

day's battle he said:—"I have just returned from the battlefield near Metz. The advance of the seventh corps attacked the enemy, who was instantly reinforced from the fortress. The 13th division and part of the 14th sustained the advance. The conflict was desperate, involving the entire line. The enemy was repulsed at all points, and pursued to the glades of the detached works near the fortress, which enabled the enemy to give shelter to their wounded. Our wounded were instantly cared for. By daybreak the troops returned to their bivouacs. All fought with incredible and admirable energy. I have gone among them and congratulated them with all my soul."

On the same day the small fortress of Heeny, between Saarbrück and Metz, capitulated, after a short bombardment by the second Bavarian army corps. This point now became the headquarters of Prince Frederick Charles and Gen. Steinmetz, and the centre of the operations against Metz.

On Monday the French evacuated St. Avold, and the Emperor, who had already withdrawn from Metz to Verdun, fell back as far as Châlons. Another battle took place on that day (the 15th) in the neighbourhood of Metz, concerning which the following despatch was made public in Paris:—"The Sub-Prefect of Verdun, telegraphs the following:—"Verdun, August 16.—No news from Metz. Nothing is known to have occurred to-day. All day yesterday the roar of cannon was heard between Metz and Verdun. Persons who reached here from that direction, say a great battle was fought, opening at day-break, and that the Prussians lost more than 40,000 men in the combat, and were completely defeated. During yesterday morning at the extremity of Metz arrondissement, 28 kilometres from the fortifications of Verdun, the enemy had been seen directing his retreat to the south. Though this intelligence is transmitted by authority, the Government has not yet been able to verify it, and it is given to the public under reserve by the Minister of the Interior." There has been no confirmation of such a brilliant victory for the French, though they claim that this check to the Prussians would effectually secure the French the desired opportunity for retreating. A despatch from Berlin says that:—"Late on the afternoon of Monday, the 1st and 7th Prussian army corps vigorously attacked the French forces under the walls of Metz. A sanguinary conflict ensued. The French were at length driven within the city with a loss of four thousand men. On the same day, a grand reconnaissance under King William in person, maintained itself some hours within two lines of the French defences, without any effort on the part of the French to dislodge it. The fact shows an utter demoralization of the French, and a special despatch from London at 10:30, says the defeat of the French in the late battle is certified. The Prussians numbered sixty thousand; their loss was heavy, and the French loss was fearful."

On Tuesday the fortress of Lichtenburg, N. E. of Pfalzbourg, and that of Marsal, N. E. of Nancy, fell into the hands of the Prussians. A sortie was made by the garrison of Strasbourg, but they were driven back with great loss, losing three guns. A serious engagement, according to French reports, took place at Gravelotte, six miles west of Metz, in which the Prussians were defeated, with great loss on either side. Prussian troops have been seen near Commercy, west of Toul, marching in the direction of Bar-le-Duc, on the Paris and Strasbourg Railway, about 125 miles east of Paris. The London Times is reported by cable to have declared that the French army received its decisive and finishing stroke at Metz; and that a decisive battle will be fought at Châlons, after which English intervention will take place. On the contrary, the Post affirms that the fighting will be good for a week without a decisive battle, and that the French will fight to the end. There are rumours that the fighting was continued on Wednesday, the French still gradually retreating on Châlons, where now it is deemed a desperate battle, such as the world has never before seen, will be fought. Should Prussia win it is understood that she will demand the expenses of the war, and the cession of Alsace and Lorraine.

We give a map of the seat of war this week, an examination of which in the light of the news already published, will enable the reader—in so far as telegraphic despatches give particulars and can be relied upon—to form a correct opinion as to the relative position of the contending forces.

The London Gazette announces that Her Majesty has been pleased to confer the honour of Companionship of the Order of St. Michael and St. George on Lieut.-Col. Elphinstone, Governor of His Royal Highness Prince Arthur.

His Grace the Archbishop of Quebec is very dangerously ill. He is stated to have been "almost at death's door since his return from Rome," and but little hopes are entertained of his recovery. His Grace tendered his resignation some weeks ago.

