

SCRAPING COTTON.

Oh! de noon time, chillen, is creepin' dis way.
We'll soon hear de dinner horn blow.
Oh! t' he dem tie-vines--tackles 'em I say.
And pull for de cend ob de row.
Oh! time's a rollin' on!
Oh! time's a rollin' on!
Slay de crass cross-ways, clip de weeds clean.
Kase time's a rollin' on!

De clouds am a risin' 'way off in de sky,
I spec' it's gwine to rain pretty soon.
Hit's a mighty good sign when de fishhawk cry.
About dis quarter ob de moon.
Oh! time's a rollin' on!
Oh! time's a rollin' on!
Keep yo' hoes a dauntin', handle dem blades,
Kase time's a rollin' on!

Oh! bend to yo' task an' wrestle with de sun.
Don't you mind de sweat a droppin' down;
Des peartin' up quick, till de work's well done.
De eatin' time 'll soon be around!
Oh! time's a rollin' on!
Oh! time's a rollin' on!
Yonder comes de boss down de little turu row.
An' time's a rollin' on!

Oh! de lightning flash and de thunder speak low.
De black crow's a rollin' wid de win.
Dah ain't a single sign ob de crooked rainbow
At de place whar it ought to hab bin.
Oh! time's a rollin' on!
Oh! time's a rollin' on!
Let yo' muscles clip an' de coos increase fly,
Kase time's a rollin' on!

An' now we 'llustrate to de po' sinner man,
By singin' him dis little song.
To take mighty care dat he ain't behindhan!
When de los' thunder clap come along!
Oh! time's a rollin' on!
Oh! time's a rollin' on!
Klick de debbil endways, don't forget to pray,
White time's a rollin' on!

—W. H. M. in Vicksburg Herald.

NIAGARA FALLS.

THE ELECTRIC LIGHT.

In regard to having favors thrust upon her, the fair City of Hamilton, unfortunately, has not much to be grateful for. There is, however, one advantage enjoyed by her citizens—one that cannot easily be taken away from them—and it is that the city is only about one hour and a half distant from the Falls of Niagara. It is so close that the people can slip down to see the stupendous cataract with about as little inconvenience as Montrealeers experience when they want to cross the Victoria Bridge, and with infinitely less trouble than Torontonians meet with whenever they visit that paltry sand-bar, which they call their "Island." The facilities of the Great Western Railway are such as to enable Hamiltonians to visit the Falls as often as they please, at a trifling cost. Indeed, it seems highly probable that, in the near future, the great Niagara will be an actual suburb of the "Ambitious City." There are innumerable "excursions," "afternoon trips," etc., throughout all seasons of the year, for, like a fashionable belle, the mighty torrent adorns itself in summer in vast clouds of gauzy mist, and invariably has an entirely new outfit for icy winter.

The falls illuminated by electric light is a new feature, this summer, and the people are now indulging in the luxury of "evening trips" to witness the marvellous effect which that wonderful light has upon the waters of the greatest cataract on earth. Whew! Endowed with a fondness of natural phenomena, yours truly has made it a point to miss no opportunity to view Niagara under all—well, nearly all—circumstances. He has gazed upon it at sun-rise, at sunset, on a windy day, during a thunder-storm, by night, by moonlight, when somebody walked across on a rope, when nobody walked across, or anywhere or around, in silence, etc., etc., and, finally, he made one of a large party who recently went down to see the grand old waterfall lit up by the hand of man.

The electric lights are placed in what many of your readers will remember as "Prospect Park," on the American side, and are intended to cast a reflection on the American fall. They do so; or to speak more correctly, in my opinion, the fall rather throws a reflection on the light. Standing on the Canadian shore and looking over at the red and green and white streaks (interspersed with darkness) which ever and anon shot across the lesser fall—of which our cousins are so proud—I was lost in contemplation, and thought I was gazing upon a barber's pole, placed at the entrance to an immense shaving shop.

