Sir G. B. Airy, J, Campbell, A. A. Common, G. H. Darwin, Major J. Herschel, E. B. Knobel, G. Knott, A. Marth, E. Neison, A. C. Ranyard, Prof. H. J. S. Smith.

THE gold medal of the Royal Astronomical Society has been presented to Prof. Axel Möller, Director of the Observatory at Lund, in Sweden, for his investigations on the motion of Faye's comet. W. C. W.

WASHINGTON, March 18, 1881.

MICROSCOPY.

On looking over the Transactions of the New Zealand Institute for 1878, we notice that a Mr. A. Hamilton speaks of having discovered *Melicerta ringens*. It was found in great profusion,on the finely-divided leaves of the *Myriophyllum*. This adds another locality to the wide geographical distribution of this interesting Rotifer.

Mr. Hamilton states that after examining a number of specimens he found the description given by Gosse correct, except that the formation of the pellets was at a much slower rate than that stated by him.

In the same locality were also found organisms which Mr. Hamilton thought to be *Plumatella repens;* they were growing on dead thistles in a swamp in only a few inches of water.

The American Monthly Microscopical Journal for March editorially announces the immediate publication of Mr. F. Habirshaw's Catalogue of the Diatomaceæ, also by the editor, a small book based on Professor J. Leidy's "*Freshwater Rhizopods of North America.*" The editor's handbook on Adulteration is withdrawn.

In the same number Dr. F. S. Billings gives a long resumé of what is known about "*Trichenæ,*" but seems to offer no new facts; the illustration he offers of "*Fresh trichinous invasion*" (after Heller) is a wretched misrepresentation of free trichinæ.

Any reader desirous of examining living specimens of trichinæ in this condition can obtain them on calling at our office.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.*]

To the Editor of "SCIENCE:"

The development of a peculiar non-nervous tissue in connection with the rhomboid sinus of the lumbo-sacral intumescence in birds, and which is especially well marked at the embryonic period, is I think of some bearing on the recently agitated question of a so-called lumbar brain in the extinct sauranodon. In all amniote embryos that I have studied myself, and of which I can find illustrations in accessible works, it is remarkable that there is a distinct posterior enlargement before the cephalic enlargement is well marked, or the brachial intumescence is even indicated in the medullary tube. This fact may point to the potent influence of some, at one time, deeply engrafted ancestral trait. It is not, I think, necessary or warrantable to go beyond this fact, and the established one of the existence of a non-nervous enlargement at the same region in allied sauropsidæ in endeavoring to account for the peculiarity found in the spinal canal of an extinct saurian genus. The supposition of the existence of anything meriting the designation of a brain elsewhere than in the cranial cavity in any amniote animal would be so fundamentally out of harmony with what we have learned to consider as the normal type of structure, that much stronger evidence than the size of a bony receptacle must be adduced before it can even be taken into consideration. That the size of a cavity and that of the contained organ are not neecssarily in close correspondence, has been alluded to by another correspondent under the initials of B. G. W. I have been struck, in this connection, with the discrepancy between the size of the brain cavity and the brain itself in a two year old hippopotamus, though they corresponded in a young elephant.

Respectfully,

E. C. SPITZKA, M. D.

N. Y. 130 E. 50th Street.

To the Editor of SCIENCE:

PARIS, March 5th, 1881.

In bringing before your notice various points which are both novel and interesting, it seems to be my fate constantly to struggle with an *embarras de richesse* represented by a vast combination of phenomena which is forever appearing upon the scientific horizon.

Condensing therefore as much as possible the matter at my command, I will begin with a very trite and commonplace observation; petroleum is a most excellent thing in its way. It is inexpensive and it gives forth a beautiful light. But these advantages, as many know to their sorrow, are more than counterbalanced by the disagreeable habit it sometimes has of exploding. Accidents thus occasioned, frequently prove fatal, as the violence and intensity of the explosion prevent, in most cases, speedy relief being administered to the victims. Besides this, the methods employed are inefficient and usually unsatisfactory.

M. Ichlumberger, whose mind for some time has been occupied with this subject, finally proposes a mode of extinction which is exceedingly simple, and at the same time instantaneous. So confident is he of the efficacy of his plan, that he would like to make a law compelling every one to adopt it who has petroleum in any quantity.

