

to ably perform the task of conducting a journal in the interest of immigration. The enterprise deserves every encouragement, but unless the Governments come to its assistance to make a circulation for the paper in Great Britain, we must confess that it will enjoy our wishes for, much more than our hopes of, its success. A special organ in Canada to instruct the inhabitants of Great Britain and Ireland has some geographical and other drawbacks very hard to overcome; but if Mr. Morris succeeds he will have done good service to the country.

LA NOUVELLE FRANCE: LE CANADA. Paris: Gustave Bossange, Agent D'Emigration pour Le Canada.

This little pamphlet contains much valuable information concerning the resources of Canada, shewing its advantages as a field for emigration to those of the French people who do not find themselves so comfortable as they desire. The result of the late census considerably damages the author's figures as to population, but otherwise the brochure will stand the test of criticism, and we trust will do much good in promoting immigration, especially to the Province of Quebec, wherein the *émigrés* will find a kindred people.

A PERILOUS SITUATION.

The Portland (Oregon) *Bulletin* gives the following account of one of the most thrilling incidents we have ever heard of, as occurring on the Oregon and California Railroad, between Portland and Salem:

"When the down train came near one of the stations on the road, it was running at full speed in order to make up time, as it was a few minutes behind. The road at this point runs through a cut something more than a mile in length, and in entering it the road makes a curve, so that the engineer cannot see through it. He had barely gotten into the cut before he saw a woman riding leisurely through it, using the centre of the track. She was not more than halfway through the cut, and barely a quarter of a mile ahead of him. He immediately whistled 'down brakes,' and then sounded the warning."

"The woman, hearing the peculiar death-whistle of the locomotive, looked over her shoulder and saw the train rushing at her. She did not shriek or faint, nor give up all hope, but, like a true Webfoot, her courage rose equal to the emergency, and without a moment's hesitation she commenced swinging her riding whip from one shoulder of her steed to the other, thereby urging him to exert his utmost speed."

"The shrieking of the locomotive caused the passengers to look out of the windows, and upon their discovering what was the matter the wildest excitement ensued. Several jumped forward and seized the bell rope and commenced pulling on it, as if they could stop the train by that means. The brakemen were exerting all their strength on the brakes, and the engineer had cut off the connection, and was doing all that he knew to stop the train, while the woman was doing her best to urge the horse to speed, but all in vain, the locomotive kept gaining on her, and there was scarcely a person on the train who did not expect that both the woman and horse would be killed. There were perhaps thirty feet intervening between the cow-catcher and the horse's heels, when, fortunately for the woman, she observed a place which was a little wider than usual, and with a steady rein she guided the fleeing horse from the track and endeavoured to press him against the wall of the cut, in order that the train might pass without injury."

"In doing this the woman was encouraged by Sam Winans, the conductor, who had run forward and got on the locomotive. A few seconds only passed by when the fiery monster poked his nose past the rump of the horse. At this moment Winans threw his whole force against the animal and held him until the train stopped, and then a rousing cheer of gratification and joy at the escape of the woman from a terrible death was given."

Abbe Collet, Vicar of Ploemel, has made excavations in several tumuli near his residence. He found charcoal, tiles, bricks, flint knives and arrows, fragments of glass, iron lance heads, bronze swords, rings of iron and bronze, so mingled together as to prove that the use of stone and bronze was continued until a late period of the iron age.

The Colonne Vendôme will shortly be restored to its former position. All the fragments of the column have been collected at the Dépôt of Crown Property in the Rue de l'Université. There are in all 272 pieces, only two of which will require re-casting—those which formed that portion immediately beneath the capital, representing in relief the soldiers who fought at Austerlitz.

It is reported from Riga, Russia, that Dr. Von Richard has employed chloral in the recent epidemic of cholera in that city—first, to calm the cramps at the outset; secondly, to lessen the precordial anguish in the last stage; thirdly, to arrest the vomiting; fourthly to induce sleep, for which patients have earnestly prayed. It has successfully fulfilled all these indications. In one case, in which the patient was in *extremis*, and had apparently not three hours to live, sixty grains of chloral gave calm sleep; the temperature rose; the pulse fell from 130 to 90, and regained a certain fulness; the *facies cholericæ* disappeared; and the patient was, as it were, snatched from the jaws of death.

