

PROFESSOR PALMIERI'S DIAGOMETER.

Professor Palmieri's diagraphometer is an instrument designed to test the quality of oils, and is based upon the principle that olive oil is a poorer conductor of electricity than any other oil in common use, and that mixtures and oils made from seeds are the better the more resistance they offer to the passage of electricity. The oil is poured into a glass vessel, *c*, Fig. 1, in which dip two brass rods, *b b'*. The points of these rods are kept at the same distance apart during the experiments, and also at the same distance below the surface. By means of two arms, *d d'*, the rods are connected with two insulated balls, *f f'*, the former of which communicates with a Zamboni's dry pile, *a*, and the latter with a Palmieri's electrometer, *k*.

In Palmieri's electrometer the electricity, which we will suppose to be positive, passes into a little fine brass cup, *m*, Fig. 2, furnished with brass arms, *p p'*. In the cylindrical cavity of this cup a disk of aluminum is suspended by means of two single threads of silk diverging from a brass hook. The disk has likewise two fine arms, *q q'*, of the same metal. Electricity, contrary to that in the cup, is induced in the disk, and electricity of the same kind is repelled in the arms, *q q'*, in consequence of which the arms or indices of aluminum, situated opposite to those of brass, swing over a graduated circle. The arc described by the index at the first impulse is commonly double that obtained finally when the apparatus is in perfect order. If the final arc is smaller, it indicates that there is some loss of electricity in the apparatus that must be taken into account. This fact gives a peculiar value to Palmieri's electrometer.

If the oil poured into the vessel, *c*, is olive oil, the aluminum index takes several minutes to swing through a few degrees; but if the oil is made from seeds, the index swings through a considerable range in a few seconds. To test the value of oils it is only necessary to compare them at a constant temperature with a sample of pure olive oil, and to note the time required for the index to pass over a given arc in every case.

Palmieri's diagraphometer may also be employed to detect the presence of cotton in silk fabrics. A strip 0.25 meter long and 0.02 wide is well dried and fastened to the two rods, *b b'*. If it is pure silk, the electricity coming from the globe, *f*, will scarcely move the index; but if it contains cotton, the index will be quickly repelled, and will swing through several degrees. A. Riccio.

Naples, Italy, July 7, 1878.

New Inventions.

Mr. John P. Bligh, of St. Paul, Minn., has patented an improved Envelope for sending samples of flour, seeds, etc., by mail. It is so constructed as to prevent its contents from sifting out upon the other mail matter, while allowing its said contents to be readily seen.

Mr. James M. Wheeler, of Fish's Eddy, N. Y., is the inventor of an improved Rowlock for boats, and its object is to furnish a simple and durable device which will work easily, and permit the oar to be connected or detached with great facility.

Mr. William H. Parkin, of Good Hope, Ill., has patented an improved End Gate for Wagon Bodies, which is so constructed that it may be conveniently adjusted into an inclined position to enable the contents of the wagon body to be conveniently removed with a scoop or shovel, and which, when in an erect position, will hold the sideboards together and prevent them from being pressed apart by the load.

An improved Heat Fender for Cooking Stoves has been patented by Byron S. Hite, of Fulton, Mo. The object of this invention is to prevent the escape of heat to the room in which the stove is placed, and to confine the heat for the purpose of drying fruit and other articles.

Mr. Joseph T. Maybury, of New Orleans, La., has patented an Apparatus for Drying Meal, Flour, Grain, etc. This invention relates particularly to that class of apparatus known as "steam grain and meal driers," or others of similar construction, extensively used for drying grain, meal, or other like substances, wherein a series of flights or spirals, revolving within cylinders, is made to convey the substance to be dried, while steam is acting on the exterior of the cylinders, and also in the interior of the hollow shafts of said spiral conveyers.

An improved Thill Coupling has been patented by Mr. Winfield S. Palmer, of Glenburn, Pa. The object of this invention is to dispense with the nut usually employed to secure the thill iron of car-

riage shafts to the clips, and to furnish a coupling which may be applied to the ordinary thill iron and clips without requiring alterations.

