

from accidental and apparently trifling causes. It has been said that those employed in making ordinary lucifers, are liable to a frightful and inveterate disease, known as "necrosis" caused by the fumes of the phosphorus used in their manufacture, which attacks the jaw-bones—the lower being sometimes entirely destroyed. As the safety match contains no phosphorus, all risk of this distressing malady in its manufacture is effectually prevented. A source of fires (attributable to the use of lucifers) arises from the number of matches, which, not readily lighting, are thrown away, whilst in most cases their combustable properties remain, and, by being trodden on, and in various other ways, the latent fire is evolved, possibly causing a conflagration. This cannot happen with the "safety match," which affords an instantaneous light, as readily as those in common use, whilst all danger of accidental fire is avoided.

Modern Projectiles.

Comte de Latour, says that the opinions now generally held regarding the power of the new firearms are vastly exaggerated, and shows that many more men were lost in the great battles of the empire than in the last Italian campaign. At Austerlitz, the Russians lost 30 per cent., the Austrians, 44 per cent. of their army; the French lost 14 per cent. At Wagram the loss of the Austrians was 14, that of the French 13 per cent. At La Moskowa, the Russians lost 44 per cent.; at Waterloo, the allies lost 31 per cent.; the French 36 per cent. At Magenta, on the contrary, the Austrian loss was not more than 8 per cent., that of the French only 7; at Solferino, the Austrians sustained a similar loss, and the Franco-Sardinians only lost one-tenth. This may be explained by the fact that a long range obliges the projectile to describe a curve; thus, according to M' d' Azemar, if the column of the Place Vendome were placed between the gun and the mark, the latter being at a distance of 2,500 yards, the projectile would pass clean over the monument without touching it.

Water converted into Fire

There have been speculations as to the possibility of such a transformation for a long time. But in a recent number of the *Cosmos*—a scientific journal, of a high character, published in Paris—the Abbé Moigno, the editor, informs his readers that he has seen this at the workshop of the discoverer, M. Festud de Beauregard, in the Rue Lafayette, and that the action and the effects are truly admirable. It has long been known that when oxygen and hydrogen gases unite and form steam, as they do by their union, a most intense heat is produced. In this case, in fact, we have the oxyhydrogen blowpipe, which though very small, is yet a furnace of the most intense heat. It is now found that by exposing steam in its turn to a very high temperature, the atom of oxygen and the atom of hydrogen (of both of which in union with each other, an atom of steam consists) tend to separate again, and in fact may be actually separated merely by presenting to the very hot steam some substance with which one of the elements of the steam, either the oxygen or the hydrogen, tends to unite rather than the other. But no sooner are the oxygen and the hydrogen separated than they tend to rush together again, producing in the act of union the heat of the oxyhydrogen blowpipe. In or-

der to obtain this wonderful power of heat all that is necessary, as now appears, is to raise steam to a very high temperature, and then to let it loose when very hot upon some body which tends to unite with one of its elements, its oxygen for instance, as is the case with common fuel. The hot steam immediately sets the fuel on fire. M. Moigno mentions that in the apparatus which he saw, a jet of hot steam from a tube, which was only one millimetre (about 1-25th of an inch) in diameter, when made to play upon a mass of charcoal in a furnace, lighted it up into a most vivid fire. The only point that is staggering is the immense heat which requires to be imparted to the superheated steam. Thus, for the full effect, 1000 deg. cent. is named,—that is, 1832 deg. Fahr.—that is, a heat at which silver and almost copper melts. And this said to be produced by having the steam-heater immersed in a bath of melted tin. As there is no need of great pressure however, and no risk of explosion (for no water at all is admitted to the steam-heater), it may be found possible both to command and to control steam at this temperature with economy upon the whole. And if so, there can be no doubt that not only in the laboratory of the chemist, but in the reducing of metals and in the arts generally, on a great scale, the application of superheated steam will form an epoch.

Deleterious effects of Copper.

Dr. Perron, of Besancon, where there are more than 3,000 persons engaged in the manufacture of watches, in his paper adverts to the mischief which accrues from the constant manipulation of copper. His conclusions are as follows:—1. The molecular absorption of the salts and oxides of copper give rise to gastric irritation, diarrhoea, fever, &c.—in fact, to the symptoms of poison all but in degree. 2. Successive slow poisonings of this kind derange the health of the workman, and powerfully predisposes him to phthisis (a disease of frequent occurrence among the Besancon watchmakers). 3. They require him to take corporeal exercise, carried even to fatigue, and justify the frequent employment of evacuants and sudorifics. 4. Manipulations of copper or other metals should be interdicted to thin and excitable persons of a dry bilious temperament, and who have any congenital or acquired disposition to phthisis. 5. This affection is best prevented by the use of succulent aliments, and tonic drinks, the thorough ventilation of the workshops, great cleanliness, frequent tepid bath, and wearing the moustache.

Native Woods at the Great Exhibition.

Among the articles to be sent to the Exhibition from the island of Dominica, in the West Indies, are no less than 170 varieties of native woods, principally hard and susceptible of a fine polish. Indeed the specimens of wood from our various colonies, manufactured and in the rough, will form to a large and influential body of the British community one of the most interesting sections of the palace of arts and industry.

Drift of the Sea.

A bottle has been picked up at sea, off the Azores Islands, which, from a memorandum it enclosed, had drifted 1,417 miles in 243 days, equal to 5.83 miles per day.