been bad boys in their treatment of the innocent, gentle, and altogether lovely red man; and our author scores them most beautifully. Anabaptists and Quakers were the good boys, and, of course, were un molested by the noble Indian. In all seriousness, the author has done a good deed in presenting the other side of the Indian question; but in doing this, we think he goes too far occasionally in the justification of Indian atrocities, and he seems to have entirely overlooked the fact, that, notwithstanding the efforts of John Elliot and other Indian "apostles," the Indians were ever ready and willing to be led from the path of duty. As to the "malignant sentiment of murderers" begotten by the perusal of other Histories, we will simply quote a short paragraph to show how far the author is guilty in the same direction.

In speaking of the course the Spaniards pursued toward the natives, he quotes the following: "They murdered young children, beating out their brains against stones. The kings and princes of the country they either scorched to death or threw them to the dogs to be torn to pieces." What sort of a spirit must the reading of such passages beget in the "youthful mind?"

The author hates rum, and sometimes goes clear out of his way to preach a temperance discourse. Slavery, of course, is an abomination to him; but when he says—

"Had the constitution provided that slaves should not be counted in computing the quota of representatives, it is highly probable that our country would have escaped the sad experience of the War of Emancipation. The slave power would then not have been over-represented, and would have been more likely to accept of some satisfactory plan of adjustment ere sectional bitterness closed the way."

He forgets that twelve of the thirteen states held slaves, and that we would have had no constitution at all, had not the three-fifths compromise been adopted.

War the author very properly abhors as a relic of the barbarous ages; but we can not quite agree with him in saying that "our ancestors had no right to make war upon the plea that they were unjustly taxed and treated." It seems to us that such a thing as "forbearance ceasing to be a virtue," and our ancestors had about arrived at that point.

A few expressions strike us as peculiar: "Washington died the 14th day of the 12th month, 1799." "Inauguration (3d March 14th, 1797)." "The Cherokee lands were disposed of by lottery," etc.

The publishers have done their work well; the binding is attractive, yet plain; the tinted paper and the large, clear type go far toward making us forget the absence of maps. Illustrations there are none, and we are not sorry for it.

The Eclectic Series of Geographies. This series consists of three books,—
Number one, Primary Geography; Number Two, Intermediate Geography; Number Three, School Geography. Number one is designed for beginners, and is arranged with questions and answers, though these do not alternate as in some primary geographies; the questions are, however, numbered to correspond with their answers.

The Intermediate Geography, though designed to precede Number Three in a full course, is so arranged as to be complete in itself. The maps are very beautifully and accurately engraved, being always on the left hand page, facing the questions and descriptive text. The work of the publishers, as well as the authors, has been done with only one object in view—to make the book the best in the market.

MINONK, ILL.

We present the following equations for solution:

\[
x+y+z=5, \quad x=10, \quad x^2+y^2+z^2=704.
\]

D. H. D.

Are teachers always as clear and definite in their ideas as they ought to be, in order to impart knowledge, or illustrate a subject to their classes? We have in mind a teacher of some years' experience, whose pupils could never give a satisfactory explanation of the reason why, in the division of one fraction by another, we invert the divisor and then multiply. The trouble was, the teacher did not have a clear idea herself.

In order to acquire a habit of clearness of thought, pupils are required to write out analyses and explanations. There is nothing like careful writing to promote habits of accurate thought and expression. Teachers themselves can do nothing that will better promote their own efficiency and thoroughness, than to write, frequently, articles on some points connected with their teaching. This need not be for publication, but simply for their own benefit. Careful writing of this kind will soon lead teachers to a little surprised at their former indefiniteness of some of their own ideas in regard to very important things in teaching. It will suggest new thoughts to them every day, and make their work more interesting to themselves.
The School Geography embraces considerable mathematical and physical, as well as political geography. The mechanical execution—the fine art displayed in the maps, the illustrations, and the typography—is deserving of the highest praise. The publication of such a magnificent work—especially such a series of magnificent works—necessitates an enormous expense of time, labor, and money. But the enterprising publishers—VanAntwerp, Bragg & Co.—have for years enjoyed the highest reputation as publishers of school books, and the item of expense scarcely enters into consideration when they have discovered that a new publication is needed.