An improved Sheet Metal Can has been patented by Messrs. Joseph W. Miller and Bernard Coll, of Baltimore.

Mr. This improvement consists in stamping the heads of the can with a flange, which is bent, in relation to the cylindrical body portion, first parallel with the same, then flared outwardly, and again bent parallel, so that when the body portion, which is made straight from end to end, is fitted to the heads, the edge of the body portion binds tightly with the inner edge of the smaller portion of the flange, while the outer edge of the flange sets off from the body of the can sufficiently to permit the solder to run in and form a tight joint.

Mr. John W. Turner, of Fort Worth, Texas, has patented a simple and inexpensive Attachment to Counters for Measuring and Cutting Cloth, and holding and cutting twine, and for holding wrapping paper.

Mr. Eugene Hawkes, of San Diego, Cal., is the inventor of an improved Pump, in which two valves are used, working in line with each other, and so arranged that each valve will begin its stroke before the other has quite completed its stroke, to cause each valve to begin to act upon the liquid while moving in the same direction and at about the same velocity, so that there will be no jar or interruption of the discharge, and no loss of force.

Mr. Jacob Benschel, of Stockton Township, N. J., has patented an improved Refrigerator, having a cover made with double walls, inclosing between them a chamber which is supplied with water through a mouth at the top. The base is also made with double walls, inclosing between them a water chamber. The cover rests with its lower edge upon the slightly concave annular surface of the base. Between the inner walls of the cover and the base there is a chamber, in which are placed the substances to be preserved.

Pedro F. Fernandez, of San Juan, Porto Rico, West Indies, has patented an improved Fastening for Holding Doors or Window Shutters securely in position when open, by means of hooks engaging with each other and actuated by springs; and it is applicable to doors and shutters of dwelling houses, doors of churches and places of amusement, and doors on board of vessels.

Mr. John Will, of Bryan, Ohio, has devised an improved Lunch Case for the use of laborers and others, whose employment requires them to carry lunch with them, and for the use of picnic parties, fishing parties, excursionists, etc. It is arranged to carry the lunch securely, and protect it from dust, etc.

Mr. Philipp F. L. Burstall, of Milwaukee, Wis., is the inventor of an improved Burglar Alarm, which may be either portable or fixed, and it may be attached to a door or window, and becomes operative by the jar occasioned by an attempt to open the door or window. The alarm may also be connected by wires to a distant bell or other signal, so as to give the alarm by electricity, and in that manner it is especially available for attachment to safes.

Mr. Miner T. Perkins, of Log Lick, Ky., has devised an improved Branding Stamp, for branding live stock, also rails, posts, and other timber, etc. It is so constructed that it will cancel an old brand at the same time that the new one is formed.

Mr. William R. E. Berth, of New York city, has patented an improved Prayer Book and Hymnal Case, made with a central partition provided with pockets upon its opposite sides, to receive the adjacent boards of the covers of the two books, having a flap upon the edge of one side, to overlap and be secured to the other side, and provided with a handle by which it may be conveniently carried.

Mr. Ernst Gessner, of Aue, Saxony, has patented an improvement in Machines for Hot Pressing and Finishing Woven, Felted, and other Fabrics, and made-up articles, such as collars and wristbands. The invention is an improvement upon that general form of machine in which a hollow steam-heated press box smooths and presses the cloth between its curved inner surface and the periphery of an adjacent cylinder.

Mr. Moses Lewis, of Utica, Ill., has patented an improved Draught Equalizer, which consists in a novel arrangement of equalizing bars, levers, whiffletrees, and other devices, whereby an apparatus is produced which may be readily adjusted to adapt it to be used with two, three, four, or more horses.

Mr. Henry Hiestand, Jr., of Vincent, Pa., has patented an improved Wagon Jack, in which the sliding bar or standard is placed on the front side of a fixed standard, and the same pins with which the lever engages for raising the bar constitute also the means for guiding the latter in its vertical adjustment. The upper end of the fixed standard is beveled at such an angle that the lever will rest thereon when the sliding bar is locked in any adjustment.