I had expected to find the whole immediate atmosphere brilliantly illuminated with a beautiful white light that would show the foaming torrent in exquisite light and shade; but, alas! my fancy always did lead me astray. Disappointed! No; one can never be disappointed at the Falls, but the illumination—well, fancy Central Park, at New York, lit up with a couple of Chinese lanterns, or St. Paul's illuminated by two or three wax candles. No, no; I was not disappointed, for the lights had a pretty effect, and reminded me of a child trying to tie up an elephant with a string of flowers. I have always been impressed with the vastness of the awfulness of Niagara, but I never realized the feeling so fully as when I saw the attempt to illuminate it with something which looked like the headlight of a locomotive. The great Horse-Shoe Fall was left unmolested. The pale moon herself made no effort to light up the dark water, but seemed satisfied to have her silvery light playing antics with the mist, as it floated in fantastic shapes up towards the sky.

The electric light will do the Falls no harm, but before it can do much good the apparatus will have to be built in proportion to the size of the mighty cataract; and, until that is done, people will have to be contented with the illuminating powers which "Old Sol" alone can supply.

Hamilton, Aug., 1879.

W. F. McMAHON.

ASTRONOMY.

There is scarcely a fact in the whole history of astronomy which furnishes the student of science with more food for reflection than the reason which induced Copernicus to deny that the earth was immovably fixed in the centre of the universe, and that the Moon, Mercury, Venus, the Sun, Mars, Jupiter and Saturn revolved around it as around a common centre. To believe such a theory it was necessary to suppose that the sun revolved round the earth at the inconceivable velocity of upwards of twenty-three millions of miles per hour. Higher up in the heavens, far beyond the planets, Ptolemy supposed was the firmament of the fixed stars, and higher still the *celum empyreum* or heaven of heavens the abode of the blest; all these bodies were supposed to move round the earth, which was motionless in the centre of the universe. Such a system was sufficient to bewilder the imagination. The Sun, according to this theory, would require to travel at the rate of upwards of twenty-three millions of miles per hour, but even this rate of speed would be nothing in comparison to what the fixed stars would have to perform. It is supposed that the nearest fixed star, a Centauri, is about 17,500,000,000 miles distant from the earth, or in other words, a train travelling at the rate of fifty miles per hour would take forty millions of years to reach it, so that to make one revolution round the earth in twenty-four hours, it would require to travel at the enormous velocity of upwards of 2,200,000,000,000 per hour. This system was espoused and defended for upwards of fourteen hundred years, until the bold genius of Copernicus, the son of a Polish baker, flung the Earth from the central position which Ptolemy had assigned to it in the universe, and placed the Sun in the centre of our system, next to it, Mercury, then Venus, the Earth, Mars, Jupiter and Saturn, and these planets, at various rates of speed, travel in orbits, nearly circular, round the Sun. Then on the supposition that the Earth performed one revolution on its axis in twenty-four hours, the transparent spheres, chrysalis, eccentrics and epicycles of Ptolemy were dashed to the ground, and order and regularity became apparent in the universe. The scientists of the day demanded proof of the diurnal revolution of the Earth. They had lived on the globe, but they never felt the least motion of it whatever. What proof could Copernicus give? What proof could he give? None whatever, except that his system "rested," says Dugald Stewart, "on its conformity in point of simplicity to the general economy of the universe."

A savage who sees a clock for the first time, does not detect at the first glance that the hands are in motion; it may take a minute of time to detect the direction of motion of the minute hand, and a much longer period would be necessary to be aware of the fact that the hour hand is in motion also. When once the savage becomes convinced of the real motions of the hands, it might require a lengthy period of observation on his part to become aware of the fact that the minute hand performs one revolution while the hour hand performs but one-twelfth. Now the bodies of our solar system may with justice be regarded as so many hands to a clock. 1st.—The observations necessary to determine the direction of motion, which may be called the epoch of Pythagoras or of Copernicus. 2nd.—To ascertain the law of motion corresponding to the minute and hour hands of the clock, namely, that the period of motion of the minute hand as compared with the hour hand is as one is to one-twelfth. Or with respect to the planets, that the squares of their periodic times are proportional to the cubes of their distances from the sun. The discovery of this great law did not take place until the year 1609, or about two hundred and seventy years ago. This we may call the epoch of Kepler, the greatest genius of modern times. These, and these only, are the two grand strides which have been made in the science of astronomy. In order that the clock should be of any service whatever to the savage, it is necessary that he should be acquainted with the force which causes its motion. In like manner should we be acquainted with the cause of motion of the heavenly bodies; without that knowledge, we are only scoundrels groping our way in the fields of science, without making any satisfactory advancement whatever.

