

## Scientific.

**THE CONSTITUTION OF METEORS.**—The Paris Academy, says *Nature*, has just awarded the Lalande medal to M. Stanislas Meunier for his researches into the constitution of meteors. M. Daubree had already shown that there existed a close connection between these falling bodies and the lower strata of our own globe. M. Meunier has carried the same line of research further, and proved that this analogy is not confined alone to mineralogical constitution, but that it extends to the relations which these cosmical materials, disseminated in space, present when compared amongst themselves. The academy considered that M. Meunier had reason to conclude from his experiences that all the masses once belonged to a considerable globe, like this earth, of true geological epochs, and that later it was decomposed into separate fragments, under the action of causes difficult to define exactly, but which have more than once been seen in operation in the sky itself. Such a conclusion, it is remarked, adds greatly to the interest attaching to these "minute stars." The astronomer, once occupied only with their motions and their probable distribution in space, finds himself confronted with a sidereal geology, as he already was under the necessity of having regard to celestial physics, celestial chemistry and celestial mineralogy.

**PROF. TYNDALL ON THE ELECTRIC LIGHT.**—Prof. Tyndall, who was recently examined before the Parliamentary Select Committee, gave a brief history of the discovery of electricity for lighting purposes, illustrating his description by a series of experiments. Volta's discovery, he said, had the power of producing heat and light, and if his conception was correct it would have been tantamount to the introduction of perpetual motion. The voltaic battery, however, was not an economical mode of producing electricity. In 1820 a Dane named Orsted found that a magnified needle was affected by the proximity of the electric current, proving the analogy existing between electricity and magnetism. Prof. Faraday had also for many years devoted his attention to the subject, with the result of discovering a new magnetic electricity. In the opinion of the witness very extensive improvements in the electric light must be regarded as inevitable, and seeing what had been done by Mr. Edison there was reason to believe that many of the existing difficulties would eventually be removed. He was afraid that as regarded public illumination, platinum would be found too expensive for general use; nor was he of opinion that the electric light would drive gas out of the field, there being so many uses for the latter.

**DEW.**—The commonly accepted theory that the phenomenon of dew is produced by the condensation of the moisture of the air by contact with surfaces of a lower temperature, is rejected by Prof. Stockbridge, of the Massachusetts Agricultural College, who defines it to be the vapor of the soil condensed by the cooler air.

**A CONVENIENT PLAN FOR WASHING GELATINE EMULSIONS.**—In Mr. Bennett's process a rather inconvenient plan of washing the gelatine emulsion is prescribed, and one on which we think we have improved, since by adopting it the emulsion can be washed in an ordinarily lighted room. A bottle by preference having a wide neck is chosen, and a tin canister with a top is procured, into which the bottle can be placed and covered up. In the top a hole is carefully drilled so as just to fit a piece of  $\frac{1}{4}$  in. glass tubing,  $\frac{1}{2}$  in. longer than the canister is high; and about 2 inches from the bottom another hole is bored, and a  $\frac{1}{4}$  in. tin tube with a couple of bends at right angles to one another soldered over the hole. The bottle with the emulsion in it is placed in the canister, the glass tube put into the bottle through the hole in the lid, and a piece of india-rubber tubing slipped over the projecting end of the tube till it fits tightly against the lid. The other end of the india-rubber tubing is fitted to the water supply, and the amount of water admitted to the bottle regulated by a clip on the tube or by the tap. We have ourselves used as a reservoir a 4 gallon jar with a bung hole at the bottom, into the bung a piece of glass tubing is inserted as an exit for the water, and the supply is controlled by a clip on the india-rubber tubing. It answered excellently: four times filling washed the emulsion perfectly.—*Photographic Journal*.

**CASE-HARDENING IRON.**—In order to economize in the more expensive materials for case-hardening cast, wrought, or malleable iron, and to harden only portions of the article in different degrees, if required, Mr. Gracie S. Roberts, of Brooklyn, makes

use of an improved method. After polishing the surface, he glues to the portion to be case-hardened a coating of yellow prussiate of potash. A number of coats are given, according to the degree of the case-hardening required. A cheaper material, or simply boneblack is used where a slight effect only is required. When the glue is set hard, the article is packed in powdered charcoal, heated to redness in a quick fire and maintained at that heat for half an hour. Then it is hardened and tempered in the usual manner.

