decomposes water with the evolution of hydro-sulphuric acid, and is converted into a hydrate.

The oxide of lanatium is of brick-red colour, which does not appear to be owing to the presence of oxide of cerium. It is converted by hot water into a white hydrate, which restores the blue colour of litmus paper reddened by an acid; it is rapidly dissolved even by very dilute acids; and when it is used in excess, it is converted into a subsalt. The salts have an astringent taste, without any mixture of sweetness; the crystals are usually of a rose-red colour. The sulphate of potash does not precipitate them, unless they are mixed with salts of cerium. When digested in a solution of hydrochlorate of ammonia, the oxide of lanatium dissolves, with the evolution of ammonia. The atomic weight of lanatium is smaller than that assigned to cerium; that is to say, to a mixture of the two metals.

M. Berzelius has repeated and verified the experiments of M. Mosander. —*L'Institut*, 14 Mars, 1839. Ibid.

NOTICES FROM THE FRENCH JOURNALS. TRANSLATED FOR THE JOURNAL
OF THE FRANKLIN INSTITUTE, BY J. GRISCOM.

New Application of Dextrine. By BARON DE SYLVESTRE.

I have the honour to announce to the Society that I have just made a new application of Crude Dextrine in employing it as a temporary varnish for oil paintings. At the last exposition of the Saloon a great number of pictures were so confused by the imbibition of the colours, that it was impossible to appreciate them properly, and I was induced to seek for some remedy for this serious inconvenience which common varnish will not obviate, since it cannot be applied until long after the painting is finished. The nature of dextrine and the various qualities which have given it already so much extension in the arts, induced me to think that it might produce happy effects in this case, and, in fact, numerous trials have convinced me that crude dextrine, dissolved in diluted alcohol, will completely prevent the effect of imbibition, even when employed a few days after the finishing of the picture. Applied with a soft brush it gives to the whole picture a sort of clearness like a light varnish, which can be easily removed by a moist sponge, when, after a few months, common varnish may be applied with its ordinary brilliant effect, without inconvenience.

Sometimes the fat oils which have been used too freely in painting, obstruct the uniform adhesion of the solution of dextrine on the picture, and occasion the formation of small liquid drops, which, in drying, produce spots. In this case a sponge moistened with warm water must be passed over the picture to remove the first coat, and then it should be rubbed lightly with soap water previous to renewing the dextrine, which, after this, spreads uniformly over the whole picture.

The solution of dextrine, as above prepared, serves as a perfect varnish for water colours and for fixing pencil and crayon drawings, so as to prevent any injury from rubbing.

The solution of dextrine, in about an equal portion of warm water, furnishes a paste which remains liquid and possesses great energy. It may be used for drawings, engravings, and all sorts of pasteboards and paper, and as a substitute for the greater number of common pastes with decided advantage.

Rec. Soc. Poly. Juel. 1839.

Obliteration of Indelible Ink.

Marks made with this Ink may be effaced by wetting the stuff on which they are written thoroughly with liquid Ammonia. In ten minutes the colour becomes pale, and in a short time completely disappears.

The reputation of marking inks depends on the difficulty of removing from the stuff the oxide of silver, which is formed from the nitrate, the base of these inks. Ammonia dissolves this oxide without leaving a trace of its existence.

Idem.

New Phosphoric Matches.

On the subject of these matches, the committee of health and safety in Paris, remark as follows, relative to their fabrication:

"Every body is acquainted with the new and elegant matches, which, on account of their convenience and cheapness, are now preferred to all others. They may be said to have totally supplanted the red matches. They inspire, it is true, some fear of danger, but when examined closely, we find this fear to be unfounded. The first matches were naturally very imperfect. They took fire on the slightest friction and sometimes on a simple exposure to the sun. It was therefore with reason that Councillor Trousnotrof awakened public attention to the danger of using them; and yet the fabrication of these matches has not been the less prosperous.

"The friction matches now sold may be strongly shaken in the box containing them without inflaming. They ought not certainly to be given to children as play things; but if governments were to be influenced by these considerations they must interdict the use of flint and steel, and must watch with especial care the manufactories, to prevent the sale of sulphur, sulphuric acid, burning glasses, ceruse, &c. &c., which would involve them in the ridiculous.

"Our aim in publishing this article is to enable our readers to partake in the advantages of so useful an invention, by communicating the following process. We should observe that although these matches may not be dangerous, they ought not, nevertheless, to be kept in heaps, nor should governments allow them, under any pretext, to be fabricated in the large way in a town or near dwelling houses, for the least negligence might cause a fire which could not be extinguished, and even in making them in a small way, the greatest care ought to be used.