Deep ploughing is essential for good beet-root as well as for other crops, and Mr. Thomson, of Edinburgh, whose turn-pike-road locomotive, with india-rubber tires, we noticed last year, has invented and constructed a machine, which will run up and down a field, draw a plow, and do many other kinds of farm-work. It has been fairly tried in heavy land, through which it drew merrily a plow that makes three furrows at once; and whatever be the work it is set to do, the cost is much less than when done with horse and cart. As to its capabilities, we are informed that this active agrarian locomotive will run home a crop from the field, fetch lime and manure, and deliver it on any part of the farm, drag out roots of trees, saw timber, and thresh grain.—*Chambers' Journal*.

SCIENTIFIC.

A NEW MINERAL.—Professor F. Sandberg announces a new mineral from Guadalcanal, Spain, which he names glaukopyrite, and which has the following centesimal composition: sulphur, 2.36; arsenic, 66.90; antimony, 3.59; iron, 21.38; cobalt, 4.67; copper, 1.14. It occurs, associated with carbonate of lime, tetrahedrite, and pyrrargyrite, in rounded aggregations, which, when magnified, are found to be composed of a series of thin layers. Its colour is a light lead-gray, approaching tin-white.

Alcohol, it is well known, can be distilled from anything that ferments, no matter whether the fermenting matter be a loaf of unbaked bread or a reeking garbage-vessel. Thus the garbage is gathered from the houses of citizens, dumped into water-tight vats, boiled for several hours, the grease is carefully skimmed off for soap-making purposes, and the pulpy mass fermented and distilled. The refuse goes to the corn-field, the peach-orchard, or the vine-yard. A barrel of garbage yields three pounds of soap grease and four gallons of proof spirits.

ENGRAVING ON GLASS.—Instead of using aqueous hydrofluoric acid for engraving on glass, M. Siegwart recommends a solution of eight parts of any alkaline fluoride dissolved in one hundred parts of water, mixing this solution just previous to use with one part of oil of vitriol. In order to remove every trace of organic matter, the glass before immersion in this bath should be thoroughly cleansed with a solution of bichromate of potassa, acidulated with oil of vitriol. A few hours' exposure is stated to be sufficient at ordinary temperatures to obtain a fine frosted surface.

A committee of the Boston Society of Natural History has for the past twelve years been investigating the subject of the "frozen well" at Brandon, Vt., and in their last report appear to have made but little progress from the starting-point—and that little is backward. The committee report that for twelve years the ice has remained in the Brandon well during the hot months of summer, notwithstanding openings were made in the soil, and a tunnel was run into the gravel bed to give more free access to the warm-surface water. Further on it is asserted that there is nothing in the composition of the water which will explain the freezing, and that no electric current passes through the well or surface soil. And so the committee come to the conclusion that: "The gravel bed, it is believed, was frozen by the cold of previous rigorous winters, and the wave of summer heat has not yet been able to overcome that cold."

Professor Cope has lately published in the *Indianapolis Journal* an account of a visit to the Wyandotte Cave, and of the animal life occurring within its limits. He reports this cave to be as well worthy the popular favour as the Mammoth Cave of Kentucky, since, although lacking the large bodies of water of the latter, it is fully equal and even superior to it in the number and beauty of its stalactites. The gypsum regions in the more remote parts of the cave are especially beautiful, this substance occurring in amorphous masses of great purity, or in the form of loose crystals resembling snow. Fourteen species of animals were found in this cave, consisting of a blind fish similar to, if not identical with, that of the Mammoth Cave, seven species of insects, two of spiders, one of centipedes, and three crustaceans. Several of these species, as might be imagined, are destitute of eyes, such organs being unnecessary to them in their subterranean abodes.