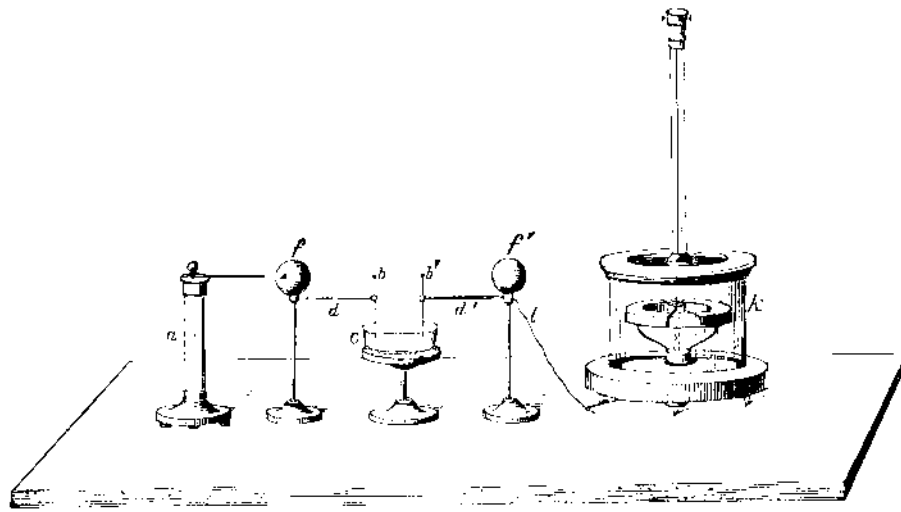


Fig. 1.
PALMIERI'S DIAGOMETER.

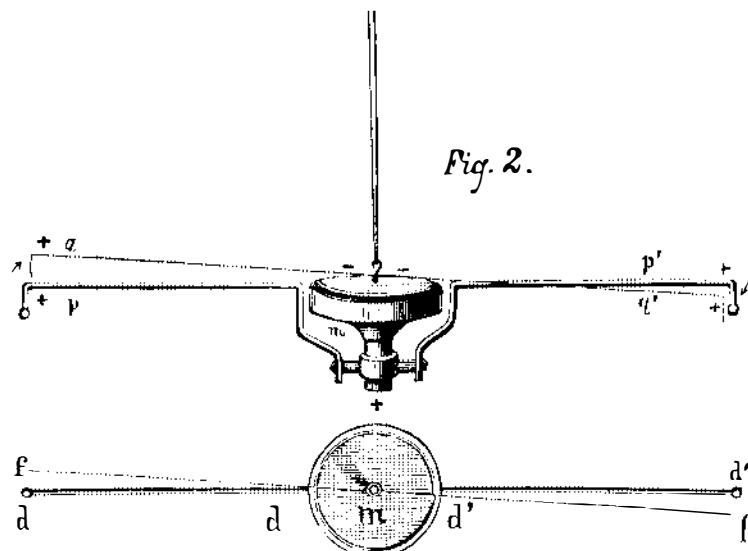
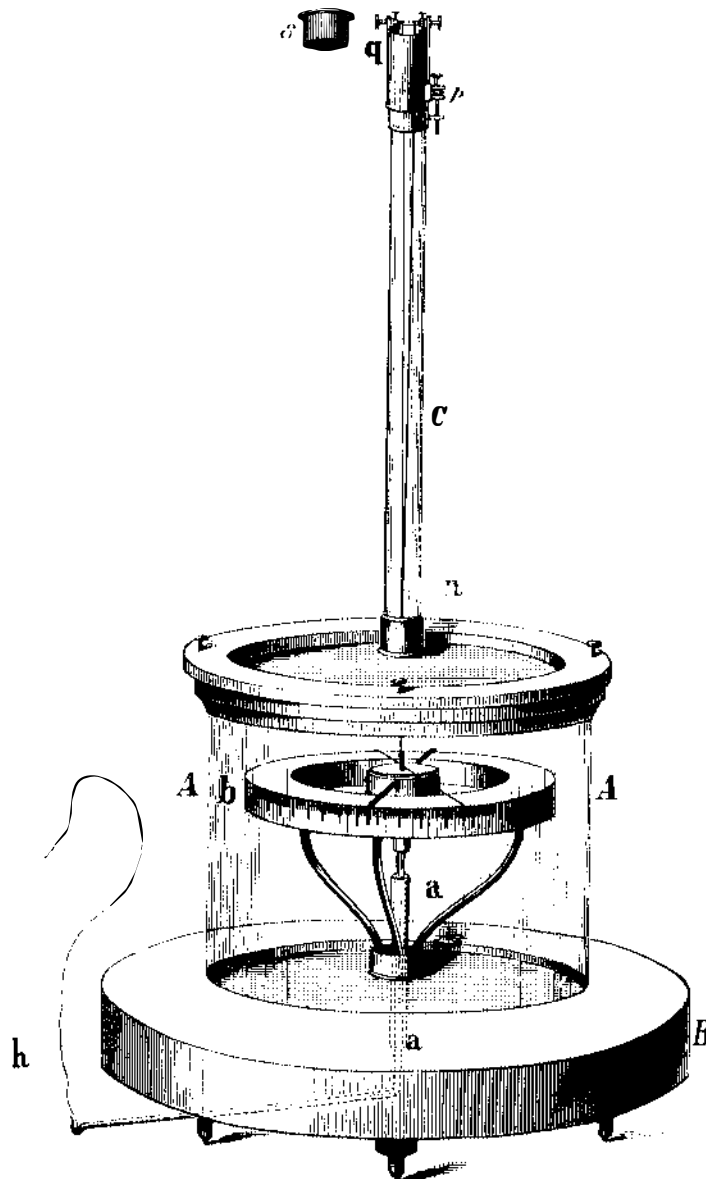