A serious fire occurred at Collé St. Antoine near the Tanneries in this city, early on Thursday morning, by which about 50 houses, mostly occupied by workmen and mechanics, were consumed. About one hundred and fifty families were rendered homeless. On the night before the Terrapin saloon, Notre Dame street, was burnt.

The inhabitants of Snowden, Ont., are in hopes they possess large beds of good marble in that township. A specimen has been shown in the office of the Bobcaygeon Independent which was exceedingly hard, and smooth as glass. The block exhibited was hammered with difficulty from a large mass. There is said to be any quantity of this material in the back townships.

The fires raging in the country to the north and west of Ottawa, are doing immense damage. Large quantities of crops and many farmers' houses have been consumed. The Village of Bells Corners was nearly all burned down on Wednesday, and on Thursday Ottawa City was filled with smoke, while burnt leaves and ashes floated in the air. The city was almost surrounded by the bush fire, which, it was supposed, also threatened Papineauville, on the other side and further down the river.

THE APPARENT SIZE OF THE MOON

This question, which has probably interested every school-boy in the world, has latterly been discussed at length in the columns of *Nature*, and various opinions have been given upon the subject. The last one given, and in our opinion the best explanation, is that of the celebrated Professor Helmholtz, which we extract:

"The moon appears larger when she is near the horizon

than when she is high in the heavens, although in point of fact, owing to atmospheric refraction, her vertical diameter ought in the former case to seem less than in the latter. Even Ptolemy and the Arabian astronomers were perfectly aware that the true reason why the moon appears larger when seen in the horizon is that she then appears further off. The real question therefore is, why the sky should appear further from us at the horizon than it does at the zenith. Various causes have been assigned for this fact, and I am myself disposed to admit that there are several causes which combine to produce this effect, so that it may be difficult to say which of these causes predominates in any one case.

"First of all we must remember that there is no decisive reason why the starry firmament should appear to us to be a spherical surface. It certainly reveals to us objects (the stars) which are at an infinite distance; but hence we can only infer that it may assume the appearance of any such indeterminate surface as any motive whatever may lead us to ascribe to it. If we were floating in empty space, and could survey it in its whole extent at the same moment and in all directions, or if its movements were so rapid as to make a distinct impression on the senses, there might be more reason for assigning to it a spherical rather than any other kind of surface. In point of fact, however, its apparent form and apparent direction are constantly changing, according as the portion we happen to see is more or less inclosed by various terrestrial objects, and according as we fix our attention on a higher or a lower spot. We shall see further on that we are naturally disposed to regard it as a plane surface, at right angles to the line of sight, whenever both eyes are steadily fixed on one point.

"But with the canopy of cloud the case is entirely different. The clouds in general are so far from us that the criteria for judging of distance which binocular vision or the movement of our own bodies can supply are utterly useless. But the clouds are often disposed in parallel lines, they generally drift with a constant velocity and in the same direction; when near the horizon they appear like bars across the sky seen edgewise, and so lighted that it is easy to perceive they are bodies whose horizontal extension is foreshortened by perspective. All these indications serve to give us the impression that the true form of the canopy of cloud, at least in the zenith, is that of a very flat dome. On the horizon indeed these indications cease to serve us; there the clouds, like the mountains, appear to be evenly painted on a vertical or nearly vertical background, which gradually passes into the surface of the earth below, and into the firmament above. Now, since the senses supply no criteria by which we distinguish between the distance of the clouds and that of the sky, it seems only natural that we should ascribe to the one the ascertained form of the other, so far, at least, as we can separate them. This, I believe, is the way in which our conception of the sky, as a flat domelike vault, must originate, vague, variable, indefinite as that conception undoubtedly is.

