THE PALÆOTHERIUM MAGNUM.

The palæontological collection of the French Museum of Natural History has recently been enriched with a new fossil of the highest scientific interest. It is an entire skeleton of the *palæotherium magnum*, found incrusted in the quarries of Vitry-sur-Seine. Our engraving is reproduced from a photograph taken in the galleries of the excavations by means of the electric light.

The animal was first described by Cuvier, and was a mammifer, now entirely extinct and indeed without any actual representative among existing creatures. At one period its species was extremely abundant. Modern geologists classify it with the rhinoceros, the tapir and the horse; but their views have heretofore been based only on the detached bones, which have become common objects in almost every collection. The examination of the complete skeleton, now for the first time discovered entire, shows that even Cuvier was wrong in ascribing to the animal the proportions and conformation of the tapir. So far from being massive and heavy in build, as has been supposed, the palæotherium was a light, graceful animal, with a neck longer than that of the horse and closely resembling in external form that of the llama. Three toes are counted on each foot, and there is a snout or rudiment of a trunk. The femur has a third trochanter. The dentary system is composed of six incisors, four canines and fourteen molars, the last being analogous to the similar teeth of the rhinoceros. The hight of the animal was a little less than that of the medium horse. It was herbivorous, and existed in vast herds during the middle of the eocene period, as its remains are found in gypsum and equivalent rocks formed during that stage of the world's history.

THE PALÆOTHERIUM MAGNUM.

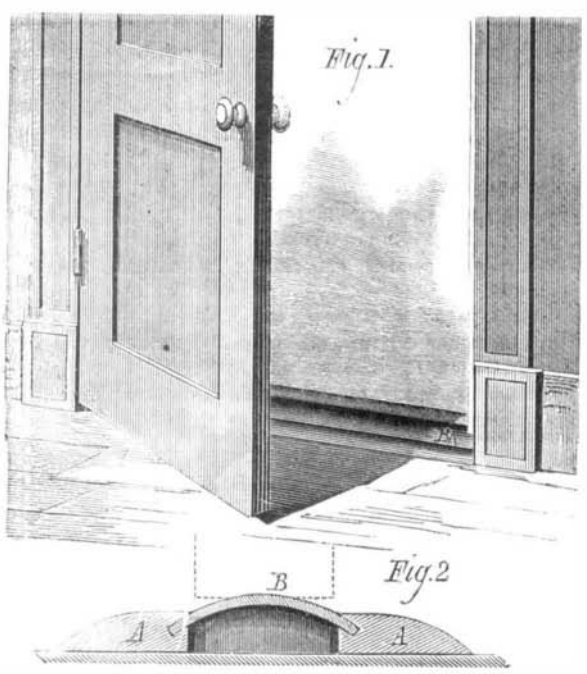
Galvanic Electricity.

Put a rod of amalgamated zinc in a glass cell filled with dilute acid, and it will be seen that the apparent action is limited to the gradual production of a few bubbles of gas. On placing this copper wire in the cell beside the zinc, there is no change until I allow the two metals to touch, when you see torrents of bubbles are evolved from the surface of the copper wire. On substituting platinum or silver for the copper we get a similar effect, and that whether we join the metals within the liquid or at a point exterior to it. Thus, if I join the copper wire to this galvanometer, and connect the other end of the coil with the zinc rod, you see that the magnetic needle is deflected as long as contact continues; but immediately on breaking the circuit, the action on the needle and the evolution of bubbles cease instantly. Such an arrangement of two metals, in a liquid capable of acting on one of them, is called a galvanic battery, and by means of it, in connection with a very delicate galvanometer on the other side of the Atlantic, we are able to send telegraphic signals across the ocean.

From the fact that the bubbles of gas are given off from the surface of the copper, we might suppose that it was that metal which was acted on; but if we were to weigh them, we should find that it was the zinc which had lost weight, while the copper remained quite unacted on. The dissolved metal is known as the positive, and the unacted metal as the negative; in fact, there is less tendency to solution on the part of the copper when connected with the zinc than in the absence of the latter metal, which, on the other hand, is far more rapidly dissolved than it would be alone.—*Lecture by A. H. Allen, F.C.S.*

IMPROVED ADJUSTABLE THRESHOLD.

Prolific causes of cold feet, consequent colds, and soiled carpets, are cracks under doors, between the bottom and the



threshold. As a remedy for this trouble, a very simple device has been suggested, and has, as we are informed by the manufacturers, been in use for some four years past in Chicago, with perfect success. It consists, simply, of a strip of heavy rubber, B, let into hard wood pieces, A, and securely fastened, thus forming an arch in the center, as will be seen from the sectional view, Fig. 2. When the threshold is in place, the rubber arch presses gently on the bottom of the door (dotted lines, Fig. 2); when closed, across the whole width, entirely excluding, it is claimed, rain, cold, dust, etc. The device is said to be very durable, and to outwear wooden thresholds. It cannot get out of order and is easily swept over.

We learn that it is now being introduced in other sections of the country for the first time, and is meeting with ready application. Further particulars regarding sale of rights (State or county) can be obtained by addressing Wilson, Peirce, & Co., 182 Clark street, Chicago, Ill.

Tooth-edged Cutting Scissors.

Dr. B. W. Richardson says: I have recently had constructed for my use a pair of tooth-edged cutting scissors, on the

plan shown in the diagram. The scissors are of the ordinary construction, in all respects, except in the cutting edge. The cutting edge of each blade, instead of being even and sharp, is divided into finely pointed teeth, each tooth being directed with a slight inclination towards the handle of the scissors. When the blades meet, the teeth cross each other; and as they pierce any structure that may lie between them, they crush also, between their surfaces.

