### One-Legged Railway.

An Oil City *Derrick* correspondent describes the elevated one-wheeled, or, as it is more generally known "one-legged railroad," now being constructed by General Stone in the Bradford oil region. It is attracting a good deal of attention, and there is much speculation as to the probable success or failure of the enterprise. A portion of the line between Bradford and Tarport is completed, and one car of peculiar construction has arrived and been placed on the track. The construction of the road is simple, rapid and easy. On the hard ground logs six feet long and from a foot and a half to two feet in diameter are placed at right angles to the line, and from twelve to fifteen feet apart, the distance varying. In these logs vertical sawed posts, fourteen by fifteen and a half inches, are dovetailed and wedged. These verticals vary in height, and by their length the grade of the road is regulated. On the top of these verticals the horizontal pieces to which the rails are spiked are laid, with their ends squarely against one another. These sleepers are ten inches wide by fifteen and a half in thickness. By a proper arrangement of vertical and horizontal pieces of timber the timbers on which the rails are laid are kept firmly in position, and two wooden rails, three feet and a half below the top of the iron rail and twenty-two inches apart, are spiked to the vertical posts. Across streams and the swampy ground piles are driven. On this one rail a saddle-shaped car is mounted and supported by two wheels, double flanges. The gondola car now mounted on the portion of the road completed is twenty-two feet long, nine feet wide, and weighs over seven thousand pounds. The car is a double decker, there being room for freight in the body of the car, and on each side of the saddle. Twenty-two inches below a plane tangent to the upper wheels, at the lowest point of their circumference, four smaller wheels are placed in a horizontal position, and in the same plane, their circumferences being twenty-two inches apart. These run against the wooden guide rails, and keep the car in position. The wheels are attached to standards connected with the iron framework of the car.

### Dental Caries.

The general prevalence of dental caries is chiefly owing to food remaining on and between the teeth after meals—from breakfast time till the following morning—when, according to custom, the teeth are brushed; brushed, but probably not cleaned, as the brush is more often used to polish the surface merely than to assist in removing what has accumulated between them. Experiments have been referred to that prove the solvent action of weak acids on the teeth; and I think it will be conceded without proof that, were portions of our ordinary food, mixed and moistened as in mastication, kept during the night at the high temperature of the mouth, the compound would be sour. It follows that dental caries must continue to prevail as now, while it is the custom to allow the food to remain in contact with the teeth all night.

The following observations show the dependence of caries on food remaining in contact with the teeth. When the teeth are wide apart food is not retained, and they generally remain free from caries. The lower front teeth are seldom attacked by caries when, as is generally the case, the spaces between are closed to the entrance of food by tartar. The backs of all the teeth, upper and lower, being kept free from food by the tongue, are seldom affected by caries. Lodgment of food takes place between the bicuspids, between the molars, in the depressions on the masticating surface of these teeth, and on the buccal walls of these molars, and these are the chief seats of caries. While mastication is performed by the molars and bicuspids, the upper front teeth remain free from food and from caries; but, when they themselves are made to do the work of lost or diseased molars, and the food gets between them, caries is certain to follow before long. Further proof cannot be required that, if no food remained in contact with the teeth after eating, they would be free from caries, unless acted on by acidity from other sources. The only indications, therefore, for the prevention of dental caries are the neutralization of acid applied to the teeth and the removal of food before it has become acid. The food should be removed after every meal, and all who have not the opportunity of doing so should not fail to remove it every night at bedtime by rinsing, as the brush cannot be trusted to remove the food from between the teeth.—*British Medical Journal.*

### Ancient American Cliff and Cave Dwellings.

There have been just added to the South Kensington Museum, London, six models (the gift of the United States Government), illustrating the cliff houses, cave dwellings, and lowland settlements met with through the district where the States of Utah, Colorado, Arizona, and New Mexico join. They are reduced to different scales, the cave dwellings being of smaller scale than the lowland dwellings, since with the former the surroundings are given, while with the latter they are not. The district, which may be called that of the San Juan basin, was surveyed in 1875, and last year some attention was paid to the ruins of ancient dwellings that had been previously noticed. The area examined was 6,000 square miles. The general aspect of the country is that of a semi-desert. Yet there is a bountiful evidence that at one time it supported a numerous population; there is scarcely a square mile in the whole 6,000 examined that would not furnish evidence of occupation by a race totally distinct from the nomadic savages who hold it now, and in every way superior to them. The ruins of the region are those of stone structures, but the remains are not so perfect as to show to what extent wood and adobe were used. The only known traces of the people besides their dwellings are flint and stone implements, tied bundles of sticks, fragments of matting, pottery, and pictures cut into the walls. A number of burial places were noted, but of the graves examined few yielded further evidences of occupation than small quantities of charcoal and bits of painted pottery. As regards the buildings, the parallelogram and the circles are the predominant forms. A greater part of the ordinary structures are square or rectangular; while attached to each group, and sometimes without indications of contiguous buildings, are the circular ruins frequently resembling towers. The models, which are colored, give a good idea of the structures.—*London Building News.*

### CURIOUS BLOOD DISKS.

BY JOHN MICHELS.