This is his method; Upon every keg or barrel of petroleum, place a moderately large bottle filled with aqua ammoniæ. Should an explosion occur, the shock will shatter the bottle, spread the fumes of the ammonia in the atmosphere, and produce an automatic and infallible extinction of the flames.

This plan can well be recommended to those who make use of petroleum, or who are obliged to superintend the distillation of the liquid. It is only necessary to have within easy access one or several bottles of aqua ammoniæ, whose contents should instantly be scattered upon the petroleum in case it catches fire.

M. Ichlumberger also thinks that this mode of extinction could be effectively utilized in mines where fire-damp is imminent. The ammonia should be put in reservoirs, and so placed that it will be overturned immediately when the explosion occurs. This agent would undoubtedly be more powerful than water, and M. Ichlumberger's idea is worthy of serious attention.

A very peculiar case of poisoning occurred a short time ago at *Puy l'Evêque*, an account of which was sent to the *Académie de Médicine* by Dr. Demeaux. It seems that a family composed of five persons was taken violently ill after having eaten some mushrooms. One of the mushrooms left from dinner was sent by Dr. Demeaux to the *Académie* as a specimen, and upon being examined by M. Chatin, was found to belong to one of the numerous varieties of the *oronge-ciguë* species called the *Amanita bulbosa*. Nine-tenths of the mushroom poisoning we hear about is due to this *Amanita* which, on account of its white color is frequently mistaken by the inexperienced and unsuspecting for the harmless mushroom. It is certainly the height of folly for people to run about the woods and fields mushroom hunting, unless they are perfectly familiar with the different species.

Science, it seems, is able to reap some benefit from everything, however trivial! Fancy the ignoble art of Tattooing being elevated to a philanthropic institution! And yet, this is indeed the case. Up to the present day, the artists whose business it was thus to decorate the human skin, confined themselves to tracing merely a warlike emblem in indigo or vermillion upon the arms of our troopers, with the number of the regiment added sometimes. However, their ambition led them to execute a more intricate and ornamental design, such as a flaming heart pierced by an arrow, accompanied by the inscription, "To Mary," or something equally effective. Henceforth, be it understood, these dermographic artists will be looked upon as valuable auxiliaries to surgery.

"Why is it," asks Dr. le Comte, who is physician to a regiment of dragoons, "why is it that such quantities of soldiers die upon the battle field?" And then he replies confidently: "Simply because of the difficulty which arises in regard to arresting hemorrhages,"

The compression of an artery being the best mode of stopping profuse bleeding, Dr. le Comte proposes to teach each soldier first where these vessels are situated, so that he may assist himself while waiting for the surgeon. Therefore, he tattoos an image of some kind upon every portion of the soldier's body where there is an artery. Think of it! Has ever a more ridiculous and absurd idea been put into practice? How infinitely preferable it would be to furnish each soldier with a tourniquet, or at least compel him to attend six lectures upon anatomy, even though such a course might spoil a good soldier to make a bad doctor.

I believe some news has already reached you of Balmain's luminous painting, which attracted public attention some months ago and was first practically applied at the establishment of Messrs. Thlee and Horm. The ceilings of their different offices were covered with a layer of the composition, dissolved in water, and the effect produced is that of a diffused light which is sufficient to enable one to distinguish the various objects in the room.

M. Balmain's idea is excellent, and it would be most advantageous to paint the ceilings of rooms, passages, halls, etc., with his composition, should the use of lamps be dangerous or not absolutely necessary. A simple border of the painting is sufficient in narrow passage ways and stair-cases, and costs a mere nothing.

When dissolved in water, the composition can be applied like whitewash or kalsomine and is useful in more ways than one. Large slabs of glass have been covered with it and employed on board of English marine vessels, also in the Waltham powder factory and in Mr. Young's refinery to illumine places where it is impossible to carry a light. This painting has likewise taken the place of lamps upon several railroads in England, particularly those lines where tunnels are so frequent as to necessitate constant light in the carriages.

Now, a word about meteorology. Nearly every book that has been written on the subject, tells us unhesitatingly that the *Aurora Borealis* is a very rare occurrence except in the polar regions. It appears, however, that this is by no means the case, and that it can be observed with equal frequency in countries occupying a much lower latitude.

