

M. Johnston

THE ENTRANCE

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[25 CENTS A YEAR

Switzerland's President.

In Switzerland the president is elected each year, and in no case can such an official hold the position for two years in succession. Dr. Deutcher, whose portrait we publish in this issue, is the newly-elected president of the Swiss Republic. He is not a new man in politics, but is one who has been in harness for years; in fact, this is the second time he has been elected to the presidency, his former term of office dating back to 1890. Dr. Deutcher was born in 1831. He studied medicine, and graduated in Heidelberg, Germany. In early life he became active in politics, and has held some of the most important positions within the gift of the people.



DR. DEUTCHER.

The Immigration Bill.

On January 27th the Congress of the United States passed a new immigration bill. It is now before the President for his signature. As the bill stands it provides for an educational test for immigrants from sixteen to fifty years of age. The "land of the free" is beginning to wake up to the fact that more is required than mere numbers in population to build up a strong nation. The Immigration Restriction Bill just adopted by both houses of Congress, and designed to exclude after the 1st of next July immigrants who are unable to read and write, provides a peculiar test. At each of the inspector's offices of the United States there are to be pasteboard slips with printed extracts from the Federal Constitution in double small pica type of not less than twenty nor more than twenty five words. These slips are to be kept "in boxes made for that purpose," so that they shall be concealed from view, are to be duly numbered, and printed in different languages. The immigrant, having designated the language in which he claims to be proficient, is "required to draw one of said slips from the box and read, and afterward write out in full view of the immigration officer the words printed thereon." It will be seen, therefore, that the plan affords a practi-

cal test of the immigrant's ability both to read and to write his own language.

As we go to press we learn that the above bill has been vetoed by Mr. Cleveland, but that the House of Representatives has again passed it by a vote of 193 to 37. It has yet to secure a two-thirds majority in the Senate. As the vote in passing the bill in the latter body stood 34 to 31 it will be difficult to secure the two-thirds majority in order to carry the bill over the president's veto.

The Rhodes Inquiry.

The trial of Cecil Rhodes, now going on in England, recalls the Jameson raid. It is about a year ago now that Dr. Jameson crossed the Transvaal frontier with 600 men of the South Africa Chartered Company to redress the grievances of the 60,000 Uitlanders of the Transvaal Republic. As we all know, Jameson was met by a large force of Boers, and was compelled to surrender. Jameson and his chief associates were sentenced to death, but the sentence was commuted to fines and imprisonment—the leader for fifteen months, and his coadjutors for five. Some time ago the British Government appointed a Parliamentary Committee to inquire into the connection of the Chartered Company with this raid, more especially the part taken by Mr. Cecil Rhodes, the president of the company. Mr. Rhodes has been for several years past an important factor in the history of South Africa. Some ten years ago Rhodes is reported to have drawn a line across a map of Africa from ocean to ocean, near the waters of the Congo, and to have exclaimed, "All that English—that is my dream." As Premier of Cape Colony, Mr. Rhodes did much towards building up South Africa. He engineered large business interests and otherwise proved himself just such a leader as the South African people delighted to follow. His success in putting down the recent outbreak in Matabeleland is fresh in the memory of us all.



CECIL RHODES.

Mr. Rhodes frankly admits to the committee that he was not without knowledge of the Jameson

son agitation and the intended invasion of the Boer territory, but that he did not interfere simply because he had reason to believe that the Boer Government was attempting to introduce German influence into the Transvaal. The investigation is still in progress and will be watched with interest. We may have occasion to refer to it again.

The Situation in Crete.

The situation in Crete is a puzzle even to the best informed newspapers. During the first part of February information was received of another outbreak between the Turks and Christians, and on February 8th 5,000 refugees embarked from Canea, Crete, and 2,000 went on board the British warships. On February 9th it was reported that the Greek flag had been raised at Retimo, Crete, and on February 10th the Greek torpedo fleet, commanded by Prince George, sailed from Athens for Crete. Then on February 11th the Greek Government announced its intention to intervene forcibly in Crete, while Turkey appealed to the powers for aid. A joint blockade was proposed, and the Porte declared that Turkey would attack Greece in Thessaly unless the powers restrained hostile action by Greece in Crete. This was proposed by Germany to blockade the Piræus, the port of Athens, to put a check upon the warlike ardor of Greece, but this was vetoed by Great Britain. The latest information as we go to press is that the powers have notified Greece to withdraw her troops from Crete, and leave to them the settling of the troubles on the island. The indications are that Greece will refuse to do as the powers wish. In the meantime Greece and Turkey are preparing for the struggle.

