Correspondence.

The Coming Electrical Exhibition at Paris.

To the Editor of the Scientific American:

The Committee of Organization has been somewhat modified, and the names of Count Du Moncel and Dr. Cornelius Herz have been added.

The funds necessary for organization will be partially furnished by the government and partially by a guarantee society, the members of which have subscribed a certain amount of money.

The Emperor of Germany signed a decree on the 4th of January, in which he promises the participation of Germany in the Congress of Electricians and the Electrical Exhibition. The Government of Holland has also made an official announcement of the participation of that country.

The Government of Belgium has nominated as delegates to the Congress Messrs. Banneux and E. Gerard, Telegraph Engineers. In Italy the Minister of Public Instruction and Public Works is also making preparations for the participation of that country in the Exhibition.

In the last session of the seventy members of the Organization Committee some new and important facts concerning the Exhibition were announced, which it may be interesting to mention here.

The Commissary General, Mr. George Berger, communicated to the assembly that the power which will be at the disposition of the exhibitors will amount to 800 horse power, which, besides furnishing power for moving the machinery, will be sufficient to have 600 lamps burning imultaneously. This fact alone is sufficient guarantee to the public that the exhibition will be a brilliant one. A large hall will be connected by telephones with the Grand Opera, and the experiment of transmitting the music of the choirs aud of the orchestra in this way from the Opera to the Palais de l'Industrie will be tried.

Several electric railroads will be erected, and, it is reported, Mr. Siemens, of Berlin, has announced that he will expend 150,000 francs for the construction of the new railway which has been used with such grand success in the Prussian capital.

A note read before the Academy by Mr. Blondlot throws some new light upon the properties of selenium metal, an element much spoken of since the iuvention of the photophone by Mr. Graham Bell.

Mr. Blondlot has, by means of a platinum wire, attached to the one pole of a capillary electrometer, a fragment of annealed selenium metal, and to the other pole a platina plate. When the selenium was brought into contact with the platina (using for this purpose insulating handles) and then quietly kept there, the electrometer remained at zero, but as soon as the platina was rubbed with the selenium, the electrometer showed a great deviation, similar to that produced by a sulphate of copper battery. Mr. Blondlot has shown that neither the rubbing of two metals with each other, nor that of an insulating body with a metal, nor that of two insulating bodies, is able to produce a deviation of the capillary electrometer.

The current produced in the experiment described moved the electrometer around in the direction from that part of the selenium which was not rubbed to that part which had been rubbed, and it may easily be ascertained that the thermo-electric current, which is produced by heating the contact point of the selenium and platina, moves from the warm part of selenium to the cold part of the selenium, consequently the electric current produced by the rubbing cannot be ascribed to the *heat* created by the rubbing of the two elements.

If, after the electrometric deviation had been obtained, the rubbing ceased, this deviation remained. This phenomenon is due to the fact that the selenium, which had permitted the electric current to pass through it while in the high tension produced by the rubbing, afterward opposed a resistance which could support the feeble polarization of the mercury of the electrometer. A shock given to the selenium, or even a pressure, produces the same phenomenon, although in a less marked degree.

There is much talk in Paris in regard to a new telephonic system, a description of which Mr. Kroetlinger, of Vienna, has just published in the *Angewandte Electricitaetslehre.* This system is based upon the variations of the intensity of thermo-electric currents, the apparatus being so arranged that the heat can be modified by the vibratious of the voice. Mr. Kroetlinger uses a thermo-electric battery consisting of long elements, one end of which is kept at a comparatively low temperature, while the other is heated by the upper part of a candle flame. The candle is kept at a constant height by a mechanism similar to that used in carriage lamps. Surrounding the front and the sides of the battery there is a telephonic mouth-piece, which is placed in an invariable position.

The diaphragm of this mouth piece is flexible, and is pierced by a great number of holes varying in size, and the whole apparatus is surrounded by a box, which prevents the interference of exterior noises, and through which only the mouth of the telephone and the poles of the thermo-electric battery enter.

This disposition permits a change in the normal conditions of the air current (which is heated by the flame) to take place by means of the vibrations created by the voice. The corresponding variations of the heat acting upon the thermo-electric pile may be easily determined.

These variations create variations of the same nature in the current produced by the battery, and consequently the words are reproduced in the telephonic receiver, which is connected with the wires in the battery.