The most striking feature of the edition of the School Geography before us consists in twelve pages devoted exclusively to the state of Illinois. This special department has been prepared with extreme care, under the direct personal supervision and authority of Prest. E. C. Hewett, of the Illinois Normal University. In the preparation of these pages nearly every prominent teacher and superintendent in the state has rendered more or less assistance, in reporting geographical statistics and information relating to their individual localities. This special geography is accompanied by a full page map of the state, which portrays not only the county boundaries, railroads, cities, towns, and villages, but, what is not common in the school maps of Illinois, the physical features of every county. The rivers and smaller streams are shown by blue lines, and the knolls and river hills are also indicated in every county by the ordinary means. So complete a description of the state—its surface and drainage, its climate, its soil, its products, and the occupations of its inhabitants—should be found in every school in the state. It is the most valuable portion of the book, and even if not to be obtained independent of the rest, should by all means be in the possession of every teacher.

The illustrations in these books, while not as large as may be found in one or two other works of a similar kind, are nevertheless unsurpassed in respect to artistic excellence and the vividness with which they portray the most important parts of the text. The very low prices at which such magnificent school-books are sold is one of the marvels of the day. Only the enormous sales which are made can justify so much expense for so low-priced books.

Ray's New Arithmetic. Van Antwerp, Bragg & Co. have just issued a revised edition of Ray's Arithmetic, in which an attempt has been made to meet the demand, not only for new methods of discussing the subject, but also for more of what is called "business arithmetic." It is a little remarkable, if true, that not until these days has the fact become generally acknowledged that it is chiefly for business that arithmetic is and should be studied in the schools. But however this may be, the prominence given to "business arithmetic" is now urged as a special excellence of every new arithmetic.

This revised series of Ray's books consists of three volumes. The first is called Ray's New Primary, the second, Ray's New Intellectual; and the third, Ray's New Practical. Of course the books look much better than they did before, for this is not the time for producing any new book, especially a school book, which is not printed and bound in the very best style. This may be well, but it may also be possible to expend too much money on the mechanical part of the work. It is well to give the eye a favorable impression at the outset, for much favor is thereby gained from such as do not examine the contents carefully, but it is not well to permit the expense of publication to increase the actual cost to the pupil beyond what is necessary for a good substantial book.

The Primary Arithmetic contains seven illustrations, five of which picture groups of birds; the other books are not illustrated. Ray's Intellectual Arithmetic—the old Part II., has long been a standard, and in the revision it has been rendered more complete and systematic, and therefore more valuable. The pages devoted to Fractions, Percentage, and General Review are specially full and varied. In the Practical Arithmetic we find the same features which distinguished the former editions, and "which constituted the peculiar philosophical method of its learned author." It contains 326 pages, printed in elegant typography on calendared paper. In regard to its arrangement as it now appears, the publishers say:

"The arrangement is strictly philosophical; no principle is anticipated; the theorems are given in their proper order, until the principle on which it is founded has first been explained. ** The different matter of the volume, the definition, the solution, or the rule, is at once clearly indicated by a difference of type **. The analytic solutions and written operations have been carefully separated. All obsolete Tables of Weights and Measures, such as Beer Measure and Cloth Measure, and all obsolete denominations, such as drams, roods, etc., are discarded. The Metric System of Weights and Measures is presented in accordance with its now widely extended usage, and is assigned its proper place immediately after Decimals."

Correspondence.

TO THE EDITOR OF THE WEEKLY:

I CHEERFULLY accept the criticism of Dr. Hendricks in No. 33 of the WEEKLY to a sentence in my second paper on Astronomical Geography, in which I said: "The brief and unhappy sentence in which occur the words "the one-third of an inch" might well have been omitted. I can account for my inserting it without the proper qualification as to latitude only on the eternal principle that it is human to err." On the 7th page of Mitchell's Physical Geography is this sentence: "In 1884, thirty balls were dropped from Michael's Tower, in Hamburg, from the height of 235 feet, when the deviation from a perpendicular was found to be one-third of an inch." It becomes my duty to call attention to a serious error in the formula developed by Dr. H. I fully appreciate the method of establishing the formula, but it does not apply to the case under consideration. It furnishes results considerably too large. The descending ball does not change its longitudinal uniformity during the time of its descent. The rate of this change at the instant of the striking the ball is nothing, and at the instant of striking the earth it is precisely that which the formula for the difference between the velocities of A and B' furnishes. The rate of the headway which the ball makes toward the east in descending varies, then, from nothing to the maximum represented by the formula. Further illustration is perhaps unnecessary. If desired, it will be cheerfully furnished.