"Moreover, the apparent increase in the size of the sun or the moon is never very striking or decided, except at those times when the air near the horizon is heavily charged with vapour, and when, as a necessary consequence, the heavenly bodies in question only shine with a very feeble light; we have then the very same effect with which we are perfectly familiar in the case of distant mountains. They appear more distant than they do when the air is clear, and therefore larger. Moreover, when suitable terrestrial objects happen to be placed near the horizon, they add very much to the effect. When, for instance, the moon sets near a tree some twenty feet in diameter, and about 1,000 yards off, as she subtends the same visual angle, and is known to be far more distant, she appears to be very much larger; whereas, when the moon sets behind a flat horizon, there is no object of comparison to enable us to perceive that her small apparent may represent a very great absolute magnitude.

"When I look at the moon reflected from a piece of parallel glass, so that her image appears to be very near the horizon, I do not find that the image looks decidedly larger than the moon herself seen directly high in the sky, although in this way it is easy to compare the apparent magnitude of the reflected image with that of the terrestrial objects seen together with it. In this case it is evident the reflected image has not the effect of being seen through the vaporous portion of the atmosphere.

"To my eye, the apparent increase in magnitude near the horizon is much more apparent in the case of the moon than in that of the sun. When the form of the sun can be distinguished at all, his light is generally so dazzling that we cannot look at him steadily, and consequently cannot compare him directly with any terrestrial objects that happen to be on the horizon. Even in the case of the moon when the sky is clear, the delusion is not so apparent. In all cases the delusion depends in a very great degree on the state of the atmosphere."

WHO DISCOVERED NITRO-GLYCERIN.

It is somewhat remarkable that the date of the discovery of nitro-glycerin should be a matter of dispute after all that has been published on the subject. The honour is sometimes ascribed to Professor Williamson (1853), and again to M. Nobel, the Swedish engineer who has done so much towards making its properties known; and to the late Professor Pelouze is also given the credit. In the transactions of the Turin Academy of Science for July 5, 1847, may be found a memoir on fulminates, and the action of nitric acid on certain organic compounds, by Professor A. Sobrero. In this paper the author gives an account of long and dangerous researches made by him on this subject.

He states how he prepared nitro-glycerin, mentions the properties of the new compound, and gives its principal reactions and its poisonous effects on the animal system. Professor Pelouze, in 1865, gave full credit to M. Sobrero at a meeting of the French Institute, and it is therefore somewhat remarkable that any question of priority could now arise.

M. Sobrero, at the time he made the researches (in 1847), was Professor of Applied Chemistry in Turin, and there is no doubt about his being entitled to the honour of having discovered nitro-glycerin.

Literature, Science, and Art are already suffering from the disturbed state of Europe. In Paris, the demand for Art-workmanship has almost ceased; and although a grant has been made for a French Arctic expedition, the war will tend to limit still further French expenditure on scientific exploration.

tion, already much reduced. It also threatens the great Lyons Exhibition, the first stone of the building for which was to have been laid, with much pomp, about this time. The German universities are closing, and, as many of the professors will follow the students, the various branches of research will be interrupted.

Temperature in the shade, and Barometer indications for the week ending Tuesday, Aug. 16, 1870, observed by John Underhill, Optician to the Medical Faculty of McGill University, 299 Notre Dame Street.

		9 A. M.	1 P. M.	6 P. M.
We'nesday,	Aug. 10.....	80°	86°	80°
Thursday,	" 11.....	78°	86°	83°
Friday,	" 12.....	75°	73°	71°
Saturday,	" 13.....	68°	72°	68°
Sunday,	" 14.....	67°	74°	66°
Monday,	" 15.....	64°	76°	62°
Tuesday,	" 16.....	68°	80°	74°
		Max.	Min.	MEAN.
We'nesday,	Aug. 10.....	87°	67°	77°
Thursday,	" 11.....	88°	66°	77°
Friday,	" 12.....	76°	66°	71°
Saturday,	" 13.....	74°	66°	67°
Sunday,	" 14.....	77°	55°	66°
Monday,	" 15.....	76°	51°	63° 5
Tuesday,	" 16.....	80°	53°	66° 5

Aneroid Barometer compensated and corrected.