Fig. 2.
ELECTROMETER ARM AND DISK.



PALMIERI'S ELECTROMETER.

Mrs. Henry Dormitzer, of New York city, has patented a Window-cleaning Step Chair, which is an improvement on the window-cleaning chair for which letters patent No. 200,441 were granted to the same inventor February 19, 1878. The object of this invention is to render the window-cleaning chair lighter and more portable, to simplify its adjustment, and to render it stronger and more reliable and complete.

The same inventor has also taken out another patent for improvements on the chair, which simplify it so that it may be easily and quickly placed in position in the window and rendered secure.

Messrs. Frank M. Chapin and Joshua Gersbacher, of Cuffey's Cove, Cal., have patented an improved Vehicle Torsion Spring for Wagons, which shall be simple, strong, and durable, and at the same time light and elastic, making the wagon easy riding.

Mr. Magnus Gross, of New York city, has patented a process of Manufacturing Illuminating Gas free from an excess of carbon, carbonic oxide, and light carbureted hydrogen, which consists in passing the commingled steam and hydrocarbon vapors through an incandescent porous material to fix the gases, and periodically turning off the supply of naphtha and blowing out the deposited carbon by means of steam, and conducting the same into the furnace in the form of carbonic oxide and carbureted hydrogen.

Mr. Charles E. Carmon, of Lyons, Ohio, has patented an improved Resonator or Resounding Chamber for Telephones, for the purpose of increasing the tone or sound transmitted to the vibrating diaphragm by means of electricity or any other means; and the invention consists of a hollow resonator, to which the vibrating diaphragm is applied and supported thereon by a metallic band with feet. The post of the resonator is made adjustable in the base for imparting the required tension to the transmitting wire.

Mr. Robert R. Moore, of Lewisville, Ark., has patented an improved Combined Lamp and Stove, which is intended more particularly for the use of physicians, mail messengers, and other persons who, especially in rural districts or thinly settled localities, are compelled in the discharge of their duties to ride on horseback in cold weather, on dark nights, and over rough roads.