HEAT ON THE GROWTH OF PLANTS.—A paper has recently been published by Koppen, upon the relationship of conditions of heat to the phenomena of growth in plants; his first inquiry being limited to the question connected with the germination of the seed. The general conclusion arrived at was that varieties of temperature were in all cases prejudicial to the growth of the germ, even when amounting to but a few degrees, and these within limits favorable to energetic growth. That is to say, the germination process more rapidly at a low temperature of a uniform degree, than a higher, where subjected to more or less variation. From that we derive the inference that a nearly uniform spring temperature, with a clouded sky, is more favorable to rapid development of vegetation than the alternation of hot days and cool nights, it being of course understood that the mean temperature in each case is about the same.

EFFECT OF COLD ON GAS.—It may surprise some of our readers, who have given no attention to such subjects, to learn that the illuminating power of gas depends in a very marked ratio upon the temperature of the air in which it is burned. Thus, it has been found, taking the amount of light emitted at 65 degrees of Fahrenheit as a standard of 100 parts, that at 32 degrees, or the freezing point, the percentage of light is only .76; and that at 4 degrees above zero it is only .33, or about one third of what it is at 55 degrees. On the other hand, increased heat if not accompanied by a corresponding amount of light, since the temperature of boiling water causes an increase of only four per cent. over the standard; and that of 320 degrees, or boiling paraffine, only 18 per cent. The loss of illuminating power upon the application of cold is supposed to depend directly upon the condensation of the hydrocarbon vapours; since, at a temperature of 4 degrees a solid mass was found congealed upon the sides of the tube, containing, among other substances, benzole, ammonia and nitric acid.

CURIOSITIES OF CHEMICAL SCIENCE.—An atom of water sometimes makes a most extraordinary difference in the properties of bodies. Thus, to give some more familiar illustration, the addition of an atom of water to starch converts it into sugar; the subtraction of an atom of water from alcohol converts it into ether. But perhaps the most curious change produced by the removal of an atom of water from a body has been recently discovered by Dr. Matthiesen of London. Morphia, the well-known active principle of opium, is commonly used to allay vomiting, and very often performs the duty very effectually. But when morphia has been heated with hydrochloric acid, and an atom of water has been thereby removed, it is changed into the most active emetic known. It is not necessary to swallow it to produce the effect; a very small quantity introduced under the skin, or even, it seems, spilt upon the hand, is quite sufficient to produce vomiting, which, however, soon subsides, and leaves no nausea afterwards. The new body introduced into medicine has been named by its discoverer Ememorphia.

The favourable turn taken by the Prince of Wales on Tuesday was a source of special satisfaction to the street loungers, the boys, and so forth, chiefly because of the statement that the Prince had been drinking a glass of ale. "That's the stuff," said one of them; "a pot o' four-arf-and-arf 'ud fetch a man out of his grave!" The newspaper boys late at night tore down the ordinary poster outside of a London daily paper, and stuck up a written placard of their own with the words, "The Prince of Wales having Bitter Beer."

The following is an extract from a letter written by a lady residing in the neighbourhood of Dublin:—"The Prince of Wales's illness is the one topic here, and the sorrow felt by all classes has rather surprised us. A group of at least a dozen working men stopped me on Saturday morning, and, to use their own expression, 'made *bould* to ask me how the fine young gentleman was.' I told them the latest telegram. They lifted their hats with the reverence of Irishmen, and a very old man said, 'God look down on his poor mother and wife. God spare him!'"

CHESS.

Solutions to problems sent in by Correspondents will be duly acknowledged.

The Montreal Chess Club has received a communication from the Toronto Chess Club, proposing a match by telegraph.

As both cities possess first-class talent, and as there is no doubt of the invitation to a friendly contest being promptly accepted, we are in hopes of chronicling, in course of next month, some of the most interesting games ever recorded in the annals of Canadian chess.

We shall give further particulars as the correspondence progresses.

A lively skirmish played last season in the "ancient capital."

RUY LOPEZ ATTACK.

White.