If a piece of moderately firm substance be placed between the blades—a piece of paper or thin card, for example—the scissors perforate it in a series of perforations resembling what is seen in the postage stamp; that is to say, they do not cut clean through the substance, so as to leave it in two distinct parts at once. A little lateral or half-rotating movement of the closed blades is, however, sufficient to tear through the still connected lines of substance and to complete the separation. The same occurs if the substance placed between the blades be a portion of soft animal structure, only that more force is required in the lateral or rotating movement to cause complete separation. The parts punctured are crushed between the teeth, and are separated by the twist or torsion.

I find these scissors useful in dividing, directly and quickly, structures in which there are many minute blood vessels, and which, when divided by the knife, bleed freely. These toothed scissors, as they can be made at one and the same time to pierce, crush, and twist, control bleeding remarkably.

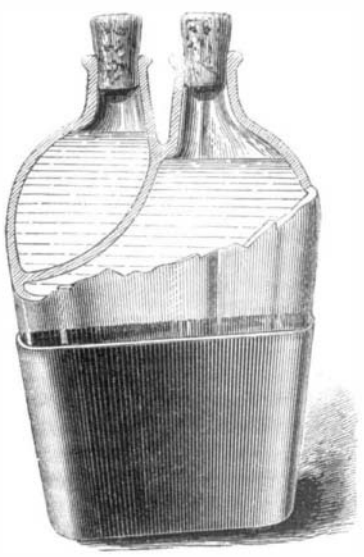
I have put the scissors to a good test in a case of epulis. The tumor was increasing rapidly, and three teeth were involved in it. It was very vascular, had a broad base, and might, at first sight, have been taken for a malignant rather than for a fiberous tumor. The three teeth being extracted, I found I could get a deep grasp of the tumor between the blades of the scissors. I carried the teeth of the scissors well through the base of the tumor, crushing some portion of bone in the way, and gently and easily twisted the mass off, and lifted it away upon the blades without the loss of any blood whatever. The healing in this case was rapid and good. —*Medical Times and Gazette.*

Iron Columns.

At a recent meeting of the members of the London Architectural Association, Mr. Richard Moreland, C.E., read an important paper on "Iron Construction," in which he said that, with regard to cast iron pillars in long columns, the tranverse section had two duties to perform, namely, to support the load and to resist flexure, so that only one half of the strength of the pillar could be considered available for the resistance to crushing, and the other half for the resistance to flexure. In other words, one half was in compression and the other half in tension; and this was precisely the condition in which a girder was in; or it might be taken as a question of leverage, the length of one end being the diameter of the pillar, and the other half length of the column; but in the case where the pillar was large in comparison to its length, then the whole of the material must be taken to resist the compression of a considerable portion of its crushing strength. The working load on pillars should not exceed one tenth to one sixth of their breaking, and, under ordinary circumstances, should not exceed 25 diameters. Special care should be taken when the pillar was subject to transverse strains, where heavy goods of unstable form were piled against them, as a considerable strain might be produced from this cause; and also in the event of blows from rolling goods or other causes. Pillars in juxtaposition to brick walls took the whole load when they were strong enough to bear it; but masonry served to stiffen the pillar if secured to it; and if the wall was built in cement, and of considerable thickness in comparison to the iron pillars, they then possibly might assist each other. In cases where the brickwork was liable to be compressed, and the pillar unequal to its load, then obviously nearly the whole weight must be discharged on the pillar; but care must be taken, as possibly intense compression might take place at the base of the pillar. The basis should be as level as possible. Short columns under crushing force were deformed by pyramid wedges forming at the ends and forcing out wedges at the sides; this was also seen in the crushing of stone and other solid materials. For various forms and sections of pillars, and also of different lengths, the strength of the material would vary considerably under the diverse conditions in which it was placed. For small proportions of length to diameter, cast iron was the strongest material, but its strength diminished, as the proportion of length to diameter increased, faster than wrought iron; and, in comparison of solid square or wrought iron pillars with solid round cast iron pillars beyond twenty-six and a half diameters, wrought iron was stronger. For ordinary work no cast iron columns should exceed twenty-seven diameters. The elasticity of cast iron was twice as great as that of wrought iron. The strength of girders to resist resilience was proportional to the weight of the beam, irrespective of the length, so that a beam twice the weight or twice the length would take twice the load to produce the same deflection. Rolled girders were only economical up to a given size and weight.

PATENT BOTTLE.

Mr. Benjamin C. Odell, of Kingston, N. Y., is the inventor of the novel style of bottle represented in the annexed illustration. The object is to separate, within the same bottle, two kinds of liquid, which can be separately removed, and this is effected by arranging a partition to form two compartments, each of which has its own discharge or spout. It is a handy device for invalids traveling, as medicine might be carried in the smaller division and water in the larger, while a cup, similar to the kind generally accompanying "pocket pistols," might be fitted over the bottom. Any number of partitions may be placed in the bottle, with a corresponding number of spouts. Thus arranged, it might prove valuable to physicians, by affording them the means of carrying quantities of several remedies in a single pocket receptacle.



THE maximum cost of transporting railway freight, last year, between New York and Chicago, was 7 mills per tun per mile. The total cost of moving freight by canal (horse power being used for towage) is 5 mills per tun per mile.

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