

SCIENCE NOTES.

A novel torpedo has been designed at the Royal laboratory, Woolwich, England. It is shaped like a fish, and is about five feet long, with a tail contrived to work like a screw propeller, by which it can be impelled with great force and accuracy of aim against the side of a ship four hundred yards distant.

The Government of Queensland, moved by the similarity between the geological structure of the South African diamond region and that of many parts of Australia, has offered a reward of one thousand pounds sterling to the first discoverer of an Australian diamond drift or field, and has also designated the district in which the most competent judges believe that such a discovery will be made, if made at all.

The great aurora of February 4th, which was visible over so large a portion of the earth, was exceedingly brilliant at the Cape of Good Hope, as we learn from a letter to the Astronomer Royal of England, written by Mr. E. J. Stone of the Cape Town observatory. He says it was the most conspicuous auroral display witnessed in that region for fifty years, and that the natives throughout the colony were considerably frightened by the unusual luminosity of the sky.

Professor Piazzi Smyth, the Astronomer Royal for Scotland, is well known for his researches concerning the Great Pyramid of Egypt. He extends its scientific relations of the highest interest and importance, and maintains that its dimensions "afford the standards and units of weight and measure which have been the greatest favourites with the greatest number of all peoples through all history down to the present day." It is situated at the centre of the land surface of the globe, and its altitude is contained precisely one thousand million times in the mean distance of the earth from the sun. Curiously enough, Professor Smyth thinks that the Egyptians were themselves ignorant of these asserted Great Pyramid standards.

A NEW FOSSIL RESIN.—A new fossil resin, named rosbomite, is described by Höfer as occurring in the coal of the Sonneberg, in Carinthia. This has a fatty lustre, a brown colour with garnet-red gloss, wine-yellow by transmitted light, and a light brown to orange yellow streak. When heated in the air it gives off white vapours having an aromatic odour, and burns with a smoky flame without having any residue. In chemical composition this mineral approaches most nearly to cismite, and still more to the fossil resin of Girona, in New Grenada. This substance can not be properly assigned to any of the groups already established among the fossil resins, but seems rather to conform to the type of a solid resin, rich in carbon but poor in oxygen.

Captain Sherard Osborn of the British Navy lately addressed the Royal Geographical Society in advocacy of a new English expedition to the North Pole. He predicted that the final laurels of Polar discovery would be wrung from his countrymen by German or Swedish navigators, unless a fresh effort was made by England at once. His sentiments were received with much favour by the Society, and Sir Leopold McClintock, the discoverer of the remains of Sir John Franklin's party, agreed with the speaker that the best route to pursue was that through Smith's Sound, Dr. J. D. Hooker dwelt upon the advantages which botanical science might derive from the proposed expedition, in view of the discovery of fossil plants at Disco, in Greenland, which indicate the former prevalence of a temperate climate in latitude 70 degrees North.

ARTIFICIAL LEATHER.—Among the different kinds of artificial leather lately introduced is the following:—J. Charles, in London, and C. Taylor, in Manchester, England, take boiled linseed-oil, and boil it again with quicklime and borax, till they obtain a fluid, which, by cooling, nearly solidifies into a thick dough. To this they add pulverized cork, and some quicklime, and the paste obtained is rolled out into sheets, which, if desired to be very smooth, after being dried, are rubbed down by means of pumice-stone. The process is evidently a partial saponification, and reminds us of the artificial India rubber, which is also made of linseed-oil, without the addition of the powdered cork, which serves only to give the appearance of leather, and is a mere filling or adulteration of the tenacious chief ingredient, in the same way as India rubber is adulterated by similar fillings.

Professor Huxley, in his lecture at Manchester, which was on the subject of yeast, gave the following interesting account of the origin of the word alcohol, as applied to spirits: "Alcohol," he said, "originally meant a very fine powder. The women of the Arabs and other Eastern people are in the habit of tinging their eyelashes with a very fine black powder which is made of antimony, and they call that 'kohol' and the 'al' is simply the article put in front of it, so as to say 'the kohol.' And up to the seventeenth century, in this country, the word alcohol was employed to signify any very fine powder. You find in Robert Boyle's works that he uses 'alcohol' for a very fine subtle powder. But then this name of anything very fine and very subtle came to be specially connected with this fine and subtle spirit obtained from the fermentation of sugar; and I believe that the first person who fairly fixed it as the proper name of what we now commonly call spirits of wine was the great French chemist Lavoisier, who lived in the latter part of the last century."