QUESTIONS.

(ANSWERED IN NEXT ISSUE.)

1. Where and for what noted is Benin city? 2. What is meant by the Corliss Bill? 3. What is meant by the "franking privilege" in postal matters? 4. Mining capitalists ask for a "public assay office." What is this? What Canadian town will soon be incorporated as a city? 5. To what country do the islands of St. John, St. Thomas, and Santa Cruz belong, and what general interest attaches to these islands at present? 6. Is the arbitration treaty signed by Secretary Olney for the United States and by Sir Julian Pauncefote for England now in force? If not, why not? 7. How are the territories of Canada governed? (No reference to districts.) 8. What are the public debts of Canada and the United States? 9. What is the chief item of income for each of the provinces? 10. Where and for what noted is Neckar Island? 11. Name the great powers which have had fleets in the Mediterranean in connection with the Cretan trouble?

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Geography.

CANADIAN PACIFIC RAILWAY SYSTEM

GEORGE A. FRASER.
MAIN LINE.

Montreal, Lachute, Hull, Ottawa, Carleton Junction, Almonte, Arnprior, Renfrew, Pembroke, Mattawa, North Bay, Sudbury, Port Arthur, Fort William, Rat Portage, Winnipeg, Portage la Prairie, Brandon, Regina, Medicine Hat, Calgary, Banff, Kamloops, Lytton, Yale, Vancouver.

BRANCHES.

1. Montreal to Windsor.—Montreal, St. Polycarpe Junction, Kemptville, Smith's Falls, Perth, Sharbot Lake, Peterboro, Toronto, Streetsville, Milton, Guelph Junction, Galt, Woodstock, London, Chatham, Windsor.
2. Owen Sound to Toronto.—Owen Sound, Cardwell Junction, Orangeville, Toronto.
3. Orangeville to Teeswater. — Orangeville, Mount Forest, Harriston, Teeswater (with a short branch to Wingham).
4. Streetsville to Orangeville.— Streetsville, Brampton, Cataract, Cardwell Junction, Orangeville.
5. Cataract to Elora.—Cataract, Fergus, Elora.
6. Guelph Junction to Guelph.
7. Woodstock to St. Thomas.— Woodstock, Ingersoll, St. Thomas.
8. Carleton Junction to Brockville.—Carleton Junction, Smith's Falls, Brockville.
9. Ottawa to Prescott.—Ottawa, Kemptville Prescott.
10. Sudbury to Sault Ste. Marie.
11. Montreal to Quebec.— Montreal, Three Rivers, Quebec.
12. Montreal to St. John, N.B.— Montreal, Lachine, Sherbrooke, St. John. (The C.P.R. has merely running powers for a short part of this distance over the Maine Central Railway.)

INDEPENDENT LINES.

- Michigan Central Railway.—Buffalo to Detroit
Buffalo, Welland, Cayuga, Tilsonburg, St. Thomas, Ridgetown, Essex, Windsor, Detroit.
2. Essex to Amherstburg.
 3. St. Thomas to Courtright.
- Erie and Huron Railway.—Rondeau, Chatham, Dresden, Courtright, Sarnia.
- Lake Erie and Detroit River Railway.—Ridgetown, Blenheim, Leamington, Kingsville, Windsor, Toronto, Hamilton and Buffalo Railway.—Brantford, Hamilton, Welland, Buffalo.
- Kingston and Pembroke Railway.—Kingston, Sharbot Lake, Renfrew.
- Central Ontario Railway.—Pictou, Trenton, Marmora, Elorado, Coe Hill.

Canada Atlantic Railway.—1. Ottawa, Alexandria, St. Polycarpe Junction, Coteau, Valleyfield, St. Alban's (Ver.).

