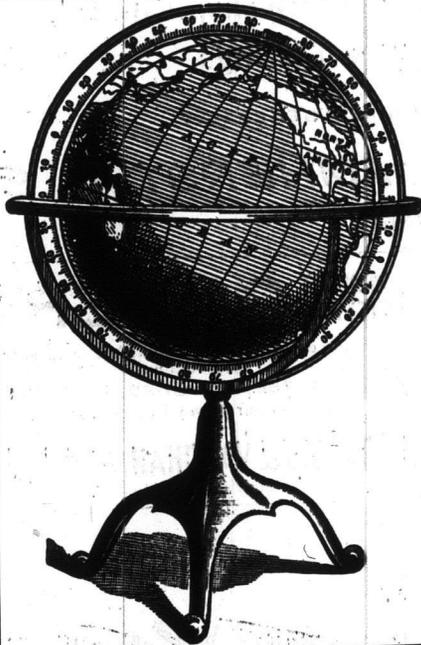


# THE EDUCATIONAL REVIEW

Vol. XX. No. 10.

ST. JOHN, N. B., MARCH, 1907.

WHOLE NUMBER, 238.



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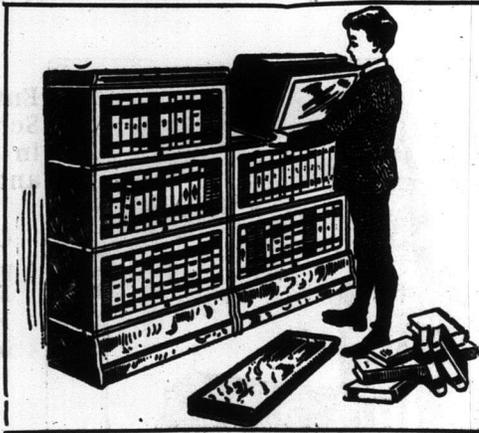
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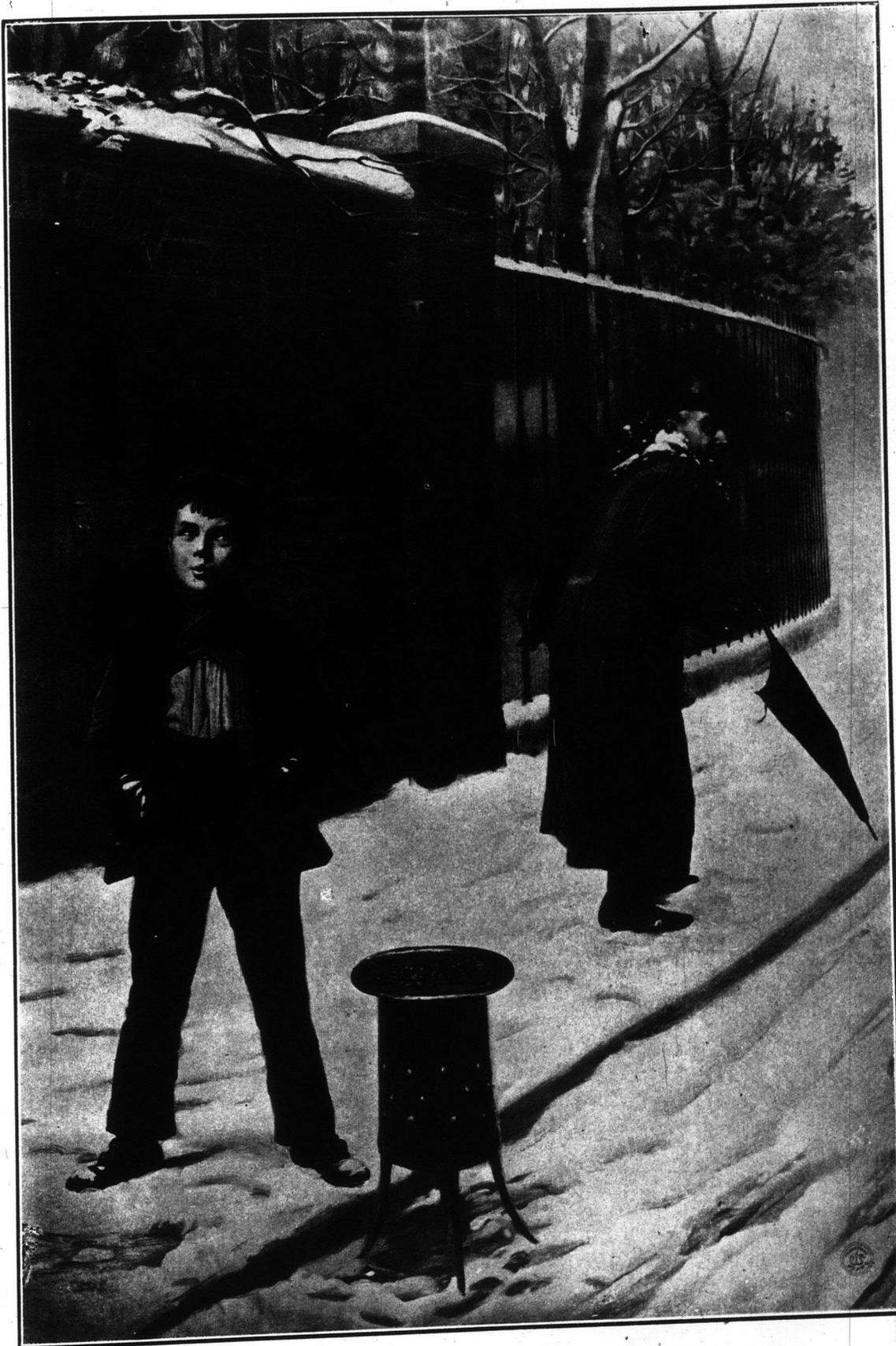
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# The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

PUBLISHED MONTHLY.

ST. JOHN, N. B., MARCH, 1907.

\$1.00 PER YEAR.

G. U. HAY,  
Editor for New Brunswick.

A. MacKAY,  
Editor for Nova Scotia.

## THE EDUCATIONAL REVIEW.

Office, 31 Leinster Street, St. John, N. B.

PRINTED BY BARNES & Co., St. John, N. B.

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THE EDUCATIONAL REVIEW is published on the first of each month, except July. Subscription price, one dollar a year; single numbers, ten cents.

When a change of address is ordered both the NEW and the OLD address should be given.

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The number accompanying each address tells to what date the subscription is paid. Thus "235" shows that the subscription is paid to Dec. 31, 1906.

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THE EDUCATIONAL REVIEW,  
St. John, N. B.

IN the sudden death of Lieutenant-Governor Snowball, following so soon after the equally sudden death of Hon. A. G. Blair, New Brunswick loses two of her eminent sons, men of character and influence who have left their impress on their generation.

HON. L. J. TWEEDIE, Premier and Provincial Secretary of New Brunswick, has been appointed Lieutenant-Governor of the province in place of the late Hon. W. B. Snowball. Hon. Wm. Pugsley has been called to the leadership of the provincial administration.

THE official notice on another page from the Superintendent of Education in Nova Scotia contains some important announcements. Principal W. R. Campbell, M.A., after twenty years successful work as principal of Colchester Academy, Truro, N. S., has been appointed inspector of

schools for the newly-created district Number Twelve—the county of Colchester. Hitherto the inspectorial work of Colchester, Cumberland and Pictou was found to be too heavy for the present inspectors, Inglis C. Craig and E. L. Armstrong, so the council of public instruction decided to make Colchester a separate inspectorial division, and Principal Campbell, after some hesitation, has accepted the position. Truro Academy has been one of the leading academies of Nova Scotia under the successful administration of Mr. Campbell, whose experience and abilities serve him well for his new position.

MR. STANLEY S. BRUCE of Shelburne Academy succeeds Mr. James H. Munro as inspector of schools for Yarmouth and Shelburne counties. Mr. Munro retires after many years of faithful and efficient service. Mr. Bruce has proved himself a competent and successful teacher, and for many years has been a diligent student of the natural history of Shelburne County.

A federal conference on education will be held in London from May 24th to June 1st. Its object is to promote the furtherance of the federation of the Empire in education. Representatives from all parts of the Empire are expected to take part in this important meeting. Chief Superintendent Dr. Inch of New Brunswick, and Dr. MacKay, Superintendent of Education for Nova Scotia, have accepted invitations to be present.

DR. A. H. MacKay in an article in the *Federal Magazine* of London urges the desirability of a uniform system of nomenclature in connection with the ages and grades of pupils in primary and secondary schools, not only throughout the Empire, but in all English-speaking countries. This, Dr. MacKay says, can only be brought about through the influence of some central agency, such as the proposed convention, which, if it originate such a general co-operation, would be sufficient of itself to justify its assembling. Dr. MacKay is also contributing to the same magazine a series of articles on education in Nova Scotia.

**Glimpses into Schoolrooms — III.**

BY THE EDITOR.

A correspondent considers this series of talks on "Glimpses into Schoolrooms," as one of the most helpful and encouraging features of the REVIEW, because few teachers have the opportunity to visit other schools, and "because many teachers, from long meditating on their own troubles in school, sometimes imagine that they are the only ones who have any difficulties. So, in your account of visits to schoolrooms do not give us only the bright side of the picture. Tell us some of the trials and troubles, and how they are overcome."

These records of visits to schools are intended to help teachers, and if the editor has so far strayed into the good schools, it was not intentional to do so, but rather to take them as they come, and to afford glimpses not only of those recently visited, but to call up pleasant impressions—or otherwise—of school work seen in the past. It is much more pleasant to jot down the impressions produced by visiting a school where everything is in "apple pie order" than the reverse picture. There are two difficulties in the way in presenting the latter: In very many schools teachers and children do better work when visitors are present; if both are placed at a disadvantage and obviously embarrassed by the presence of a visitor, the lessons drawn from failure may not be either happy or accurate. Again, the bad schools with harsh, unsympathetic teachers and impish, noisy children are rare,—at least the evidence points that way. If any correspondent will tell the REVIEW of such a school it will be visited, if not too far away.

During a visit to a school a few months ago there was a recitation in geography. The pupils had their books open before them. The teacher asked questions; the pupils answered after consulting their maps or books. There was no interruption to the cross fire of questions until the visitor volunteered one, which was answered readily enough. But it mattered little whether the question was answered correctly or not. The class had no evident interest in the work; there was no opportunity to think, compare, observe, for which the right study of geography is so well fitted; there was no history, current events, travel, incident, or other companion subjects of geography to enliven the lesson. It was geography pure and simple, and so crudely conducted that it was charitable to suppose that teacher and

pupils were merely putting in the time—it was the last half hour of the day.