A NEW KIND OF FLINT-GLASS.—Dr. Benrath, Director of the glassworks at Dorpat, Russia, publishes an account of experiments made by him to produce a glass which has the good qualities of flint-glass without its defects. The good qualities of ordinary flint-glass are, that it is as clear as crystal; that it has a high specific gravity, (is heavy); a low fusing point, so that it melts easily; and strong power of refraction and dispersing light. It is, therefore, invaluable for chemical and optical purposes. Its defects, however, are that it is easily acted on by chemical and mechanical influences—that means, its surface cannot stand rain and sunshine, much less acids or boiling water, and it is so soft that it is most easily scratched.

The chemical difference between ordinary and flint-glass is that the former consists of silice, lime, and soda or potash, while oxide of lead is added to make flint-glass out of it. Chemically speaking, common glass is a silicate of lime and potash, while flint-glass contains also silicate of lead.

SOMETHING ABOUT TONGUES.—Nothing but the proboscis of an elephant compares in muscular flexibility with the tongue.

It varies in length and size in reptiles, birds, and mammalia, according to the peculiar organic circumstance of each. A giraffe's tongue has the functions of a finger. It is hooked over a high branch, its strength being equal to breaking off large strong branches of trees, from which the tender leaves are then stripped. An ant-bear's tongue is long and round, like a whip-lash. The animal tears open dry, clay walls of ant-hills, thrusts in his tongue, which sweeps round the apartments, and by its adhesive saliva brings out a yard of ants at a swoop. The mechanism by which it is protruded so far is both complicated and beautiful. A dog's tongue in lapping water takes a form by a mere act of volition that cannot be imitated by any ingenious mechanism. The human tongue in the articulation of language surpasses in variety of motions the wildest emotions of a poet. Even in swallowing food its office is so extraordinary that physiologists cannot explain the phenomena of deglutition without employing the aid of several sciences.—*Hall's Journal of Health.*

MISCELLANEOUS.

A singular attempt was made to rob the county treasurer's office at Crown Point, Ind. A stranger came to the office at a late hour and requested the treasurer to lock in the safe until Monday morning a small tin box which he said contained a quantity of valuable jewellery. The request was granted, and a couple of hours later the watchman heard an explosion inside the safe, and approaching discovered and fired at a man creeping toward the safe. An investigation showed that the box contained a torpedo ingeniously arranged to explode at a certain time. The explosion blew the door of the safe open and injured the walls of the vault in which the safe stood, but failed to open the vault door.

According to the English *Western Daily Mercury*, considerable light has lately been thrown upon the damatory clauses in the Athanasian creed by a discovery lately made in Venice. There has been discovered in St. Mark's library in that city a copy of this creed, which is believed to be the oldest in existence, and the damatory clauses are nowhere to be discovered in this version. A correspondent of one of the leading English Nonconformist journals says he believes the creed to have been written by an Arian, who, being imprisoned for his opinions, produced it as a satire on Trinitarian doctrine, and owed his liberty to the circumstance, since the authorities took the squib for a recantation, and released him accordingly.

The *Militärisches Wochenblatt* gives the following statistics respecting the rounds fired by the German artillery during the late war:—The Prussian, Baden, and Hessian artillery, consisting in all of 79 light, 78 heavy, and 38 horse batteries, besides 19 light and 10 heavy batteries of reserve, making a total, at six guns per battery, of 1,344, fired during the whole campaign no less than 267,975 rounds, or an average of 199 per gun. The Bavarian artillery consisted of 12 light, 22 heavy, and two 12 pounder batteries, or in all of 216 guns, which fired 56,211 rounds, or an average of 260 rounds per gun. Saxony had 6 light, 8 heavy, and 2 horse batteries, or 56 guns, which fired 15,521 rounds, being an average of about 162 rounds per gun. The grand total of guns and rounds would therefore be 1,656 guns, from which were fired 339,707 rounds.