The theory of Sir Isaac Newton assumes two moving powers given to the planets by the Creator at the beginning of the world, the one a centripetal force impelling the planets towards the Sun, the other a centrifugal force which hurries them away from it; the one counterbalancing the other. It will be observed that Newton makes no attempt whatever to account for the real cause of the motion, but leaves us as much in the dark as ever. I have no doubt whatever but that the Omnipotent Creator is the ultimate cause of all motion. We are told that when the followers of Ptolemy discovered any new motion, a new heaven of crystal was formed to account for it, and that these were multiplied without end to answer every purpose. So it appears with the Newtonian theory. One force is necessary to pull a comet towards the Sun, another to push it away. One force impelling the planets towards the Sun, while another hurries them away from that luminary. As Ptolemy multiplied his heavens of crystal to answer every purpose, so does Newton multiply his moving powers to account for every motion. It had been humorously remarked that Ptolemy's heavens of crys-

tal cost him nothing; the same remark will apply with equal justice to the moving powers of Sir Isaac Newton.

If the proof of the Copernican theory rested on its conformity in point of simplicity to the general economy of the universe, it would seem to me that the theory of Newton was grounded and approved on opposite principles. Instead of multiplying forces to account for everything, let us consider the source from which flows all our mechanical power, and we cannot fail to regard the heat of the Sun as the fountain of all our potential energy and the source of life. The same power which causes the motion of a cloud to the west drives another to the east. "Every fire that burns," says Tyndall, "and every flame that glows dispenses light and heat which originally belonged to the Sun. In these days, unhappily, the news of battle is familiar to us; but every shock and every charge is an application or misapplication of the mechanical power of the Sun. He blows the trumpet, he urges the projectile, he bursts the bomb. And remember," he continues, "this is not poetry, but rigid mechanical truth. He rears the whole vegetable world, and through it the animal; the lilies of the field are his workmanship, the verdure of the meadows, and the cattle upon a thousand hills. He forms the muscle, he urges the blood, he builds the brain. His fleetness is in the lion's foot; he springs in the panther, he soars in the eagle, he slides in the snake. He builds the forest and hews it down, the power which raised the tree and which yields the axe being one and the same. The clover sprouts and blossoms and the scythe of the mower swings by the operation of the same force. The Sun digs the ore from our mines, he rolls the iron, he rivets the plates, he boils the water, he draws the train. He not only grows the cotton, but he spins the fibre and weaves the web. There is not a hammer raised, a wheel turned, or a shuttle thrown, that is not raised and turned and thrown by the Sun. Look at the integrated energies of our world! the stored power of our coal fields; our winds and rivers; our fleets, armies, and guns. What are they? They are all generated by a portion of the Sun's energy which does not amount to $\frac{1}{250,000,000}$ of the whole." The heat of the Sun is the cause of all the motions of the members of our system. There are not two forces, as Newton affirms, but one; and, if we assume that heat is the cause of all celestial motion, such an assumption would be in strict conformity in point of simplicity to the general economy of the universe, and would harmonize with the opinion of the immortal Kepler, who supposed that whatever force moved the planets resided in and emanated from the Sun.

August 25th, 1879.

DUGALD MACDONALD.

OUR CHESS COLUMN.

TO CORRESPONDENTS.

J. W. S., Montreal.—Letters and papers to hand. Many thanks. Also, correct solution of Problem No. 232 received.
Student, Montreal.—Correct solution received of Problem No. 232.
R. F. M., Sherbrooke, P.Q.—Correct solution received of Problem No. 237.
J. B., Montreal.—Letter received. Many thanks.

The gap in Chess periodicals caused by the discontinuance of the *Westminster Papers* is about to be filled by a serial to be called the *Chess Monthly*, to be published in London, Eng. It is to be under the management of Messrs. Zukertort and Hoffer, and the standing of these gentlemen in the Chess world will, no doubt, lead to their receiving the best of aid from the public in their new undertaking.

A carefully annotated selection of games from the present and the past, is to be one feature of the work, and a more profitable one to amateurs could hardly be found connected with a Chess magazine. Chess news of the month, end-games not hitherto published, by B. Horwitz, problems and solutions, reviews and essays on novelties in the openings, are among the good things which will be found in this forthcoming candidate for the favour of the Chess fraternity, and we trust that it will not be disappointed.