No subject has been more changed in its methods of presentation during the last decade or two than geography. Instead of memorizing a mass of details, consisting of names of capes, islands, rivers, boundaries, etc., it is now recognized as a distinct branch of science and an important adjunct of nature-study. Its aim is first to make the pupils acquainted with home and its surroundings, and using these as a starting point to proceed to a knowledge of the world—its features, inhabitants, products.

A lesson given to a fourth grade class at a normal institute, which I attended in Eastern Nova Scotia a few years ago, will illustrate how interesting this subject may be made to young children, and how it may be used to train them to habits of observation and reading. The lesson was carefully prepared by a teacher and given as a model to other teachers present.

The teacher had not met his pupils until that morning. A few minutes were spent in obtaining from them what they knew about their surroundings: A village overlooking the Strait of Canso, some few facts about the occupations of the people who live there, and the products and industries of the place, with a few incidental references to the plants and animals found in the neighborhood. The teacher soon gained the sympathy of the pupils, by his own evident interest in all matters that they talked about, and by his offer to take them out that afternoon on an exploring trip. Here was a teacher who volunteered after a few hours' acquaintance with the place (if I am correct in this opinion) to do what some other teachers hesitated to do after weeks or months spent in acquainting (?) themselves with the vicinity of their schools. The remaining time of the lesson was spent in drawing from the pupils their knowledge about the ships in the harbour, what they took away and what they brought back, and the same with the railway, with an imaginary journey on each, and the places probably visited. There were maps and pictures to illustrate these journeys, which though imaginary became very real under the influence of a live teacher.

Bear in mind that the purpose of this lesson was simply to draw from the pupils a knowledge of their surroundings and then to connect the people and products of their home with those of more distant places, without entering into too much detail. In these respects the lesson was indeed a model.

**Forestry.**

The recent forestry convention held in Fredericton served to show the interest that is felt in New Brunswick concerning the care and preservation of its trees. Not only was there a large gathering of the representative men of the province, but men well versed in the science of forestry from Eastern Canada, and experts from Harvard and Yale were present to discuss the more technical aspects of the question. The members of the provincial parliament showed an intelligent interest in the proceedings. The legislature was adjourned, and the legislative chamber was occupied by the members of the convention during the two days that their important deliberations continued.

A hopeful feature of the convention was the evident interest felt in the education of those who are in future to have the care and control of the forests. As one expressed it, to make foresters you must catch them while they are young. Chancellor Jones of the University of New Brunswick outlined a course which might, with little change in existing conditions, and with little additional expense, provide a suitable education for those who have the science of forestry in view. In brief, a thorough course of engineering would be provided for during the first two years of a student's life at the University, and during the last two years special instruction could be given in forestry. During the course of these students subjects which are more intimately connected with forestry, such as botany, chemistry, surveying and related studies would receive more special attention.

It was urged by one of the speakers that the sons of lumbermen and others who may not desire to take a full course should have the privilege of taking a shorter course; and no doubt provisions may be made for this, especially if the lumbermen of New Brunswick will contribute towards an endowment for this purpose. At Yale University a request similar to the one noted above was made by lumbermen, and the answer was returned that if they provided for it such a course would be established. The lumbermen promptly made a gift of \$150,000. There is wealth and public spirit enough among the lumbermen of New Brunswick to respond just as readily to a call upon them to endow a chair of forestry in the New Brunswick University, or at least to provide for an endowment covering a special course.

Dr. J. R. Inch, Chief Superintendent of Education, in dwelling upon the relation of forestry to our public schools, spoke of the advantage of nature-studies, and the observance of Arbor day in promoting an interest in and respect for trees among children.

Mr. T. B. Kidner, director of manual training, in his illustrative talk about trees and other plants, pointed out what the manual training schools are capable of doing in this direction. The collection of woods and drawings aroused much interest and attention among those present.

It is confidently expected that this convention, the direct result of which is the formation of a provincial forestry association, will do much good in directing attention to the need of better methods in lumbering and the care of forests in New Brunswick. No country in the world is better adapted in its natural condition for the growth of trees than New Brunswick, and the preservation of its forests should be one of the first duties of its government and people.

**Free — "The Dictionary Habit."**

The publishers of Webster's International Dictionary have just issued a handsome thirty-two page booklet on the use of the dictionary. Sherwin Cody, well-known as a writer and authority on English grammar and composition, is the author. The booklet contains seven lessons for systematically acquiring the dictionary habit. While it is primarily intended for teachers and school principals, the general reader will find much of interest and value. A copy will be sent, gratis, to anyone who addresses the firm, G. & C. Merriam Company, Springfield, Mass. Write to-day. The teacher will find it one of the greatest aids in getting pupils to do profitable work for themselves.

Professor Lounsbury, discussing the question of simple English, said at Yale one afternoon: "There was a little boy who began to keep a diary. His first entry was: 'Got up this morning at 7 o'clock.' He showed the entry to his mother, and she, horror-stricken, said: 'Have you never been to school?' 'Got up,' indeed! Such an expression! Does the sun get up? No; it rises. And she scratched out 'Got up at 7,' and wrote 'Rose at 7' in its place. That night the boy, before retiring, ended the entry for the day with the sentence: 'Set at 9 o'clock.'"

### Nature Study in March.

By G. U. HAY.

March is the harbinger of Spring—indeed it is the first spring month according to the calendar, although in this northern climate of ours there is more of winter about it than spring. He is a variable fellow, this March, when the waning cold struggles with the waxing warmth, and when boisterous winds make no one regretful that Winter's reign is nearing an end. "As mad as a March hare," is an old English saying, and it might be supposed, if we judged from our blustering month, that the hare (or rabbit, as we call the species here) is goaded to madness by hunger or cold. But an old English writer tells us that March is the mating season for the hare, when he becomes excitable and violent as he feels the warm blood of spring pulsing through his veins.

The pale faces of the children who have kept too close to their books during the long winter begin to glow with the prospect of work in the school garden or a romp in the woods in search of early spring flowers, or listening to the carols of our old friends the birds, or the peeping of frogs after their long sleep in the mud, or other of those numberless sounds and signs of a returning spring.

What a delight it will be for those children to welcome back the little birds which come in ever increasing flocks to their native haunts in the north. Yes, their native haunts, for were they not born here, and are they not coming back to revisit their homes, to make new nests, and to carol gladly among the branches where first they looked out with wonder on this busy, work-a-day world?

"But when will our friends be here?" say the children. "When can we expect Robin Redbreast, or that delight of past summers, the Song Sparrow, or the Fox Sparrow, a joy to all lovers of birds music, and many other glad song birds?" No one can tell the precise time of their coming, so the word must be—wait and watch. Continued severe weather delays their coming. If warm weather prevails for several days they may surely be expected to follow in the wake of this warm wave. When the ice leaves our bays, ponds and rivers, the ducks and loons will appear, and wild geese in spreading V-shaped flocks, the air vibrating with their "honk, honk," so familiar to school boys, will be flying north again. But they do not come until the ice is out of the bays and estuaries to the north of us. (How do they know?—but that is more than you or I can tell). They do not come until their food,

scarce at first though it may be, is ready for them; and so of the birds that prey upon insects. Nor do those birds with long sharp bills, like the woodcock, come until the earth is thawed sufficiently for them to search for their fare of earthworms.

The signs of spring are soon to be seen on the branches of trees. The twigs of maples and willows are putting on a deeper hue. The buds of some trees are beginning to grow red, and from day to day, warmed by the sun, begin to grow larger, and get ready to cast off their winter wraps. What are these buds and what do they contain? When were they formed? Why do they need coverings? What will they grow into? are questions that will occur to every child at this season.

As the month draws to a close the little furry catkins on the pussy willow will be seen to have come further out during the warm days. Notice the catkins on the birch, the alder and the hazel trees. Notice the other trees that are preparing to send forth their flowers. "Their flowers!" say the children; "do trees have flowers?" They do indeed, and most of trees bear their flowers in early spring. Look for them this spring on every tree that you meet.

One of the sounds of early spring will be the roar of streams and rivulets as they strive to break the bands of the ice-king. Watch the banks of some of these streams and even the rills that trickle by the roadsides. Notice the earth caving in, and see how muddy the water looks. Follow the course of this muddy water, and find out what becomes of the mud and gravel that these streams carry along. And that may tell you what changes have been going on upon this earth during the winters and springs of countless years of the past.

No Nature-study in March! Oh, yes; if we can get into the spirit of it there is plenty of material; and the first bird, the first sign of a flower, of a reddish twig or bud, will remind us of other spring advents. Thus we can refresh our spirits after the long winter and come into touch with the newest and gladdest spring it has been our lot to pass through.

---

I am pleased with the REVIEW. It tells me just what I want to know, and helps me to keep out of ruts. I preserve each number for future reference. Wishing the REVIEW and its editors many happy years in representing the educational interests of these provinces,

Gavelton, N. S.

JOSEPH J. GAVEL.

**Our Picture for March.**

REV. HUNTER BOYD, WAWEIG, N. B.

The subject selected by the editor for the March number of EDUCATIONAL REVIEW, belongs to the class known as "Pictures that tell a story." It will appeal to youthful imagination, and more or less to a sense of humour. A title was hardly required, as the artist has conveyed the idea by his brush, but titles are sometimes a necessity in order to distinguish the works of one painter from those of another, or to fix the identity of his own. The language of emotional expression is practically the same in human life, and therefore if his observation is correctly rewarded it would matter little whether the characters introduced were Russian or Canadian. But the scene has a strong local flavour about it, and those who know London urchins will not only say it is true to human nature, but *true to life* in some sections of the world's metropolis.

The exact location is not important. We see a portion of the pavement or 'sidewalk' alongside the high wall and railing of the grounds of a large institution. The boy doubtless has good reasons for taking his stand near the door which is seen behind him. It is late in the afternoon and as it becomes colder makes his chances of doing business more favorable. But his mind is not wholly devoted to serving customers, the opportunity for throwing snowballs is very tempting when the passers are so infrequent. To see a gentleman well-dressed, and more elderly than nimble, presents very strong temptation. Whoever threw the snow, made good aim for the largest amount of discomfort to the person who received the blow. It is possible that this boy can have done so. Judging the time which it would require for the victim to half turn his head, would the thrower be able to insert his hands in his pockets, look the other way, and commencing to whistle assume this air and bearing of innocence? The old gentleman is looking out of the corner of his eye—the boy is turning as far as he dares, and a psychologist would say there has been considerable emotional energy on the invisible line between those two eyes.

Allow the scholars to describe as exactly as possible the looks of the two persons—mischief, cunning, alertness and so on one side, and annoyance, anger, possibly fear of more attacks on the other. Endeavor to get lists of suitable words, and according to the grades of the scholars attempt to define the shades of meaning.

The picture will afford a good basis for a word study, and some may make it an occasion for discussion of the propriety of practical joking. Is this man typical of the kind that boys specially like to irritate.

