

## Scientific Items.

### NEW NOTES ON STRIDULATION.

According to the Science Summary, in the *Independent*, some fresh observations on the buzzing of insects have been made by J. Perez. He believes that the cause of buzzing certainly resides in the wings. In the Hymenoptera and Diptera the buzzing is due to two distinct causes—one to the vibration of which the articulation of the wing is the seat, and which constitutes true buzzing; the other the friction of the wing, an effect which more or less modifies the former. In moths of strong flight, such as the sphinges, the soft and full buzzing which these insects produce is only due to the friction of the air by the wings. This sound, which is always grave, is alone produced. It is not accompanied by the basal beatings, owing to a peculiar organization, and especially to the presence of the scales. In the dragon-flies, also, in which the base of the wing is furnished with soft fleshy parts, no true buzzing occurs, but a simple rustling, due to the friction of the organs of flight. M. Perez believes that the passage of air through the respiratory orifices has nothing to do with the production of sound, as when injured or closed the buzzing goes on. When the stigmata or air-holes are stopped hermetically, as was done by Barmeister, the buzzing is only weakened, as the insect is partially asphyxiated by the loss of fresh air. When, as Chabrier did, Perez stuck together the wings of a fly, the sound was still produced, as the base of the wing continued to vibrate and the buzzing sound to be produced. But all buzzing was stopped if, by holding the wings pressed together, over as large an extent as possible, so as to exert a certain traction upon their bases, all movements of these organs is rendered impossible. In whatever way the wings are confined, provided their immobility be incomplete, the buzzing absolutely ceases; contrary to Hunter's statement. M. Perez's observations can be readily repeated, if nice methods of procedure are followed, by observers in this country, and this vexed question be set at rest.

### COLORING METALS.

A foreign paper gives the following: Metals may be rapidly colored by covering their surfaces with a thin layer of sulphuric acid. According to the thickness of the layer and the duration of its action there may be obtained tints of gold, copper, carmine, chestnut brown, clear aniline blue, and reddish white. These tints are all brilliant, and if care be taken to scour the metallic objects before treating them with the acid, the coloring will suffer nothing from the polishing. On making a solution of 640 grains of lead acetate in 3,450 grains of water and warming the mixture to 88 or 90 degrees, it decomposes and gives a precipitate of sulphuret of lead in black flakes. If a metallic object be immersed in the bath, the precipitate is deposited upon it, and the color produced will depend on the thickness of the deposit. Care must be taken to warm the objects to be treated gradually, so that the coloration may be uniform. Iron treated in this way has the aspect of bluish steel; zinc, on the contrary, becomes brown. On using an equal quantity of sulphuric acid instead of the lead acetate, and warming a little more than in the first case, common bronze may be colored of a magnificent red or green, which is very durable. Very beautiful imitations of marble may be obtained by covering the bronze objects warmed up to 100°, with a solution of lead thickened with gum tragacanth, and afterwards submitting them to the action of the precipitate spoken of above.

FOR THE POLE OVERLAND.—We read in an Eastern exchange that a party of enterprising explorers in search of the North Pole left Indianapolis on the 7th ult. They are even hopeful that in the extreme northern regions they may be able to find some traces of the long-lost explorer and navigator, Sir John Franklin and his followers. The party will proceed to the Red River of the North and descend said river as far as Pembina. From the latter place, a small steamer will carry the exploring party as far north as navigation will permit. They will then proceed as best they can to Fort York, on the west side of Hudson Bay, in about 58° north latitude. At this point they will put their boats together, carried in sections, à la Stanley, and launch them and push as far north as 80° before going into winter quarters. We understand that the Governor-General of Canada has received instructions from the home government in Great Britain to aid and assist the expedition in every possible way. A band of 50

tried Esquimaux trappers and fishermen are engaged to accompany the explorers. The Esquimaux are thoroughly equipped for the voyage and provided with trained dogs, sledges, reindeer, etc., and can travel at a rapid pace.

CAUTION AGAINST BASTIE GLASS.—The toughened glass of M. de la Bastie, which, upon its first appearance, created so great an interest, and not a little consternation in the glass trade, has scarcely justified the great expectations formed of it, and evidence of its unreliable character is from time to time forthcoming. Thus in the August number of the *Moniteur Scientifique*, M. J. Laurent, of Marseilles, cautions the scientific world generally, and chemists in particular, against the use of it. He considers the objects and utensils made of toughened glass to be no better than so many Prince Rupert's drops or Bologna flasks, from which they differ only by their shape. M. Laurent adduces an instance where a dish made of toughened glass was used at a stearine factory at Marseilles; it suddenly broke into thousands of fragments upon being placed on the metal scale of a balance. It was then in a state of cooling down from 100° C., at which temperature it had been maintained for some time; but it had previously been in use for about a month, and its sudden destruction was entirely inexplicable, save by the theory above mentioned.

SPONTANEOUS COMBUSTION.—Dr. Hoffman has called attention to some curious cases of spontaneous ignition of hydrogen in air. The phenomenon has been noticed in factories where quantities of zinc were being dissolved in hydrochloric acid for the preparation of zinc chloride. Violent explosions took place when no flame was near; and it was eventually ascertained that the gas took fire spontaneously. It appears to be caused by fragments of very porous zinc, which, when lifted above the surface of the liquid during the violent evolution of the gas, and so brought in contact with hydrogen and air, act just as spongy platinum would do under the circumstances. The author recommends the performance of such operations in the open air. The ignition can be shown by treating a few kilogrammes of finely divided zinc with acid. The "zinc dust" may even ignite by contact with water.

THE BRUSH MACHINE IN A COTTON-MILL.—Mr. Charles P. Brush, inventor of the Brush dynamo-electric machine, has completed and exhibited apparatus for a New England cotton-mill, which gives eighteen lights of two thousand candle-power each, a fourteen-horse engine being used to furnish the power. The lights are claimed to be under perfect control, and not disturbed by accidents to one or more in the circuit. The carbons in each lamp, it is also claimed, cost seventy-two cents, and last eight hours. This is about one-sixth the cost per candle-power of the Jablochkoff lights in the streets of Paris, which, however, cost more than the gas-lights they displace.

REMEDY FOR COLOR BLINDNESS.—*La France Médicale* states that M. Delbœuf has found that if a person afflicted with Daltonism looks through a layer of fuchsine in solution, his infirmity disappears. A practical application of this discovery has been made by M. Joval, by interposing between two glasses a thin layer of gelatin previously tinted with fuchsine. By regarding objects through such a medium all the difficulties of color blindness are said to be corrected.

It is stated that the electric light is already in use on the Crown Prince Rudolph Railway, in Austria, as a headlight. The apparatus used consists of what is known as Schnkert's dynamo-electric machine, a small three-cylinder steam-engine and an electric lamp. It takes very little room on the locomotive, and is said to answer the purpose perfectly.

A NOVELTY IN FIREARMS.—A Spaniard, of Madrid, has invented a novelty in revolving firearms. In consists in the addition of a special chamber for receiving from the rear end of the cylinder, a portion of the gas resulting from the explosion of the cartridge, and conveying it to one of the discharged chambers to expel the empty shell.

LARGE FUNGI.—Among noteworthy specimens seen at the recent Edinburgh Fungus Show was a *Polyporus giganteus* three feet six inches in diameter, and a puff-ball (*Lycoperdon giganteum*), fifty-four inches in circumference and weighing twenty pounds.

IMPERVIOUS RUBBER TUBING.—It is asserted that India rubber tubing may be made entirely impassable to coal gas by painting it over with a solution of silicate of sodium, otherwise known as "water glass."