Two clubs engage in a Chess contest by telegraph.

The game arrives at such a stage that, say, White has the Queen's Pawn on the Queen's seventh square. At this point, it is White's turn to move, and he sends the following message:—"K. R. to Q. 7." Black demands a penalty. Is he justified in so doing, and why?

This is the question which is at present engaging the attention of many Chess-players in the Province of Ontario, and elsewhere. It is to be brought before the approaching meeting of the Dominion Chess Association for decision. Should it fail to receive a solution there, it may, peradventure, like other important difficulties, be sent to the Mother Country for settlement.

We insert in our Column this week the thirteenth game in the match between Mason and Potter.

As a specimen of careful play between two remarkably equal antagonists it is well deserving the attention of the Chess student.

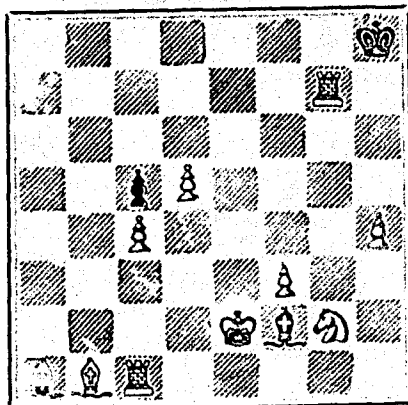
Almost every move seems to have been properly weighed on both sides, and when for a moment, Mr. Potter's good genius left him his defence immediately gave way, and he speedily lost the game. It will be observed that these two players, Messrs. Mason and Potter, have not failed in this match to have recourse to the French game. It was customary, some time ago, to belittle this mode of defence, but lately it has been adopted by some of our best players, especially in important encounters.

We are informed that the contest which has been going on between Messrs. Blackburne and Bird at the Divan is not to be looked upon as a match, but as "a small private affair." This seems a roundabout way of describing a trial of strength, but we have no objection. It is true that we have a penchant for calling spades, cats, and roses by their familiar names, not being able to rid ourselves of the impression that, however designated, the implement, animal, and flower in question will be neither better nor worse adapted respectively for the purposes to which they are usually applied. However, we are far from unteachable, and using the expression suggested to us by the euphuists of the Divan, we proceed to state that the "small private affair" terminated on Tuesday last, in favour of Mr. Blackburne, with a score of 5 to 2, and 1 draw.—*Land and Water.*

PROBLEM No. 240.

By Rev. A. CYRIL PEARSON.

BLACK.



WHITE

White to play and mate in three moves.

GAME 385TH.

(From Land and Water.)

CHESS IN LONDON.

Thirteenth game in the Mason and Potter match.

(French Defence.)

WHITE.—(Mr. Mason.)

BLACK.—(Mr. Potter.)