It will be interesting to know the grounds on which scholars incline to believe the boy is not guilty.

Objection is sometimes made that pictures should not be analysed but enjoyed; but the title of this one positively invites discussion. Many scholars have not seen chestnuts roasted, certainly not in our streets. They are more familiar with the process of roasting peanuts. The teacher will do well to encourage them to search for accounts of London waifs and their modes of obtaining a scanty livelihood. Some may be found eager to draw the simple open-air stove with the chestnuts cracking open on the tray on which they are roasting. The clothing of the boy is typical of his class, but in strong contrast to Canadian lads in winter. Would such a boy make a good colonist?

The picture suffers scarcely anything by reproduction as colours are not essential to success. Invite the older scholars to note the parallel lines throughout this upright rectangular arrangement, and to state if "unity" is secured in the picture, and in what manner?

Can any of the teachers recall references to 'roasting chestnuts' in English literature?

Answer to "Query for REVIEW Subscribers" in February number: Mrs. A. bought 32 yards; her daughter (Ann) bought 31 yards; Mrs. B. bought 12 yards; her daughter (Jane) bought 9 yards; Mrs. C. bought 8 yards; her daughter (Eliza) bought 1 yard.

C. E. LUND.

A solution was received from Mr. J. E. Belliveau, Pictou, N. S.

**March.**

I wonder what spendthrift chose to spill  
Such bright gold under my window-sill!  
Is it fairy gold? Does it glitter still?  
Bless me! it is but a daffodil!  
And look at the crocuses, keeping tryst  
With the daffodil by the sunshine kissed!  
Like beautiful bubbles of amethyst  
They seem, blown out of the earth's snow-mist.  
O March that blusters and March that blows,  
What color under your footsteps glows!  
Beauty you summon from winter snows.  
And you are the pathway that leads to the rose.

—Celia Thaxter.

**March and Its High Days.**

ELEANOR ROBINSON.

The Roman name of this month was Martius from Mars, the god of war. A more appropriate name in our climate is that given to it by the Anglo-Saxons, who called it *Hlyd Monath*, that is, the loud or stormy month. Among the Romans the year began in March, and in the English calendar March 25th was the first day of the year until 1752. Thus in modern editions of Pepys' Diary we find, for example, the days from January 1st to March 25th, 1664, with the date of both years, 1663-4. Both in England and Scotland there is an old saying which represents March as borrowing three days from April, and the last three days of March are called "the borrowed days. The old rhyme says:

"March borrowed from Averill,  
Three days, and they were ill."

and another runs thus:

The first, it sall be wind and weat,  
The next, it sall be snow and sleet,  
The third, it sall be sic and freeze,  
Sall gar (make) the birds stick to the trees."

And everyone is familiar with the image of March "going out like a lion."

Dry weather in March is favorable to the grain crops, hence the saying "A bushel of March dust is worth a King's ransom.

We find the days of the patron saints of Wales and of Ireland in March. The first day of the month is sacred to St. David. There are many legends about this patron of Wales, but very little is really known of his life. He is thought to have been a bishop in Wales in the sixth century, and the date of his death has been put at 601 A. D. His shrine is in the church at St. David's. In Shakespeare's "Henry V," Lluellen, the Welshman, says to the king: "I do pelieve your majesty takes no scorn to wear the leek upon St. Tavy's day." And the king answers: "I wear it for a memorable honor, for I am Welsh, you know, good countryman."

The traditional explanation of the wearing of the leek is that King Arthur won a great victory over the Saxons in a garden where leeks grew, and that St. David ordered that every one of the King's soldiers should wear a leek in his cap in honor of the victory.

Around the name of St. Patrick, the patron saint of Ireland, has gathered a mass of legends, in which

false and true, beautiful and ghastly, foolish and instructive stories are brought together. This confusion is partly owing to the fact that the name Patricius seems to have been commonly used in the sense of nobleman or gentleman. Moreover, another Patrick was sent to Ireland as bishop by the Pope about the time that the subject of this sketch began his work there. Irish writers mention also a third ecclesiastic of the same name, so that it is not surprising that the accounts of the saint have been confused. The following facts, however, are pretty generally accepted. St. Patrick was born in Scotland at or near Dumbarton, about the end of the fourth century, and of Christian parents. When a boy of fifteen he was taken prisoner by pirates and sold as a slave in Ireland, probably in county Antrim. Here he tended cattle for six years, and then made his escape, but he soon formed the plan of going back to Ireland as a missionary. Where and how he was trained for his work is not certain. He lived among his relations in Britain for some time, and they begged him not to leave them, but he could not forget the needs of the Irish people, and in dreams he heard voices calling him to come to them. At last his plan was carried out. He says, "Thanks be to God, that after very many years the Lord granted unto them according to their cry." For over forty years he worked in Ireland, traveling from place to place, and risking death and slavery, teaching, baptizing, and founding churches. Traditions all agree that he died on the 17th of March. The year is uncertain, but 469 seems the most likely date; he was probably buried at Downpatrick. St. Partick was the first great missionary who went out from Britain, and this alone would commend his life, a holy and useful one, to our remembrance. The practice of wearing a shamrock on his day is thought to have begun from his habit of using the trifoliate leaf as an image of the Holy Trinity.

The 25th of March has been kept since very early times as the day on which is commemorated the Annunciation of the Blessed Virgin Mary; that is, the event recorded in the first chapter of St. Luke's Gospel, of the Angel Gabriel's coming to the Virgin with the message that the Saviour of the world was to be born of her. This event has been a favorite subject with artists, and is portrayed in some of the most beautiful pictures in the world. The day is commonly called Lady Day.

The Festival of the Annunciation commemorates the promise of the coming of the Saviour, but a still greater event is celebrated this year in the same month, for Easter falls on the 31st of March. This festival of the Resurrection of Christ has been kept as the crowning feast of the year since very early ages. It is spoken of by ancient writers as "the most holy Feast," "the Great Day," "the Feast of Feasts," "the Queen of Festivals." The name Easter was in use as far back as the sixth century, and the Venerable Bede, the historian of the church in Britain, says that it is derived from the name of a pagan goddess, Eostre, or Ostera, whose festival came in the spring. Later writers say the name comes from a word meaning to arise. In old-English calendars Easter is called "the Again-rising of our Lord." Among Eastern Christians it is popularly called "the Bright Day."

This name connects it with the idea of sunrise, and of the Sun of Righteousness rising from the darkness of the grave. The French name for Easter, *Paques*, is derived evidently through the Latin *pascha* from the Hebrew name of the Pass-over festival, and Easter eggs are called "pasque" eggs in some parts of England.

Easter may fall upon any day from March 22nd to April 25th, inclusive. Its date is determined as follows: Easter Day is the first Sunday after the fourteenth day of the calendar moon which happens on or after the 21st of March.

Most of the popular customs connected with Easter tide, such as the sending of flowers and of eggs, rising to see the Easter sun dance, the wearing of new clothes, are typical of the release from bondage, the coming from darkness to light, the beginning of a new life—all that the Resurrection of Christ means to Christians. Flowers are the most obvious symbols of the Resurrection, and lilies especially stand for purity. The sending of eggs, often coloured, is one of the most wide-spread customs of the season among Christian nations.

A prayer to be said before eating eggs, and belonging to the early part of the seventeenth century runs thus:

"Bless, oh Lord, we beseech Thee, this thy creature of eggs, that it may become a wholesome sustenance to Thy faithful servants, eating it in thankfulness to Thee, on account of the Resurrection of our Lord." Originally, Easter eggs were coloured red, the colour of blood, in commemoration of our Lord's death and passion.

Another favorite symbol of the rising from the

grave is the butterfly, and the connection of ideas here is quite plain. Not so in the case of the hare, which appears so commonly upon Easter cards, and in different forms in the shop windows. This symbol seems to have been borrowed from Germany, but no perfectly satisfactory explanation of it is to be found. The Easter hare is supposed in German superstition to lay eggs, and to bring coloured eggs to good children on Easter morning.

#### Rockefeller's \$43,000,000.

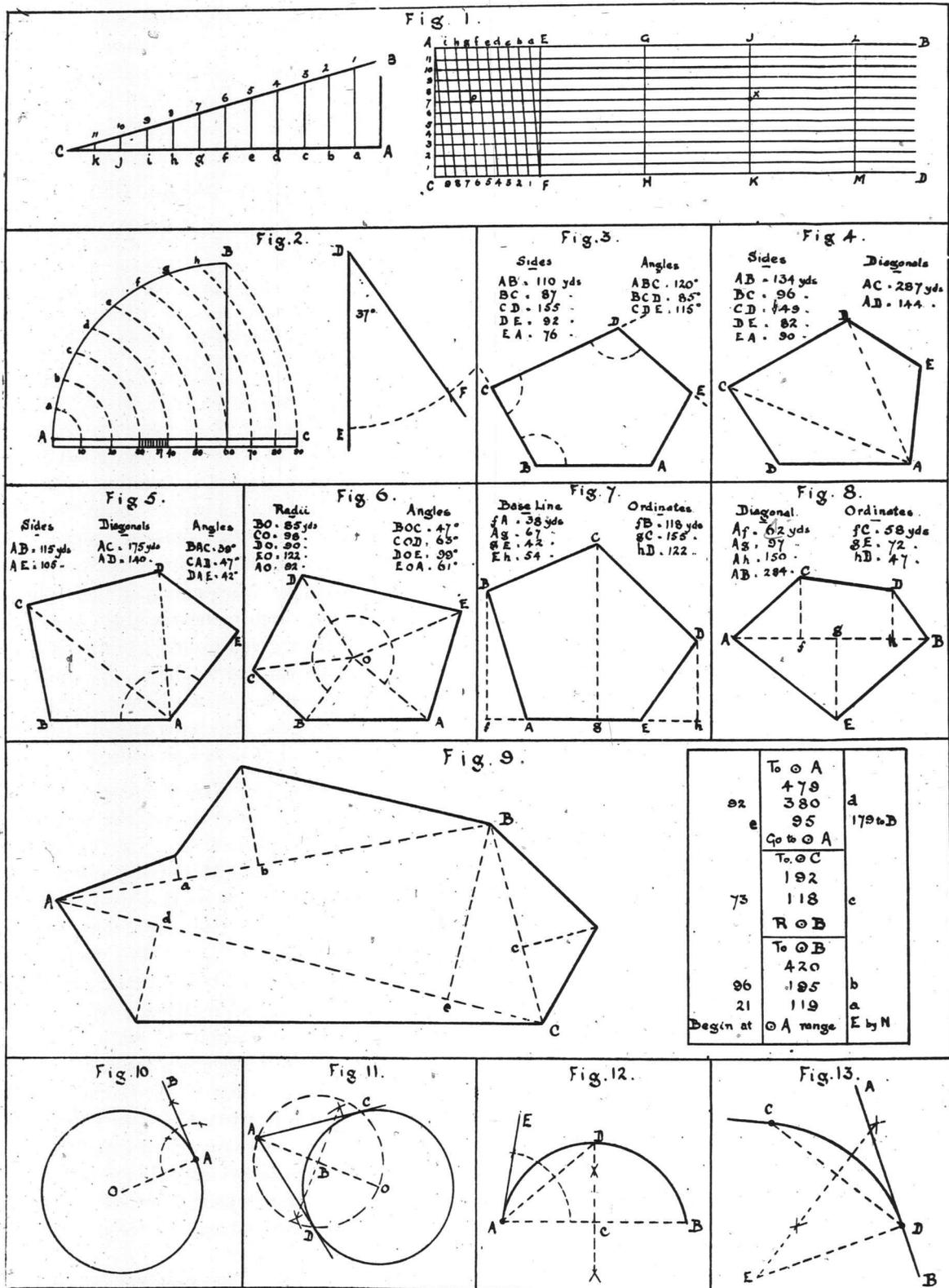
One can get no idea of what \$43,000,000 means, but this is the amount set apart by John D. Rockefeller for the benefit of higher institutions of learning in the United States. Presumably each donation will mean the giving of more than as much more by other men and women of large wealth, so that \$100,000,000 will go to these institutions. It is said that the \$43,000,000 are so invested as to give an annual income of about \$6,000,000. This would mean the giving of \$100,000 a year to sixty different colleges. What a thought!—*N. E. Journal of Education*.