2. Ottawa, Arnprior, Renfrew, Parry Sound.

Intercolonial Railway.—1. Levis, Bathurst, New-castle, Moncton, Dorchester, Amherst, Truro, Halifax.

2. Moncton to St. John.

(This railway belongs to the Dominion Government.)

Drawing.

BY A. C. CASSELMAN (NORMAL SCHOOL, TORONTO).

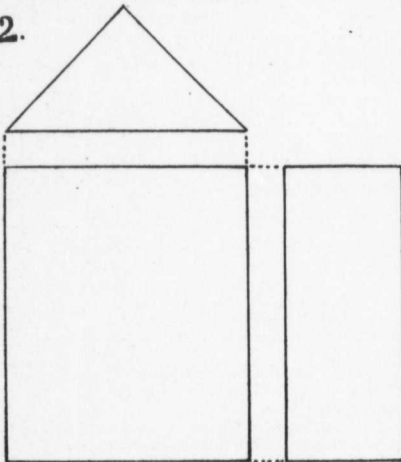
ANSWERS TO QUESTIONS IN LAST ISSUE.

1. (a) Constructive drawing is the science and art of making diagrams or working drawings, which give the facts of objects, and from which objects may be constructed.

(b) Representative drawing is the science and art of delineating or representing objects as they appear to the eye.

(c) Decorative drawing is the science and art of producing beauty in ornament.

2.



3.



4. The cube is the basis of all forms that have plane faces and straight edges.

QUESTIONS.

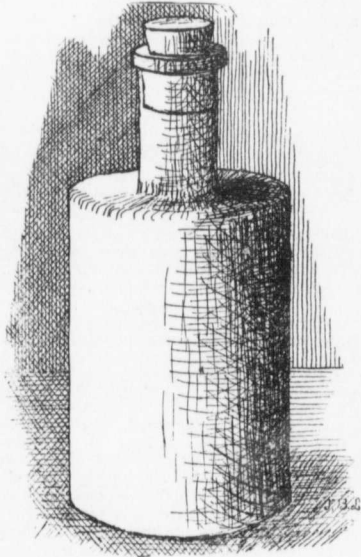
(Answers in next issue.)

1. Draw an open book as it appears on an inclined plane in front of you.

2. Draw a pitcher and tumbler on a tray.
3. Draw a flower-pot and saucer with plant.
4. Name the type solids or parts of them that the objects mentioned in questions 1, 2, and 3 are based upon.

The above questions are selected from the paper on blackboard and memory drawing of the Art School examinations, 1890.

If you have any difficulties in drawing make them known to us, and we will try to help you in this column.



The drawing of the bottle is by J. B. Lambe, of the junior fourth class, Boys' Model School, Toronto. It was handed in as a regular class exercise on the vertical cylinder.

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Geo. Stewart, principal of the Springfield Public School, says: "Am well pleased with your 'Canadian History Notes' and your 'British History Notes.' Send me forty copies of the former and fifteen of the latter."

P. S. Leaving Literature.

THE LORD OF BURLEIGH.

ANSWERS TO QUESTIONS IN OUR LAST ISSUE.

I. The subject of the poem is :

The marriage of a village maiden to the Lord of Burleigh, and her sad death, overcome by the duties and responsibilities for which she was not fitted.

II. The qualities of style exemplified are :

1. *Simplicity.* This is secured by (1) a simple vocabulary. Notice how few long or learned words there are in the poem. (2) By a simple structure. Notice there are no long or involved sentences.
2. *Clearness.* We have no difficulty in seeing at once what the author means. This is secured by (1) precision in the use of his words ; each word is used in its exact sense. (2) By careful attention to the structure of his sentences.
3. *Force.*—This is secured by (1) brevity. Notice the abruptness with which the story opens, the rapidity with which the scenes follow each other, and the conciseness of the conversational parts. (2) By climax. Notice how all leads up to and centres in the death of the Lady Burleigh.
4. *Pathos.*—What could be more touching than this story. We hardly know whether to sympathize most with the wife, whose dream of humble love is dispelled and who dies of a broken heart ; or with the husband who, thinking to overwhelm his wife by a delightful surprise, finds he has only placed her in a position which causes her death. This rises to a climax when, after her death, the husband commands she be clothed in her wedding gown,

"Bring the dress and put it on her,
That she wore when she was wed."