L. F. M. Easterday.

Carthage, Ill., Sept. 7, 1877.

QUERIES AND ANSWERS.

QUERIES.

[Queries and answers are invited from all readers. This department is in the hands of subscribers.]

36. If the inclination of the plane of the earth's orbit were 25°, what would be the width in degrees of each zone?

37. To what political difficulties during the period of our constitutional history has the doctrine of "political inequality of race" led?

38. Give examples of each kind of levers in the human system.

39. Parse the italicized words in the following: His being a lawyer proved his ruin.

40. The diameter of a circle be 4 feet, what will be length of the sides of the greatest square formed within the circle?

41. What led to a division of our language into parts of speech?

42. What is the difference in the following: 1 , 060.05 and 0.05 per cent?

43. At what rate does the blood travel in the arteries? capillaries? veins?

44. Will some reader suggest a good method of conducting an advanced class in spelling?

45. Do the readers of the WEEKLY think it advisable to use copy books?

46. A, B, C, and D found a purse containing a certain amount of money, which they divide in the following manner: A takes $50.06 and one tenth of the remainder; B takes $70.07 and one tenth of the remainder; and C takes $50.08 and one tenth of the remainder; and D takes what then remains. What is the whole amount? What is the share of each?

47. Will some of the correspondents of the WEEKLY who have had experience in that direction, answer through its columns this question: "What can be done in the high school to promote a taste for good reading among the pupils?" The question is a vital one in any system of education. "67."

48. If an article had cost me 20 per cent less, my rate of gain would have been 30 per cent more. What was my rate of gain?

49. A man owed $3,375.75, which is 20 per cent of 1/4 per cent of 3/6 of his fortune more than 3/4 of his fortune. What is his fortune? LIBRA.

ANSWERS.

[The answers are numbered to correspond with the queries which have preceded.]

31. J. M. Maxwell made a slight mistake in his solution of the problem in question 31, by omitting the length of one end of the field. [Bell Creek, Neb., Sept. 7, 1877.]

\[ \sqrt{\frac{120 \times 160}{6^2} - 2 \times 226.24} \text{ rds.} = 2 \text{ ends.} \]

\[ 226.24 \times 3.39 \text{ rds.} = 2 \text{ sides.} \]

\[ 226.24 + 339.36 = 565.6 \text{ rds.} = \text{distance around the field, which at $2 per rod = $1,112.20 total cost of fence.} \]
Minnesota.

The State Teachers’ Association, held on the 28th, 29th, and 30th of August, at Mankato, was a success. There was much larger attendance than has characterized these meetings for several years; our very best educators turned out in force; able papers were presented on live topics, and these brought favorable responses. Among opening papers, we mention Prof. Bond’s, of St. Paul, on the question, “What Age Should Children Be Admitted to the Public Schools?” The school law of the state places the age too young. Our primary schools are made nurseries. Many of our primary schools are not good nurseries, and yet the state considers them as nurseries. In New Jersey fixes the age at seven years. This is better than at five years. At the age of ten, the New Jersey child will be ahead of the Minnesota pupil at that age. What can be done with foreign children at this immature age? They have the vitality of youth, and still must be baffled by their dullness. They are not old enough to learn. Our Minnesota plan gives cities an advantage over rural districts in the matter of drawing public money. Children of five years can attend in the cities, but not in the country. It would be wise to change our law and make the time of admission seven years of age. It was voted that the paper of Prof. Bond be printed in the report of the State Superintendent.

Miss A. E. Wheeler, of Winona, gave an illustrative lesson on the methods of teaching history. It is not the object of this study to commit to memory a great mass of dates. History is a systematic account of the rise and fall of nations, including the causes of events and the results of social and historical changes. Many of these questions are old; they have often been discussed, and the value of any labor depends upon the methods of treating these causes and results. We need a thorough study in our common schools. History is a defect in our system of education that we have not had more real history. Our teachers are to blame for this. They have not imbued the spirit of American history. We have done only routine work. A skillful teacher should select topics for a course of oral instruction, use a map and require digested American history.

Illinois.