M. Sophus Tromholt, of Bergen, Norway, has just published an interesting account of some observations made at his request during the winter of 1878-1879, at one hundred and thirty-two stations extending throughout Sweden, Norway and Denmark. Many extraordinary facts concerning the *Aurora Borealis* can be gathered from this work. To give you an example, it was found that scarcely an evening passed that the phenomenon was not witnessed in one of these countries. M. Tromholt thinks the Aurora is often a local phenomenon, situated but a short distance above the surface of the earth. To strengthen his opinion he quotes many cases in which the Aurora was seen at one or more of the stations without being visible at Bergen, the headquarters, so to speak, where observations were carefully made both day and night. The phenomenon was only seen three times simultaneously by all the stations comprised in 71 and 55 degrees. And even then, who knows but that it was the same Aurora that each saw?

I cannot close my letter without mentioning why the inauguration of the Berlin electric railroad has been so long delayed. As was feared, electricity escaped from the middle rail, and a copper conductor supported by means of stakes has been substituted. Although this is a great improvement, it is doubtful whether the railway can be used in rainy weather, and this fact justifiesan article recently published in *L'Electricité*, which affirms that electric railroads can only be properly employed in tunnels such as, for instance, those of the future Metropolitan in Paris. COSMOS.

VANILLIN.—Meissner's new process for the manufacture of the aromatic principle of vanilla consists in producing it from eugenol $C_{10}H_{12}O_2$ by first forming aceteugenol; then oxidizing the said product with a certain proportion of permanganate of potash in a neutral solution; and, finally, further oxidizing the product with bichromate of potash in a neutral solution. The aceteugenol is obtained by digesting the dry eugenol with an excess of acetychloride C_2H_3OCl. The excess of acetychloride is distilled off, and the remainder used for the production of vanillin. (1). The crude aceteugenol is oxidized in a neutral solution, 47 to 50 parts of permanganate being used to 20 parts of aceteugenol. The product obtained is separated by a filter press from the binoxide of manganese formed during the oxidization, and after the decomposition of the small quantity of the carbonate of potash by sulphuric acid, the clear liquid is evaporated in a vacuum at 50 deg. C., to about 1-15th of the original volume. The acetvanillin is extracted from the lye thus obtained by repeated agitation with ether. (2). The lye freed from the acetvanillin is heated to 100 deg. C. to remove all the ether, and after being neutralized is mixed with neutral chromate of potash. The mixture is heated until the chromate is decomposed, and the product filtered off from the oxide of chromium, and shaken up with ether to remove the acetvanillin formed during the oxidizing process. This operation is repeated on the lye several times. After the evaporation of the ether, the acetvanillin is boiled with soda, by which operation crude vanillin is obtained, which is purified by being dissolved in ether, and shaken up in a warm saturated solution of bisulphite of soda, and set aside to crystallize. The crystals are washed in bisulphite of soda solution and strong alcohol, and finally decomposed by sulphuric acid when the vanillin separates as a colorless oil, and can be finally recrystallized in water.

IN speaking recently of the Washington telescope we inadvertently referred to it as a 32-inch equatorial. This instrument is well-known to have an object glass of 26 inches diameter. The objectives for the Russian Government ordered by Struve is 30 inches, and the Lick equatorial will have a 36-inch objective.

THE CAUSE OF SPONTANEOUS DECOMPOSITION OF RAW CANE SUGAR.—Organisms contained in these sugars multiply and produce an inversive ferment.—U. GAYON.

PERSISTENT VITALITY OF CARBUNCULAR GERMS, AND THEIR PRESERVATION IN CULTIVATED SOILS.—At a farm near Senlis, cattle which have died of carbuncular fever twelve years ago have been buried at a certain spot in a walled garden. Samples of the soil were lixiviated and concentrated, and guinea-pigs inoculated with the matter died quickly with well-marked symptoms of carbuncle. Of seven sheep allowed experimentally to pass a few hours daily on this spot, two died of the same disease in the course of six weeks, whilst the rest of the flock from which the seven had been taken remained healthy.—M. PASTEUR.