5. *Elegance.*—Notice the extreme gracefulness of the poem.

"He was but a landscape painter,
And a village maiden she."

Read this,

"He was but a young pork-butcher,
And a village maiden she."

What a different effect ; notice how no words are used which can in any way offend the most refined taste.

III. The poem is an imitation of an old English ballad.

- (a) It tells a story, one mark of the ancient ballad.
- (b) It is an outline sketch brought out rapidly and often with abruptness.
- (c) The metre is simple, uncomplicated, and adapted to music.
- (d) The use of archaic collocations, and provincialisms, as, "Made a murmur *in the land*," also

"And he came to look upon her,
And he looked at her and said."

The introduction of such phrases which add little or nothing to the meaning, and the repetition of expressions, was a mark of the old ballads.

IV. The purpose of the author in writing the poem was,

- (a) To give us pleasure from awakening our deeper and more tender feelings by this pathetic story.
- (b) To make us aware of the beauty of the ballad form of story-telling, which places before us the desired effect by a few strong, accurate, and skilful strokes.

V. The introduction of conversation into the poem gives it a dramatic element ; makes the action of the poem move more rapidly ; and enables the author to become more lively, vivacious, and interesting.

THE HANGING OF THE CRANE.

This poem was first published in 1874 ; it was received cordially, as the author's reputation had already been securely established.

The style is characteristic of Longfellow, in that it is eminently picturesque, and marked by elaborate and scholarly finish. Notice especially the rhythmical harmony and melody of the versification. The manner of dealing with the story or plot is also characteristic of Longfellow. You will notice how closely he associates the seen with the unseen, the real with the imaginary. The *preludes* to each stanza are intended to depict to us real scenes, while the *corollaries* which follow are pure creations of the poet's imagination.

QUESTIONS TO BE ANSWERED IN OUR NEXT ISSUE.

1. Write the story in your own words, reproducing as far as possible the spirit of the original.
2. In a single phrase or short sentence express the main idea contained in the poem.
3. "The Hanging of the Crane" is composed of a series of seven pictures ; supply a suitable title for each.
4. State fully the circumstances of time, place, and mood under which this poem has professedly been written.
5. What characteristics of the author's style are exemplified in the poem ? Give examples.
6. Show, introducing quotations when necessary, how the author gives force and beauty to his language.

EXPLANATORY NOTES.

STANZA I.

"Thronging came." How vividly this brings before the reader the great number of guests ! They came in "throng." "Thronging" is used as an adverbial predicate adjective. See H. S. Grammar, c. xiii., s. 28.

"Jests." Not jokes, but the older meaning, "merry tales."

"The hanging of the crane." It was a custom, in Longfellow's New England home, when a newly-married couple were about to commence

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housekeeping, for the relatives and friends to accompany them, and fix or "hang" in the old-fashioned open fireplace the upright iron bar or "crane," from the horizontal arm of which hung over the blazing logs, the pots and kettles used in cooking. This was the New England equivalent to our "house-warming."

"Into the night are gone." "Are gone" is a present perfect verb phrase. See H.S. Grammar, c. viii., s. 131.

Note the strong contrasts in this *prelude*. The former mirth and jollity, the present quiet and silence; the former "throngs" of guests, the present lonely watcher; the light and warmth and glow inside, the dark and cold and chill outside; all doubly intensified when seen by the fitful light of the glowing embers. In this the "strength" of the lines consists.

"When a new household"—"realms of space." Here you will notice the poet declares the "new household" to be like the "new star." This "bringing together of widely different conceptions because of a *perceived similarity* between them is called *simile*. In order that a simile may please it is necessary that the things compared should be as widely different as possible, and at the same time have the greatest number of points of resemblance. Similes often illustrate the *spirit* of a passage. There are elevating similes, degrading similes, humorous similes. This is an elevating simile, and the poet by comparing the "new household" to a "new star" at once indicates the feeling with which he regards the "new household." This puts the reader *en rapport* with the author at once. Longfellow, not being of a philosophical turn of mind, does not here refer to any "nebular theory," but simply found a suitable image for the enforcement of his thought in the "new star."