The Glenn family, of San Francisco, are as yet unknown to fame, but they will not be long so. They have gone to London with the intention of making good their claim to unclaimed dividends remaining in the Bank of England amounting to the respectable sum of \$120,000,000; and, what's better, there appears to be every probability that they will succeed without much ado. Happy Glens! This is how this stroke of luck is said to have come about:—About 55 years ago the Sir Francis Drake of that day left to his American heirs a large fortune. The heirs were at the time unknown. Seventy years passed away before the Drake family resident in Kentucky, Tennessee, and Virginia, even heard of the good fortune in store for them—that was 15 years ago; and it was only within the past 12 months that any steps were taken in the matter. The Glenn family of San Francisco claim to be the direct descendants, in the female line, of Sir Francis. The lawyers have taken the case in hand, so that we shall soon hear all about it.

During his recent stay at Milan, the Prince of Wales went to see the ballet of *Shakspeare*, by Signor Casali, with which he appeared to be highly entertained, and no wonder! He seemed to be especially amused by the noisy and animated demonstrations of the audience, the applause, the hisses, the shouting, so different to that of English theatres. It must have been a pleasant, or at least a singular, contrast to him to find himself shut up in a small box, smoking his cigar, amid the frantic excitement of this gay and congenial public. Add to this on the stage a Queen Elizabeth, a Falstaff, and a Shakspeare, who, if they did not fill him with indignation, must have diverted him exceedingly. Elizabeth, the grand and terrible Queen, flirting in a tavern with the tragic author, Falstaff as factotum of the Court, and Shakspeare abominably tipsy, are certainly sights that the Prince cannot expect to be often treated to in London. Add, again, a Scotch dance executed to English music, repeated three times by the dancers. Who would not be amused by such a scene?

The people of the West are the most successful in the world in making sport of their misfortunes. One of their severest afflictions is a visitation of potato bug; this season they crack jokes on the villainous insect as though their potatoes were in no danger. The vermin, by the way, bears the cracking of jokes remarkably well. One day we are told that the noble army of potato bugs has pitched its tents on the plains of Kansas, and is on short rations waiting for the esculent root to put forth its sprouts. Then we get the announcement that in Wisconsin the potato bugs are sitting around on the fences offering 75 cents a bushel for potatoes and \$1.50 a day for men to plant them. Next we hear that the potato bug will pole a full vote in Indiana, and proposes to adopt the cumulative system. Then we hear that these interesting creatures are holding a joint convention at Council Bluffs, and repudiate the one term principle. The latest advices are to the effect that potato bugs are loafing about on the street corners in Dubuque awaiting the tardy growth of their favourite vegetable.

At an evening party lately, a gentleman came up and spoke to the Chancellor of the Exchequer. In the crowded room, Mr. Lowe, who is, it is said, near-sighted, mistook him for Mr. Mundella, the member for Sheffield, who, though a Liberal, has been bothering the Chancellor not a little of late. Mr. Lowe replied in a very cold, curt manner, on which the gentleman rejoined, "I don't think you recognise me, Mr. Lowe." "Oh yes, I do; I've seen you often enough of late." "When pray?" quoth the astonished gentleman. "Why, only yesterday." "That's impossible. I wasn't in England yesterday. I'm the King of the Belgians!" It takes a good deal to discompose Mr. Lowe, but he looked the picture of despair.

Imagine the distress of a milliner who forgot on which side of the rose to put the hat.

CHESS.

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

R. M. B., Toronto.—Solution of Problem No. 51, received; correct. G. H., Montreal.—Send the Solution.

HAMILTON v. ST. CATHARINES.
Petroff's Defence.—Game No. 4.