		9 A. M.	1 P. M.	6 P. M.
Wednesday,	Aug. 10	30.25	30.27	30.24
Thursday,	" 11	30.30	30.29	30.24
Friday,	" 12	30.12	30.12	30.15
Saturday,	" 13	30.20	30.20	30.14
Sunday,	" 14	30.10	30.10	30.00
Monday,	" 15	30.25	30.22	30.18
Tuesday,	" 16	30.10	30.04	29.95

CHESS.

The following game, from the Chess-player's Magazine, is a good example of the play of the celebrated Master "Anderssen":—

EVANS' GAMBIT.

White—Prof. Anderssen.	Black—Herr Neumann.
1 P. to K. 4th	P. to K. 4th
2 Kt. to K. B. 3rd	Kt. to Q. B. 3rd
3 B. to B. 4th	B. to B. 4th
4 P. to Q. Kt. 4th	B. takes P.
5 P. to Q. B. 3rd	B. to R. 4th
6 P. to Q. 4th	P. takes P.
7 Castles	B. to Kt. 3rd
8 P. takes P.	P. to Q. 3rd
9 P. to Q. 5th	Q. Kt. to R. 4th (a)
10 B. to Kt. 2nd	K. Kt. to K. 2nd (b)
11 K. B. to Q. 3rd	Castles
12 Q. Kt. to B. 3rd	P. to K. B. 3rd (c)
13 Q. Kt. to R. 4th	P. to Q. B. 4th
14 Kt. takes B.	R. P. takes Kt.
15 Kt. to K. sq.	K. Kt. to Kt. 3rd
16 P. to K. B. 4th	B. to Q. 2nd
17 P. to K. Kt. 4th	P. to Kt. 4th
18 Kt. to Kt. 2nd.	P. to B. 5th
19 B. to K. 2nd	R. to K. sq. (d)
20 P. to B. 5th	Kt. to K. 4th
21 Kt. to B. 4th	P. to Q. Kt. 5th
22 B. takes Kt.	B. P. takes R.
23 Kt. to K. 6th	B. takes Kt.
24 Q. P. takes B.	Q. to Kt. 3rd, ch.
25 K. to R. sq.	Q. to Q. 5th
26 Q. R. to Kt. sq.	P. to Kt. 6th
27 P. takes P.	Kt. takes P.
28 Q. takes Q.	P. takes Q.
29 B. takes P.	Kt. to Q. 7th
30 B. to Q. Kt. 5th	R. to K. 2nd
31 Q. R. to R. sq. and wins.	

NOTES. (BY ED. C. P. M.)

a This is generally considered the best move. We hear, however, that Mr. de Riviere is of opinion that the Q. Kt. can be played to K. 2nd without disadvantage.

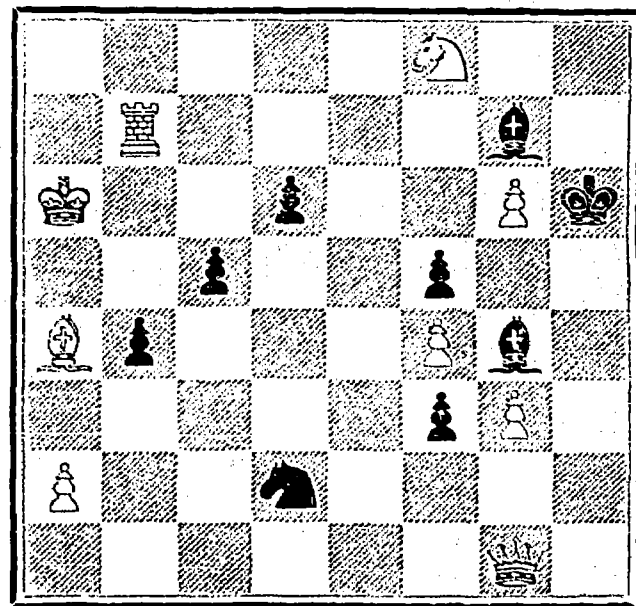
b For this move we are indebted to Mr. Paulsen.

c This move is indispensable for the completion of the defence, as has been shown by Mr. Paulsen.

d As the result shows, this was not a good square for the Rook.

PROBLEM No. 15.

BLACK.



WHITE.

White to play, and mate in three moves.