"Myriad." Just a great number.

"Harmonious way." This is characteristic of Longfellow. Kind, cheery, hopeful as he was, he is ever listening to the music, not to the discords, of nature. Thus he thinks of the order, regularity, and symmetry of the path of the star, and transfers this to the "new household" as love, kindness, and sympathy. There may be also a reference to the "music of the spheres." This doctrine was first taught by Pythagoras, and consisted in the statement that the worlds, as they passed on in their orbits, made "music" which was heard only by the angels, being too grand for mortal ears. See H.S. Reader, page 71, stanza 13; also "Merchant of Venice," Act V., Scene I.

"Chimney, burning bright." This is a "transferred epithet"; the "burning brightly," referring to the logs of wood in the fireplace, is transferred directly to the chimney itself.

STANZA II.

Notice, in the *prelude*, how gracefully the poet's uncertainty of the scenes in this vision of the future is expressed. "Floating vapors," "shapes indeterminate," "shadows passing into deeper shade."

"For two alone." "Alone" means "by oneself," and should be used with reference to a single object only.

"More divine." "More divine" is a predicate adjective completing the verb "shines" and modifying the subject "light." H.S.G., chapter xiii., section 26.

Notice here that marked characteristic of Longfellow's poetry, the commingling of the actual with the metaphorical. How deftly the poet introduces the "divine light of love" by reference to the actual light of the "evening lamps"!

"Mine and thine—thine and mine." The unselfishness and kindness of this wedded pair is beautifully expressed in these lines—the unselfishness that puts not itself first, "not mine and thine," but, in a spirit of self-sacrifice, is willing to put itself in the second place, "thine and mine."

"Like a screen." This is a very weak figure. It adds nothing to the clearness, force, or beauty of the passage. The idea is that the presence of guests would check the natural impulse of the wedded pair to cast tender glances at each other, and it surely adds nothing to the passage to say that a "screen" would act in a similar way.

"Tell them tales." They are so happy in each other's society that they do not wish to be worried with news from the "dull prosy world beyond their paradise of peace." This heightens the effect by contrast. See notes on the first *prelude*.

"Needs must be." "Needs," of necessity, an adverb.

STANZA III.

Notice here, again, the means employed by the poet to show the indistinctness of the prophetic vision. "Picture fades," "dissolving into air," "transfigured on the screen."

"Showman's views." The dissolving views of a magic lantern, stereopticon.

"Transfigured." With the views changed.

"So in my fancy this." So in my fancy this picture, which faded from view, again appears, with the views changed, "transfigured."

"Selfsame scene." The author seems to have been drawn, by a desire for alliterative effect, to use this phrase. Selfsame means "identically the same," and could not be applied to a scene "in part transfigured."

"A little angel unaware." Longfellow has been called "the children's poet." Note the minute fidelity of the whole picture. No man ever loved children more than did Longfellow.

"Drums on the table," "grasps at things unseen before." Note the simplicity and truthfulness of this description.

"Celestial." Heavenly.

"Consider well the guest." Think who it is that acts thus.

"Right divine of helplessness." All regard his rights because he is helpless; this regard for helplessness is divinely implanted in the human breast.

"In purple chambers of the morn." Purple is a royal color. And since this is a "monarch absolute," and despotic sovereigns are found in the East where the morn appears, the poet uses "chambers of the morn."

"Conversation in his eyes." The eyes of children express their thoughts.

"The golden silence"—would not speak." Notice here the half-sportive, half-sad tenderness.

with which the poet pictures the grave and wise demeanor of the child, who appeared as if "he could, but would not speak."

"Resistless, fathomless, and slow—like the sea." This is a very disappointing figure. When we institute a comparison between the nurse and the sea, what does fathomless mean in the case of the nurse? Possibly her movements were a *fathomless* mystery to the child, but this is very "far-fetched." Then, again, does the sea "rustle"?