Experiments made with this telephonic arrangement have given very satisfactory results, and the idea is certainly of great scientific interest.

Paris, January 19, 1881.

The Late Dr. Sandford.

To the Editor of the Scientific American:

With your permission I would correct the unjust reflection upon Dr. Sandford in the article entitled "An Unwise Physician," published in the January 8th issue of the SCIENTIFIC AMERICAN, my attention having just been called to it. First, let me say that my information is principally obtained from a friend who assisted the doctor in the operation of tracheotomy, which proved so fatal to himself.

The little one on whom the operation was performed was *not* a patient of Dr. Sandford, as reported; neither had he watched the patient "night and day," but was called by the attending physician to perform the operation, which he had successfully done on other occasions.

The child had been under treatment for "membranous croup," and not diphtheria, as stated.

Had the doctor supposed for a moment it was the latter he would never have resorted to the knife, as it would then have been a useless attempt. Had it been "membranous croup" the fatal consequence would not in all probability have occurred.

It is asserted that a rubber tube was used, through which the membrane was drawn. This is also incorrect, as nothing was used for that purpose until afterward, when a silver tube was inserted, through which the child breathed.

It is customary in such operations, I am informed, to open the windpipe, which allows the lungs to inhale rapidly; when filled the sudden exhalation drives the membrane out through the opening. In this case, for some reason known only to himself, the doctor, seeing the membrane, and thinking to be more sure, without previous intent apparently, clapped his mouth to the open wound and drew the membrane out.

In reply to a suggestion by my friend that it "would be bad for him if diphtheria was there," he said, "Yes, it would!" and immediately rinsed his mouth with water.

It was not until this moment apparently that he thought of diphtheria.

The doctor's large heart and anxiety to save human life, rather than "professional zeal," prompted the act.

The act of drawing the membrane with the mouth perhaps cannot be justified, as the consequence cannot always be foretold. An inspirator should be used in such cases.

The doctor was familiar with the operation, having performed the same successfully on several occasions; also had written several papers on the subject.

A young man in years, but stood far in advance of many older practitioners by his untiring study and labor.

His loss is mourned by a large circle of friends, and it is but just to his memory, his friends, and science, that the above errors be corrected. E. G. R.

A Steam Boiler Explosion.

The Keystone Council of Stationary Engineers, of Philadelphia, in the case of a boiler which exploded at Allentown on the 6th of January, after summarizing the evidence, say: In the first place we find malconstruction; the boiler hung at the extreme ends, with no support for the center, and the hole in the shell being cut out the full size of the dome, which tends to weaken the shell of this diameter very much, and the fourth sheet being five-sixteenths thick and the fifth sheet three eighths thick, while all the sheets should have been the same thickness. The one sheet being heavier than the other, the heavier sheet tends to pull the lighter sheet apart, from the difference of their expanding qualities. We find the bad workmanship in the riveting, the holes not being even, and the rivets being too small for the holes—the holes being three-quarters of an inch and the rivets five-eighths—and from the evidence, the pressure has been carried far in excess of a safe working pressure for a boiler of this size and thickness. As we estimate the strength of a boiler by its weakest part, we would judge the character of the iron as it presents itself to be able to sustain a tensile strength of 52,000 pounds per square inch, and reduced 44 per cent for single riveting, and the thickness being five-sixteenths—the boiler being 36 inches in diameter—the bursting pressure would be 505 pounds, and one-sixth of the bursting being the safe working pressure (by our city ordinance), the safe working pressure would be 84 pounds. This would be the safe working pressure of the rim that gave way, the fourth sheet; while the fifth sheet, being three-eighths by the same rule, would give a bursting pressure of 606 pounds and a safe working pressure of 101 pounds. This would be a calculation of a boiler, new and first-class workmanship, and being hung from three saddles, distributing the weight. When we consider the weight o the boiler at 6,000 pounds and a weight of 8,000 pounds of water and 5,000 pounds of bricks and mortar laid on top of the boiler, there is not much wonder why it gave way in the center, particularly by the assistance of at least 90 pounds per square inch on the heads, which would be the mean between 60 and 120 pounds, which would be equal to a force of 91,608 pounds pressure on the heads, tending to pull the boiler apart in its curvilineal seams, while the curvilineal seam in its full strength, admitting it to be equal to 52,000 pounds per square inch, and reducing it 44 per cent for riveting, and it being 113 inches in circumference, its tensile strength would be 1,028,300 pounds, and one-sixth of this being a safe load for it to bear, would be 171,386 pounds, and subtracting 91,608 pounds, which would be the pressure of steam exerted on the head by a pressure of 90 pounds, would leave us 79,778 pounds as a surplus to support the weight of the boiler; weight of water and weight of bricks and mortar would be 19,000 pounds. There is not much wonder that the boiler gave way in the center, which, theoretically and practically, is the weakest point, when hung from the ends, and no support for the center. The boiler should undoubtedly have been condemned before the last patch was put on; the boiler is evidently a great deal older than six years.