Mr. John B. Holmes, of Grayville, Ill., has patented an improved Ventilator for Blow and Dust Rooms. The objects of this invention are, first, to increase the grading capacity of the blow or dust room of a flour mill without changing its size; secondly, to save all the material worth saving, and at the same time to grade it; and, thirdly, to direct the escaping dust downward and outside the mill, so that it may not fall on the roof and cause it to decay.

An improved Bung has been patented by Mr. William Bender, of New York city. This is an improved bung for casks and kegs of all kinds, by which a perfect sealing of the vent hole of the bung is obtained, while at the same time the vent plug is driven in with great facility.

An improved Lock for Firearms has been patented by Mr. John M. Wittman, of St. Mary's, Pa. This invention is an improved attachment for the Winchester repeating rifle. It is so constructed that the rifle may be reloaded by simply pulling a trigger, so that several shots may be fired when required without taking the gun out of aim.

An improved Blasting Wedge has been patented by Mr. Otto F. Brockhausen, of Reno, Nev. The object of this invention is to furnish a simple and effective mode and device for blasting logs or splitting logs by blasting with gunpowder, so as to effect a saving of time, labor, and fuse, as compared with the old method of boring the log and charging the hole with gunpowder.

What Most Women Need.

Discussing the difficult problem of female education, the *Nation* pertinently remarks that what most women need next after health and power of acquisition, and the confidence which springs from having acquired something, is a tolerable amount of administrative capacity. Housekeeping is administration on a small scale. It includes the faculty of getting the most for one's money, and managing servants and children. If it were likely to be a man's vocation to the extent to which it is likely to be a woman's, he would undoubtedly be prepared for it by some sort of apprenticeship. He would have to learn in some subordinate capacity the proper mode of buying and preparing food, and of procuring and taking care of furniture and clothing, and of ruling servants. He would be trained to receive company by some experience of the art of entertaining, both in its material and its æsthetic aspect. No one would ever guess, however, from an inspection of an average school course, that a girl was to be the head of that most complex result of civilization, a modern household, with its thousand duties, responsibilities and relations.

The Secretion of Sweat.

The secretion of sweat is now known to be, like that of saliva, directly under the control of the nervous system, and to be excited by secreting nerves, independently of alterations in the vessels which supply secreting glands. Dr. Ott and Mr. Field, in the *Journal of Physiology*, show that the nerve centers, in connection with the sweat glands, can be stimulated by the poisonous principle of the toadstool—*muscarine*—and that a greater amount of carbonic acid than usual in the circulating blood will also excite functional activity. This fact would tend to explain the well known greater tendency to perspire which people

observe when they are shut up in a close room, a tendency which appears to be greater than can readily be accounted for by the warmth of the room alone.

ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, September 21, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

PLANETS.

	H. M.		H. M.
Mercury rises.....	4 28 mo.	Uranus rises.....	3 31 mo.
Venus rises.....	4 13 mo.	Neptune rises.....	7 40 eve.
Jupiter in meridian.....	7 55 eve.	Neptune in meridian.....	2 30 mo.
Saturn in meridian.....	11 59 eve.		

FIRST MAGNITUDE STARS, ETC.

	H. M.		H. M.
Alpheratz in meridian.....	0 02 mo.	Procyon rises.....	11 44 eve.
Mira (var.) rises.....	8 22 eve.	Regulus rises.....	3 17 mo.
Algol (var.) in meridian.....	3 40 mo.	Spica.....	invisible
7 stars (Pleiades) rise.....	8 45 eve.	Arcturus sets.....	9 19 eve.
Aldebaran rises.....	8 27 eve.	Antares sets.....	8 30 eve.
Capella rises.....	8 55 eve.	Vega in meridian.....	6 30 eve.
Rigel rises.....	11 34 eve.	Altair in meridian.....	7 42 eve.
Betelgeuse rises.....	11 19 eve.	Deneb in meridian.....	8 24 eve.
Sirius rises.....	1 39 mo.	Fomalhaut in meridian.....	10 47 eve.