May we not look at it from another point of view. If the income were applied to creating or assisting teachers' pension funds, it would mean the giving of \$100,000 a year for that purpose to every state of the United States, and to every province of Canada. This would be a beginning at the right end. It is not that too much money is given to colleges, but that too little is given to improve the conditions of elementary schools and teachers. In Canada Sir William Macdonald has shown how wealth may be devoted wisely to raise the status of country schools and teachers, as well as to benefit colleges.

Says the University of New Brunswick *Monthly*: "What will our authorities do for the maintenance of the chair of chemistry? . . . Through the generosity of Sir William McDonald, and the goodwill of Dr. Brittain, we have enjoyed for more than two years a course in chemistry that has been thoroughly up-to-date. . . . We cannot speak too highly of the work of Dr. Brittain. His ability as a teacher, his range of knowledge of the subject, and the energy he has displayed mark him as the man we want. We undergraduates say that he is the kind of a professor that U. N. B. cannot afford to lose. No course has become more popular than this one, no lectures more eagerly listened to, and no laboratory work less laborious and more successfully conducted. No arrangement short of maintaining the present high standard will be welcomed by the student body."

Students are apt to be pretty good judges in matters of this kind, and in their estimate of the work of Dr. Brittain the REVIEW heartily agrees.

GEOMETRICAL DRAWING. GR VIII.



## Geometrical Drawing — IV.

PRINCIPAL F. G. MATTHEWS.

The problems here given for grade VIII, although few in number, contain sufficient principles on which to base plenty of exercises to cover the year's work. Many of these may be found in the publication mentioned last month, and in past examination papers. If further practice is required, good exercises may be given in copying, enlarging and reducing given figures, using all kinds of scales.

FIG. 1. *The diagonal scale*, its construction and use. To explain the construction of this most useful scale, let AB in the first diagram be a short line which is to be divided into twelve equal parts. Draw AC any length, stepping off on it twelve equal divisions. Join CB and from the divisions on AC draw lines  $a_1, b_2$ , etc., parallel to AB.

Since Af is half AC, f6 will be half AB; and since Ci is one-fourth of AC, i9 will be one-fourth of AB. Similarly k11 is one-twelfth of AB, and e5 seven-twelfths, and so on. This method of division is extremely useful when AB is a very short line. In the second diagram we have a true diagonal scale in which the inch is divided into 120 parts, giving a scale of 10 feet to the inch from which we can measure feet and inches.

To construct it draw AB any required length marking off each inch. Divide the first one AE into 10 equal parts. Draw AC at right angles to AB and on it mark off twelve equal divisions. Through each one draw a line parallel to AB. Draw EF, GH, etc. parallel to AC. Divide CF into ten equal parts. Join Fa, 1b, 2c, etc. These lines are diagonals and divide each tenth of AE into twelve equal parts.

Suppose we wish to measure off a line 26 feet 7 inches long. From K to 6 on the bottom line represents 26 feet. By going up the line 6g to the parallel marked 7, we add seven-twelfths of another foot, so that the distance xo represents 26 ft. 7 in.

By using ten parallels instead of twelve we divide the inch into 100 equal parts, and can obtain fractions of the inch to two decimal places.

FIG. 2. *The scale of chords*, its construction and use. With any convenient radius describe a quadrant AB. With the same radius trisect the arc. By trial divide each of these thirds again into three giving nine divisions, each representing ten degrees. With A as centre and radius Aa draw the arc a10. Similarly draw b20, c30, etc.

This divided line AC is the scale of chords. The second part of the figure shows its use. It is re-

quired to make an angle of  $37^\circ$  with DE. With D as centre and radius A60 on the scale describe the arc EF. With radius A37 and centre E, cut off point F. Join DF. Then EDF contains 37 degrees.

FIG. 3. *To construct an irregular polygon*, having given lengths of sides and sizes of angles. Draw AB and make it the given length. By means of protractor or scale of chords make the angle ABC the given size. Cut off BC the required length and proceed in a similar manner with each side and angle until the figure is complete.

NOTE.—In this and the succeeding figures which have dimensions, the scale used is 100 yards to the inch. This is an easy scale, and can be worked with great accuracy from a diagonal scale.

FIG. 4. *The same as Fig. 3*, having given the lengths of sides and diagonals. Make the triangle ABC according to dimensions given (by Ex. 4 grade VII.) Then on CA make the triangle CDA by the same method. Next construct the triangle DEA on DA and the figure will be complete.

FIG. 5. *The same as Fig. 3*, having given two sides, lengths of lines radiating from one corner, and the angles between them.

Draw BA its given length. Make the angles BAC, CAD, and DAE of the given number of degrees. Cut off AC, AD and AE the given lengths, and join BC, CD and DE.

FIG. 6. *The same as Fig. 3*, having given lengths of radii from a point within the figure, and the angles between them. Draw BO the given length. Make the angles BOC, COD, DOE, and EOA of the required number of degrees. Next set off the lengths of the radii, and join their extremities.

FIG. 7. *The same as Fig. 3*, by means of ordinates from one side, or the side produced. Draw any line fh and set off fA, Ag, gE, and Eh their respective lengths. At f, g, and h erect perpendiculars (called ordinates) and cut them off to required lengths. Join AB, BC, CD, and DE.

FIG. 8. *The same as Fig. 3*, by means of ordinates from a diagonal. Draw the diagonal AB and mark off the different divisions from the table. Erect the ordinates and cut them to lengths. Join the extremities.

FIG. 9. *To construct an irregular figure from dimensions given as in land surveying*. The right hand portion of the figure represents a page from a surveyor's Field-book, which should be read from the bottom upwards.

Draw AB rising  $11\frac{1}{4}^\circ$  from the horizontal (each

point of the compass being  $11\frac{1}{4}^\circ$ ) making it the required length, 420 yards. From A to a is 119 yards at which point there is a set-off to the left of 21 yards. From A to b is 195 yards, where another set-off of 96 yards to the left is found. BC being 192 yards and AC 479, construct the triangle ABC, noting that BC turns to the right from AB, and on BC and CA mark off the ordinates from the table as before. Join the points of the triangle and extremities of the ordinates to complete the figure.

After completing the drawing the children may be allowed to compute the area of each part of the figure, and of the whole. To allow of the simplest method of getting the area of triangle ABC, the perpendicular height is given from B.

FIG. 10. To draw a tangent to a circle from a given point in the circumference. Join A the given point to the centre O. At A draw AB at right angles to AO. AB is the tangent required.

FIG. 11. The same as Fig. 10, from a point outside the circle. Join the point A to the centre O. Bisect AO in B. With B as centre and radius BO describe a circle cutting the circumference in C and D. Join AC and AD. Both these lines are tangents to the circle.

FIG. 12. The same as Fig. 10, from a point in the circumference, but without using the centre. From A the given point, draw any chord AB. Bisect it in C and erect perpendicular CD. Join AD. Make the angle DAE equal to the angle DAC. AE is the tangent required.

FIG. 13. This exercise is designed to shew a practical application of problems on tangents. AB represents a piece of straight railroad track. Another straight road approaches C. It is required to form by a natural curve a junction at D. AB being tangential, a perpendicular from D will give one locus of the centre. Join CD. Bisect this chord and produce. This will be another locus. The common one is E, which is the centre of the curve.

We are living out these lives of ours too much apart from God. We toil on dismally, as if the making or the marring of our destinies rested wholly with ourselves. It is not so. We are not the lonely, orphaned creatures we let ourselves, suppose ourselves, to be. The earth, rolling on its way through space, does not go unattended. The Maker and Controller of it is with it and around it and upon it. He is with us here and now.—*Nelson H. Huntington.*

### A History Device.

The use of scrap books has become so well known and so useful in geography that it suggested itself in history and has proved equally successful in that subject. The greatest handicap, especially to the country teacher, is the lack of time, but this may be overcome largely by a little planning, and letting the pupils do most of the work, which greatly enhances its value.

An old composition book makes a good scrap book. Cut out part of the leaves to allow for the added thickness of the pictures. The pupils may be aided a little in collecting the pictures, but as far as possible let each child collect and classify his own pictures, only giving a little advice or a few suggestions as to the topic. Each day's lesson may be taken as a topic, if there is time; for example, when the class is studying some battle, as the battle of Gettysburg, let each try to find pictures illustrating this battle; many such pictures may be found in old magazines. This brings the lesson more clearly before the mental vision, keeps it in the mind longer, and creates an interest.

Pictures of the noted statesmen may be used as they come in the lessons, and a brief sketch of the life of each learned in connection with the picture. Pictures of old historic buildings, forts, etc., all help in making the subject interesting. The children never tire of them, and vie with each other as to who can bring the most practical and useful pictures, and who can picture out the topic in the most graphic manner.

Another aid in the study of history is map-drawing—drawing maps of each section of country as brought into prominence in the lessons. This also helps in making history real. In the wars the maps are drawn, then the routes of the different armies are traced in colored crayons, a different color being used for each army. The best of these maps are saved and put into the scrap books.

History studied in this manner is much more real to the pupils than when studied by merely committing to memory the words of a text-book. Approximate dates are associated with nearly every picture, so that time and places are permanently located in the mind, and looking over the scrap book when completed gives a quick review of the entire term's work. This method is especially helpful in seventh grade history.—*Popular Educator.*

**Art in the Netherlands.**

BY MRS. A. MACLEAN.