1. P. to K. 4th
2. K. Kt. to B. 3rd
3. B. to Q. Kt. 5th
4. P. to Q. 4th
5. B. to R. 4th
6. B. to Kt. 3rd
7. Kt. takes P. (b)
8. Castles.
9. B. to Q. 6th
10. Kt. to Q. B. 6th (c)
11. B. takes Kt. ch.
12. B. to Q. 5th
13. Q. Kt. to B. 3rd
14. P. to K. R. 3rd
15. P. to K. B. 4th
16. P. to K. 5th (d)
17. Kt. takes Kt.
18. Q. to K. Kt. 4th
19. P. to K. B. 5th
20. B. to K. R. 6th
21. B. takes Kt. P.
22. Kt. takes B. ch. (f)
23. B. takes Q.
24. R. takes B.
25. R. to K. B. 3rd, wins.

Black.

1. P. to K. 4th
2. Kt. to B. 2nd
3. P. to Q. 3rd (a)
4. P. to Q. R. 3rd
5. P. to Q. Kt. 4th
6. P. takes P.
7. Kt. to K. 4th
8. Kt. to B. 4th
9. R. to R. 2nd
10. Kt. takes Kt.
11. B. to Q. 2nd
12. Kt. to B. 3rd
13. B. to K. 2nd
14. Castles.
15. P. to Q. Kt. 5th
16. Kt. takes B. (e)
17. B. to Q. Kt. 4th
18. B. takes R.
19. P. takes K. P.
20. B. to B. 3rd
21. P. to K. R. 4th
22. Q. takes Kt. (g)
23. P. takes Q.
24. K. takes P. (h)

(a) P. to Q. R. 3rd, followed by K. Kt. to B. 3rd, are the moves generally recommended by the authorities as best for the defence.

(b) B. to Q. 5th seems preferable.

(c) P. to K. B. 4th, apparently stronger, would have led to many complicated positions, resulting, probably, in about an even game.

(d) Premature.

(e) Black should have taken Kt. with P., remaining with a superior position.

(f) If the Queen retire, Black might have escaped thus:—

White.

22. Q. to Kt. 3rd
23. Q. to Kt. 4th
24. Q. takes B. (best.)

Black.

- P. to R. 5th
- B. to K. 7th
- B. takes B.

And the attack is exhausted.

(g) Evidently forced.

(h) This loses at once; if we mistake not, however, White has a winning position from this point even against the most careful defence. Let us suppose that, instead of this careful move, Black had played, as his best:—24. K. R. to Q. B. sq.—the following is a probable continuation:

White.

25. P. takes P.
26. P. to Kt. 5th
27. K. to B. 2nd
28. R. to K. R. sq
29. R. to R. 7th
30. P. to Kt. 6th, wins.

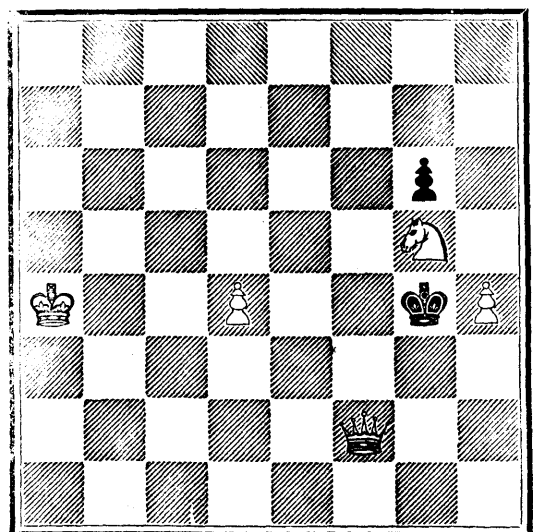
Black.

- K. R. to Q. B. 3rd
- K. to B. sq.
- K. to K. sq.
- K. to Q. 2nd
- K. to Q. 3rd

PROBLEM No. 38

By J. W.

BLACK.



White to play and mate in three moves.

SOLUTION OF ENIGMA No. 18.

White.

1. Q. to Q. B. 3rd
2. P. to K. B. 4th, ch.
3. Kt. to Q. B. 2nd, mate.

Black.

- B. takes Q.
- K. to Q. 5th

VARIATION.

1. Q. to Q. B. 3rd
2. Q. takes B. ch.
3. B. to B. 6th, mate.

- Kt. takes Kt.
- K. takes Q. (a)

(a) If—K. takes B.—Q. to K. B. 6th mates.