REMARKS.

Mercury will be at greatest western elongation west September 25, and will be brightest September 25-28, rising on the 26th at 4h. 25m. morning, about 8° north of the sunrise point. He will be in conjunction with Venus September 25, 5h. 41m. morning, being less than ½° south of her, and as Venus has the greater apparent motion in right ascension, and both bodies are advancing, she will appear east of Mercury after the conjunction. But the hourly motion in right ascension of Mercury increases so rapidly that by September 30 he will overtake her, and be in conjunction again at 9h. 15m. morning, being north of her this time. Jupiter will be stationary September 23. Saturn will be in opposition September 22, being 180° east or west of the sun. Uranus will be near the moon September 24, being nearly 3° north.

The Sun enters the constellation *Virgo* (sign *Libra*) and crosses the equinoctial southward September 22. This is the beginning of Autumn, and the Sun is said to be at the autumnal equinox, but the day and night of the 22d are not of equal duration, as is generally supposed, and stated in astronomical text books.

This year the equal day and night occurs four days after the autumnal equinox, September 26, and at the vernal equinox, three days before, or March 17. This is owing to atmospheric refraction, which increases the length of the day.* This explains why the time of equal day and night occurs before the vernal and after the autumnal equinoxes, for before March 20 the days are less than 12 hours long, as also after September 22.

Disinfectants and Deodorants.

Mr. Thos. Taylor, Microscopist of the Department of Agriculture, gives the following in the *Washington Evening Star*:

During the year 1876 I made a series of experiments with essential oils, including the oil of eucalyptus globulus and the spirits of turpentine, which were published in the report of the Department of Agriculture for that year. I found that the oil of eucalyptus disinfects fresh meat as effectually as carbolic acid, besides being a powerful deodorizer, and on combining it with soap found it agreeable, forming a valuable substitute for the carbolic, especially for the sick room. Turpentine I found to be also a most powerful deodorizer. A tablespoonful of the latter, added to a pailful of water, will destroy the odor of cesspools instantly, and in the sick chamber will prove a powerful auxiliary in the destruction of germs and bad odors, being both a disinfectant and deodorizer. I have quite recently added to the list of disinfectants one of general application, and it has for many purposes the advantage of cheapness with remarkable effectiveness. I allude to gasoline, one of the products of petroleum. Gasoline when applied to the germs of fungi or of other cryptogamic plants instantly destroys them, although it fails to deodorize gases. Being a solvent of oils and fats it destroys animal germs, and fatty degeneration gives way to it. It may be employed full strength to wash delicate and tender plants and sores without producing pain. It is wholly devoid of the caustic principle, even when applied to the tongue; it produces no disagreeable sensation. A single drop applied to any insect will kill it, and even its vapors have a most destructive effect on the lower forms of animal life. When gasoline is applied to a wound or to any delicate part of the body, on evaporation it produces the sensation of cold, followed soon after by a sensation of heat. Of course all experiments should be made in the absence of artificial light, as it is a very explosive gas.

Mail matter supposed to be infected can be thoroughly disinfected by the application of gasoline, either by immersion or by sponging the surfaces. It penetrates with lightning rapidity all porous substances, such as leather, gloves, bank notes, ribbons, dress goods, silk, cotton, and linen, evaporating in a few minutes without injury to the goods. I have placed sealed letters in this solution for a few moments, completely wetting the contents, and in less than five minutes the gasoline evaporated, leaving the letters dry, without stain, and well disinfected.

* From sunrise to sunset is meant.

New Agricultural Inventions.

Mr. James Edgemoor Mustard, of Glen Hall, Ind., has patented an improved Wheel Cultivator, which is so constructed that it may have a direct draught, and will have no side draught. It requires less power to draw it than ordinary cultivators.

Messrs. Mortimer Mathews and Albertus L. L. Scoville, of Seneca, Kan., have patented an improved Agricultural Boiler, which consists of a strong wooden barrel containing an iron fireplace and iron flues, and having novel details which render it strong and efficient.