**GIGANTIC TREES.**—It is well known that America claims to outstrip all the other parts of the world even in the size of its trees. Thus, until lately, a *sequoia* in the neighbourhood of Stockton, in California, estimated to be 325 feet high, enjoyed the reputation of being the tallest tree in the world. But an official of the Forests Department in Victoria (Australia) measured not long since a fallen *Eucalyptus* in Gippsland, and found that it was 435 feet long from the root to the highest point of the branches. But even this is exceeded by another *Eucalyptus* still standing in the Dandenong district in Victoria, which is estimated to be 450 feet from the ground to the top.

**EMERY BELTS.**—A correspondent of the *Scientific American* says that most users of emery belts and emery wheels do not use glue that is thick enough, fearing it may chill before the sand or emery can be spread. In making an emery wheel or belt, if the cloth has never been glued, it should be sized with glue about as thick as lard oil, and allowed to dry thoroughly before applying the glue which holds the emery. Have the emery heated to 200° F., and coat the belt or wheel with glue about as thick as molasses and roll it in the hot emery. If a wheel or belt thus treated is allowed sufficient time to become thoroughly dry, it will be very serviceable.

**THE LOFTIEST BRIDGE IN THE WORLD.**—The erection of one of the great towers of the Forth Bridge on the Island of Inchgarvie was commenced on the 4th inst., by the contractor, Mr. Wardell. The towers, of which those on the Inchgarvie are to form the centre support of the bridge, will, when the ironwork is completed, be upwards of 500 feet in height, says the *Leeds Mercury*. It is intended that the construction of the heavy engineering work shall be carried on with expedition. The bridge will be one of the greatest engineering works of modern times.

**FERN DYEING AND MOUNTING.**—Collect the fern fronds and lay them between dry blotting paper, then have as many pieces of blotting paper as you have fronds, put them under a little pressure and keep them until quite dry, then you may dye them with Judson's dyes until the colour required. Do not attempt to dry them too quickly; they are well worth the extra time when well done.

**A POLISH FOR REMOVING STAINS, &C., FROM FURNITURE.**—Take  $\frac{1}{2}$  pint of alcohol,  $\frac{1}{4}$  oz. pulverized resin,  $\frac{1}{4}$  oz. gum shellac,  $\frac{1}{2}$  pint boiled linseed oil. Shake the mixture well and apply with a sponge, brush, or cotton flannel, rubbing well after the application.

**CLEANING CARVED WORK.**—The feather end of an old quill pen will, by the aid of benzoline, effectually remove the dirt from the interstices of carvings.

**A REMEDY FOR WHOOPING COUGH.**—Dr. Garth (*Wiener Allgem.*) states that by placing xx. gtt. ol. terebinth. on a handkerchief, holding it before the face, and taking about 40 deep inspirations, to be repeated thrice daily, signal and marked relief, followed by rapid cure in cases of laryngeal catarrh, is the result. In an infant 15 months old, in the convulsive stage of whooping cough, he directed the mother to hold a cloth, moistened as above, before it when awake, and to drop the oil upon its pillow when asleep. The result was markedly beneficial. In 24 hours the frequency and severity of the attacks were notably diminished, and by proper support by aid of stimulants, the improvement was rapid. Subsequently pertussis became epidemic in his vicinity, and he repeatedly used the drug in this way. He gave it to children of all ages, and in any stage of fever. The initial catarrh, the convulsive, and the final catarrhal stages were all decidedly benefited, the spasmodic attacks being in many cases aborted.

**TO CHILL CAST IRON VERY HARD.**—Use a liquid made as follows: Soft water, 10 gallons; salt, 1 peck; oil vitriol,  $\frac{1}{2}$  pint; saltpeter,  $\frac{1}{2}$  pound; prussiate of potash,  $\frac{1}{2}$  pound; cyanide of potash,  $\frac{1}{2}$  pound. Heat the iron a cherry-red and dip as usual, and if wanted harder, repeat the process.