Preparation.—Put a quantity of mucilage of gum arabic into an earthenware vessel and heat it to the temperature of 40° or 50° C. (= 100 to 125 Far.) and to four parts of the mucilage add one part of phosphorus: it instantly melts; stir it so as to mix it well with the mucilage, and when well divided, add chloride of potash in powder, nitrate of potash and a little Benzoin, so as to form a soft paste: into this dip the ends of the match sticks. The mass constitutes what is called *fulminating tinder*.

Idem.

Observations.—The Editors of the French Journal designate a number of grave accidents which have occurred in Paris in consequence of these matches, such as fires, loss of eyes, &c., and urge the expediency of an injunction, on the part of the administration, that they be manufactured in localities detached from other buildings, and if possible in fire-proof rooms, —that they be packed and sold only in separate boxes, and to recommend

that no more paste be used than is sufficient for inflammation, and when transported to a distance that they be inclosed in solid cases, and the contents carefully marked as in the regulation for percussion caps.

Some prohibitory police regulations on this subject would doubtless be advisable in our cities and villages. The committee appointed by the corporation of New York to investigate the causes of fires, ascribe a number of their annual conflagrations to the imprudent use of these matches.

Of the various kinds of matches which have come under our notice, there is none which, as a medium between convenience and safety, we prefer to the Lucifers, especially as prepared by Jones, of the Strand, London, and imported by our wholesale Druggists. They require the aid of the sand paper, and scarcely one in a box will fail to ignite with its use.

We were offered lately in the streets of Pittsburgh a kind of loco-foco matches which were new to us, and were told that they are made by the cart load on the Monongahela River. A block of dry wood about one inch and a half long on each side, is sawn (but not entirely through,) in two directions, so as to leave more than a hundred detached upright pieces each the size of a match. The ends of these are dipt together in the paste, and when a match is wanted it is broken from the block. Being thus detached they can be transported with much less danger than when in compact bunches. They ignite by friction on almost any surface and burn as if containing phosphorus. The composition *may be* the same as that given in the above recipe. G.

Organic Chemistry. Pyrogenous products of Amber.

M. M. Pelletier and Walter state that in examining the action of heat in amber, one substance among others which they have obtained and analyzed, appears well worthy of notice.

This is a white, crystalline substance, soluble with difficulty in alcohol and ether, and acquiring an intense blue colour from the action of sulphuric acid. Their analysis leads to the formula $C^3 H^1$.

This substance has therefore the same composition as Idrialene. It exhibits also all its properties. Idrialene, discovered by M. Dumas, has hitherto been met with only in a mineral, the locality of which is lost, and which is met with only in a small number of mineralogical collections.

The authors, however, do not decide upon the identity of Idrialene and the substance they have found in amber. In case they should prove to be only isomeric, they propose to give it the name of *Succisterene*.

L'Institut, No. 235.

New Compound of the Oxide and Chloride of Antimony.

M. Langlois announces that he has just found a new compound of the oxide and chloride of antimony, which presents all the characters of a true salt, and is different from the powder of Algaroth. This oxichloride is composed of

Chloride of antimony,	13.65
Oxide of antimony,	86.35

100.00

Idem, No. 238.

Iodide of Chromium.

The beautiful compounds of Chromium with Chlorine and Fluor have been long known, but the Iodide of Chromium has but just been obtained by M. Herbert Giraud. His method is altogether similar to that generally pursued for nitri-chloride and tri-fluoxide of chromium. Like all other compounds of the same metal, it is remarkable for its splendid colour, which is a deep granite red. It is a fluid of an oily consistence, heavier than water. Heated to 130° C. it goes off in vapour of the same colour as the liquid itself. Exposed to the air it produces aqueous fumes; mixed with water it changes into chromic and hydriodic acids. It destroys organic substances, blackens paper and wood, stains the skin with a deep, permanent brownish red, destroys the cuticle, and is poisonous to vegetables and animals.

Idem, No. 241.

Filtration of Hydrogen Gas through Caoutchouc.

M. Cagniard-Latour, in experimenting on the permeability of membranous envelopes, ascertained that a small balloon of caoutchouc, well prepared, appears to be completely tight to atmospheric air; i. e. once inflated, it remained so indefinitely; but that the same bottle filled with another gas—for example, oxygen, azote, carbonic acid or hydrogen, became very sensibly loose or uninflated. With hydrogen the collapse was more prompt than with the others.