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|----------------------------|---------------------|
| 1. P to K 4 | 1. P to K 3 |
| 2. P to Q 4 | 2. P to Q 4 |
| 3. Kt to Q B 3 | 3. Kt to K B 3 |
| 4. P takes P | 1. P takes P |
| 5. B to Q 3 | 5. B to Q 3 |
| 6. Kt to B 3 | 6. Castles |
| 7. Castles | 7. P to B 3 |
| 8. Kt to K 2 | 8. Q to B 2 |
| 9. Kt to Kt 3 | 9. P to K Kt 3 |
| 10. B to K R 6 (a) | 10. R to K sq |
| 11. R to K sq | 11. R to K 3 |
| 12. P to B 3 | 12. Q Kt to Q 2 |
| 13. Q to B 2 | 13. Kt to Kt 5 |
| 14. B to K Kt 5 | 14. B to B 5 |
| 15. R to R 4 | 15. K to Kt 2 |
| 16. P to K R 3 | 16. K Kt to B 3 |
| 17. R to K 2 | 17. Kt to Kt sq |
| 18. Q R to K sq | 18. Kt to B 3 |
| 19. Kt to B sq | 19. P to B 3 |
| 20. B to Kt 3 | 20. P takes B |
| 21. P takes B | 21. B to B 2 |
| 22. Kt to R 4 | 22. P to Q R 3 (b) |
| 23. Kt to K 3 | 23. Kt to R 3 (c) |
| 24. K to R 2 | 24. Kt to K 3 |
| 25. Q to Q 2 | 25. Kt to Kt 4 |
| 26. R to K B sq | 26. Kt to K 5 |
| 27. Q to K sq | 27. R to K 2 |
| 28. B takes Kt | 28. R takes B (d) |
| 29. Q to B 2 | 29. Q to K 2 |
| 30. R from B sq to K sq | 30. Q R to K sq |
| 31. Kt to B 3 | 31. Kt to B 4 |
| 32. Kt takes Kt (ch) | 32. P takes Kt |
| 33. R takes R (e) | 33. B takes R |
| 34. Kt to R 4 | 34. B to Kt 3 |
| 35. P to K Kt 4 | 35. Q to Q 3 (ch) |
| 36. P to Kt 3 | 36. Q to K 3 |
| 37. Kt to Kt 2 | 37. P to Kt 4 |
| 38. Kt to B 4 | 38. Q to B 2 |
| 39. P to Kt 5 | 39. Q to K 2 |
| 40. Q to K 3 | 40. K to Kt sq (f) |
| 41. P to K R 4 | 41. Q to Kt 2 |
| 42. Q to K 2 | 42. Q to Kt 2 |
| 43. K to Kt 2 | 43. R to B 2 |
| 44. R to K B sq | 44. K to R sq |
| 45. Q to K 3 | 45. P to Kt 4 (g) |
| 46. P takes P (en passant) | 46. Q takes B (h) |
| 47. Kt takes P | 47. Q takes Q |
| 48. Kt takes Q | 48. B to Kt 3 (i) |
| 49. R to B 4 (j) | 49. R to K B sq |
| 50. P to K Kt 4 | 50. P to K Kt sq |
| 51. P to K 5 | 51. R to K B sq (k) |
| 52. P to R 5 | 52. B to K sq |
| 53. P to Kt 6 | 53. B to Q 2 |
| 54. K to Kt 3 | 54. K to Kt 2 |
| 55. K to R 4 | 55. K to R 2 |
| 56. Kt to Kt 4 (ch) | 56. Kt to Kt 2 |
| 57. K to Kt 5 | |

And wins.

NOTES.

(a) Better than B to K Kt 5, as played by Mr. Mason in a previous game.

(b) He should rather have exchanged Rooks.

(c) It is obvious that he cannot take the Kt P.

(d) P takes B is probably preferable.

(e) If 33 Kt to R 4, R takes K, 34 Kt takes P (ch), K to R sq, 35 Q to B 4, R takes R, 36 Q to R 6, B to Kt 3, and Black should win.

(f) Taking the Pawn would, of course, involve the loss of the Queen.

(g) The position previous to this move is, we believe, analytically a draw, but practically Black would be likely to lose, as he would have to play a most difficult game with absolute accuracy. We therefore look upon the text move as perfectly justifiable in itself.

(h) Black hesitated between this and Q to Kt 5. The latter is far superior, and would yield a very good chance of drawing, whereas the text move, though it brings an exchange of Q and seems to free the B, renders his game almost hopeless.

(i) B takes P must be preferable.

(j) He could safely take the P, and it would be the best course, as after P to K 6 he could continue with P to K Kt 4.

(k) He should play K to R 2.

SOLUTIONS.

Solution of Problem No. 38.

WHITE.

BLACK.

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|-----------------|---------------|
| 1. K to Q Kt sq | 1. B to K R 4 |
| 2. R to K Kt 6 | 2. Any move. |
| 3. Mates acc. | |

Solution of Problem for Young Players No. 20.

WHITE.

BLACK.

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|----------------------|--------------|
| 1. Q to Q 4 | 1. Any move. |
| 2. Mates accordingly | |

PROBLEM FOR YOUNG PLAYERS, No. 237

WHITE.

BLACK.

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|-------------|----------------|
| K at Q Kt 6 | K at K R 7 |
| R at K 2 | Q at Q B 3 |
| R at K Kt 4 | B at Q 4 |
| B at Q B 5 | Pawns at K R 6 |
| Kt at K B 2 | K B 5, K Kt 6 |
| | and Q B 2 |

White to play and mate in three moves.