DECISIONS RELATING TO PATENTS.

United States Circuit Court.—District of New Jersey.

FLOWER *v.* RAYNER.—PATENT FOR DECORATING TIN PLATES.

Nixon J.:

1. The statutory provisions concerning reissues require that the original patent must be inoperative or invalid either from a defective or insufficient specification or from claiming as new more than the patentee has the right to claim; and, in addition to this, the error which is sought to be corrected must have arisen by inadvertence, accident, or mistake, and without any fraudulent or deceptive intention. If the party interested can bring himself within these conditions and limitations, the Commissioner is authorized to issue a new patent for the same invention. When the original shows upon its face that the grounds and reasons for the reissue do not exist, or where a comparison of the letters patent discloses different inventions, the reissue is void, as an act unauthorized by the law.

2. The reissued letters patent No. 7,556, dated March 13, 1877, for improvement in decorating tin plates, cans, etc., held to be invalid, as being an undue expansion of the original letters patent.

United States Circuit Court.—District of Delaware.

WILT *v.* GRIER.—PATENT FRUIT DRIER.

Bradford, J.:

This is a bill in equity brought by the complainant Wilt against the defendant Grier for alleged infringement of said Wilt's Letters Patent No. 190,368, issued May 1, 1877, originally to A. Quincy Reynolds, of Chicago, Ill., for an improvement in automatic fruit driers.

1. Where a person procures a patent for the building of a machine which produces certain results which are novel and useful, by reason of certain mechanical contrivances and appliances, any person who attempts to accomplish the same results by mere substitutions, which are equivalents of the means employed by the first patentee, is an infringer.

2. Any application of known mechanical powers which will produce that result, although different in form from the means employed by the orignal pateutee, is a mechanical substitute and equivalent of the same.

How Raisins are made in California.

In Mr. Blowers' vineyard, Yolo county, the grapes are allowed to remain on the vine until of a golden color and translucent. Then they are picked and put on wooden trays two by three feet in size, placed between the rows, sloping to the sun. When half dried they are turned by putting a tray on top, and by inverting them both are transferred to the new tray. When the grapes lose their ashy appearance, and after removing the green ones, the rest are put into large sweat boxes, placing sheets of paper between every twenty-five pounds of raisins. They are left there for two weeks, when the stems are tough and the raisins soft. The packing follows, in which iron or steel packing frames are used, the raisins being assorted, weighed, inspected, and made presentable. Mr. Blowers prefers a rich, moist, sandy loam, in a warm climate, for raisins, and believes that winter irrigation will destroy insects and keep the vines in a thrifty condition. He prefers to plant vines eight by ten feet apart, or even ten by ten feet, and uses fertilizers.

What Becomes of the Soapstone?

The *Times*, of Bethlehem, Pa., is anxious to know what is done with the soapstone which is largely quarried and ground at Easton. The industry has lately received a wonderful impetus, and the mills are running day and night. The product is shipped to New York; thence where? "It is claimed to be used in paper pulp. It may be," the *Times* says, "to some extent. It is alleged to be used in hatter's felt. Perhaps so; but where is so large an amount disposed of? Soapstone, or steatite, is a combination of silica and magnesia. It is soft and greasy, and hence it is sometimes called lardstone. From its adaptability to making vessels, in some sections it is called pot rock. When ground, it is a soft, smooth, greasy, and almost impalpable powder. No one who has seen it in its ground state will question its almost diamond value for adulteration. Candies, sugars, flour, butter, it is alleged, can be adulterated to the extent of 20 to 25 per cent without any chance of detection."

Fortunately detection in such cases is not at all difficult. Dissolve the suspected candy or sugar; the insoluble mineral will remain. Burn a sample of suspected flour; an excess of ash will betray the cheat. Melting and filtering will do the same for suspected lard or butter.