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WHEN WRITING PLEASE MENTION NORMAL COLLEGE NEWS.
St. Patrick the Apostle of Ireland.

An Historical Interpretation.

Professor Julia A. King.

Of the Seven Champions of Christendom none moves through literature with a grander or more graceful name than St. Patrick. None is more popularly known and loved than he. Religion, history, poetry, legend and romance have conspired to make his a household name. Much, however, which is held popularly as truth rests upon a slight basis of reality. St. Patrick's Purgatory, for seven centuries; a place of pilgrimage for the Irish people, is founded on a well known legend. The mountain and the cave wherein demons, snakes, and toads were driven into the sea still keeps the story in green memory by the names Creaghpatrick and Longademon. The tradition that St. Patrick illustrated the mystery of the Trinity to the incredulous King Loegaire by the shamrock is so popular that the leaf has been adopted as the national emblem of Ireland. These and many other popular traditions which might be cited show how time and distance have thrown their euhemerism's around the name of St. Patrick.

In the recent period an effort has been made to separate the traditional or minute from the rationally historic and so construct anew the life of the Saint. Both branches of the church have entered the field of research, but making as they do widely different assumptions from which to conduct the investigation their conclusions have been often diverse and contradictory. The power and influence in the church of St. Patrick have been steady through the fifteen centuries since he first preached the word at Tara. "True love hath" that which endures in the progressive thought of the advancing ages most it accepts as truth. St. Patrick in his teaching, his work, his writings, his character has endured the test of time, has outlived the passing of the pradictive and the medieval and is still a positive force for good in the church. The bullet in saints ended with unusual gifts and supernatural powers is generally accepted by the church. Patrick the saint is then accepted as a fact by most Catholic writers— an assumption from which historically it is difficult to dissent. The "rationalistic critic" on the other hand assumes nothing, believes nothing. Such mainly is the position of the non-Catholic scholar.

Starting from whichever premise the first question that the investigator must answer is, what are the sources of information concerning the man himself, the people for whom he labored, and his work. The Patrician literature is immense and covers all the centuries since St. Patrick's time. Of the greatest importance is the Apostle's own writings, the Confessions and the Epistle to the Hibernians. The oldest copy of the Confessions now included in the Book of Armagh, is among the valued archives of Trinity College, Dublin. The genuineness of these writings is now well established. Another old document is a monastic account of St. Patrick's life attributed to one of his disciples, St. Fiacc. Historically it is not of great importance. Its date is uncertain, but probably early in 600. All these remains of the Saint are to be found in the "Writings of St. Patrick" by H. H. Wright. Another document of some historical value is Colgan's lives of the Saint. The first of the collection of seven is Place's life just mentioned. Probias of the tenth century wrote one, Jocelyn of the twelfth another. The seventh called the Trivipartite life is the most important. It has been assigned to the tenth century and is perhaps the best authenticated document concerning the Saint. Colgan's lives as a whole contain a mass of tradition and show the credulity and enthusiasm of the Middle Ages which produced it. This completes the list of documents now available in English for writing the history of the period.

Turning from the sacred legends of the church in the Middle Ages to the legends of romance and chivalry of the same period the name of St. Patrick is again encountered. A doughty knight, armed for the defence of the weak, the deliverance of captives, and the vindication of wrongs, is St. Patrick. He figures as one of the Seven Champions of Christendom. "His adventures are as noble and so oddly performed that if my pen were free I should weave it out to declare his prowess." "He made the enemies of Christ to tremble and watered the earth with streams of pagan's blood." "He recovered Rhodes from the Turks by his in-
vincible prowess, where his dangerous battles, fierce encounters, and long assaults would fill a mighty volume." "He delivered the six Thracian ladies out of the hands of thirty bloody-minded satyrs." But all of this may be fully read in the tale of the Seven Champions; also how he died walled in a hermit’s cell and how the people of Ireland do yet in honor of his name keep one day in the year a festival, “wearing upon their hats each of them a crown in red silk in token of his many adventures under the Christian Cross.”

In the later period of literature secondary material is superabundant. Acta Sanctorum, compiled by the Bollandists between 1643 and 1873, contains a censorious analysis of the previous writings and excludes much of the legendary and miraculous found in Colgan’s lives. Modern students have made large use of his collection. Bar­ ing-Gould has published a work similar to the Bollandists, though much more conservative. M. F. Cusack’s life of St. Patrick contains Hennessy’s translation of the Patrician documents. For this reason the work is valuable, though in credulity the author compares well with Jocelyn or Colgan.

All told, the material out of which to construct a history is the Saint’s own writings; the sacred and romance legends; early biographies; and the critical lives of later writers. The first lacks in chronological order and detail while places are quite concealed under their old Celtic names. The second class, as the name indicates, is useless so far as interpreting events is concerned, though of great worth in reconstructing the atmosphere of the time. The third class contains a large number of works, but showing such a diversity of opinion as to render the truth doubtful or at best leaving many open questions. We turn now from this brief survey of the material to interpret the story of the man’s life and work from the primary authorities.

The country and the people.

The island had many names. The Greeks called it Ierni, the Romans Hiberni, the Gaels, Innisfall and Eire, Erin or Erin. Then as now it was divided into counties or provinces. The names of many through which the Saint journeyed on his mission, remain to this day. Such are Meath, Con­ nought, Linstor, Ulster, Antrim. After so many hundred years cities bearing the old names rise upon the slopes and rivers.

“No more to chiefs and ladies bright, The harp of Tara swells.”

Tara has been laid low, only the royal hill and the fast diminishing mounds remain witness of a nation’s rise and fall. Dublin, a ford then, has found its place among great cities since St. Patrick crossed by its bridge of hurdles.

Erinn’s green acres opened out into wide pasture land for flocks and herds. The rich soil and the warm, damp climate made the tilled field bloom like a garden with flowers, fruits, vegetables and grains. The bays and coves protected by bold cliff and headland made safe harbors from which to make predatory excursions to Britain and Gaul. Nialls, the rover Irish king, on one such expedition entered the port of Boulogne-sur-Mer and carried off a shipload of young men and women who were sold to the Irish nobles for herders of sheep and swine.

The people lived under patriarchal conditions. The clan was the basis of society as well as the unit of political polity. It was like an enlarged family, bound together by common interests, ties of blood, education, common ideals in life, common ownership of vast tracks of grazing lands. The clans of the districts were more or less closely organized under one leader called chief, prince or king. These again, as under Nialls of the Nine Hostages or his son Loaghair, were ruled by an over king, who held his right, presumably, by the sword, though kingship may, in time, have become elective. Meath was the High King’s own province. Tara, a city of splendor with palaces, assembly halls and public buildings was the capital of Erin’s proud monarch. Here, three times a year, representatives of the people gathered in council with the king. Here also were held the religious festivals of spring and autumn—easter and harvest. The ministers of the people were called Druids, though St. Patrick only called them pagans. They stood about the king and doubtless were the most important officers of the state. Lynch, Secretary of the Gaelic Society, and others portray the Druids as men of profound learning; of pure austere practices; teachers of prudence, courage, patriotism; believers in one God, the immortality of the soul, and the reward after death according to the actions during mortal life. The success of St. Patrick’s mission would give color to some such assumption. If in habits of thought and life the people were in accord with St. Patrick’s teachings then indeed was the nation waiting the regeneration of truth. Rather might it not have been a time of universal wreckage? Just when the old forms were proving insufficient for life, might not the lasting spiritual empire built by the Apostle have been raised upon a religion already crumbling to decay?

The Gaelic language already before the fourth century, had been worn by use into literary form. Lyrics and love songs, hymns or songs of praise, stories of devotion and heroism, annals like Flacc’s, are among the treasures of ancient Ir­
The Early Events of St. Patrick’s Life.

“My father was Calphurnius, a decurio of Potitius, a priest of the town of Bouavent, Touseven. He was near the town a small villa that, where I became a captive.” Confessions.

“Patrick was born at Kenthur, as is illustrated in stingers.” Fiacc. “St. Patrick was a Briton of the village of Doreone, in the district of Tyrurinum, adjacent to the western ocean.” Proclus. “The western ocean is called in another place Tyrrenian.” Lough.

It is futile to attempt to trace the places named in the citations. The lawn, the Lience and the Dco may either of them have been the river on “the edge” of which was Aedhri’s farm. Tous, Boulingueis-deler, or Old Chester may either have been the “headland” above the opus river frequented by piliate birds. Every country in western Europe claims his activity, but beyond the three citadels the foundation of such claims is legendary.

The date of his birth is also uncertain. It is established that Niall of the Seven Hostages in 401 entered the harbor of Bonamoin or Dumnon (Boulinguine-Menn) and carried away many captives. If Patrick was among the number he was three six years of age, which would make the year of his birth 398. His activity ended six years, during which time he tended a man’s sheep.” Dunne supplies some details. The “man” was Milch, a petty prince, owning a large estate in Dolarisata devoted to swine herding. Legend tells us still more and commemorates the place of his ascendency at Slemish mountain, on whose rugged peaks, amid snow, frost and rain he was wont to “present the day-break” with his prayers; and Bullygpatrick the hollow, where, on the wild, brown bog, he tended his swine herds. “Here he learned the Gaelic language and became familiar with the laws and religious customs.” The old chronicler gives the swine herd large credit it would seem.