"King Canute." The comparison of the child to King Canute, the story of whom everyone knows, is prettily conceived, yet we cannot help thinking there was somewhat of a struggle to get a word to rhyme with "absolute."

Grammar.

ANSWERS TO QUESTIONS IN OUR LAST ISSUE.

While men pay reverence to mighty things,
They must revere thee, thou blue-cinctured *isle*
Of England—not to-day, but this long while
In the front of nations, Mother of great kings,
Soldiers and poets. Round thee the sea flings
His steel bright arm, and shields thee from the
gule
And hurt of France. Secure with august smile
Thou sittest, and the East its tribute brings.
Some say thy old-time power is on the wane,
Thy moon of grandeur *filled*, contracts at length ;
They see it *darkening* down from less to less.
Let but a hostile hand make threat again,
And they *shall see* thee in thy ancient strength,
Each iron sinew quivering, *lioness*.

I. ANALYSIS.

1. Clause—While men pay reverence to mighty things.
Kind and connection—Subordinate adverbial of time, modifying the verb "must revere."
2. Clause—Thy old-time power is on the wane.
Kind and connection—Subordinate substantive, object of the verb "say."
3. Thy moon of grandeur filled, contracts at length.
Kind and connection—Subordinate substantive, object of the verb "say."

II. PARSING.

1. *While*—A subordinate adverbial conjunction of time, joining two clauses of which the verbs are "pay" and "must revere."
2. *Isle*—A noun, common, concrete, simple, singular number, objective case used appositively in apposition with "thee."
3. *Filled*—A perfect participle, appositive, used appositively, modifying "moon."
4. *Darkening*—An imperfect participle, appositive, used appositively, modifying "it."
5. *Shall*—A verb, active, finite, intransitive, used transitively, new (defective) simple, third

person, plural number, future tense indicative mood, used to make an assertion.

6. *See*—A gerundial infinitive, used as the objective complement of "shall."
Some would prefer to show the parsing in the four parts as shown below ; it aids the pupil in clearness of thought.
7. *Lioness*—Relation, none.
Classification—Noun, common, concrete, simple, gender (lion, lioness).
Inflection—Singular number, nominative case.
Function—Used as the nominative of address.

III. ADJECTIVES.

Adjectives are used to express three relations, namely :

The *attributive*, *appositive*, and *predicative* relations.

Examples of attributive adjectives : "*Mighty things*," "*great kings*," "*august smile*."

An example of an appositive adjective: All history, *ancient* and *modern*, should be read.

An example of a predicative adjective : This man is *old*.

IV. PHRASES.

1. Phrase—Of England.
Kind and relation — Adjective, restrictive, modifying "isle."
2. Phrase—In the front of nations.
Kind and relation—Adjective, descriptive, describing "isle."
3. Phrase—With august smile.
Kind and relation—Adjective, descriptive, describing "thou."
4. Phrase—On the wane.
Kind and relation—Adjective, used predicatively, modifying "power."
5. Phrase—From less to less.
Kind and relation—Adverb of manner, modifying "darkening."
6. Phrase—Each iron sinew, quivering.
Kind and relation—Adjective, descriptive, describing "thee."

CLAUSES INTRODUCED BY THAT.

All teachers have experienced more or less difficulty in dealing with clauses beginning with *that*. Below we shall try to make the function of such clauses plain.

- That may be used to introduce (1) a noun clause, (2) an adjective clause, (3) an adverbial clause.

NOUN CLAUSES.

1. *That he will come* is certain.
Used as the subject of *is certain*.
2. I know *that he will come*.
Used as the direct object of *know*.
3. I am convinced *that he will come*.
Used as the retained object of the passive verb *am convinced*.

- The fact is *that he will come*.
Used as a predicate noun after *is*.
- The fact *that he will come* is apparent.
Used as noun in apposition with *fact*.
- He says nothing but *that he will come*.
Used as a noun object of the preposition

but.

- I feel certain *that he will come*.
Used as the adverbial object after *feel certain*.

ADJECTIVE CLAUSES.

- This is something *that all should know*.
Used as an adjective modifying *something*.