The art of the Netherlands is the art of Belgium and of Holland, represented by the Flemish school and the Dutch school. Obscurity shrouds the beginning of art in the Netherlands. Though there were examples of more or less merit previously, it was not until the beginning of the fifteenth century that a distinct Flemish school arose under the leadership of the Van Eycks, Hubert, Jan, and a younger sister, Margaret. With their advent the Flemish school at once became prominent. Hubert was born in 1366, and he and Margaret died about the year 1426. Jan died in 1440.

Flemish art may be said to begin in the fourteenth century and end in the seventeenth century. Fromentin says of Flemish art in this period: "At the two extremities of this brilliant course we are struck with the same phenomenon—rare enough in such a little country—we see an art which was born of itself, on the spot; and an art which was born again when it was thought to be dead. Van Eyck is recognized in a very fine Adoration of the Magi; Memling is suggested by certain portraits; and there, at the very end, a hundred and fifty years later, Rubens is perceived—each time a sun rises and then sets with the splendor and brevity of a beautiful day without a morrow."

The Van Eycks established themselves in Ghent in 1420, among a corporation of painters then existing there. The triptych of St. Bavon is their work, but it is not known what part each painted. Their work was wonderful for the time, and it and the works of their pupils display the qualities that have since been considered characteristic of the entire Flemish school—tendency to naturalism, imitation of nature, sensitiveness to color at the expense of purity and grace of line, accuracy of finish, and, in the earlier period, profound religious feeling. Hubert Van Eyck is credited with the discovery of the mixing of oil colors, and the applying them to canvas much as we do now. This discovery, long and carefully guarded by the Van Eycks, drew immediate attention to them and their works.

Memling, who painted about forty years after the Van Eycks, was perhaps the greatest of the earlier painters of Flanders. In his theme and manner he was much like the Van Eycks, but his was an advance. They copied nature accurately with an echo of the engraver and the enamer in their style; he copied accurately, but he idealized. They have the gleam of gold, the polish of marble, the brilliant

carpet tints, the sheen of velvet and pearl; Memling has all these, but in his work are misty passages and half-tints of which the Van Eycks knew naught.

It is wonderful that, in a time so marked by violence, stratagem, superstition, dissoluteness, ecclesiastical parade, royal pageants, feasts, carousals and glitter of gold and gems, there should have sprung into being a wonderful and unexpected art-life.

In its social and religious character, Flemish art stands between the art of Italy and the art of Holland. The influence of the church is seen throughout the whole of Italian painting in its best period, and never more conspicuously than when the faith of the people was beginning to fail. In Flemish art one sees rather the influence of religion than of the priesthood. There is a sturdy national characteristic about it, and a leaning toward literal reproduction of subject.

In the sixteenth century there began a gradual decline in Flemish art, due to the powerful influence of Italian renaissance. In striving to imitate a foreign art, with which it had no real sympathy, Flemish art ceased to be national. This decadence was checked in the seventeenth century by the advent of the greatest of all Flemish painters, Rubens. He formed a school of his own, and in that school the greatest pupil was Van Dyck.

After the death of Rubens and the dispersion of his pupils, the art of Flanders ceased to form a distinct school; and when Rembrandt arose, the art-centre of the Netherlands was transferred to Holland.

The works of the Flemish artists are to be found in galleries everywhere. Some of the more important artists are: Hugo van der Goes, 1482; Geerardt David, 1455-1523; Jan Gossart de Mabuse, 1470-1532; Paul Bril, 1556-1626; Jan Fyt, 1609-1691; Casper de Crayer, 1582-1669; David Teniers, 1582-1649; Jan (called "velvet") Breughel, 1589-1642; Aelbert Cuyp (Kuyp), 1606-1691; Jacob Jordaens, 1523-1678; David Teniers (younger), 1610-1694; Pieter van der Faes (Sir Peter Lely), 1618-1680.

In the Metropolitan Museum, Central Park, New York, are many paintings of the Flemish school. To the casual observer most of them are not calculated to arouse a great deal of enthusiasm. I have heard visitors in the museum remark, "Never mind these queer old pictures, let us go and look at the modern pictures." But there is a wealth of interest and beauty in those old Flemish paintings, albeit one might find lack of refinement of feeling, or even

a touch of actual coarseness in some of them, for some of the artists were frequenters of taverns. But if my space permitted, I should like to speak of the animals of Jan Fyt, the coloring of Teniers, etc., but I shall content myself with sketches of the two most famed of Flemish painters, Rubens and Van Dyck.

#### Sarah's Teachers.

They taught side by side; one, an enthusiastic, warm-hearted woman, possessing a love for her work and a keen insight into human nature; the other, scholarly, methodical, sarcastic, convinced that all human twigs could and should be bent in the same direction. One gained the love and affection of some forty-five fifth grade pupils; the other, the respect and obedience, born of fear, of as many sixth grade pupils. Into the latter grade came Sarah, a girl, who, unfortunately, had never learned the lesson of self-control.

Bright she was and interesting, but from the first misunderstood and misjudged by "Miss Method." Rebellious, self-willed Sarah! She absolutely refused to be moulded after the approved pattern. (There was actual danger of the mould being broken). Just as determined that this self-same mould remain intact, that not even a crack appear, was the firm "Miss Method."

Under such circumstances, things soon reached a crisis. On a memorable morning, hot-headed Sarah, goaded to the point of desperation by the cool, sarcastic tongue of the presiding genius of the room, struck her. In the passionate burst of anger she hissed, "I hate you! I hate you as you hate me! so there!" Hastily the principal was summoned; the culprit, her whole form shaken with suppressed sobs, taken to his *sanctum sanctorum*—the office.

There the child sobbed out her side of the pitiful story. (He already knew the other side, and wise man that he was, read much between the lines). But what to do. Suspend her? A child of that age? Not to be thought of. Had not the child sobbed out, "Please, Mr. Day, take me out of that room, I can't be good there." Had he not also heard frequently of late that Sarah was falling behind in her classes, that she could not be interested in her work? He would give her to his resourceful fifth grade teacher. The shame of it! Demoted because a tactless woman could not win a lovable heart.

The next morning it was with a feeling of mis-

giving that Miss C. admitted to her busy hive "the drone" of whom she had so often heard. Had not her next door neighbor kept her fully posted on the short-comings of this vixen?

But was this blue-eyed, frank-faced girl, sitting there so quietly, as black as she had been painted? She should have the benefit of the doubt. (All Miss C.'s children had to prove themselves bad before she would admit it). Had this slender girl only yesterday viciously struck a teacher? Such thoughts ran through Miss C.'s mind as she assigned lessons and directed her new pupil to the seat she was to occupy—one in the rear of the room—she had formerly occupied a front one, then left her to herself while the regular work was resumed.

The child quickly adjusted herself to the new environment—several days passed without an outbreak—things seemed going well, when all at once, the unexpected happened! A frightened mouse ran across the floor and stopped, of course, in front of Sarah! Her book flew one way; she went the other. A hearty laugh entered into by teacher and pupils alike, was enjoyed; then all quieted down; no, not all. Sarah was giggling; a low, irritating, continuous giggle unnoticed for a time, then Miss C. stepped to her side, and "Stop as soon as you can, please, you are annoying others," was the low-spoken command. As if by magic, the giggling ceased; a kindly nod of approval was the reward.

In this tactful way, many bad habits were broken, many evil tendencies checked. How could they flourish in this wholesome atmosphere? By a little investigation it was discovered that Sarah possessed a sweet soprano voice that rang out strong and true in the chorus work for which the room was noted. She was appointed leader, a much coveted position among the pupils. By accident, as it were, many other schoolroom responsibilities devolved upon her.

Not in a day did she gain self-control—far from it. Many times she stumbled and fell; many were the battles fought and won in the conflict, but in the end, guided by the strong, sustaining hand of a wise teacher, she gained a glorious victory—the victory over self.—*Primary Education.*

A lawyer talked four hours to a jury, who felt like lynching him. His opponent, a grizzled old professional, arose, looked sweetly at the judge, and said: "Your honor, I will follow the example of my young friend who has just finished, and submit the case without argument." Then he sat down, and the silence was large and oppressive.

**Fröbel's Educational System.**

MRS. C. M. CONDON.

The principles and practice of the kindergarten have been found so admirably adapted to the infant in the home, and to the child from three to seven years old, under the fostering care of a kindergarten, as a preparation for school, that the very success of Fröbel's "latest thought" has overshadowed his fame as a reformer of education as an organic whole.

Those who have carefully studied his "Education of Man" will not dispute this statement. This noble work was published in 1826, when its author, by his wide and varied culture and experience, was thoroughly equipped for his task. In it he sets forth his ideal of the ultimate aim of education, and points out the laws, upon the fulfilment of which success must depend. The careful study of this book by parents and teachers would dissipate many false and superficial notions of education.

Fröbel's system rests upon the solid ground of the unity of law. Love for his kind, the "enthusiasm of humanity," led him to lay such stress upon this fundamental law of unity, and to demand its application to training and instruction in the family and school. His own early introspection and self-analysis, and the seeing and hearing the disagreements and troubled questionings, brought by parishioners to his father, their pastor, for settlement, gave the thoughtful boy a painful sense of the conflicting elements of human life. He felt that there must be somewhere a provision made for their reconciliation. To find the solution of this problem, in other words, how to help his fellow-men by correct methods of education, to bring themselves into harmony with nature, man and God, was the life-work to which he felt himself called.

All fruitful education has proceeded from a more or less conformity to this law of unity. Even a partial recognition logically results in an endeavor to adapt methods of training and instruction, not simply to a plan, formed, largely, for the convenience of carrying on school work smoothly, but tends to a study of those laws which lie implicit in human nature, and visit with penalty those who ignore them.

We are to find out not only what branches are to be taught, but also when, how and why. We are to learn this by our own careful observation, and by the experience of those who have made the subject the study of their lives.

We must also consider the mental appetite, at a

given period, whether it is in a normal condition, and what pabulum will meet its requirements.

Too often, we shall find, through neglect, or satiety, or many other conceivable causes, no mental appetite, or at least none for what we wish to offer. It is this inactivity of mind that makes the work in our primary schools so difficult for the faithful teacher. Severity in such cases is a blunder, if not criminal. Consider the way in which we deal with physical inappetency; how cautiously we proceed; how we tempt and coax the appetite with well-prepared food, skilfully adapted to the abnormal condition of the patient. What a delight to mark appetite growing by what it feeds upon! Shall we then take less pains with the immortal mind? Shall we rob ourselves of the joy of watching the happy, normal growth of a mind which we have helped to lift up out of the slough of inaction by our wise and kindly ministrations?

Encouraged by success we study, more and more diligently, the laws that govern us in our physical relations; and just so far as we obey them, we increase our physical well-being.