“In the seventh year of my servitude,” the Confessions continue, “on a certain night I heard a voice that said to me, ‘You have fasted in good measure: you shall soon return to your fatherland.’ And again after a little time I heard the answer, ‘Behold your ship is ready.’ It was not near, but two hundred miles away. Soon after this I fed and feared nothing until I came to the ship. At first the shipmaster refused to let me sail with him. When I heard this I turned away and began to pray and before the prayer was done I blessed one of them shouting, ‘Come quickly for these men call for you.’ So I entered into their ship for God sake.” After his journey by sea for three days and by desert for twenty-eight after hunger and deliverance manifold, and sixty more days of captivity he came unto “his relations in Britain.” It is impossible to say what was meant by fatherland. There is a very tradition about it. Britain was the name given to the north of Gaul called Armeronia. His uncle was St. Martin of Tours. To this place he came, so runs the tradition. On his way there he crossed the Loire. At the place of crossing there shone a tree, which, falling, every Christmas since is adorned with white bloom. Thousands once year after year to gather the “Flowers of St. Patrick,” which are believed to be an enduring token of the Saints sonorun with St. Martin at Tours.

The Monastery of St. Martin, even before St. Patrick’s time, was a center of devotion and learning in Gaul. Here living, as did the authorities, in a hut on an isle or in a cave on the tortuous banks of the Loire his young Patricius may have practiced his devotions with the same austerity and asceticism of spirit as on mount Slemish.

The Apostolic Leader.

The dates by which to trace the life of the Apostle between the close of his captivity and the beginning of his ministry lack authenticity and consistency. The time of his return to Ireland is now indefinite. The work was a great work. None put a man of learning and culture could have accomplished it. It is fair to suppose that these years were spent in study and that he was familiar with the lore of the schools.
Churchmen usually attempt to establish his connection with Rome and Pope Celestine. Probus says the Saint journeyed to Rome to receive the apostolic benediction before setting out for Ireland. St. Patrick himself gives a minute and circumstantial account of his appointment, in which over and over again, he affirms that he received his episcopate by the direct interposition of God. His statements neither prove nor disprove that the church of Ireland was, at the outset, ecclesiastical in organization. But his silence on the subject would indicate that hierarchical organization had not at that time assumed the importance which it did later. In his method of work in organizing churches it was evident that he held himself responsible to no higher authority than Christ.

The conversion of Ireland was rapid and the intellectual development of Christianity was quite as remarkable. At the close of his ministry, schools and churches must have dotted the land. The story of it is like a tale from a wonder book, or like one of their own illuminated manuscripts glorious with saints and angels. The constant mingling of the natural and the supernatural, the commonplace and the marvelous reminds the reader of St. Paul and the early century of Christian teaching. It is all very significant of their attitude of mind towards the Divine Lord. It reveals, as nothing else could, their belief in God's knowledge and care of his children, his direct interposition and help in human affairs. Many of the traditions are exquisitely beautiful; such as that of the Flowers of St. Patrick, the shamrock, the call of Benignus, or the conversion of the King Laoghaire's daughters, Ethna and Fedelinde. Others are grotesque with accretions of the passing years: such as the snowball thrown by angelic hands, the stolen goat that "bleated in the thief's belly," the contests with the magus. One and all, however, they testify to the religious ardor, the faith, the love of the Gaelic people.

The work of this Apostolic leader was constructive. The church in passing from paganism to Christianity became an institution suited to the expanding life of this people. From being exclusive and shrouded in dark mystery it became the church of the fireside. A liturgy of prayer and generous giving sprang up in place of the horrible sacrifices. Instead of the cromlech rose the altar and the sanctuary. The phantom gods vanished from the "hearts of men and in their place came the Blessed Trinity."

The old clan organizations were not disturbed, but the building up within them of a living universal church must inevitably have weakened the clan by awakening a spirit of nationality. The clan kings gave the Apostle the best of their lands for the churches and monasteries. Dichu, the first one in Ulster to embrace Christianity, dedicated the land and the barn "where his conversion was wrought, to God." The Apostle built a church which was later converted into a monastery. It was called Sabha ll, or Saul, and during his toilsome life was his favorite place of refuge and here he died.

Armagh, held by Prince Daire, was, owing to its proximity to the fortress and residence of the kings of Ulster an important place. There is a pretty legend about how St. Patrick secured the hill where he built the church and established the See of Armagh. It is very prosy to say only that the king and queen gave it to him. "Here he laid out a city, large in compass and beautiful in situation, built a cathedral, monasteries and other religious houses, and drew to it inhabitants, both secular and spiritual, and therein established schools and seminaries of education." This seems to be regarded his crowning work. Armagh became a center of missionary zeal which swept western Europe.

The churches and monasteries were in the hands of the princes who founded them. Bishops and priests were drawn from their own tribesmen. In this way the civil and religious organizations drew the people into a closer unity of purpose and action. The old documents say that the Synods at Armagh published not only manuals and catechisms, but also canons or codes of laws, some of which are still extant. If this be really true the church must have done much towards shaping the political order and modifying the ancient legal code.

It is not alone in church, school and government that the great constructive work of the Apostle must be looked for. The moral uplift felt by all classes of society, from princes and kings to clansmen and subjects, created a new people. The old ardor and enthusiasm found new expression in religious zeal. New channels of activity were opened, new industries sprang in the footsteps of their devotions. The old predatory warfare, in time, gave place to lawful exchange. The individualism of the old clan organizations broadened into a new social brotherhood. Into the old form was read a new meaning. Within the heart of this warm, impulsive, generous, passionate people, was implanted the norm of life which in the four centuries following was to transform by natural growth a pagan into a Christian nation. They were centuries of peace; meantime Ireland in her intellectual and spiritual development, perhaps, was without precedent.

St. Patrick passed from the sight of men March 7, 492, but his name still lives in "Loyal Innisfail."
Sketches in the History of Arithmetic.

II. Fundamental Operations.

Professor E. A. Lyman.

The fundamental operations of arithmetic are given by the Hindu mathematician Bhaskara (c. 1114 A.D.) in the Lilawati are eight in number: addition, subtraction, multiplication, division, square root, cube and cube root. The Arabs used six fundamental processes. They added to the first four, duplication and repetition, i.e., the processes of doubling and halving numbers. There are two ways of attaining the 16th century and then divided as an unnecessary refinement of multiplication and division.

The instructions given for addition and subtraction in the Lilawati are as follows: "Figures are added from right to left, or from left to right; and also are subtracted from right to left, and from left to right; according to their places." Thus, these operations were performed by beginning either at the right or left. Both the Hindus and the Arabs usually worked from left to right. The modern plan of working from right to left is shorter. It was introduced in Islamland in the 16th century by an mathematician by the name of Garth.

The Hindus performed the work in addition from left to right, as in the example below. Instead, however, of writing the sums of the columns separately, the 5 would be crossed and the seven written in the place of it when the sum of the second column was obtained, and so on.

Subtraction was usually begun from the left, the smaller number being placed above the greater and the operation performed as in the example above.

When "borrowing" was necessary the Hindus had two different methods which were practically the same as the methods in common use. The smaller number being placed above the greater and the operation performed as in the annexed example.

The multiplier is written under the multiplicand so that the figure of lowest order in the multiplier is under the figure of highest order in the multiplicand. The 2 is multiplied successively by 2 and 4 and the product written above this 62. The 7 is then multiplied by 2 and the product written 628, and so on. When all of the figures of the multiplicand are used the sum of the products above it will give a number of 375 and 24. It will be noticed that the multiplier was moved one place to the right after being multiplied by each of the digits of the multiplicand.

In using the counting board and style the individual results were erased, the addition being performed at each step. When the work was finished the whole product was in one line as follows:
The Hindus sometimes resolved the multiplier into factors, then multiplied by each factor and added the results. They also separated the multiplier into sum or difference of two numbers that were easily multiplied.

The Hindus had other methods, some of them closely resembling our own. Thus, the computing board was divided into squares and diagonals were drawn as in the following example:

Multiply 846 by 23.

\[
\begin{array}{l}
846 \\
23 \\
\hline
2538 \\
1692 \\
\hline
19458
\end{array}
\]

This is practically the same as our method:

\[
\begin{array}{l}
846 \\
23 \\
\hline
2538 \\
1692 \\
\hline
19458
\end{array}
\]

The difficulties experienced in performing arithmetical operations led to the use of such extraneous aids as the abacus. Addition and subtraction by means of the abacus were quite simple, but multiplication and division were very complicated.

The following examples taken from Cajori's History of Elementary Mathematics will afford concrete illustrations of multiplication and divisions by means of the abacus as used by the Romans.

Multiply 4000 by 23.

\[
\begin{array}{l}
3 \times 6 = 18, \ 3 \times 4 = 12, \\
2 \times 6 = 12, \ 2 \times 4 = 8; \ 1 + 2 + 2 = 5, \ 8 + 1 + 1 = 10. \ \text{Therefore} \ 4000 \times 23 = 105800.
\end{array}
\]

Divide 4087 by 6.

\[
\begin{array}{l}
10 - 6 = 4. \\
\text{Divisor} = 6. \\
\text{Dividend} = 4087.
\end{array}
\]

Remainder = 1.

Quotient = 681.