W. ROLF succeeds Mr. Rowell in the superintendency of the Kanka­kakee schools. — W. H. Brydges, for several years the principal of the Elgin High School, accepts the superintendency of the city schools. A lady succeeds him in the High School. — Frank Atkins is principal of the Monticello grammar school; J. E. Bangs is the principal of the Sullivan Institute. — B. F. Stocks is booked for Sullivan next year. — Prof. J. N. Wilkinson of Minnesota; B. F. Stocks is for Sullivan next year. — Prof. J. N. Wilkinson of Wisconsin has permission to adopt the plan; 137 districts purchase under the law; 157 of these loan the books to pupils. Legislation was introduced to authorize the state to provide funds for the support of these schools. It has been considered and the question whether our people would be ready for the plan. We may reach it by urging the subject upon the public notice, and this was the object of the paper.

PERSONALS.


Chicago, September 20, 1877.

The reading of the Bible is valuable where it can be made to conduce to this end, these elements are to be taught in forms requiring no argument. The state does recognize moral character and will develop it in our schools and secure it by a culture in which all can agree. Prof. Woodman, of Minneapolis, read a paper on free text-books, that is, books owned by the district and used gratis by the children. To-day books can be had only for the children at two-thirds of the cost of the old prices. He granted so much relief that districts can afford to assume the rest of the burden and furnish books as common apparatus. Books so loaned will be more carefully used than books owned by the pupils; we should have no bookless pupils on account of want of money. Prof. Franklin of the Model Grammar School, Yorktown, Indiana, has charge of the school. We must teach the child that he has a right to the books, and that he must not be allowed to break them. Prof. John W. Whitemore, of the Illinois Normal School, Indianapolis, has charge of the school. A skillful teacher of history can bring out this point. It is not the object of this study to commit to memory a great mass of dates. The Sullivan Institute was managed, this year, by Mr. J. N. Wilkinson, and Mr. B. F. Stocks. Their work was especially satisfactory to the teachers of this institution. The Elgin High School is a great success. Prof. Lewis McClouth, of Illinois Normal School, Indianapolis, delivered a highly entertaining and sensible lecture at the Methodist church on Friday evening. His lecture was entitled ‘Fiction.’ It was entirely free from conventionalism. Mr. R. W. Lynn, Massachusetts, has charge of the school. — Frank Atkins is principal of the Monticello grammar school; J. E. Bangs is the principal of the Sullivan Institute. — B. F. Stocks is booked for Sullivan next year. — Prof. J. N. Wilkinson of Wisconsin has permission to adopt the plan; 137 districts purchase under the law; 157 of these loan the books to pupils. Legislation was introduced to authorize the state to provide funds for the support of these schools. It has been considered and the question whether our people would be ready for the plan. We may reach it by urging the subject upon the public notice, and this was the object of the paper.

The Educational Weekly.

The Institute that was
Wisconsin.

Supt. Guernsey, of Grant county, says that he notices that there is, with scarcely an exception, a marked improvement in the schools of those teachers who attend the institutes. We are glad to hear that kind of testimony. In order to make the benefits of the work of the students more valuable to themselves, the Board of Regents, at their last annual meeting, made some changes in the organization of the Training Department of the Platteville Normal School. Mr. C. H. Nye was appointed Director of the Platteville Normal and Whitewater Normal School, and W. R. Crabbs, of Sparta, was pre­ sent from the state of Illinois. There are five public schools, five days, the II, beginning August 27; Cleveland, one day; Dayton, five days; and at Fox Lake and of which Rev. A. O. Smith, Principal of the school under J. C. Crawford, as the country and its school is among the best, opens in its organization.—Supt. C. M. Bright, of Marinette, says that they would reach the then normal school, and look upon the opening of the Cortland High School. He has long been connected with the cause of education in the state as teacher, and ranked high in the profession. His abilities were unquestioned. The following, clipped from the Milwaukee Sentinel, written from Black River Falls, gives the particulars: "Last Saturday, Aug 25, while a party of our citizens, accompanied by Prof. O. R. Smith, of Sparta, who has been carrying on the teachers' institute of this place, with Prof. De La Maty, were on their way to a tour of inspection, a gun acciden­ taly fell from the buggy, the hammer striking the wheel causing it to explode, and throwing the whole charge into the leg of Prof. Smith, tearing the flesh and breaking the bones in a terrible way. Sunday night at ten o'clock Prof. Smith's physician arrived, and, as the man passed away and his body was at rest, after eighteen hours of the most intense pain. The Professor's wife, accompanied by Dr. Goge, arrived at three o'clock this morning, and before the news of his death reached town they had been in high hopes that they would reach the then dead man in time to save him, but when they arrived they found the body to be that of her husband. The body was brought to this city, from whence it will be sent by the first train to his home in Sparta. Although Prof. Smith had not been in our village a week, he had many friends, who feel from their hearts for the people of Sparta, the loss of so excellent a public and private man. Rev. Dr. O. H. Hall, of Marinette, one day school, among the best, opens the school year with slight changes in its organization.—Supt. C. M. Bright, of Waupaca, is urging the teachers of his county to organize a teachers' circulating library. We hope the efforts will prove successful. As we remember it, Sanksville already has such a library.