St. Catharines.	Hamilton.
White, Mr. Geo. Groves.	Black, Dr. J. Ryall
1. P. to K. 4th	P. to K. 4th
2. K. Kt. to B. 3rd	K. Kt. to B. 3rd
3. B. to B. 4th	Kt. takes P.
4. Q. Kt. to B. 3rd	Kt. takes Kt.
5. Q. P. takes Kt.	P. to K. B. 3rd
6. Castles.	Q. to K. 2nd
7. Kt. to Q. 4th (a)	Q. to Q. B. 4th (b)
8. Q. to K. 2nd (c)	P. to Q. 4th
9. B. to Kt. 3rd (d)	P. to K. 5th (e)
10. Q. to R. 5th, ch.	P. to K. Kt. 3rd
11. Q. takes Q. P.	Q. takes Q.
12. B. takes Q.	P. to K. B. 4th
13. Kt. to K. 6th (f)	B. to Q. 3rd
14. Kt. to K. Kt. 7th, ch.	K. to Q. sq.
15. B. to Kt. 5th, ch.	B. to K. 2nd
16. Kt. to K. 6th, ch.	B. takes Kt.
17. B. takes B. ch.	K. takes B.
18. B. takes Kt. P.	Kt. to K. 2nd
19. B. takes R. (g)	R. takes B.
20. K. R. to Q. sq.	Kt. to Kt. 3rd (h)
21. P. to Q. Kt. 3rd	Kt. to Q. 4th
22. P. to Q. B. 4th	Kt. to Q. B. 6th
23. R. to Q. 2nd	P. to Q. R. 4th
24. P. to Q. K. 4th	P. to K. B. 4th
25. Q. R. to K. sq. (i)	P. to K. B. 5th (j)
26. K. to B. sq.	P. to Kt. 4th
27. P. to K. Kt. 3rd	P. to K. R. 4th
28. K. to Kt. 2nd	P. to K. R. 5th
29. P. to K. B. 3rd (m)	P. to R. 6th, ch.
30. K. to Kt. sq.	P. to K. 6th.
31. R. to Q. 3rd	Kt. to R. 7th
32. P. to Q. B. 3rd	R. to Q. Kt. sq.
33. P. to K. Kt. 4th	R. takes Q. Kt. P.
34. R. to R. sq.	B. takes Q. B. P.
35. R. for Q. 3rd to Q. sq.	Kt. takes P.
36. R. to K. sq.	B. to K. 4th
37. R. takes B.	Kt. takes R. ch.
38. K. to R. sq.	Kt. to B. 6th
39. R. to Q. B. sq.	R. to Q. Kt. 3rd
40. R. to K. Kt. sq.	Mates in three moves

(a) Kt. to R. 4th is a much better move to begin the attack.

(b) The correct reply.

(c) Evidently forced; but White still has a fine attacking position.

(d) Black, by some mistake, resisted this move as—B. to K. 3rd.

(e) Supposing the bishop was on K. 3rd. White now regains pawn.

(f) The attack commenced here is more showy than sound;—P. to K. B. 3rd, for the purpose of breaking up Black's pawns, and opening the Rook's file, seems to us far stronger.

(g) White's attack is now exhausted; and, although Black is minus a pawn, he remains with the advantage of two minor pieces for a Rook.

(h) Black's strongest move apparently.

(i) P. to K. B. 3rd would have been the move here, and might have given White an opportunity to draw; Black cannot reply with P. to K. 6th without loss.

(j) Black's play is admirably correct throughout.

(m) A weak move, after which his game is past redemption; P. takes P. instead, followed by—P. to K. R. 3rd would have freed his Rook, and given a chance for a counter-attack presently.

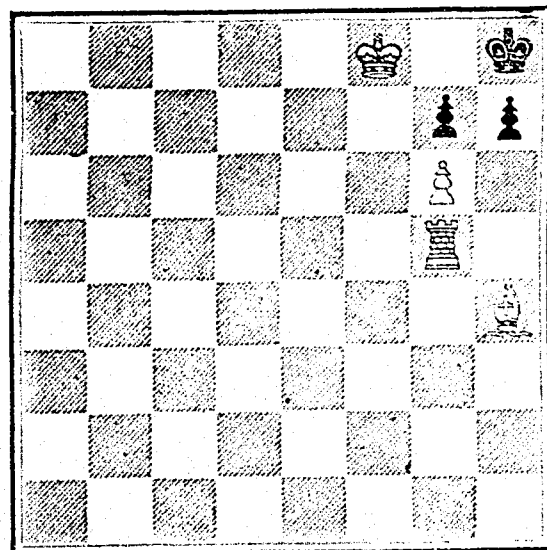
White.	Black.
29. P. takes B. P.	P. takes P.
30. P. to K. R. 3rd	R. ch.
31. K. to R. 2nd	

And we do not see how Black can win: if—R. to B. 6th. White may reply with K. to K. 3rd.

PROBLEM No. 52.

From Bell's "Life in London."

BLACK.



WHITE.

White to play and mate in three moves.

SOLUTION OF PROBLEM No. 51.

White.	Black.
1. R. to R. 5th.	P. to R. 3rd
2. R. takes P. ch.	P. takes R.
3. B. mates.	