ADVERBIAL CLAUSES.

- Let us go early *that we may get seats*.
Used as an adverb modifying *go early*.
- He was so weak *that he fell*.
Used as an adverb modifying *so weak*.

Algebra.

EXERCISE I.

Below we give a number of examples in factoring the difference of two squares. We advise that they be done orally. For instance, to factor $(a+b)^2 - (c-d)^2$, ask the class, "What is the first quantity squared?" Answer: $a+b$. "What is the second quantity squared?" Answer: $c-d$. "What is their sum?" $a+b+c-d$. "What is their difference?" $a+b-c+d$. "What are the factors?" $(a+b+c-d)(a+b-c+d)$. Do not be satisfied until you can easily read the answers of these examples at sight.

- $a^2 - b^2$.
- $a^2b^4 - c^2d^2$.
- $(a+b)^2 - c^2$.
- $(a-b)^2 - c^2$. 15.
- $(x+y)^2 - 4z^2$.
- $(x+2y)^2 - a^2$.
- $(x-5c)^2 - 1$.
- $(2x-3a)^2 - 9c^2$.
- $a^2 - (b-c)^2$.
- $x^2 - (y+z)^2$.
- $4a^2 - (y-z)^2$.
- $1 - (a-b)^2$.
- $c^2 - (5a-3b)^2$.
- $(a+b)^2 - (c+d)^2$.
- $(a-b)^2 - (x+y)^2$.
- $(a+b)^2 - (m-n)^2$.
- $(a-n)^2 - (b+m)^2$.
- $(a-b)^2 - (x-y)^2$.
- $(x+y)^2 - z^2$.
- $20(a+b-c)^2 - (a-b+c)^2$.

EXERCISE II.

Arrange the following as the difference of two squares, and then factor. These are more difficult. Solve them on paper or slates.

- $x^2 - a^2 - 2ab - b^2$.
- $1 - x^2 - 2xy - y^2$.
- $x^2 + 2xy + y^2 - a^2 - 2ab - b^2$.
- $2ay + a^2 + y^2 - x^2$.
- $a^2 - 2ab + b^2 - c^2 - 2cd - d^2$.
- $x^2 - 4ax + 4a^2 - b^2 + 2by - y^2$.
- $y^2 + 2by + b^2 - a^2 - 6ax - 9x^2$.
- $x^2 - 2x + 1 - a^2 - 4ab - 4b^2$.
- $9a^2 - 6a + 1 - x^2 - 8dx - 16d^2$.
- $x^2 - a^2 + y^2 - b^2 - 2xy + 2ab$.
- $a^2 + b^2 - 2ab - c^2 - d^2 - 2cd$.
- $4x^2 - 12ax - c^2 - k^2 - 2ck + 9a^2$.

Arithmetic.

Below we give a series of questions on boxes, closed and open. Never try to solve such a question by taking the box apart and finding the contents of each board separately.

- What will it cost to make a box 8 feet long, 6 feet wide, and 4 feet deep, with lumber one inch thick, costing \$20 per M.?

- With a lid.
- Without a lid.

- External dimensions are 96 inches, 72 inches and 48 inches.

- Internal dimensions are 94 inches, 70 inches and 46 inches, taking off two inches for thickness of lumber at each end.

Then cubical contents of whole box is $96 \times 72 \times 48 = 331,776$ cubic inches, and cubical contents of interior is $94 \times 70 \times 46 = 302,680$ cubic inches; therefore the cubical contents of the lumber is $331,776 - 302,680 = 29,096$ cubic inches.

$$\begin{aligned} \text{But } 144 \text{ cubic inches of lumber cost } 2 \text{ cents,} \\ \therefore 29,096 \text{ " " " " " } \frac{29096 \times 2}{144} \\ = \$4.04\frac{1}{2}. \end{aligned}$$

- Without a lid the solution will be the same, only the internal dimensions would be $94 \times 70 \times 47$, because only one inch would be taken off the depth, there being no lid. Answer $\$3.12\frac{3}{4}$.

EXERCISE I.