When we are equally diligent in our efforts to understand and obey those laws which govern our mental and spiritual being, and which we must understand and obey, if we are to secure the best fruits of education, we shall then reap a still richer and fuller harvest. Meanwhile let us study these pregnant words of Goethe: "Only in limitation is the artist seen, and he only is free who is the servant of law."

A correspondent asks:

1. Where is the harbour known as Simon's Bay?
2. What is correct pronounciation of Kouchi-bouguac?

Answers:

1. There is a harbour in Cape Colony, South Africa, known as Simon's Bay.
2. Koosh-ee-boo-gwak, with the accent on the first and last syllables.

Through the kindness of a friend I have become acquainted with the REVIEW, and can think of no better way of showing my appreciation than that of subscribing. Enclosed you will please find one dollar for one year's subscription.

FRANK B. FOX.

Cape North,  
Victoria Co., N. S.

**Avogadro's Law.**

By JOHN WADDELL, Ph.D.

The importance of Avogadro's law is indicated by the papers in chemistry set at the provincial examinations of Nova Scotia last July. There were three questions out of a total of fourteen in which the principles involved were a feature. Avogadro's law should more strictly be called an hypothesis, not being like Gay Lussac's law regarding the proportion by volume in which gases unite, a generalization of facts. So many facts, however, can be easily understood if Avogadro's hypothesis is assumed to be correct, that it is scarcely looked upon as an hypothesis. It was, to a certain extent, a lucky guess on the part of Avogadro, because he had a very limited knowledge of the facts bearing upon the case. The guess was, on this very account, to a certain extent, unlucky, because Avogadro applied this law to cases where it was not applicable, and so for nearly fifty years the law was neglected, and it was only when its limitations were properly recognized that its usefulness became evident.

The law in modern form is: "Equal volumes of all gases under the same conditions of temperature and pressure contain the same number of molecules."

The *existence* of molecules is assumed, though nobody has ever seen a molecule. Setting out with certain assumptions regarding the character and motion of molecules, Avogadro's law follows as a mathematical consequence, but of course the mathematical deduction is no more valid than the hypothetical premises.

On the assumption that Avogadro's lucky guess represents the facts, let us see some of the consequences.

In the first place there is no distinction made between elementary gases and compound gases. In a given volume, say a cubic foot of hydrogen, there is the same number of molecules as in a cubic foot of hydrochloric acid gas; in a litre of nitrogen there is the same number of molecules as in a litre of ammonia in ten liters of carbon monoxide or carbon dioxide there is the same number of molecules as in ten liters of oxygen, or hydrogen, or of chlorine.

This leads, in the second place, to the result that the relative weights of equal volumes of different gases give the relative weights of the molecules; for if a litre of ammonia containing, let us say, a million, million, million molecules of ammonia weighs  $8\frac{1}{2}$  times as much as a litre of hydrogen,

which, according to the law, would also contain a million, million, million molecules, it follows that one molecule of ammonia must weigh  $8\frac{1}{2}$  times as much as one molecule of hydrogen. We do not know the absolute weight of a molecule of hydrogen, or of a molecule of ammonia, but it follows from what has been said above that an ounce, or a pound, or a gramme of hydrogen will occupy the same volume as  $8\frac{1}{2}$  ounces, or pounds, or grammes of ammonia, the same conditions of temperature and pressure being maintained in both cases.

Hence, in the third place, it follows that the formula given to gases may represent a definite volume of the gases, and that the formula which represents the *molecule* may also represent a perfectly definite *volume*, which will be the same for all gases.

The question now arises: *What* volume is to be represented by the formula of a gas? The volume may be chosen as the volume occupied by an ounce, or a pound, or a ton of some particular gas, say hydrogen. None of these volumes is chosen, however; in ordinary chemical work the French system of measurement being more common. The volume occupied by a gramme of hydrogen might be employed, and this was in fact used for some time. But if this volume is used as the standard, the formula representing ammonia should represent  $8\frac{1}{2}$  grammes, of carbon monoxide 14 grammes, of hydrochloric acid 18.25 grammes. The usual formula for ammonia is, however,  $\text{NH}_3$ , and if H represents one gramme, N will necessarily represent 14, and  $\text{NH}_3$  will represent 17, or twice the number of grammes in the volume chosen. In the same way the formula CO usually given to carbon monoxide, and the formula HCl given to hydrochloric acid would represent *twice* the weight of the gases contained in the volume chosen. If we are to retain these formulæ it will be necessary to adopt as the standard volume the volume occupied, not by *one* gramme of hydrogen, but by *two* grammes. The formula for hydrogen, then, would be  $\text{H}_2$ , of nitrogen,  $\text{N}_2$ , and of oxygen,  $\text{O}_2$ . Avogadro's law would thus lead to the result that the molecule of hydrogen consists of two atoms, and the same would hold for a number of other elementary gases.

Avogadro's law may be applied in another way to arrive at this result. It is found by experiment that *one* volume of hydrogen uniting with *one* volume of chlorine gives *two* volumes of hydrochloric acid gas. According to Avogadro's law there must be therefore twice as many molecules

of hydrochloric acid gas as of the hydrogen, or of the chlorine entering into its composition. But each molecule of hydrochloric acid must contain at least one atom of hydrogen and one atom of chlorine, and so there must be at least twice as many atoms of hydrogen as there are molecules of hydrogen, and at least twice as many atoms of chlorine as there are molecules of chlorine. If the formula for hydrochloric acid is taken as HCl, the formula for hydrogen is  $H_2$ . If  $H_2Cl_2$  were the formula for hydrochloric acid,  $H_4$  would be the formula for hydrogen. Neither the hydrogen nor the chlorine of hydrochloric acid have been found capable of division, and for this and other reasons the formula for hydrochloric acid is taken to be HCl.

Though in a manner similar to the above, it can be proved that a number of elementary gases contain two atoms in the molecule, there are elements whose molecules contain only one atom, and some whose molecules contain more than two atoms.

The best volume, then, to use as the standard volume is the volume occupied by *two* grammes of hydrogen, which at the temperature of  $0^\circ C$  and the pressure of the atmosphere 760 mm. of mercury is 22.412 litres. The molecular weight in grammes of each gas, then, occupies 22.412 litres under standard conditions. If a new gas is discovered its molecular weight is ascertained by determining the weight of 22.412 litres of it. This is, of course, a matter of experiment.

Last July the question was asked in Grade XII: "How may Avogadro's law be used to establish the formula  $H_2O$  with  $O=16$  as better representing the molecular formula of water than  $HO$  with  $O=8$ ?" There were only three candidates who had any measure of success with this question, though it is really very easy when the principle is understood. If  $H_2O$  is the formula for water vapor, it follows that a volume of water vapour will weigh nine times as much as the same volume of hydrogen, since the formula of hydrogen is  $H_2$ , the conditions of temperature and pressure being of course the same in both cases. If the formula is  $HO$  with  $O=8$ , water vapour will weigh four and a half times as much as the same volume of hydrogen. It is found that the ratio of the weight is nine to one, thus establishing the formula  $H_2O$  with  $O=16$ .

In Grade X there was the question: "What volume is represented by the formula of a gas? Given the equation  $MnO_2 + 4HCl = MnCl_2 + 2H_2O + Cl_2$ , how many litres of chlorine at standard temperature and pressure can be obtained from 87 grammes of manganese dioxide."

As we have seen, the formula of a gas represents

a perfectly definite volume, namely, 22.412 litres at zero centigrade and atmospheric pressure. (In "A School Chemistry" the volume is given as 22.253 litres, but later investigations give 22.412 litres as more correct. The discrepancy is due to the difficulty in weighing gases, because of the large volume for a small weight).

The volume represented by  $Cl_2$  is therefore 22.412 litres, hence 22.412 litres of chlorine are obtained from the weight of manganese dioxide represented by  $MnO_2$ . This weight is 87 grammes since Mn represents 55 grammes of manganese, and O represents 16 grammes of oxygen. The equation gives the data at once for answering the question; if the problem had been to calculate the volume of chlorine obtainable from 100 grammes of manganese dioxide, or from 200 grammes, or from any other number, a very little arithmetic would be necessary. And here I may say that chemical arithmetic is no harder than any other, and it is just as easy to calculate about litres of oxygen as about tons of hay.

In Grade XII the volume of sulphuretted hydrogen obtainable from 100 grammes of ferrous sulphide was required at 730 mm. pressure and  $20^\circ C$ .

From the equation  $FeS + H_2SO_4 = FeSO_4 + H_2S$  it appears that from 88 grammes of ferrous sulphide 22.412 litres of sulphurated hydrogen are obtained, because FeS represents 88 grammes and  $H_2S$  represents 22.412 litres. The gas is supposed to be measured at zero centigrade and at atmospheric pressure, namely, 760 mm of mercury. As the measurements in the problem are made at  $20^\circ C$  and 730 mm., a correction must be made, and the calculation worked out for 100 grammes ferrous sulphide instead of 88 grammes.

It will be noticed that since ferrous sulphide is a solid, its *volume* is not indicated by the formula; it is only in the case of gases that the formula indicates the volume as well as the weight. FeS represents 88 grains,  $H_2S$  represents not only 34 grammes but also 22.412 litres at the standard temperature and pressure. The weight does not vary with temperature and pressure; the volume does.

An old colored woman was seriously injured in a railway accident. One and all her friends urged the necessity of suing the wealthy railroad corporation for damages.

"I 'clar to gracious," she scornfully replied to their advice, "ef I ain't done git more'n nuff o' damages! What I'se wantin' now and what I'se done gwine to sue dat company foh is repairs." — *Cleveland Leader*.

**Natural History for Little Folks.****The Story of the First Snowdrops.**

An old man sat alone in his house. It was full of shadows; it was dark and gloomy. The old man cared nothing for the shadows or the darkness, for he was thinking of all the mighty deeds that he had done. "There is no one else in the world," he muttered, "who has done such deeds as I," and he counted them over aloud. A sound outside of the house interrupted him. "What can it be?" he said to himself. "How dares anything interrupt me? I have told all things to be still. It sounds like the rippling of waters, and I have told the waters to be quiet in their beds. There it is again. It is like the singing of birds, and I have sent the birds far away to the south."

Some one opened the door and came in. It was a youth with sunny curls and rosy face.

"Who said you might come in?" muttered the old man.

"Did not you?" asked the youth, with a merry little laugh. "I am really afraid that I came without asking. You see, every one is glad to see me and"—

"I am not," interrupted the old man.

"I have heard rumors of your great deeds," said the youth, "and I came to see whether the tales are true."

"The deeds are more true than the tales," muttered the old man, "for the tales are never great enough. No one can count the wonderful things I have done."

"And what are they?" asked the young man gravely, but with a merry little twinkle in his eyes that would have made one think of the waves sparkling in the sunlight. "Let us see whether you or I can tell the greatest tale."