This process might be called "complimentary division" because 10 - 6 or, 4 is operated instead of 6. This method was used by the Romans but not so far as is known by the Hindus or Arabs. The process is as follows: \(4000 \div 10 = 400\). Write this below as part of the quotient; 10 being too large a divisor, \(4 \times 400 = 1600\) is added. Then 1000 \(\div 10 = 100\), write this below as part of the quotient and add \(4 \times 100 = 400\). Then \(600 + 400 = 1000\), \(1000 + 10 = 100\), and so on. In this sort of division it was not necessary to know the multiplication table above 5's.

The person who follows the above process throughout will fully appreciate the fact that division was a serious matter.

To assist in overcoming the difficulties in multiplication John Napier in 1617, invented a device called Napier's rods. The principle is the same as had been long in use in India and Persia. The rods consisted of rectangular slips of bone, wood or cardboard arranged in a box. Each rod was divided into 9 squares. In the top square one of the digits was written and the result of multiplying it by 2, 3, 4, 5 ........ 9 was written in the eight lower squares. When the product consisted of two digits, the ten-digit was written in the upper left hand corner and the unit-digit in the lower right hand corner of the square, the two being separated by a diagonal line. The following figure shows the arrangement of the rods placed in regular order.
The following example will serve as a concrete illustration of the use of these rods in multiplication:

Multiply 4278 by 5.

The rods headed 1, 2, 7 and 8 are taken from the box and arranged as in the figure.

The product of 4278 by 5 may be written:

\[
\begin{array}{c}
4278 \\
\times 5 \\
\hline
21390
\end{array}
\]

The Arabs and Persians had other methods of multiplication and division. The old "scratch" or "galley" method of division used by Tartaglia (1499-1557 A.D.) was very generally employed in Europe in the 16th and 17th centuries. The introduction of the "Italian method," which is the method in common use now, was a great improvement.

The "Austrian method" of division, which consists in abridging the work by performing the division and the subtraction from the dividend at the same time, is quite extensively used in Germany and is gradually being introduced into this country.

The method of performing multiplication by beginning with the figure of highest order in the multiplier has been in use for a long time. Paciolo (about 1500 A.D.) used the method and called it "by the little castle." It was taught by Nicholas Pike, who wrote an elaborate text book on arithmetic in this country in 1708. This method, although not much used now, is of great advantage in the multiplication of decimals, when an approximate result correct only to a definite number of decimal places is desired.

The three inventions that have contributed very largely to the success of modern methods in computing are: (1) The Hindu Notation, (2) The decimal fraction and (3) The invention of Logarithms by John Napier early in the 17th century.
The first requisite of a good composition is a good subject. A bad one handicaps the student at the outset, and invites, if it does not insure failure. Much of the dull conventionality and dishonesty of the composition work done in our secondary schools can be directly traced to the character of the subjects used. They are too difficult, too commonplace, too hackneyed, or too comprehensive. For this the teacher is wholly responsible, either because she allows the child to choose a poor subject, or because she imposes upon him a poor one of her own choosing. And upon whom should the choice of theme devolve? Occasionally we hear of a teacher, who having set forth some fine rhetorical principle, assigns to her pupils the talk of writing a composition which shall embody and illustrate the principle. There is no subject named, or even hinted at, no interest aroused—nothing but the bare demand for a bit of writing and the whole wide world from which to choose the theme. No more unpedagogic proceeding could be devised, and the results are as miserable as they are inevitable. The pupil, filled with a vague idea that an essay subject must be very dignified, very high-sounding, and remote, begins his search; after wasting much valuable time and energy, he becomes discouraged, and finally in sheer desperation has recourse to books, from which he draws not only his subject, but alas! too often, his ideas and even his form of expression. From the very beginning of their work in composition many pupils are thus literally driven into dishonest methods; and the fault is not theirs if they become mere copyists. To avoid this, the teacher, understanding the various interests of her pupils, their needs and capabilities, should always direct in the choice of a theme. She is fitted to do this by her superior knowledge of the ends to be gained, of the material which can be utilized, and of the dangers which are to be avoided. She is thus able to save the pupil’s time, keep him from the blight of discouragement, prevent his forming dishonest habits, and insure for him that measure of success which comes from a well-chosen subject.

And what are good subjects? First and most emphatically, those in which the pupils are interested, so that, after all, the choice of the teacher is but the unconscious choice of the pupils. She selects those subjects which have to do with the child’s life and experiences, those which are connected with what he is doing, or thinking, with what he sees and knows. She arouses his interest in these things as material for composition, leading him to see that they may be made interesting to others, and that they have in them great possibilities. She makes him conscious of his own literary possessions, and teaches him to feel that he has no need to be ashamed of them, or of his interest in them. In short, the teacher chooses the subject from the world in which the child lives, utilizing always his natural interests, augmenting them where she can, creating new ones where she must.

So rich is this field of material that it is easier to say what should not be used than what should. As hinted above, all topics which send pupils to books should be rejected. It is absolutely impossible for the child to treat in an original, or even in an honest way matter that has just been gotten from the printed page. Both the ideas and the language of the author handicap him. Nothing that he can say will ever seem so good as what has already been said. He can hardly think a new thought on the subject, or even find for the old one any form of expression save that in which he has already seen it embodied. Topics which end thus in restricting and embarrassing the pupil work serious injury, both mentally and morally. It is hardly necessary to say that the subjects chosen should never be hackneyed. There are too many themes of fresh and live interest to necessitate the use of those hoary with age. The country child has the great world of out-doors with all its changing miracles and thronging life from which to draw his themes; the city child has equally rich material in the various institutions, in industries and organizations, in buildings and machinery and public gatherings, and exhibits, and what not, to be found in every town and city. Both classes know far too little concerning the life about them. The teacher of composition ought to find here her opportunity. On the whole, the regular work of the school room does not furnish good material for essay writing. While it has the advantage of being familiar, it lacks the freshness necessary to insure spontaneity; and often it is too remote from the child’s experience to be of vital interest to him. Whatever the subject chosen, it should not be difficult to grasp, lest in the child’s effort to say something, the form of saying be forgotten. The thought should be fully mastered before the writing is begun, for the labor of expressing his thought is all that he can attend to, and form, not content, is the chief concern, once the actual work of writing is under way.

Next in importance to the choosing of the
theme is the method of presenting it. The teacher has no right to presuppose that the child is eager to write upon the subject, however full of interest it may be. She wishes him to write naturally and well, but he cares nothing about the form apart from the content; he cannot be made to care for it. In his mind words and ideas are forever united; and expression is always associated with knowledge and emotion. If he is to care anything about the form, he must first care about the thought. To know something about the subject is not enough; he must be interested in it. Just as the child learns English only when a deep interest in the content taught has carried him beyond the consciousness of form, so he gives it out only when he becomes eager, when his imagination is aroused and his feelings touched. By a mere effort of the will, he may acquire or report facts, but a real composition is not merely a record of things learned. It comes as the result of an overlying interest, which represents the feelings plus; and the feelings are not subject to the will. Hence it is, that in assigning the lesson, the teacher first assumes is to make the pupil as interested that they will want to write. She must fill him as full of the subject that expression will become a necessity, a kind of safely valve for subabundant feeling. This intensity of interest the teacher can secure by various means. She may tell of the interest of others in the subject; and she herself must be honestly interested in it, so that what she says concerning it shall "issue glowing with life." But above all things else she will make her pupils eager to write by supplying them in some way a live and eager public.

This idea of a public waiting to hear is of paramount importance. To call for compositions merely because an "act of writing" must be performed is to make the work unprofitable and hateful. Let the pupils once discover that their work is a mere class exercise, that there is no audience, and their interest dies. To accomplish anything really good, there must be not only a thought to express, but a mind awakened for expression by the knowledge that someone is really to hear. The child's public may be merely the school to which he belongs, or his class, or simply his teacher; but a public there should always be, and a sympathetic and appreciative one.

And this public must always respond promptly to his effort. Children are as eager to know the verdict of those for whom they write as any other authors, and they have a right to know. The teacher who waits weeks before resuming the written work of her pupils is doing her best to make the composition writing the dullest kind of task work, hateful to the pupils and utterly barren of results. It is a sad commentary on much of the written work done in our schools that the pupils should be surprised when the papers are now and then returned with alacrity. They should feel that the teacher is interested in what they have written, that she takes keen delight in reading it. Too often, however, they discover that she looks upon the papers as an "insolent burden," that she signs at receiving them and delays correcting them as long as possible. Yet how a teacher of composition truly alive to her work can fail to see the interest and value that attach to every scrap of written work done by the child, it is difficult to understand. However dull, or weak, or faulty the papers may be, the work of correction should not be regarded as "dreadful drudgery." Even the poorest of them should be of interest, since more than any other school work they reflect the whole life of the child. Moreover, the teacher can find in the compositions not only a revelation of the child, but also the evidence of her failure or failure as a teacher. How shall she learn what to teach and how, if she does not see the results of her efforts made manifest in the papers of her pupils? From them she must get continually her new point of departure. The day of the old method of composition teaching is past. There is no longer any predetermined order of teaching principles. Indeed, we have come to understand that formal precepts have very little to do with composition writing, and that they should be presented only when the pupils reveal the need of such instruction. But in order to be familiar at every point with the needs of her pupils, and in order to enable her wisely to supply them, the teacher must read the compositions.