Wisconsin Journal of Education are among the best in the country. Our correspondent reports the Institution for the Blind, and the high grade established in their midst.—W. T. Fry takes charge of the Crawfordsville schools, at a salary of $1,200.

Indiana.

In the death of Chauncey Rose, of Terre Haute, Indiana loses one of its best citizens. Mr. Rose's gifts to educational and charitable institutions aggregate over two million dollars. To the Rose Polytechnic Institute alone he has given about $450,000, while it is thought that certain provisions in his will will add very largely to the sum already given. It is, indeed, not very unlikely that the Rose Polytechnic Institute may prove to be the best endowed institution of the kind in the country.—J. A. Reubelt has opened an academic and industrial school. The following is a statement of the reasons for getting a school of that grade established in their midst:—The July and August number of the Wisconsin Journal of Education are among the best in the country. Our correspondent reports the Institution for the Blind, and the high grade established in their midst.—W. T. Fry takes charge of the Crawfordsville schools, at a salary of $1,200.

Ohio.

In most of the cities and towns of this state the school year begins the first Monday of September. There have been fewer changes in superintendents and teachers in the public schools of Ohio, than for several years. Ow­ ing to the reduction of salaries in many towns, and in Cleveland and Toledo, and the apparent dissatisfaction which has shown itself in some localities of the state, in regard to course of study and the general management of school affairs, the number of studies was increased last year. There are two courses of study—English and Classical—extending through four years; also a Normal and a Prepa­ ratory department. The school is under efficient management.

Arkansas.—The State Teachers' Association held its annual meeting last week in Little Rock. Among the resolutions adopted was one of a success as was desired by those most interested. In order to cor­ rect errors of advertising, arranging programs, etc., the Association determined to hold another meeting during the holidays, at Little Rock. In view of the instructions given to the executive committee it is expected that this meeting will be one which will be a credit to the state. In the election of officers a new departure was taken by electing a lady President.—Miss Ida Joe Brooks, of Little Rock. Notwithstanding the feeling of opposition to "im­ provement" in the public schools, the schools of the state, several were present from the state of Illinois.

Colorado.—Colorado College is to be the name of a new institution to be established at San Juan, near Colorado Springs. It is said that $30,000 has been given by New Engancers for a professorship, and $10,000 has been promised by the people of Colorado for the building. A kindergarten is projected at Colorado Springs.

Georgia.—The Board of Trustees of Georgia University has appointed a committee, of which the Hon. A. H. Stephens is chairman, to confer with the faculty with a view to revision of the whole system of discipline, studies and curriculum, from which it is hoped the University will take an upward step in the fulfillment of the hopes of its founders. The corps of instructors is fully organized.

Iowa.—Mr. C. Stratton is principal at Edwardsville.—Mr. Miller, last year superintendent of schools at Bushnell, was re-elected by the retiring board of education. The new board, after organizing, elected Mr. A. Neff, and Mr. Miller has brought suit for $1,000, the amount of a year's salary. — Serious charges have been brought against him by the board. Serious charges have been preferred by Mr. Miller against Dr. C. H. Fowler, ex-president, and the Board of Trustees. The charges are said to be groundless.—Mr. Wentworth, a graduate of the State Normal School of Massachusetts, has taken that position as principal of the industrial department at Princeton. Mr. Prof. P. H. Harris edits an educational column in the Milton Beacon, in which he attempts to show that it is not desirable for teachers to subscribe for educational journals. He says that the "educational paper, instead of being an aid to the average teacher, is a clog and a burden."