"I can breathe upon a river and turn it to ice," said the old man.

"I can breathe upon the ice and turn it to a river," said the youth.

"I can say to water, 'Stand still,' and it will not dare to stir."

"I can say, 'Stand no longer,' and it will go running and chattering down the mountain side."

"I shake my white head," said the old man, "and snow covers the earth."

"I shake my curls," said the young man, "and the air sparkles with sunshine. In a moment the snow is gone."

"I say to the birds, 'Sing no more. Leave me,' and they spread their wings and fly far away."

"I say, 'Little birds, come back,' and in a moment they are back again and singing their sweetest songs to me."

"No one can count the leaves," said the old man, "but whether I shake the trees with my icy touch, or whether I turn my cold breath upon them, they fall to the ground with fear and trembling. Are there any rumors of my deeds as great as that?"

The young man answered gravely, but with a laugh in his voice, "I never saw any leaves falling to the ground, for when I appear, they are all fair and green and trembling with gladness of my coming."

So the two talked all night long. As morning came near, the old man appeared weary, but the youth grew merrier. The sunlight brightened, and the youth turned to the open door. The trees were full of birds, and when they saw him, they sang, "O beautiful spring! glad are we to look again upon your face!"

"My own dear birds!" cried Spring. He turned to say good-by, but the old man was gone, and where he had stood were only snowflakes. But were they snowflakes? He looked again. They were little white snowdrops, the first flowers of spring, the only flowers that can remember the winter.—  
*The Book of Nature Myths.*

**Summer Threads.**

A little spider had lived all the summer in the meadow, and had busied herself catching many of those naughty midges that are so fond of biting children's hands and faces. In the winter the meadow is flooded by the river, and any little creature that cannot live in the water is drowned.

The spider has, at the end of the summer, just the same longing to travel that some birds have, but she could never get very far on her little legs, for the very first ditch would stop her. She knows a much better way to get along, however. She watches wind and weather like an experienced seaman: "To-day is beautiful sunshine," says she, "and a favourable wind, not too mild and not too blustry; this is a day to start upon a voyage!"

So she climbs quickly to the top of an alder-bush, and perches on the tip of a branch. There she stands upon her head, and stretches out her body, with its spinning apparatus upwards. She spins a long thread, and lets it blow far, far out in the breeze, till the wind lifts it and tugs at it, and the spider can hold no longer, lets go of the branch, and sails away at the end of her thread, like a balloonist in a balloon.

She sails away in her air-ship, here and there, according to her fancy, the thread rising high up over the ditches in the meadow, over the river, over bushes and trees, over the houses of the town, and over the church steeple. When the children see the spider's little air-ship they cry: "Look at the long summer thread!"

After a time the spider thinks she has travelled far enough, and wants to stop, but how is she to lower her ship to the ground? Small as she is, she knows a way out of the difficulty. She seizes the floating white thread with her nimble legs, and rolls it up into a ball. The more she pulls it in, the less the breeze can carry it, till she gradually sinks to the ground.

Here the spider seeks a corner where she can safely take up her winter quarters. If she finds no likely spot, she spins herself next day another little air-ship, and travels further on. It is true that she can neither steer nor guide her vessel, for it is driven along with the wind, but she leaves it in God's hands, who has a fatherly care for even the smallest spider. But she must think for herself, also, and take heed which way the wind is blowing.

#### Where Montgomery Fell.

All good Americans, when they visit Québec for the first time, go to the spot where the ill-fated Montgomery fell in battle, in his rash attempt to take Québec after his capture of Montreal in 1775. High up on the precipitous rocks above the lower city they find the inscription, "Here fell Montgomery, Dec. 31, 1775." As the Spectator stood there musing on the things that might have been, a carriage drove up containing three ladies. The driver announced, "Here was where Montgomery fell." The ladies craned their necks. "Where did he fall from?" "From up there, madam! He fell from the place where you see the sign, down to the road here, and the fall ended his life." The Spectator was highly amused at this interpretation of the word "fall." Following old Champlain Street, he came to the shore of the St. Lawrence and entered into conversation with an old Irish woman. He related to her what he had just heard; but, instead of sharing his amusement, she said seriously, "Yes, I've heard my old father tell about it; he said General Montgomery was on horseback when he fell, and the fall killed both horse and rider!"—*Spectator, in N. Y. Outlook.*

#### Rhymes for Little Folks.

##### Over the Meadow.

Over in the meadow,  
In the sand, in the sun,  
Lived an old mother-toad  
And her little toadie one.  
"Wink!" said the mother;  
"I wink," said the one;  
So she winked and she blinked,  
In the sand, in the sun.

Over in the meadow,  
Where the stream runs blue,  
Lived an old mother-fish,  
And her little fishes two.  
"Swim!" said the mother;  
"We swim," said the two;  
So they swam and they leaped  
Where the stream runs blue.

Over in the meadow,  
In a hole in a tree,  
Lived a mother-bluebird,  
And her little birdies three.  
"Sing!" said the mother;  
"We sing," said the three;  
So they sang, and were glad,  
In the hole in the tree.

Over in the meadow,  
In the reeds on the shore,  
Lived a mother-muskrat,  
And her little ratties four.  
"Dive!" said the mother;  
"We dive," said the four;  
So they dived and they burrowed  
In the reeds on the shore.

Over in the meadow,  
In a snug beehive,  
Lived a mother-honey-bee  
And her little honeys five.  
"Buzz!" said the mother;  
"We buzz," said the five;  
So they buzzed and they hummed,  
In the snug beehive.

Over in the meadow,  
In a nest built of sticks,  
Lived a black mother-crow,  
And her little crows six.  
"Caw!" said the mother;  
"We caw," said the six;  
So they cawed and they called  
In their nest built of sticks.

Over in the meadow,  
Where the grass is so even,  
Lived a gay mother-cricket  
And her little crickets seven.  
"Chirp!" said the mother;  
"We chirp," said the seven;  
So they chirped cheery notes  
In the grass soft and even.

Over in the meadow,  
 By the old mossy gate,  
 Lived a brown mother-lizard  
 And her little lizards eight.  
 "Bask!" said the mother;  
 "We bask," said the eight;  
 So they basked in the sun,  
 By the old mossy gate.

Over in the meadow,  
 Where the clear pools shine,  
 Lived a green mother-frog,  
 And her little froggies nine.  
 "Croak!" said the mother;  
 "We croak," said the nine;  
 So they croaked and they splashed,  
 Where the clear pools shine.

Over in the meadow,  
 In a sly little den,  
 Lived a gray mother-spider,  
 And her little spiders ten.  
 "Spin!" said the mother;  
 "We spin," said the ten;  
 So they spun lace webs,  
 In their sly little den.

Over in the meadow,  
 In the soft summer even,  
 Lived a mother-fire-fly,  
 And her little flies eleven.  
 "Shine!" said the mother;  
 "We shine," said the eleven;  
 So they shone like stars,  
 In the soft summer even.

Over in the meadow,  
 Where the wise men dig and delve,  
 Lived a wise mother-ant,  
 And her little anties twelve.  
 "Toil!" said the mother;  
 "We toil," said the twelve;  
 So they toiled and were wise,  
 Where the big men dig and delve.

—Olive A. Wadsworth.

#### Greek Children's Song.

The swallow has come again  
 Across the wide, white sea;  
 She sits and sings through the falling rain,  
 "O March, my beloved March!  
 And thou, sad February,  
 Though still you may cover with snow the plain,  
 You yet smell sweet of the spring!"

—Selected.

#### The Caterpillar.

I creep upon the ground, and the children say,  
 "You ugly old thing!" and push me away.  
 I lie in my bed, and the children say,  
 "The fellow is dead; we'll throw him away."  
 At last I awake, and the children try  
 To make me stay, as I rise and fly.

—Unknown.

#### Grown-Ups.

There are no real fairies, grown-ups say so,  
 Except in stories, which is so absurd—  
 If only they could know the secrets I know,  
 And hear the things I've heard!  
 I know what the thrush near the nursery window sings  
 In the lilac bush below,  
 The fairies tell me heaps and heaps of things  
 That grown-ups never know.

I know why the shadows grow so long and glide  
 Across the lawn, beneath the poplars tall:  
 It's because they want to look at the world outside,  
 They're climbing the ivied wall.  
 I know what the butterfly with painted wings  
 Says to the proud red rose.  
 The fairies tell me heaps and heaps of things  
 A grown-up never knows.

I know why the clouds, with which the sky is whitened,  
 Hurry along so very, very fast:  
 They want to see the sunset, and are frightened  
 That each may be the last.  
 I know why the river never, never sleeps,  
 Why the wind comes and goes.  
 The fairies tell me secrets, heaps and heaps,  
 A grown-up never knows.

—Pail Mall Magazine.

#### March.

The stormy March is come at last,  
 With wind, and cloud, and changing skies.  
 I hear the rushing of the blast,  
 That through the snowy valley flies.

Ah, passing few are they who speak,  
 Wild stormy month! in praise of thee;  
 Yet, though thy winds are loud and bleak,  
 Thou art a welcome month to me.

For thou, to northern lands, again  
 The glad and glorious sun dost bring,  
 And thou has joined the gentle train  
 And wear'st the gentle name of Spring.

And, in thy reign of blast and storm,  
 Smiles many a long bright sunny day,  
 When the changed winds are soft and warm,  
 And heaven puts on the blue of May.

Then sing aloud the gushing rills  
 And the full springs, from frost set free,  
 That, brightly leaping down the hills,  
 Are just set out to meet the sea.

The year's departing beauty hides  
 Of wintry storms the sullen threat;  
 But in thy sternest frown abides  
 A look of kindly promise yet.

Thou bring'st the hope of those calm skies,  
 And that soft time of sunny showers,  
 When the wide bloom, on earth that lies,  
 Seems of a brighter world than ours.

—Bryant.

**Your Gawky Boy.**

That gawky boy of yours—ungainly, gaunt, shy, unprepossessing, as he is,—writes Henry A. Shute in the *March Delineator*. You nag him. You laugh at him and ridicule him. Did you ever realize how it hurts? You ought to realize it, for it is not long since you knew how it felt. You would have stood pain like a man, and so does your boy. You would have borne privation like a stoic, and so does your boy, and there would have been a grim sort of enjoyment in it, for the joy of resistance is fully awake at fourteen.

But you could not bear ridicule, and he cannot, and yet there is scarcely a day when you do not cause him sharp discomfort.

The boy's mother never does this. She loves every awkward movement of her boy. She loves his long legs, and she loves to hear his raucous voice. She smiles at it, too, and at him, and it is a smile of genuine amusement; but there is love in the smile, and love in her eyes, and he knows it, and adores her for it.

If he becomes depressed and despondent, he confides his troubles in his dog, which sits in front of him gazing at him with an almost human expression of sympathy, and puts his paw on his master's knee.