Moreover, she has even in the correction of the simplest bits of writing an opportunity for self-culture. To express her criticism clearly and in an interesting manner, to make it direct and suggestive, to make it teach a truth without disheartenment, and to avoid monotonous repetitions—these things call for the constant exercise of skill and good judgment. There are many teachers who might well profit by such practice; the composition papers of their pupils might be made their own opportunity.

Concerning the correction of the papers, at least one thing should be emphasized. Everything need not be, and should not be corrected. On the whole, teachers of composition praise too little and find fault too much. They forget that since the composition situations so directly out of the heart of the child, he is more sensitive concerning it than concerning anything else he does. If
the work is to be spontaneous, if it is to be a joy and a success, he must be made to feel a sense, not of wasted energy, of failure, or of utter incapacity, but of well directed energy, of growth, of latent power. It was Sir Walter Scott who said, "Many a clever boy has been flogged into stupidity, and many an original essay has been corrected into painful mediocrity." Certain it is, that the teacher may easily do too much. She must learn to distinguish between things absolute and things relative. Capitals and spelling should always be corrected; choice of words, form of expression and even punctuation may often go untouched. The wise teacher will not be over-nice about the use of relatives, about conjunctions at the beginning of sentences, and particles at the close; indeed, she may ignore many things of greater importance; but she never overlooks a strong word, a picturesque phrase, or a natural touch. She understands that the purpose of composition work is not to produce fine essays, but to lead pupils to conscious care, easy naturalness and a deep respect and love for the work.

Above all things, the teacher must be wise in dealing with what Samuel Thurber calls the "faults of feebleness," faults which can hardly be criticised without discouragement. Indeed, they should rarely be criticised at all. Instead of trying to make the pupil feel his weakness, it is infinitely better to hold before him examples of excellence, to rouse his imagination, give him new ideas, stimulate in him new and more powerful emotions. If the composition is weak, it is either because he has little to give, or because he has no power of expression. In either case he needs, not to be urged or reproved, but to be stimulated and fed. Expression is a natural, not an unnatural thing; and when the conditions are right it will surely come. Once fill the child's mind with the theme, make him eager and alert concerning it, and if the teacher knows the "art of solicitation," there is bound in time to be a response. One of the reasons why our high school, and even our college students sit for hours literally chewing their pencils to bits in the vain endeavor to express their ideas in writing is the fact that during their earlier school life they were not trained in the habit of written expression. They have ideas, but they are unable to formulate them. They search and strain for the remote thought and the formal phrase, not knowing that the spontaneous and natural expression of ideas, which come easily into the mind is really good literature. What we need to do is to lead the boys and girls to see, and think, and feel, and to report the results in their own way, with the utmost simplicity and honesty, remembering that the good composition is merely the natural overflow of the thoughts and feelings.

If it seems advisable to have the compositions rewritten, some new stimulus should be given to the child. Certainly the work of rewriting should never be enforced as a task or punishment. Unless the child wishes to improve his work, there will be little improvement. This does not mean that he may be allowed to neglect the work of correcting his papers; it simply means that he should make the corrections, not because his teacher demands it, but because he desires to make his composition as perfect as possible.

There are other matters, such as the use of uniform paper, of correct margins and of suitable titles, which ought not to be ignored. Teachers should insist upon legible writing, careful numbering of the papers, and general neatness. Indeed it is worth while to pay attention to everything pertaining to the mere mechanics of the work; for these things, though slight in themselves, add much of dignity and interest. Let the teacher assume that the composition work is of some importance and it will become so. In too many of our schools there is no definite time set aside for it. It is used to fill in the chinks, and as in many school there are no chinks, it is crowded out altogether. At best, it is too often done in a slip-shod and half-hearted manner. Yet if any subject in our school curriculum deserves time and attention, it is this.

Easy? No, but what matter! Nothing worth while is easy, and in the effort to help the child toward self-realization there is ample recompense. Once organize the composition work on the right basis, set aside a definite time for it, and hold that time sacred, look about for live subjects, get the children interested and talking about them, make them understand that their thoughts are of value, and that somebody wants to hear them, encourage them to be frank and honest, be interested in what they write and wise in correcting it—do these things, and enjoy the reward that is sure to come to every successful teacher of composition.
The Solution of "Ka Snóm Mity Viz."

G. W. Owen.

More than a hundred years ago the settlers on the Phelps and Gorham Purchase opened clearings in the heavy forests, built snug log houses and made the prosperous beginning of that pleasant and fertile region which now spreads over the hills and valleys.

Gradually, as by generation "the village" grew around the meeting house The Tavern, Wiswell's store, Hill's cabinet shop, Hill's shoeb shod Haviland's blacksmith shop, Miss Kipp's milliner shop and all the various arts and trades collected near each other.

There was an intimate and hearty friendliness and community of feeling, that the hurrying whirl of the present has quenched and swept aways.

Many of the settlers were related to each other by ties of blood or marriage, or at least of acquaintance. Given names were in common use among the adults with a prefix of kinship. As the young people married, names became curiosity distinctive. For instance there was "Sally-Stephen," "Sally-Olin" and "Sally-Jim," "Sally-Olin" and "Sally-Jim" were sisters-in-law and "Sally-Stephen" had the same surname because of a remote kinship between the husbands James and Stephen.

Just north of the meeting house the "Town Line Road" between Middlesex and Gorham struggled westward up the rocky hills toward Uncle Eliasha Palmer's place. His wife was Aunt Helsey and he was brother to Aunt Borces, Squire Chester's wife. Of all Uncle Eliasha's seven children, Nathan, or Lasha, as he was commonly called, was most prominent. "She is a very captivating child," said her first schoolmaster when she was seven years old, and her characteristics did not lessen as she came to maturity. The stern training of her New England ancestry made her obedient and just, while her generous heart and dauntless will made her the leader of her associates. She walked like a queen and one when old mother MacArthur, who was sly and venomous, remarked:

"These go like a ballerina with her head up in the air," Lasha said, "The Lord made my head up five feet and a half and I have no reason to hold it any lower." She was afraid of nothing and really shocked the other young people by her lack of awe for even the minister.

Perhaps one of her most daring exploits was when she undertook to help Naomi MacNamara procure to "be inspected" for a school teacher. They had been classmates in the academy, where Naomi was one of the brightest scholars and had plodded on together from "a baby" on the front

beach to "Dubbs" and Linsdale-Murray on the back seat.

The round school house is an architectural curiosity ever in Middlesex. The walls, or rather, the wall is a complete circle built of cobblestones in well imbedded rows around it. The interior is a circular room about twenty feet in diameter and the roof covers it like a gigantic exhalation. It stands to this day a monument to its freakish designer, almost a hundred years old.

When Naomi had been promised the position of teacher in the Round School house, contingent upon receiving a certificate after "inspection," she said to Lasha, who was her most intimate friend:

"I would not care for the inspection if it was not for the grammar. I can do every single thing under the Rule of Three, but I dread the grammar—and I am to be inspected day after tomorrow."

"Yes; grammar is awful," was Lasha's sympathetic reply.

"I could go through it if there were not so much to say in learning, and some things I cannot find out. If they were in the book I could learn them."

"I cannot parse every word," said Lasha, "but you always did everything in the class."

"I can go through part of them, but there are some things we have to say which I do not understand. I think 'Ka snóm mity viz' is the most puzzling thing in grammar."

"So do I," said Lasha. "I just said it once in a while when I was parsing anyway, hit on the words."

"I always said it that way too. I never knew whether it belonged with nouns or pronouns or verbs. I stopped after school one day and asked Prof. Linsdale and he said 'study the rules, Miss Naomi, and you will find out for yourself,' but there is no such thing in Linsdale-Murray."

Naomi paused with a discouraged expression. Suddenly Lasha exclaimed:

"I will go with you tomorrow and we will ask the minister what it means."

"Why! Lasha!" said Naomi.

"I'd just as soon ask him as not," protested Lasha. "He knows Greek and Latin and Hebrew and everything else. So of course he knows 'Ka snóm mity viz.'"

"Probably he could tell us," said Naomi, hopefully.

"Certainly he can, and I am not afraid to ask him; come for me tomorrow afternoon and I will go with you. Perhaps it is Greek or Hebrew or something. You know we had to say 'quod erat

solus' when we were boys and girls. You know, 'we had to say 'quod erat solus.'"
demonstrandum' in Euclid."

"Yes, but we knew what that meant."

"Well," added Lasha, "in the Psalms we say 'Selah.'"

It was a warm sunny September afternoon when Lasha and Naomi started on their long walk down the hills of the "Town-line road," past the green billows of "Whitman's woods," across the bridge over Willow brook till they turned south into the highway leading through the hollow, where stood the meeting house and the academy. To the west, beyond the fields and woods, hazy in the September sunshine, Bare Hill and South Mountain showed clear against the sky with Boat-brook valley notched between them; while far on the horizon the dim, blue Bristol hills rose from the farther shore of the lake, that lay unseen, at the foot of South Mountain.

As they came near the parson's dwelling Lasha saw that Naomi looked anxious.

"Are you afraid?" said she.

"Yes, I am. What will the minister think of us?"

"Oh, P'shaw!" said Lasha. "I don't care what he thinks. Everyone goes to the minister when they are in difficulties."