Arkansas.—The State Teachers' Association held its annual meeting last week in Little Rock. Among the resolutions adopted was one of a success as was desired by those most interested. In order to correct errors of advertising, arranging programs, etc., the Association determined to hold another meeting during the holidays, at Little Rock. In view of the instructions given to the executive committee it is expected that this meeting will be one which will be a credit to the state. In the election of officers a new departure was taken by electing a lady President.—Miss Ida Joe Brooks, of Little Rock. Notwithstanding the feeling of opposition to "im­ provement" in the public schools, the schools of the state, several were present from the state of Illinois.
the state, and more than any other public school in the United States, while providing a thorough and extended commercial course, rivaling the courses in expensive business colleges, for students not desiring a college course. Supt. Perry says in his report respecting the high school: "The enrollment the past year exceeded that of the previous year by forty-four, of which increase forty-three were non-residents. The total tuition receipts from all departments, including the preceding year of $496. The non-resident tuition receipts amounted to $315.22, an excess over like receipts of the preceding year of $547. Such a growth bespeaks, as nothing else can, the popularity and I trust the excellence of the High School. Then the balance of opinion is very largely, if not nearly unanimously, in its favor. Cheapness, thoroughness of instruction, reputation, the interest of the University, and increased local trade, all combine to encourage its successful continuance. It is a large high school department, but the balance of opinion is very largely, if not nearly unanimously, in its favor. Cheapness, thoroughness of instruction, reputation, the interest of the University, and increased local trade, all combine to encourage its successful continuance.

MISSOURI.—Miss Alice P. Goodwin, teacher of Latin and Greek in Wilson College, Chambersburg, Pa., has been elected Lady Principal of Olivet College, and has accepted the position. She has taught in the University, and was educated at the noted Classical Seminary in Meriden, N. H., pursuing a post-graduate course, and subsequently spending a year in an educated Parisian family for the special purpose of perfecting herself in the French, which she afterward taught with great success in the New Hampshire State Normal School, till the languages were excluded from the course of studies in that school.

MINNESOTA.—S. F. Cale, formerly of Sank Center, has taken the principalship of public schools at Blue Earth City. He is reported by the County Superintendent as an excellent disciplinarian.

MISSOURI.—Miss Emma Whittaker, of Seymour, Ind., takes charge of the school at Rolla. Prof. Baldwin, President of the State Normal School at Kirksville, accomplished a glorious work during vacation. His campaign lay in Iowa and Missouri, and good reports have come to us from nearly every one of the schools which he sees, the report being all favorable.

NEBRASKA.—At Omaha the question of frequent examination of pupils in the schools and the consequent great amount of time taken by the teachers to make out reports, etc., causing them an undue amount of labor, was fully discussed, and the conclusion arrived at that it is an unnecessary piece of business. The opening of the state University has been postponed till October 2.

NEW HAMPSHIRE.—Two ladies have been elected members of the school board for the first time in Portsmouth.

TEXAS.—The trustees of the Peabody fund have given $2,000 for the schools of San Antonio.

VIRGINIA.—There are in Virginia white male teachers, 2,495; white female, 1,489; colored males, 418; colored females, 218. Average monthly salaries from all sources—males, $34.95; females, $30.57.

The editors of the Knickerbocker for the belief that the Normal School at that place is full to overflowing. The number of persons in the district between the ages of five and twenty years is 1,188. The Beloit schools open very promisingly. The attendance at the High School has increased. Some valuable additions have been made to the cabinet of the school. The College also opens with the most favorable prospects.—Oscar Green remains in Milwaukee, employed by Prof. Markham in the Milwaukee Academy. He goes next year to test by appointment Prof. Post's Academy, which he has occasionally used as a temporary house, and is to be occupied by the Board of Education as a branch school. W. C. Whitford, President of Milton College, was nominated by the Republicans last week for Sup't of Public Instruction, the contest having been made up by an enthusiastic teacher in attendance at the state institutes yet heard from a lady who attended the one just closed at Mt. Sterling. Wishing to spend the Sabbath at her home twenty miles distant, she started Saturday afternoon, rode four miles, and walked sixteen. Sunday afternoon she started on her return rap, walked sixteen miles, stopped at the house of an acquaintance, and finished the remaining four miles Monday morning on foot before the institute opened. She desires a life certificate—marked 100 per cent throughout.

Publishers' Notes.

The first number of The Practical Teacher will be ready November 1, and in order that we may know how large an edition to print, we invite all who are interested and who will subscribe, to send us their names before that date; we will then promptly mail them the first number. It will be sent regularly to all county superintendents or others who will send us a club of four at one dollar each. We are prepared to receive subscriptions of any size.

The Practical Teacher will be clubbed with The Educational Weekly one year for three dollars.

Address
The Practical Teacher, 170 Madison St., Chicago.