A bit unfortunate, isn't it, that your own boy is obliged to depend on his mother and his dog for sympathy and affection? He gets none from you, and but little from his brothers and sisters. It is true, isn't it?

My friend, if you paid as much personal attention to the proper development of your boy as you do in raising the two-minute trotter, or the blue-ribbon Guernsey, or the Black Strain Jubilee of Orpington, or in beating bogy, or in your game of whist, you would be astonished at the results.

**CURRENT EVENTS.**

Glass water pipes are used in Germany.

A locomotive engine which consumes all its own smoke and waste steam, allowing none to escape into the open air, is now in use in Belgium.

Since they were first known to Europeans, the mines of Mexico have produced over four thousand million dollars worth of the precious metals.

A promising new fruit from Uruguay is described as having the size of an apricot and the shape of an apple, a bright red and yellow color when ripe, a delicate perfume and an extremely agreeable taste.

There is a continuous increase in the number of immigrants coming to Canada. The total number for the last seven months is nearly fifty per cent greater than for the same period ending with January of last year; and it is expected that the total number to arrive in 1907 will

be fifty per cent more than the number of arrivals in 1906. While exaggerated reports of the very severe winter through which we have passed may deter some, it is expected that the number coming from the British Islands will be greater than ever before.

The failure of last year's crops in the valley of the Volga has brought famine to whole provinces of the Russian Empire lying north of the Caspian Sea. The Russian government is doing what it can do to relieve the distress; but funds are exhausted, and it has been obliged to ask for help from abroad.

The new parliament has not brought peace to Persia. The revolutionary movement is said to be spreading; and there is much disorder, especially at Teheran, where the parliament is in session, the populace refusing to acknowledge the authority of either the parliament or the Shah.

The first elections to parliament under the new constitution of the Transvaal have taken place, and the colony is now under representative government.

The International Exposition at Jamestown, Virginia, where the first English settlement on this continent was established, will be opened with imposing ceremonies on the 25th of April, the three-hundredth anniversary of the landing.

A new ice breaking steamer, the *Lady Grey*, has been built in England for the Canadian Government, for service on the St. Lawrence River, to maintain an open channel to the sea during the winter months.

A battle in the air is no longer among the remote possibilities of the future. It is possible to-day. The British Government has for months past been making experiments looking to the formation of a fleet of airships, and men are being trained to manage them. The plans are said to include the use of kites as observatory stations, dirigible balloons for transport, and aeroplanes for actual fighting.

Another war has begun in Central America. Nicaragua has declared war against Honduras, and one or more of the other little republics will probably be involved. Disputed territory and border raids are the immediate cause; but the possibility of some one state absorbing the others and founding a powerful Central American nation is always borne in mind.

It has long been known that the leaves of some of our wild cherries, notably our black cherry, though perfectly harmless when fresh, are more or less poisonous when wilted. This is due to the development of prussic acid in the drooping leaves. An English botanist in India has discovered that the same thing occurs in other plants under rare conditions; and mysterious poisonings of farm stock may be traced to some ordinarily wholesome fodder plants becoming suddenly poisonous.

The Ontario government is providing for the teaching of agriculture in all the county high schools of the province.

A German scientific expedition has discovered in Central Asia a large collection of ancient manuscripts in different languages and dialects, including one or more languages hitherto unknown to modern students. It is probable that some important ancient writings will be found among them.

## SCHOOL AND COLLEGE.

Inspector of Schools A. G. Macdonald has been elected by acclamation mayor of the town of Antigonish, N. S., an indication that his fellow townsmen know how to appreciate the worth of an intelligent and upright man.

The provincial normal school at Truro, and the other schools and churches of that town were closed for two weeks in February owing to the discovery of two slight cases of small-pox. By this prompt measure and by great vigilance on the part of the authorities the disease has been kept down.

Supervisor McKay of the Halifax Schools, recommends strongly the appointment of a physician to examine all pupils. The School Board will probably put the suggestion into effect.

The New Brunswick Normal School at Fredericton is crowded to its utmost capacity. There are over three hundred pupil teachers in attendance.

Sir William Macdonald has given twelve scholarships of the Kingston, N. B., Consolidated School. This means that the pupils who win them have their fees and maintenance provided for at the new St. Ann's College, near Montreal.

## RECENT BOOKS.

FIRST SCIENCE BOOK—Physics and Chemistry. By Lothrop D. Higgins, Ph. B. Cloth. Pages 237. The Copp, Clark Company, Toronto.

This book contains an excellent presentation of the first principles of the sciences of physics and chemistry. The subject matter is concise and interesting, and illustrated where necessary by diagrams. What renders it of great value to the teacher is the fact that it contains explanations of the various forms of electrical energy and the devices which man employs to use it, such as the dynamo, the motor, telephone, telegraph and other present day appliances.

In history and geography Messrs. Blackie & Son, London, have published the following: Moncrieff's *Heroes of European History* (1s. 6d.), which presents the principal figures, in easy reading lessons, from the early conflicts of Greece to the great wars of the French Revolution; *Readings in English History* (2s.), including selections from original sources, illustrating the chief events and characters in English history, arranged chronologically; *A Geography of Europe and the British Isles* (2s.), for junior forms, dealing chiefly with practical geography in its industrial and historical aspects; the geography of *The World* (1s. 9d.), No. VII, of the New Century Geographical Readers, is an interesting bird's-eye view of the chief races and features of the world. All of the above books are attractively printed, with illustrations and maps.

In literature, Blackie's *Model Reader*, Book VI (1s. 6d.), provides interesting and varied reading in selections possessing literary merit; Maria Edgeworth's *Murad the Unlucky and Other Tales* (1s.), with a biographical introduction of the authoress; Sir Walter Scott's *The Talisman* (1s. 6d.), with introduction and notes. In the Greater Plays of Shakespeare we have *King Richard II*, *King Richard III*, *The Tempest*, *Coriolanus* (price 4d. each), convenient and low-priced editions, without notes. In

Blackie's Story-Book Readers there are selections from Lytton's *Last Days of Pompeii*, Henty's *The Two Prisoners*, and *Among the Bushrangers* (price 4d. each), and the Story of *Willy Black* (2½d.); and in Blackie's English School Texts, Charles Dickens' *The Chimes* (6d.). All of the above is printed and bound in attractive and convenient form for easy reading. Blackie & Son, London.

Black's *Literary Reader*, Book II (1s.), is illustrated in colour, and in black and white. The reading entitled "Little Folks in Canada," is, as a whole, a pretty picture of children's summer and winter sports here. Black's Picture Lessons in English (6d.) are useful aids to children's compositions. Adam and Charles Black, London.

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In modern languages, Blackie & Son, London, publish a *Skeleton German Grammar* (2s.), a guide which, if thoroughly mastered, will conduct the beginner to a successful mastery of translation; *French Readings in Science* (3s. 6d.), a selection of passages from chemical, physical, astronomical, physiological and botanical treatises, compiled to assist students in their general reading, and to prepare them for the London University examination, which, since 1904, has made it compulsory on candidates to translate a portion of a French and German scientific work; Alexander Dumas' *La Jeunesse de Pierrot* (1s. 6d.), a bright story for the young from that popular novelist; Fontaine's *Shorter Fables* (6d.), La Bruyère's *Les Caractères* (4d.), Bechstein's *Märchen* (6d.), and two plays for acting in schools (price 4d. each).

In subjects from the Ancient Classics, Messrs. Blackie & Son, London, have published *Damon*, a Manual of Greek Iambic Composition (2s.), which teaches Greek Iambic-writing on a system which the author (a teacher) has found to be as valuable a mental training as the study of the higher mathematics; *A First Greek Course* (as. 6d.), a practical and concise introduction to the Greek language, the author maintaining that "Greek can be learnt with profit and enjoyment by the average boy, so that in less

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### RECENT MAGAZINES.

The March *Atlantic Monthly* fittingly observes the centenary of Longfellow by an eloquent poem upon the well-beloved poet by Thomas Bailey Aldrich, and a study of his genius and place in letters by Bliss Perry. Other contributions, with essays and literary papers, stories and poems, are suggestive of the quality and brilliancy of this favorite periodical.

The February number of *The Canadian Magazine* contains an interesting article by Prof. Goldwin Smith entitled *The Stage of Former Days*. Prof. Smith gives an appreciation of players who have long since gone from the scenes, and he advocates the endowment of theatres as powerful organs of culture. The article is accompanied by ten reproductions of old engravings and is altogether a valuable contribution to current literature. The number contains also eleven other articles, nine of which are illustrated, and five short stories.

The *March Delineator* is full of seasonable hints of the fashions and styles of the month. The children's department is as usual of great interest to schools and families. Its articles about women and the home are especially appropriate and worthy of thoughtful reading.

An article on Greenwich Time by H. H. Turner, which *The Living Age* for February 2nd reprints from the *Cornhill Magazine* is a good example of what a popular scientific article ought to be. It is clear and intelligible without being condescending and it fully acquaints the reader with the importance and the methods of the observations taken at Greenwich. The story of Amelia and the Doctor, now running in *The Living Age*, becomes more charming with each instalment. The Cranford flavor is unmistakable, but it is a twentieth-century Cranford, and the characters have a warm living interest.

### OFFICIAL NOTICES.

#### Province of Nova Scotia.

The County of Colchester has been made a separate Inspectorial division by the Council of Public Instruction, to be known as Division No. 12, to go into effect on the first day of March, this year.

C. Stanley Bruce, Principal of the *Shelburne County Academy*, has been appointed Inspector of Schools for Division No. 3 (the counties of Yarmouth and Shelburne).

W. R. Campbell, M. A., Principal of the *County Academy at Truro*, has been appointed Inspector of Schools for Division No. 12, (the County of Colchester).

Teachers and School Trustees are asked to take notice and govern themselves accordingly. The address of each inspector is italicised above.

Halifax, 1st March, 1907.

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M. A. Harrington, Toronto, Ont., Jr. Matric.  
Mary Harker, Cardston, Alta., Standard VII.  
S. B. Lamont, Brussels, Ont., Jr. Matric.  
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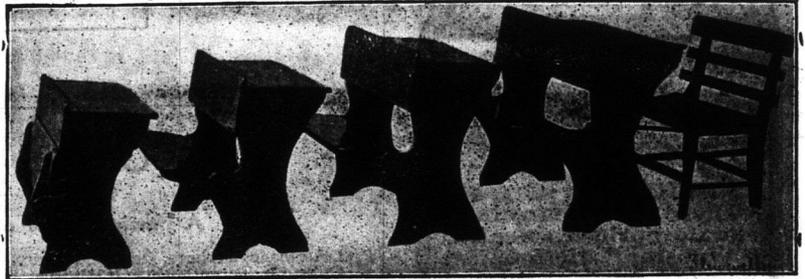
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