"Yes, of course—but I wish this was over with."

There was silence for a few minutes; they had nearly reached the gate when Lasha suddenly said:

"Naomi, you go on to Uncle Chester's and wait for me. I am going in alone and Dominie Page will never know that you had anything to do with it."

"Oh, no. I will not have you go alone, Lasha."

"Why, Naomi, I believe I'd rather go alone. He will not think it is anything if I go in and just say I came to ask him what some words meant—something in the grammar that I do not understand. He will not think it is queer. Once when I was at Doctor Bryant's, he and Judge Torry came in and they talked about the meaning of words and Greek roots and Latin derivations all the evening. You go on and wait for me, and I will have 'Ka-snodmity viz' as clear as daylight when I come."

Lasha opened the gate and shut it against Naomi with a prompt slam. She walked bravely up to the door and struck the brass knocker. Mrs. Page opened the door and greeted Lasha with a smiling face.

"Come in, my dear Latetia. How do you do? Sit down and take off your bonnet."

"Thank you," said Lasha, taking the offered chair, "but I cannot stay long. I came to see the minister. Is he at home?"

"Yes, I will tell him," and the kindly expression of her face became curiously mixed with seriousness. People "some to see the minister" from such a variety of causes; one may come to leave notice of the prayer meeting at the Corners next week, or to ask his service at a wedding, or it may be with some tragedy of heart or soul, which shall wreck a life or glorify a saint.

Dominie Page came into the room, large, genial, a little pompous perhaps, but sincere, warm-hearted and with genuine paternal care and sympathy for his flock.

"My dear child, I am very glad to see you, very glad. Your father and all the family are well?"

"Yes, sir, thank you, all very well," she paused a moment, and then continued, "I came to ask you about something I do not understand. One of the other girls and myself have puzzled over it and we—I thought—I would come and ask you."

"That was right. I am very glad you came, my child. Anything to clear away uncertainty I will be pleased to explain to you."

"It is not a thing of any great importance, I suppose," said Lasha, hardly knowing how to begin.

"Ah, no," said the Dominie, thinking from her hesitation that some question of conscience aroused by his last Sabbath day sermon, might be her errand. "Ah, no there is no trifle in this world. Everything is a part of the Divine plan. Not a sparrow falls unnoticed; not a hair is unnumbered."

"I only wanted to ask"—and then as her question seemed so far from the theological drift of his remark, she paused and the minister, with sympathetic zeal, promptly finished her words: "You only wanted a little light, my daughter, a ray of light upon the darkened natural understanding. I comprehend how it is with you. Remember that doubt and perplexity and fear are but the weapons of the Great Enemy of mankind. The way of redemption is a straight and narrow, but a clear and simple path. Lay aside the pride of your own reason and the confidence of your own understanding. Surrender your own worldly wisdom and accept with thankful humility the guidance of Divine Power. Acknowledge with a sincere heart, the control of the Holy Spirit and trust with a pure faith, the atonement of the Redeemer."

The rhetorical periods overwhelmed the disconcerted Lasha. Awe, impatience, amusement and another feeling, unknown to her before, actual embarrassment, made her speechless. She lost all power of attention as the expression of religious fervor went on, amid the confusion of her own thoughts. She realized nothing but a bewildered sense of her own temerity in venturing to come to him with any such worldly trifle as her errand now seemed to her.

In those days it was commonly supposed that the minister passed his whole existence in a state...
of lofty devotion, and that all his exercises were
combined with prayer. Thanksgiving and prayer,
making and prayer, meditation and prayer, coun-
sel and prayer, visiting and prayer were terms
associated with the minister from her earliest days.
Hence, when after a while she comprehended the
words:

"Let us kneel and invoke the Divine Assistance,"
she was not entirely unprepared for the idea of
grammar and prayer. There was no possibility of
explaining, and she promptly rose from her
chair and knelt before it and covered her face
with her hands. The Doctor, resting upon one
knee, his hands clasped upon his chair and his
face, with closed eyes, raised to the ceiling,
"wrestled with Divine Grace in behalf of thy
bewildered and glowing child."

Poor Lasha. "Ka sónominity viz." seemed like
an "examination from the pit, and when at length
a solemn "Amen" gave the signal for rising from
her knees, she stood unable to say a word.

"Now, my daughter, is there any thing you wish
to ask? Is there any uncertainty in your mind
as to these great questions of eternal life?"

"No, sir." And she almost unconsciously added,
"Good afternoon. Thank you, sir," and made her
way outside. Naomi was waiting for her.

"What did you find out, Lasha?" she asked eag-
lessly.

Lasha looked silently into Naomi's face with such
a solemn and hallowed expression that her anxious
impulsiveness changed slowly to a kind of awful
apprehension. At last Lasha said:

"He has been praying with me."

Naomi turned white with terror, and she whis-
pered, "What can it mean!"

"Oh; do not be frightened. It is not Ka sónominity
viz. He did not give me a chance to tell
what I wanted. I began to say that I came to
ask something which I did not understand and he
looked so for granted that I wanted to know
about the Plan of Salvation, and he went on with
a regular sermon, so that I could not say a word."

Neither spoke for some time, then Naomi said:

"There is no use in trying to find what 'ka
sónominity viz.' means, and I am to be unhoused
tomorrow."

"Well, never mind, Naomi; I do not believe the
inspectors know what it is themselves. You know
as much as they do; so straight on and say it when
it sounds right, and you will get your certificate.
I am sure."

Naomi was somewhat comforted and said: "That
is all I can do, anyway."

A few days after this Prof. Lindsley, a graduate
of Harvard, who had taught the academy for
years, met Naomi and Lasha.

"You have your certificate, I hear, Miss Naomi? I
congratulate you. You have always been a
faithful scholar."

Naomi took courage and said:

"Mr. Lindsley, there was only one thing in the
examination which I would have been afraid of,
but I was not asked to explain it so I did not fail."

"Indeed? Is there anything in your responses
which you do not understand?"

"Yes, sir. It is in grammar."

"Why? Why did you not tell me when you
were in the class?"

"I did ask you why I should say it, and you
said 'why the rules,' but I never could find any
thing about it."

"What is it?" said the professor, with great
dignity.

"I do not know what is to say, Ka sónominity viz.
in the words."

"To say what?" said Mr. Lindsley, with a
perplexed frown.

"Sónominity viz." said Lasha.

"Ka sónominity viz.," said Naomi: both together
"Why, I never heard the words!" said Mr.
Lindsley.

Lasha looked at Naomi with astonishment and
exclaimed:

"Oh, Mr. Lindsley! everybody says it when they
praise. You always say it."

"I never heard the words in my life. What did
you say there?"

"Kir and kónominity and 'viz.'"

"There are no such words. It is impossible that
I ever said such nonsense."

"Oh, Mr. Lindsley, will you please parse 'Columbus
discovered America,' and you will see what we
mean," said Naomi.

The professor complied in a very indulgent and
superior manner and went through the elaborate
formula for each word. As he finished Lasha
and Naomi exchanged a triumphant glance and
before he could speak Lasha answered the un-
solved question.

"Yes, sir. You said it then."

"What do you mean?" he said in a low which
was almost thundering.

"When you named 'discovered' you said: Dis-
covered in a verb, regular, transitive, active voice,
indicative mood, perfect tense, third person, sin-
gular number, Ka sónominity viz. according to
Rule XII."

When Naomi began, his face showed an almost
real incredulity, but when she concluded he
raised both hands in speechless astonishment for
a moment, and then said:

"Hello, my soul! I said it was third person,
singular number because its nominative is 'me.' My
handwriten. Bless my soul: 'Ka sónominity.' Good
heavens!"

After some minutes of complete silence the
three separated, equally astonished and humiliated
and by the next day, equally amused.
School Discipline.

II.

Professor S. B. Laird

In last month's issue the means of successful school management was described as a process of will-training. This result was to be reached by placing proper ideals before pupils in such a manner and spirit as to secure their acceptance and, in greater or less degree, their realization. Three planes of development were assumed, first, that of self-gratification; second, self-denial for future good; third, doing right for right's own sake.

More planes might have been discussed, in fact as many might have been considered as find representation in the list of school incentives known as the "royal seven." These briefly stated are, the desire to excel, the desire for activity and power, the desire for approbation, the desire for knowledge, a sense of honor and a sense of duty. The three taken serve our purpose just as well and are easier to follow.

In this article we purpose to lay down a few maxims for guidance in discipline, as well as to emphasize the difference between external and internal authority as governing forces. We will not discuss at this time the matter of corporal punishment either as an aid or a hindrance to the development sought. Many times such methods represent a transition stage in the teacher's experience as he moves on toward a more perfect self-control and a more complete knowledge of child life. The same is true in large measure of the pupil himself, especially if we substitute the recognition of higher ideals for self-knowledge.

Any maxim presented should be applicable to the case in hand no matter what means are used to secure good government. We believe that all discipline, worthy of the name, should issue in a higher degree of self-control. This principle applies to all grades from kindergarten to high school, and reaches its most important and developing phase when the pupil's own will is enlisted in securing the desired result. Not all control with which we have been familiar found its seat of power within the one controlled. A teacher by her austere manner may overawe a school into what is sometimes misnamed good order, but when her back is turned or the pupils pass to another teacher who lacks this austerity they show little or no self-control. The authority was purely external and found no hearty cooperation in the good sense, judgment or will of the pupil, hence lacked the most important element of good management. Successful teachers in all the grades assure us that the majority of pupils, after a little acquaintance, respond cheerfully to appeals made in the interests of a good school. They thus become trustworthy and helpful and take delight in doing the right thing. Some teachers seem to possess this power from the first, others grow into it slowly and painfully. Of one fact we may be assured that without this ability to lead pupils to see, accept and follow worthy ideals, the great work of character-building will advance with slow and uncertain step.