In the summer of 1877, on a visit to the London establishment of Messrs. R. & J. Beck, I purchased a slide that was offered to me, as a recent addition to their cabinet of microscopical objects for sale. It was represented as a specimen of the largest blood corpuscles known, and was labelled as follows: Blood.—Congo Snake.—Amphiuma Meaus.—R. & J. Beck, 31 Cornhill, E.C.

As it is a most interesting specimen, I offer in Fig. 1 a sketch I have made by the camera lucida, as a part of it appears magnified by my ¼ inch objective and B eye piece, enlarged 310 diameters.

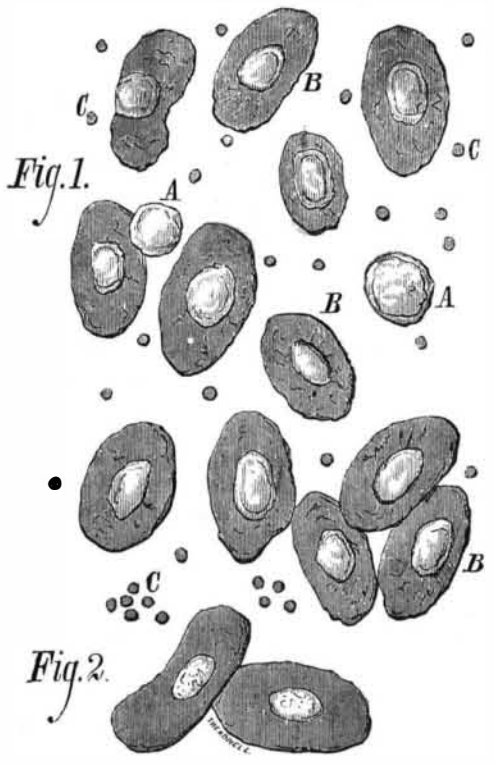

Fig. 1.


Fig. 2.

Had the preparation been offered by a less reputable house I should have considered the description on the label an error, as I am not acquainted with a Congo snake, with the above name, and the only "Amphiuma" I know of is a genus of batrachian reptile met with in the lakes and stagnant waters of North America.

As an animal similar in form to a water newt could not be mistaken for a snake, a difficulty is presented, the explanation of which it is not in my power to offer. The red corpuscles of this specimen are immense in size, and can be distinguished by the unassisted vision, and in their oval form are characteristic of those met with in reptiles.

At letter A will be noticed the white corpuscles, which are smaller in size and circular in form, and thus readily distinguished from the red corpuscles, marked B. The small circles are to represent human blood disks similarly enlarged; these are introduced for comparison of size only.

Large as these red corpuseles appear, I find they are yet smaller in size than those met with in another reptile called "menobranchus lateralis," one of the salamander family found in Lake Ontario. This amphibious animal is remarkable from being furnished with both lungs and gills, which permits it to live either on land or in water with equal comfort to itself.

Fig. 2 is a copy of a drawing of the blood disks of the "menobranchus lateralis," enlarged 300 diameters.

A comparison between the illustrations, Figs. 1 and 2, at once shows that, although the red corpuscles of the "amphiuma" are magnified 10 diameters in excess of those of "menobranchus," still the former is the smaller of the two specimens, thus the "menobranchus lateralis" must still carry off the palm of having the largest blood disks yet discovered.

### A New Theory of the Nature of Water.

M. Maiche in *Les Mondes* propounds the theory reached after numerous experiments that water is simply hydrogen *plus* electricity, or oxygen *minus* electricity; or, in other words, that normal electrified hydrogen constitutes water, and that normal diselectrified oxygen produces the same; or that hydrogen, oxygen, and water are precisely the same, differing only in degree of electrification.