Mr. Willie F. Goddard, of Orwell, Ohio, has patented an improved Hay Elevator and Carrier. This is a simple and effective device for elevating and conveying loads of hay, straw, and other articles.

Mr. Roselle Clarke, of Austin, Minn., has patented an improved Arrangement of Grain Sieves and Wind Vanes, by means of which a rapid and thorough separation of the grain and foreign substances will be effected.

An improved Harrow has been patented by Mr. Samuel Beckner, of Argos, Ind. This harrow is so constructed as to adjust itself to the surface of the ground, harrowing ridges and furrows with the same facility and effectiveness as level ground.

An improved Sack for Baling Hops has been patented by Charles A. Sands, of Burlington, Kan. It consists of a sack, open at both ends and hemmed, and in heads, over which the sack is tied by means of strings drawn through the hems after the hops are compressed.

Mr. Charles A. Sands, of Burlington, Kan., has devised an improved Press for Packing and Baling Hops, by which the hops may be pressed without being broken up or mixed with dust and dirt, and by it more hops can be put in a bale, at a considerable saving in the expense for labor and bagging.

Mr. Thomas S. Miller, of Pomeroy, Ohio, is the inventor of an improved Horse Hay Rake, which consists in an arrangement of levers by which either or both of the brake shoes may be brought into contact with the periphery of the supporting wheels when it is desired to dump the rake.

Mr. Prescott's Proof Sheets and Electrotypes.

To the Editor of the *Scientific American*:

An article entitled "Crooked Journalism," published in your issue of August 10, charges a writer in the *Engineering* with garbling a portion of my recent work on the speaking telephone, describing Edison's discoveries relating to the acoustic effects produced by the variable resistance of carbon under pressure.

As it might be inferred from the concluding portion of your article that the proof sheets and electrotypes of the portion of my work alluded to were forwarded to an officer of the English Post Office Telegraphs, I desire to correct any misapprehension on this point by stating that they were sent direct to the editor of the *Engineering*.

GEORGE B. PRESCOTT.

Electrician's Office, Western Union Telegraph Company, New York, September 5, 1878.

Explosion of Powder by Lightning.

The recent explosion of two powder magazines by lightning, one attended with considerable loss of life, emphasizes the need of great care in the placing of such structures and in providing them with proper lightning conductors. The first explosion occurred in England, August 8, the magazine belonging to the Victoria Colliery, at Bruncliffe, and containing one ton of powder. Several persons within range of the explosion were severely injured. The magazine was situated in the middle of a field, 400 yards from the colliery. The shock was terrific, and but for the incessant rain which preceded the explosion, and had the effect of stopping all traffic in the vicinity, many lives, it is thought, would have been lost.

The second explosion occurred near Pottsville, Pa., August 17, the magazine containing 1,100 kegs or 25,000 lbs. of powder. There was a picnic party assembled in the neighboring wood, half a mile distant across a valley. Three were killed instantly and several injured, some fatally. Many houses in the neighborhood were wrecked.

To Render Cinchona Tasteless.

According to the *American Journal of Medical Sciences*, Dr. S. Ashurst overcomes the disagreeably bitter taste left in the mouth after taking cinchona, by mixing the alkaloid with sugar of milk and bicarbonate of soda. According to him a powder containing one grain of cinchona, four grains of sugar of milk and one tenth of a grain of bicarbonate of soda, possesses only the slightly sweet taste of the sugar of milk, and is quite readily miscible with water and milk; or, if preferred, can be easily swallowed dry.

American Institute Exhibition.

This exhibition opens on the 11th day of September, by which date all exhibitors should be in position. The incompleteness of all exhibitions is the cause of general and well deserved complaint, yet we hope our frequent notices of this exhibition may have, at least, the effect of having this one in good shape on opening day. Any parties intending to exhibit should apply at once, and address all communications to General Superintendent, American Institute, New York city.