Another maxim that sheds some light upon this complex problem is this,—each person must be held responsible for his own acts, and should soon learn that "The way of the transgressor is hard." How early in school life can this principle be employed? We answer from the very first. Primary pupils can be taught that certain duties must be done and that certain kinds of behavior are essential to the highest good of all. This inculcation of personal responsibility does not necessarily imply harshness or cruelty of treatment. Kindness, blended with firmness and good sense, will secure success. The great need of the emphatic application of this principle will be realized, if we recall the vast number of irresponsible people of all ages who clog the wheels of civilization. The apparent reasons why a fair measure of personal responsibility is not more nearly universal may be thus stated. First, teachers and parents pass by many matters of importance as being of slight concern, until the habit becomes strong and, unless heroic measures are applied, will not yield. The good habit is as easily formed as the bad one and will always conduce to the highest good.

Second, the parent and teacher often take upon themselves the responsibility which the child should bear for his own good and thus defraud him of his strength and efficiency. The attitude of Dr. Arnold Tompkins to this principle seems very suggestive. If it does not reach all cases that occur under school environment it should not be condemned. The announcement of a panacea for all school needs must ever be regarded as eminating from a quack.

Briefly put, Dr. Tompkins holds that "The school is an organic spiritual unity" and each pupil sustains a vital relation to this unity. If one should break it through disobedience or failure to perform his part the work of restoring the delinquent to his former relations must devolve mainly, not upon the teacher, but upon the culprit.

The problem of making matters right must be solved by him and time and opportunity granted for this important task. When it is solved and

(Continued on page 419)
The Teaching of Square Root.

VI. The Teaching of Arithmetic.

Professor J. C. Same.

Note: The Pythagorean theorem and square root do not follow in natural order from the work of my preceding paper, but I am often asked about the teaching of square root—how and when to teach it—hence I give the discussion at this time. Another reason for giving these subjects at this time is that they so well illustrate the method of teaching all subjects of arithmetic, and may well be taken as a type.

The subject of square root should not be taught earlier than the grammar school. While it is not done so imperative here as in earlier grades that the pupil sees the need of each process before it is developed, yet even here I think a fuller plan is to develop a subject as need for it arises. A moment’s reflection will show that square root is used mainly in the applications of the Pythagorean theorem. Hence, square root may well follow the development of this theorem.

The Pythagorean Theorem.

In developing this theorem, the work and the discovery should be done by the pupils working under the direction of the teacher.

Have them take a right triangle ABC and, marking around it from a figure A'BC (Fig. 1) which is the same on the hypotenuse.

Now taking triangles 1 and 2 place them as in Fig. 2.

The pupils will observe that the area has not been changed, but that we may have two squares, one whose side is the base of the triangle ABC and another whose side is the altitude.

Let this be done by the pupils both by drawings and by cutting cardboard and changing the first figure into the second.

![Fig. 1](image1)

![Fig. 2](image2)

In this way, lead to the discovery that in any right triangle the square on the hypotenuse equals the sum of the squares on the two legs.

While there are many other simple methods of demonstrating this well-known theorem the one above is one of the very simplest, and can be followed by a pupil of the seventh or eighth grade. The application of this theorem will lead to the necessity of finding one of the two equal factors that make up a product. The first simple problems that arise can be done by inspection. The root of a perfect square can also be found by factoring; but when the necessity arises for the formal written process for finding the square root of a number the pupil approaches this new problem with a sense of its use and a desire to discover its solution.

Square Root.

The pupil should see the nature of the problem that has arisen. He has a number that has been obtained by taking the product of two equal numbers. I. e., the square of some number. He is to find this number which taken as a factor twice has produced the square—he is to square a square.

It is well to call attention to the fact that in certain cases of operations coming together, as addition and subtraction, or multiplication and division, one is the inverse of the other; in the first operation in each of these pairs the divisor is that of putting together, and the second that of putting apart—synthesis and analysis. One would not think of teaching subtraction without first having taught addition, nor division without multiplication. Now, finding the root of a power is clearly the laying of finding the power of a root. In one, we find the product of a number of equal factors; and in the other we have the product of a number of equal factors, and in the other we have the product given and find the factors. It would seem then just as absurd to teach roots without powers as to teach subtraction without addition. Yet, that is practically what is done in a great many schools. It is true that in most textbooks of today there is a subject called involution pencilling the subject of evolution, but it is not true that in a majority of cases it is so taught as to aid in the development of the laws of evolution.

The pupil before taking up square root should know square numbers, not simply by multiplying one by the other in order to obtain the result, for he could have done this several grades below, but in such a way as to find the law by which a number is squared, and thus discover principles that will aid him in finding one of the two equal factors when their product is known—that will help him to understand a square.
The pupil should know the table of squared numbers from 1 to 9 inclusive, and observe that the square of a number expressed by one digit is a number expressed by one, or by two digits. Then by squaring multiples of 10 to 90 discover that the square of a number expressed by two digits is a number expressed by three or by four digits, and so on for higher numbers; and hence be able when he sees any square to know the number of digits in the root from which it was obtained. He should also observe how the squares of multiples of 10, 100, etc., may be obtained from the squares of numbers from 1 to 9 inclusive.

To discover the law by which a square is formed, the pupil should square, by multiplying as usual, some number expressed by two digits as 23, say, and see how each figure of the product is obtained, and by writing out the parts of each partial product as follows, discover the law:

\[
\begin{align*}
23 \\
69 &= 60 + 9 = 20 \times 3 + 3^2 \\
460 &= 600 + 40 = 20 \times 3 + 20^2 \\
529 &= 20^2 + 2 \times 20 \times 3 + 3^2
\end{align*}
\]

Lead the pupil to see that he has done nothing new except simply to analyze the partial products, and discover the law by which all squares are made up. Have him see also that when multiplying one number by another he always really considers both multiplier and multiplicand broken up into sums. Thus, above, he really considered 23 = 20 + 3. Lead him to see that any number may be broken up into parts and squared by the law which he has just discovered. Thus, \(9^2 = (7 + 2)^2 = 49 + 28 + 4 = 81\), and in general that \((a + b)^2 = a^2 + 2ab + b^2\).

Using this law, pupils should now square numbers made of figures until they become perfectly familiar with the law, and see just how each of the three partial products in a square is made up.

Now say to the class that we shall try to find the factors, or the root, when the square is known—we are going to unsquare the square.

For example, let us find the two equal factors of 529. Since 529 is expressed by three digits we know that its square root is expressed by two digits, also that the root lies between 20 and 30, for \(20^2 = 400\), and \(30^2 = 900\). Hence, we know one part of the root to be 20. This part squared is 400. Then 129, the difference between 529 and 400, is a little more than 40 times the second number. We can therefore estimate the second figure by dividing 129 by 40. The second figure may then be 3; \(129 - 40 \times 3 = 9 = 3^2\); now, since we have left the square of 3 after \(2 \times 20 \times 3^2\) has been taken, therefore 3 is the second figure, an hence the root is 23. The work might be written as follows:

\[
\begin{align*}
529 & \quad (20 + 3 = 23) \\
400 & \\
40 \times 129 & \\
120 & \\
9 & = 3^2
\end{align*}
\]

If such questions as the following are asked, the pupils will be able to discover the solutions for themselves:

1. Since the square contains 3 figures, how many figures in the root?
2. Since the root contains 2 figures, the square is made up of how many partial products?
3. How is each partial product formed? Can the root be as large as 30? Why? Can it be as large as 20? Why?
4. What then is the tens’ digit of the root?
5. What then is the largest of the three partial products that formed 529?
6. Taking out 400 what remains?
7. What two partial products form this 129?
8. How is the larger of these partial products formed?
9. Then since 129 is more than \(2 \times 2 \times 20 \times \text{some number yet to find}\), the number yet to find cannot be larger than what?
10. If it is 3 what is the larger of the two partial products in 129?
11. Taking the 120 away, what remains?
12. What does this show?
13. What is the relation of the 9 to 3, the number that we are now supposing to be in one’s place of the root?

The work might well be shortened when it is well understood. However, it should be done by the pupils rather than come from the textbook or the teacher. By asking questions lead the pupils to discover what might be omitted. Thus instead of subtracting \(3 \times 40\) then \(3 \times 3\) lead them to see that work could have been saved by adding 3 to 40 then multiplying by 3, for then we should have but one subtraction. Pupils will readily discover the shorter forms. The preceding observation will finally shorten the work to:

\[
\begin{align*}
529 & \quad (23) \\
400 & \\
40 \times 129 & \\
120 & \\
9 & = 3^2
\end{align*}
\]

If the analysis involved in getting the root of numbers of 5 or more figures is too difficult for the pupils, it will now be necessary after having them describe the preceding process to tell them that the process is the same, however, many figures in the root.
School Savings Banks.