### Compositions.

I give one fourth day each week to composition exercise. The pupils are provided with paper and pencil, several subjects are placed upon the blackboard, and every pupil required to write all he can on one subject. The subjects are selected so that all pupils are able to write. The following were used last week: Maple sugar-making, ghosts, telling stories, faces, domestic animals, rats, peanuts, observations in a railroad car. During this exercise the strictest order is observed. Pupils that experience difficulty write their subjects, and then are aided by the teacher, who is constantly among them. He does not write, however, but suggests what may be said on the several subjects, and aids them to form the first sentence. The writing continues just one hour, when compositions are folded, superscribed, numbered, and handed to the teacher. The pupils then receive compositions of the previous week, and are required to correct the errors noted on the outside. Fifteen minutes are given, then the remaining fifteen minutes is given to the correction of mistakes which the pupils failed to rectify. This is done by placing the words and sentences on the board, and calling upon different members of the school for correction. The facility with which young pupils write after a few months' practice is surprising; and while it proves a profitable exercise, it is no less agreeable to the scholars.—*N. E. Journal of Education.*

### Dyeing Felt Hats.

The following is a recipe for producing a good black, and giving brightness to the felt. The quantities named are for dyeing 100 hats at one operation. Into a copper containing 55 gallons of boiling water put 9 lbs. of liquid extract of logwood at 30°, 4½ lbs. of crushed brown cashoo, 4½ lbs. sandal wood in powder, and 2¼ soda crystals. Enclose the whole in a linen bag or wicker basket, so that they do not settle at the bottom of the copper. When the ingredients are dissolved, put the hats in, and allow them to boil gently for two hours; then take them out, and let them get quite cold. Now add to the bath 3½ ozs. of chromate of potash, and 9 ozs. of sulphate of copper; cool the bath by the addition of several pailfuls of water, then again put in the hats, and allow them to simmer for an hour. Again take them out, let them get cold, and after adding to the bath 2¼ lbs. of sulphate of iron, put the hats in, and let them gently boil for an hour. Should the hats have a rather reddish appearance, add to the bath another 2½ lbs. of soda crystals. After these operations the hats must be piled up, and covered with a thick cloth for a day; then subject them to a vigorous washing, and eliminate the copper, using muriatic acid rather than sulphuric acid, as the latter draws out the dye. When the copper is thus eliminated, pass the hats into cold water, in order to free them from the acid. For the final operation, prepare a bath of Panama wood, just simmering, and in this place the hats for half-an hour. This bath sets the color, and gives brightness to the felt. Upon taking them out, if they are soft hats, the water must be drained out of them by pressure.

*Observations.*—By this procedure a very clear and very bright black is obtained. In order to produce a violet-black the cashoo must be substituted by the same weight of archil; a blue-black is obtained by leaving out the cashoo and sandal wood, and replacing them by 4½ lbs. of archil; for the burnishing the sulphate of iron must be suppressed, and replaced immediately by 1 lb. 2 ozs. of sulphate of copper; if a greenish-black tint or kind of dark bronze is desired, the sandal wood must be substituted by 4½ lbs. of liquid extract of Cuba yellow wood at 30°.—*French Hatter.*

### Astronomical Notes.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, January 12, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

PLANETS.

| | H.M. | | H.M. |
|---|---|---|---|
| Mercury rises | 6 59 mo. | Jupiter rises | 7 09 mo. |
| Venus sets | 8 26 eve. | Saturn sets | 9 19 eve. |
| Mars in meridian | 5 41 eve. | Uranus rises | 7 50 eve. |
| Mars sets | 0 10 mo. | Neptune in meridian | 6 43 eve. |

FIRST MAGNITUDE STARS.

| | H.M. | | H.M. |
|---|---|---|---|
| Sirius rises | 6 10 eve. | Altair sets | 6 45 eve. |
| Procyon rises | 5 45 eve. | Fomalhaut sets | 7 21 eve. |
| Regulus rises | 7 48 eve. | Algol in meridian | 7 31 eve. |
| Spica rises | 29 mo. | Capella in meridian | 9 38 eve. |
| Arcturus rises | 11 27 eve. | 7stars (cluster) in meridian | 8 11 eve. |
| Antares rises | 4 31 mo. | Betelgeuse in meridian | 10 19 eve. |
| Aldebaran in meridian | 8 59 eve. | Rigel in meridian | 9 39 eve. |
| Vega sets | 7 57 eve. | | |

REMARKS.

Mercury rises 24 m. before the sun, and 2½° north of the sunrise point. He is now retrograding. Venus is nearly in the sun's path. She is brightest January 16. Mars is a little north of the ecliptic, and ⅞ of his illuminated disc is visible. Jupiter commences to be morning star January 5, and will so continue until April 25. He rises 14 h. before the sun, and nearly at the same point. Saturn is 3° south of the ecliptic. He is near the moon January 8, 5 h. 40 m. evening, being 4° 19′ south. Uranus is still quite near Regulus, being nearly 1° northeast of the star. The wonderful variable star Algol will decline from the 2d to the 4th magnitude between January 13, 0h. 33 m. morning, and 3 h. 57 m. morning; also between January 16, 9 h. 22 m. evening, and 12 h. 46 m. evening, increasing to the 2d magnitude at 4 h. 10 m. morning of the 17th.