In seeking for the cause of this rapid escape of hydrogen, he filled a balloon with it, and kept it for some time under water. In a few hours, the surface was nearly covered with small gaseous bubbles, and the size of the balloon appeared sensibly diminished. On examining the gas after its escape, it appeared to be the same as before, nor had the caoutchouc membrane undergone any alteration. The result appeared to be simply the effect of mechanical filtration.

The thickness of the balloon membrane in these experiments was only the fourth of a millimetre ($= \frac{1}{1000}$ of an inch), but the author had tried others much thicker, and found that when suitably compressed, hydrogen would escape through them.

Idem, No. 245.

Electricity of Friction.

Dr. Wollaston, in a memoir published in 1800, says: "To ascertain positively whether oxidation contributes to the development of electricity, I mounted a little cylinder, with cushions, and conductor, in a glass, so arranged that I could change the air it contained at pleasure. After trying its energy in common air, I substituted carbonic acid, and found that all development of electricity was suspended. It returned immediately when atmospheric air was again introduced.

In a note by Gay Lussac, on this passage, it is said: "electricity is obtained with very oxidable amalgams, in an atmosphere of carbonic acid, provided this gas is deprived of the greater part of its hygrometric water."

M. Pecllet has determined, as he alleges, that Dr. Wollaston was decidedly in error. He constructed an apparatus with a cylinder, cushion and conductor, so disposed that he could introduce and discharge the gases in a dry state. With this he operated with air, hydrogen and carbonic acid,

and for the two last, the experiments were not made until the containing vessel had been filled and emptied six times successively. The results were precisely the same in all the experiments. Hence he infers that in the production of electricity by friction the action of the air on the coating or amalgam, whether more or less oxidable, is without any influence.

Idem, No. 246.

In a subsequent memoir by the same author, we are told "that the production of electricity of a high tension, by the friction of slipping, by rolling, or by pressure, proceeds neither from chemical action, from shaking, (ébranlement) nor from an approximation of the molecules of a body; it results solely from contact; the increase of pressure or of motion during contact has no other effect than to increase the number of touching points, and that swiftness as well as the direction of the motion which produces separation, is without any influence."

Idem, No. 247.

Zinc. Sounds Produced by Heating it.

M. Strehlke has observed some peculiarities relative to this curious phenomenon. If a spirit lamp be placed under a disc of zinc, supported from several points, or under a bar of the same metal resting on two prismatic supports, in the course of a few minutes sounds are heard somewhat like those of a chime of sleigh bells at a distance, succeeding each other rapidly. The same sounds may be produced also by cooling the metal, when heated, by covering it with a piece of ice, or better, by a freezing mixture. If the bar of zinc be laid on a table, with one end projecting over the edge, the sounds are produced by placing the alcoholic lamp under the projecting end of the bar. In this case, the noise is a sort of confused crackling.

The experiments of M. Strehlke were made on a disc of several lines in thickness, and a bar of cast zinc two feet long, sixteen lines wide and $4\frac{1}{2}$ lines thick. He tried in vain to produce the same phenomenon with other metals than zinc.

Idem.

Xyloïdine.

This name was given by Braconnot some years ago, to a substance formed by the action of concentrated nitric acid on starch, lignin, and some other substances, but the particular circumstances attending its formation were not examined, nor its properties well investigated. M. Pelouse has made it the object of his study. When nitric acid, density 1.5, is added to starch, the latter, in a few minutes, disappears completely, the solution retains the yellow colour of concentrated nitric acid, and no elastic fluid is disengaged. If treated immediately by water, the xyloïdine is entirely precipitated, and the filtered fluid leaves by evaporation scarcely any residuum.

If instead of precipitating immediately by water, the solution be left to repose in a closed bottle, its colour passes through the various tints of a mixture of nitric acid and nitric oxide. The water in it then precipitates the xyloïdine in a gradually diminishing quantity, and in the course of two days, and sometimes in as many hours, it becomes quite clear, and regains its transparency, the xyloïdine being destroyed and transformed completely into a new acid, which is obtained by evaporation in a white mass, solid, uncrystalizable, and deliquescent, and weighing more than the starch origi-

nally dissolved. Neither carbonic nor oxalic acid is produced during the reaction.

Xyloidine is a compound of nitric acid and starch, an atom of water in common starch being replaced by an atom of nitric acid. The whole starch is transformed into this substance, a fact which explains perfectly the increase of weight, when the xyloidine is precipitated by water immediately after the solution of the starch in nitric acid. As an excess of this acid transforms the xyloidine into a very soluble substance, which is no other, says M. Pelouse, than the acid I have mentioned, we have an explanation of a different result obtained by Braconnot. This chemist procured from a given weight of starch, an equal weight of xyloidine. This evidently arose from the decomposition of a portion of the latter substance. By retarding the precipitation still longer, he would have found the impossibility of obtaining the slightest trace of xyloidine.