George H. Crow.

The School Savings Bank is no longer an experiment. Over eighty years of successful operation in Europe and twenty years' trial in America have led to its recognition by thoughtful educators as a most valuable adjunct to public education, practical in operation and eminently successful in results.

The development of savings systems in connection with public schools has been surprisingly slow, but constant in its progress. According to the best authority the first School Savings Banks over established are to be found in Cologne (1826), and Abbeville (1833), both German towns. France, however, was in effect the mother of the School Savings movement; for in that country the idea was so carefully fostered and grew so rapidly in favor from the time of its introduction in 1834 that from the school banks became a part of the French national system of education and are, so to-day. Between 1874 and 1886 France established 24,000 school banks, with nearly half a million depositors whose savings aggregated a trifle less than 12,000,000 francs or about $2,400,000. From Germany and France the movement spread into Belgium, being introduced into the schools of Grand in 1866, and from Belgium into other European countries. At present, school banks are especially numerous in France, Belgium, England, and Scotland.

In America.

The first practical introduction of the idea in this country occurred in 1835, when Hon. J. H. Thiry introduced a savings system, adapted from the European plan, in the public schools of Long Island City, New York. Schools in other states and cities are rapidly following the example in taking up the idea; the presses and the pulpit are arming in its favor, and educators are recognizing it as a potent factor in the educational activities of the nation. The threefold benefit of school savings, to the child, the school, and the State, so far as the movement to assume national scope that it is now in operation in 759 schools of 156 cities in 26 states, and the 40,961 pupils have saved $4,157,593.25.

In Claudia Ruralis, where the School Savings Bank has been in operation for a period of ten years, the children have a balance of $27,000 to their credit. While in Oswego, after a year and a half's trial, there was $8,400 to their credit. The plan is also in use in Adrian and Albion and has proven very successful.

Ypsilanti adopted the system on December 18, 1864, and pupils now have after two months' trial over $1500 to their credit.

How to Institute a School Savings Bank.

Any person having the interest of the public at heart may properly take the initial step in the movement, but it is most often customary for the Superintendent to offer the resolution to the School Board in whose hands the authority for such a movement is vested.

The establishment of a Savings Bank, in preference to a National Bank, must next be secured, and an agreement made to details of management, by whom the cost of supplies and printing used shall be paid. At this time should also be determined who is to keep the account of the teachers' reports. In schools with more than 20 teachers it is better for the Superintendent to have his clerk or the Bank keep a ledger account with each teacher. In schools of less than 20 teachers the time required is so small that any superintendent can easily look after it himself.

After you have decided this, the next step should be to arouse general interest in the plan by inserting in the local papers several articles describing the system, its aim, etc.

Several days before the date selected for the formal beginning a circular should be issued to the parents and friends of the school, which should tell the purpose of the system, how it has succeeded in other places, describing briefly but clearly the practical working of the plan, also stating the date when it is to be put into operation. In soliciting the cooperation of the parents, it should be emphasized that it is not intended to place any burden upon the parents for the maintenance of the system, but that the savings of the small amount which result from the industry of the child is of more value than the savings of large amounts which are given by the parents.

The attitude of the parents is second in importance only to that of the teacher. When parents in a practical way encourage their children in industry or offer rewards for scholarship, there is a noticeable increase in deposits and in general interest. Parents are, with few exceptions, favorably impressed with School Savings Banks and see the advantages of encouraging their children to start and continue in the system.

At a meeting of the teachers prior to the day of starting, you should thoroughly inform them as to the practical workings of the system, and emphasize especially the influence the attitude of the teachers is sure to have upon the success of the
working of the system. Upon the teacher more than upon any one else rests the success of the plan. If the teacher is enthusiastic, the number of depositors and deposits will show for themselves. Indifference shows a corresponding decrease. As usual, teachers are enthusiastic over the work and are willing to do their utmost to secure successful results.

Details of Management.

The modus operandi of the School Savings system is very simple. Each Monday morning the teacher devotes about ten minutes of her time to receiving the pupils’ savings. Each child that opens an account is given a School Savings Pass Book in which is entered the amount deposited. The amount is also entered on the teacher’s Weekly Report Sheet, which is in duplicate carbon copy form. When all deposits have been taken, the money is placed in an envelope together with the Report, marked with the amount, the name of the teacher, sealed, and conveyed to the Superintendent.

The Superintendent puts together the deposits of all the grades, and opens an account with the Bank in a general School Savings Fund. The Superintendent also checks over the reports and files them for future use, which eliminates the necessity of his keeping a debit and credit account with each pupil.

When the child’s account reaches five dollars, it may be transferred from the general fund to an individual account, if desired, and the Bank issues one of its regular savings books.

To draw money from the School Savings Pass Book, it is necessary for the child to apply to the teacher for a check, which will be filled out for the amount wanted. The child is then requested to secure the parent’s or guardian’s signature, as the case may be, after which the check is brought to the teacher and charged off the child’s School Savings Pass Book, and conveyed to the Superintendent with the report, the same entry being made on the teacher’s Report Sheet in the proper place.

Various objections to school savings banks have been made, but none thus far offered present any serious difficulties. Those commonly urged are answered as follows by former State Superintendent Delos Fall:

Takes time and energy of teachers:—Ten minutes' time in a room of average attendance is sufficient for the entire operation of the system. The procedure has been so systematized that the teacher's time has been reduced to a minimum.

Places responsibility on teacher:—Owing to the fact that the money is immediately sealed in the envelope which is to be used in conveying it to the Superintendent, there is absolutely no responsibility on her part.

Disturbs order of school:—Teachers affirm that such is not the case, but rather, that it brings added interest and order to the school. It is a means of brightening the school work, especially to dull pupils. It is evident that if the greatest good is to be derived from School Banks, they must have their place as a legitimate part of the curriculum and must be considered as much of an educational factor of the school as any regular study.

Harmful rivalry and inequality—The system does not give rise, as some suppose, to injurious rivalry among pupils or to feelings of inequality among the rich and poor. Teachers especially encourage the saving of small amounts so that children, no matter how poor, feel no embarrassment over their small savings. In some places, the teacher takes part in the plan herself, making small deposits regularly, which tends to lessen still more the chance of any feeling of inequality which might be aroused.

Practical Business Experience.

This system is of untold value to the pupil in after life. It is especially true of the pupils whose savings reach the amount sufficient to secure for them a regular savings bank account. The Bank is where they meet in a business way, and where they learn much of banking procedure and business methods. The young depositor feels that he is of some importance and is thus encouraged to continue in saving. He learns most important lessons of the value of money, its wise use, and the methods of accurate accounting.

Some of the Benefits Derived.

In Cleveland, Ohio, where the system was placed in their schools, the decrease in the use of cheap confectionery was so marked that some of the candy stores near the school buildings were obliged to close up and move down into the business section. In many instances it has been the means of causing some of the boys who were users of tobacco, especially in the form of cigarettes, to stop and thereby increase their savings. In other places, owners of penny slot machines have complained of the falling off of the number of pennies found in the machines as the advent of the School Savings Banks, contrary, the system of School Savings promotes business activity by training the pupils in saving, honesty, and the necessity by training the pupils in the value of time and energy, the system of School Savings may serve as a useful factor in the school work.
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The Educational World.

Rites and Topics of Current Interest by
Dr. KATHAN A. HARKSWY.

VERTICAL WRITING.

Vertical writing seems again to be a live topic for discussion. It was proposed as a sub-
stitutes to the formerly prevalent Spencerian system, the advocates of its advantages urged
its adoption so vigorously and strenuously that very many cities and
districts began to test it. It was believed that a
great reform in education was at hand, growing
out of this simple change. The extravagant
claims made for vertical writing have not been
justified by the results. So there is a decided
tendency to abandon vertical writing as a sys-
tem, and teach writing, not according to any
system, but with very great freedom of individ-
ual selection. The discussion and adoption of
vertical writing has been productive of good
results in one way at least. It has shown that
there is no necessity for writing with one par-
cular slant or slanting of the letters, but that regu-
larly, uniformly, and freedom from superfluous
strokes will make any handwriting legible and
pleasing. The old slant of fifty-two degrees will
ever be resurrected, but each person will be
taught to write uniformly with the slant that
appears most easy and pleasing to him. So much
good at least, has the vertical writing accom-
plished.

THE PEABODY FUND.

Few persons noticed a paragraph in the news-
papers a short time ago, stating that the trus-
tees of the Peabody Fund had decided to disso-
vie the trust. The Peabody Fund was a sum of three
and a half millions of dollars donated by George
Peabody in 1869 to be used for the benefit of
education among the negroes of the South. The
fund has been administered by trustees, and the
incomes distributed to various institutions for
 negro education. The trustees at their meeting
on January ninth, Chief Justice Fuller presiding,
decided to dissolve the trust, turning over the
principal to certain institutions by whom the
fund should hereafter be administered. One mil-
lion dollars was donated to a college for the
training of teachers at Nashville, and the trus-
tees have still two and a half millions to be dis-
posed of to other institutions whose purposes
shall be in harmony with the spirit of the trust.

TEACHERS' SALARIES.