- The external dimensions of a box without a lid are: length, 4 feet; breadth, 3 feet; depth, 2 feet; and the thickness of the sides and bottom is the same, namely, 1 inch; if the cost of a cubic yard of the material is 9 shillings, and the cost of making the box equals $\frac{1}{11}$ of the cost of the material, what will the box cost?

- Find the thickness of the sides of an iron box in the form of a hollow cube, which weighs 266 lbs. when empty and 566 lbs. when filled with water; the sides, bottom, and top being all of the same thickness, and the specific gravity of the iron 7.7.

- The sides, bottom, and lid of a quadrate box have a uniform thickness of $\frac{3}{8}$ inch. The outside measurements of the box are 8 in. by 12.5 in. by 16.25 in. How many cubes, each $\frac{3}{8}$ of an inch on the edge, will the box hold?

- A rectangular box made of boards 1 $\frac{1}{2}$ inches thick, measures on the outside 3' 7" by 2' 5" by 1' 10". Find its external contents, (a) the measurements, including the lid; (b) the measurements being of the box without the lid.

Bookkeeping.

Toronto, May 1st, 1895.

Rented a store from J. Shields at \$20 per month and began business, investing as follows :			
Stock, Cr.			
By Cash as per C.B.	250 00		
By Merchandise as per invoice	345 00		
By Bill Rec. favor of J. Bell	73 00		
By Tarbutt & Son, bal. on acct.	16 25	684 25	
Stock, Dr.			
To Turcotte & Co., bal. on acct.		21 00	
Tarbutt & Son, Dr.			
To stock, bal. on acct.		16 25	
Turcotte & Co., Cr.			
By stock, bal. on acct.		21 00	
J. Larneek, Dr.			
To 37 yds. velveteen at \$2.25	83 25	83 25	
Turcotte & Co., Dr.			
To cash on acct.		12 75	
Tarbutt & Son, Cr.			
By order on W. Williams		16 25	
W. Williams, Dr.			
To above order		16 25	
Stock, Dr.			
To cash, given away		5 00	
Turcotte & Co., Dr.			
To 100 bbls. apples at \$4	400 00		
By groceries	21 40	421 40	
W. Williams, Cr.			
By cash as per C.B. in full of acct.		16 25	

NOTE.—You will see that the \$5 given away is entered in the day book and carried to Stock account as a withdrawal, while the \$5 lost is entered only in the cash book as a loss.

CASH BOOK. Dr. Cr.

May 1	To Stock Investment	250	
" 3	By Turcotte & Co. on acct.		12 75
" 7	" Stock, gave away		5
" 7	" Loss and gain, lost		5
" 8	" Mdse, Bot of McDonald & Co.		100
" 8	" Expense, repairs		1 35
" 11	" Expense, shelves and postage		15 40
" 13	To W. Williams, cash for order	16 25	
	By balance		126 75
		266 25	266 25

LEDGER.

Dr.		Stock.		Cr.	
May 1	To Turcotte	21	May 1	By Sundries	684 25
" 7	To Cash	5			
" 13	" Loss	99 94			
" 15	" Net worth	558 31			
		684 25			684 25

Dr.		Turcotte & Co.		Cr.	
May 3	To Cash	12 75	May 1	By Balance	21
" 10	" Mdse	421 40	" 13		413 15
		434 15			434 15

Dr.		Tarbutt & Son.		Cr.	
May 1	To Stock	16 25	May 6	By Order	16 25
		16 25			16 25

Dr.		J. Larneek.		Cr.	
May 2	To Velveteen	83 25	May 13	By Balance	83 25
		83 25			83 25

Dr.		W. Williams.		Cr.	
May 6	To Order	16 25	May 13	By Cash	16 25
		16 25			16 25

STATEMENT OF RESOURCES AND LIABILITIES.

	Dr.	Cr.
Cash balance on hand		126 75
Bills receivable balance on hand		73
Turcotte & Co., balance due from them		413 15
J. Larneek, balance due from him		83 25
Bills payable balance outstanding		137 84
Net worth		558 31
	696 15	696 15

STATEMENT OF LOSS AND GAIN.

Net investment	\$658 25
Net worth	558 31
Net loss	99 94

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