When instead of leaving the solution at rest, the temperature be raised to ebullition, the starch is decomposed in a few minutes, and transformed into a deliquescent acid, which is easily obtained pure and in great quantity by evaporation in the water bath.

This acid contains no azote; it has some relation to oxalhydric acid (nitro-saccharic) but differs from it in composition. A moderate heat converts it into another acid of a dark colour, soluble in water, and from which, by the action of nitric acid, the white acid from which it was derived, may be regenerated.

Concentrated nitric acid, at a boiling heat, attacks it with the greatest difficulty. When cold, it changes it slowly into oxalic acid, without the production of carbonic acid. Hence by slow oxidation, excited by the presence of a suitable quantity of concentrated nitric acid, starch is successively converted into xyloidine, into a deliquescent acid and into oxalic acid, without any participation of the carbon in the displacement of the other elements of these matters. These curious changes take place spontaneously in the cold in close vessels.

Xyloidine is hence to be regarded as a kind of salt, in which the starch acts the part of a base to the acid. It is accordingly very combustible, taking fire at 180° C., and burning away rapidly without leaving any residuum. This led the author to an experiment which may be applicable to artillery. Dipping paper into nitric acid of 1.5 density, allowing it to become thoroughly penetrated, which is done in two or three minutes, and then washing it thoroughly in clean water, a kind of parchment is obtained, which is impermeable to moisture, and extremely combustible. Tissues of linen and cotton are acted upon in the same way.

Idem, No. 251.

Secretions.

According to the observations of M. L. Mandl, all the secretory organs supplied with nerves from the cerebro-spinal system give out alkaline secretions; and all the organs whose nerves are from the ganglionic system, produce an acid secretion. He remarks that the presence of a few greyish fibres proceeding from the ganglionic system, as proved by several anatomists, in the midst of cerebro-spinal nerves, may explain the small quantity of acid found in alkaline secretions, and which concur in the formation of salts in these secretions. In the same manner, he adds, the acknowledged presence of some fillets of nerves from the cerebro-spinal system, in the ganglion nerves is accompanied with a little alkali, as soda, &c., in the

acid secretions. The dominant quantity of nerves, therefore, from one or the other system determines the chemical character of the secretion. One single secretion, that of the skin, makes an exception to this observation, for the sweat is acid. But my experiments induce me to hope to be able soon to resolve this difficulty; it is probable that the sweat owes its acid character to the influence of the air.

Idem.

Heat of Electricity.

Mr. Humboldt presented in the name of M. Riess a memoir printed in German, containing some new experimental and analytical researches on the quantity of heat which electricity produces in metallic wires. The results are as follows:

If an electric battery is discharged through a silver wire 118.7 inches in length, through a gold wire 88.8 inches, and through a platina wire 15.5 inches; they will, when of equal thickness, experience an increase of temperature very different; but if we suppose them surrounded with ice after the discharge, they will each melt equal quantities of it in returning to their primordial temperature.

The calorific force of a metal, that is to say, the quantity of heat developed in each metal by an electric discharge, may be found by dividing the retarding electric force by its capacity (specific heat) and its specific weight.

When different metallic wires are united for the discharge of a battery, the quantity of heat developed is proportionate to the retardation which each wire produces during an electric discharge.

M. Arago observed that these results coincide in many points with those obtained by M. Peltier, in his researches on the same subject.

Idem, No. 252.

Electricity in a Vacuum.

A note being presented at the session (October 8th) from M. Masson, for the purpose of showing that, in certain conditions, the electric current did not pass through a vacuum between the poles of a strong pile, M. Arago observed that M. Savary had long ago succeeded in producing magnetization by the discharge of electricity of tension, developed by friction, and instantaneously discharged through a vacuum. For example, a glass tube, void of air, and a brass rod sensibly equal in diameter to the tube, being placed in the same circuit, the discharge magnetized needles in an equal degree, placed at the same distance from the tube and the rod. It results from this experiment, that electric motion may develop magnetism without the intervention of ponderable matters directly in its course.

Idem.

Progress of Physical Science.

Upon the alleged Influence which the Roughness and the Polish of Surfaces exercises upon the Power of Bodies to emit Heat, in reference to the Experiments of Professor Sir John Leslie. By M. MELLONI.

When we measure the intensity of calorific radiation which takes place from the two sides of a metal vessel filled with boiling water, having the