Teachers' salaries constitute a perennial theme for
discussion. One of the very ablest of all
the discussions of the subject is that presented to
the Indiana State Teachers' Association at its
meeting last December by a committee which
had been devoting much attention to the sub-
ject for a year. The report was presented by
Superintendent J. W. Cars, of Anderson, who
was chairman of the committee. It is a report
which will probably be quoted as authority upon
the subject for years to come. It states the sal-
arles of teachers in the different grades of schools
in the state, and compares the salaries of teach-
ers with the salaries of workers in other occupa-
tions. It shows that the money invested in edu-
cation is perhaps the most profitable investment
that a community can make. Then it shows not
only what salary is paid to teachers, but what salary might be paid to teachers in every
township and school corporation in the state.
In only a few townships are the salaries as
great as it is possible to pay and still keep within
the limit of taxation set by law. It states
also the number of teachers who leave the pro-
cession annually, and gives the reasons for their
leaving; in many cases, the reason being such
that better salaries would have kept them in
the teaching profession. Where twenty-five
hundred of the teachers drop out of the teaching
business every year, it is the case in some of the
counties of Indiana. It is impossible to secure
the best results from the schools. Better salar-
ies would retain the services of many of the
best teachers who now engage in some other
occupation.

SCHOOL SCIENCE MAGAZINE.

After an interval of three months, School Science has resumed publication. This magazine
is devoted to the teaching of science and mathemat-
ics in the high school, and was proved itself
by a very creditable magazine in every re-
spect. It fills a niche not occupied by any other
educational periodical, and ought to be well sup-
ported. Mr. C. D. Hickeburger, the former editor,
did himself much credit by making it the pride
of magazine that it now is, and no doubt Mr.
Charles H. Smith, the present editor, will main-
tain the high standard established by Mr. Line
burger. It may be necessary to publish the long
list of associate editors, but it really seems ap-
propos to publish a list of names on the title
page, if the contents of the magazine are what
they should be. People are interested in a magazine for what it is, and not for who makes it,
TEMPERANCE PHYSIOLOGY SO-CALLED.

In the March number of School Science is published the report of the Committee on Temperance Physiology, of which Mr. J. E. Armstrong is chairman, which is a strong, forcible statement of the case from the standpoint of the educator. The key note of the paper may be found in the quotation from Dr. Jordan, "The scientific temperance movement has been judged thus far mainly by its motives, which are good. It will come to be judged by its results, which are bad."

 GEOGRAPHY AND NATURE STUDY.

The position of nature study as a separate subject in the curriculum has not yet been satisfactorily determined. The revolution which has been accomplished in the teaching of geography has modified our ideas greatly concerning what elementary geography ought to be. As a separate subject it seems as if nature study will never find a satisfactory place in the general curriculum. So closely is nature study related to geography, which has already a recognized position, that it seems wise to consider the two subjects as one. The difficulty now arises, that if the one subject, which is the study of the environment, is called geography, it is likely to receive too limited an application, omitting too many things in the environment which ought to be made the subject of instruction, but to which we are not accustomed to apply the term geography. This seems the essential difficulty in what would otherwise be a natural and easy solution of the problem concerning the place of nature study in the schools.

TOTAL SOLAR ECLIPSE.

An eclipse of the sun sufficiently considerable to be of interest, and especially a total solar eclipse, is an extremely rare occurrence in any given locality. In general, if one would see a total solar eclipse he must consent to make a journey of some magnitude. Probably those of us who wish to see the eclipse of August next at its best have already purchased tickets either for Spain or Egypt; Labrador is nearer, but is less accessible. Spain is fast becoming, like the rest of Europe, a haunt of the summer tourist, and the eclipse will this year add to its attractions. The astronomical periodicals are publishing maps of the region of totality across Spain and tourist parties in great numbers are forming with the double purpose of having an interesting Spanish tour and a view of this striking phenomenon. Most of the large observatories also send out one or more parties. Lick sends three: one to Labrador, one to Spain, and one to Egypt. Only five other total solar eclipses will be visible in Europe during the present century: in 1912, 1914, 1927, 1961 and 1999. Those of us who stay in Ypsilanti will see little of the phenomenon, as the eclipse will nearly have passed off before sunrise, at which time only four-tenths of the sun will be obscured. Along the Maine coast, and even as far south as New York, it will have some interest, the sun appearing as a thin crescent.

PROF. ANNAH MAY SOULE.

On Friday, March 7, occurred the death of Annah May Soule, professor of constitutional history and political economy in Mt. Holyoke College. Although Miss Soule had been away from her college duties for some months seeking to regain her health, her death was unexpected, and entirely unexpected by her friends. The funeral services took place Monday, March 20, in Ann Arbor at the home of her parents, Major and Mrs. Soule. At the same hour memorial services were held at Mt. Holyoke college.

Miss Soule was connected with the Normal as a student, graduating in 1883, and as a teacher in the department of history, from 1889 to 1892. In 1896 the honorary degree of B. Pd. was conferred on her. In 1894 Miss Soule received the degree of B. L. from the University of Michigan, and in 1895 her master's degree. Her master's thesis was a most careful and scholarly study of the southern and western boundaries of Michigan, which is of permanent value to students of Michigan history.

From her early girlhood Miss Soule desired and planned to teach, and aimed to fit herself fully for this life work. After studying history at the Normal under Prof. King, Miss Soule entered the University, taking three courses in history and English. In the spring of 1886 she left the University to take a position in the Mankato, Minnesota, State Normal. There she proved that by nature and training she was fitted for teaching.

In 1896 Miss Soule was called to Mt. Holyoke College, where she has been a power socially, intellectually and morally. A person of marked individuality, she was felt wherever she was. One source of power was an intense loyalty to any institution with which she was connected. She made its interests her own, and never spared herself in her efforts for its advancement. The ability to win people, both old and young, was another source of strength. Her rare social gifts enabled her to gain friends and her sterling qualities kept them.

Annah May Soule was a woman and a teacher such as the Normal is proud to have helped to prepare for work in the world. Her death is a loss to Mt. Holyoke, to her wide circle of acquaintances, and above all to the inner circle of relatives and friends.
School Discipline.

(Continued from page 435)

Its importance clearly seen, and his future action pledged to the right, he has learned one of life's greatest lessons. Many who have tested this method in grammar and high schools speak of its efficiency.

Another principle whose wise application contributes to the justice and success of school management relates to the regulation of punishment. Experience teaches that penalties, whether applied directly to the physical, mental, or moral natures, should be the natural antithesis of the offense and be unimportant in it. Often a slight matter, frequently passed over without rebuke, comes to be treated as a matter of great importance simply because it is the one of a series which exhausted the patience of the teacher. This lack of steadiness and discrimination will do much to undermine the true authority and influence of the teacher. The element of fairness as gauged by the standard of the pupil occupies a prominent place in his thought and enters largely into his estimates of people and conduct. The fact that his standards are often faulty does not prevent his conclusions. We should respect the best-formed opinions of children and seek through kindly interest to develop them into more perfect ones. A due consideration of the old saying—

"Put yourself in his place," will often disclose to the earnest teacher some element inherent to the spirit of true courage.

There is a good deal of truth in the statement that in dealing with human beings, whether children, adults, or those of mature age we receive by way of recognition and thankfulness about what we expect. If our relations with them imply that we doubt their honor, fidelity, and loyalty, that we exhibit the mean, underhanded, and shirking attitude, it will be in accordance with their human nature not to disappoint us. On the contrary if we show by word and act that we believe in them, that we regard them as honest, trust-worthy and above cheating, their better natures will rise to meet the expectations. Dr. Arnold, of Rugby, it is said, treated his boys out of living, cheating and certain kinds of meanness by believing their statements and treating them as honorable boys. That the strength and manliness of his character had something to do with the rapidity and sincerity of the changes wrought in them, all are ready to admit. Our attitude must of course be requisite, wise and constant in order to realize our ideals in the lives of our pupils.

This whole question of discipline is often closely related to the amount and quality of the preparation made for the work of the day. We increase our feeling of mystery of the situation by refreshing our minds with the principles to be inculcated in the various subjects and their relation to those of yesterday. Besides this, however, we need a proper amount of rest and recreation that our bodies may be in the best condition possible to supply energy for our work as well as to give our tasks the most healthy and cheerful outlook.

Many a day is spoiled by the undue dissipation of the previous evening, which so reduced the vigor and evenness of control that irritability and injustice resulted. There is still another phase of discipline, call it mental or spiritual as you like, which has to do with the actualization of our ideals. Each day's experience, each term's victories over self, each year's growth in purpose and achievement necessarily demand higher ideals for ourselves and our pupils. A few pages from some worthy biography or the recalling of some events in the lives of those whom we honor as leaders, will start a train of meditation which clears the moral atmosphere for us, enabling us to see life in its true perspective.

One of the most beautiful as well as the most useful of life's experiences is to watch a rouser hard in the school room, skillfully touching the keys of human incentives and bringing forth a harmony that dupes for ever the doctrine of total depravity. This view of things is not Utopian, but is rather a blessed reality attainable by many, even if realized as yet by few. Thed teacher with abnormal self-consciousness bring you to the quick by reason of remembered failures, like prompts. While the road to success in disciplining human souls is a corduroy one whose ascent is comical and often painful, forget not that it leads to the heights of self-conquest. Those who struggle on over their rough ways in higher things are envied by the careless looks of many whose success dates back to your kindness, sympathy and wise direction. The best of earth owe much to the discipline of early failures.

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