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(Illustrated articles are marked with an asterisk.)

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No. 409,

For the Week ending November 3, 1883.

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A CONVENTION OF INVENTORS.

For several weeks past printed circulars have been sent through the mails addressed to prominent patent owners in the name of "The Resident Inventors of New York," signed by Mrs. M. A. Forbes as secretary, calling for a national convention of inventors, to meet at Lyric Hall, this city, on October 22 and 23.

The alleged objects of the convention, as stated in the call, are to protect inventors and owners of patents against the encroachments of an organized hostility to our patent laws. Also to promote the introduction of new inventions.

In accordance with the call, the "convention" began its sessions on the 22d ult., about fifty persons being assembled with the object, according to the New York *Times*, of forming an association to secure for themselves full legal rights and protection against piracy and infringement. Three lady inventors were present—Mrs. Cunningham, who has evolved a cloth cutting machine; Mrs. White, the mother of a washing apparatus; and Mrs. Jones, whose talent has found scope in various directions. Mrs. Adams, a lady who is about to bring a play into the world, and who is known better under the *non de plume* of Della Dusane, was also present, presumably with the intention of availing herself of the benefits of the society, which, when formed, will extend its privileges to authors. The temporary President, Mr. Dee R. Shryock, of the American Postal Telegraph Company, said that inventors were the people who advanced the interests, prosperity, and civilization of the country more than any other class. He alluded to the Wadleigh bill, now before the Senate, as being full of unjust discriminations and ungrateful selfishness which fell nothing short of infamy. Mrs. M. A. Forbes said that the Constitution of the United States did not provide for the protection of intellectual workers. There were powerful combinations to-day made expressly for the purpose of destroying the patent system. There existed, she said, nearly 100 Western railroad companies organized to utilize and appropriate, without paying, the work of the inventors, the grangers, the mill men, and the boot and shoe manufacturers, sanctioned and encouraged by the National Board of Trade. The measures that had been introduced into Congress since 1875 had been such as to render it imperative that the inventors of this country should organize to endeavor to secure the rights of intellectual workers, among whom authors and others might be included. During the proceedings Thomas L. Clingman, ex-member of Congress from North Carolina, came in, and stated that he was interested in the movements of the association, as he had taken out patents of electric light in America and Europe. He felt the necessity for patentees to protect themselves.

A committee of five elected Mr. J. A. Price, of Pennsylvania, President of the convention, and Mrs. M. A. Forbes Secretary, Mr. F. W. Warner being afterward appointed Assistant Secretary. Mr. Price said he thought the broadest title of the association was that of American citizenship. A committee of fifteen to draught the constitution, by-laws, and regulations for the association was appointed, each member being made the representative of a State. A committee of three, to draw up memorials to send to Congress embodying the ideas of the association, was composed of Mr. Price, Mr. Warner, and Mrs. Forbes. A telegram from Mr. E. M. Marble, ex Commissioner of Patents at Washington, was then read. He offered to become permanent president of the association. An Irishman named King, who had been disturbing the harmony but relieving the monotony of the proceedings, violently opposed this offer. He saw no reason why Mr. Marble should thrust a telegram in such a manner upon them, and called the missive a "sugar coated pill." He preferred offering the post of president to Mr. John Kelly rather than to an ex-Commissioner of Patents at Washington.

On the second day, 23d of October, the disturbing element in the shape of the turbulent little Irish agitator, Mr. King, described by one of the ladies present as a "dynamiter and a bad man," only prevailed at the commencement of the proceedings. Mr. King surreptitiously departed when the payment of fees was announced. An old lady, Mrs. Harriet F. Donlevy, who is well known in many societies as a lover of argument for argument's sake, opposed many movements with scriptural quotations. A memorial was drawn up to Congress in respect to existing wrongs and threatened injustice to a most useful class of citizens. It was petitioned that skilled persons be employed to make a digest of all the matter in the library of the Patent Office, with abbreviations of all inventions, so arranged as to correspond with the classification in the office. It was also asked that the statute which limits the term of a home patent to that of the earliest expiring foreign one be repealed. It was urged that the President should be given power to conclude arrangements for an international union for reciprocal protection and legislation for patents. It was then decided that the title of the association should be the American Patent Protective Association, its objects being to foster inventive talent, stimulate inventive genius, facilitate inquiry, and diffuse information. The association proposes to establish bureaus of scientific and legal information, and to promote the introduction of valuable discoveries and improvements. Mr. E. M. Marble, ex-Commissioner of Patents at Washington, was unanimously elected president of the association; Mr. J. A. Price, First Vice-president; Mr. P. H. McNamee, Treasurer; and Mr. F. W. Warner, Recording Secretary.

We suppose the material support of the new institution is to come from the fees and commissions to be charged for the introduction of inventions and the supply of legal information. In the matter of "fostering" inventive talent and "stimulating" inventive genius it would almost seem as if the proposed labor was superfluous, over thirty-two thousand applications for new patents being filed last year in the Patent Office. The existing laws appear to furnish all the stimulants required in that direction.

THE OIL STONE.

Twenty years ago the oil stone was found only on the joiner's bench and possibly on that of the machinist, and its sole use was the sharpening of the edges of tools. To-day its use has extended beyond this province of edging tools to that of grinding, reducing, finishing; in fact, invading the limits of the grindstone, emery, rottenstone, tripoli, and reaching almost to rouge. This stone, which is a slate known in science as novaculite—from *novacula*, a razor—is cut and dressed in hundreds of varying forms for differing purposes. In any hardware or mechanic furnishing store it may be found in all manner of shapes under the name of "slips," adapted for sharpening tools of all forms. In dentists' supply stores it may be seen in twenty or more cylindrical and circular forms, and so minute as to be used at a rapid rate of revolution even between the teeth of dental-suffering humanity. Some of these cylinders, ovoids, cones, and edged wheels are so minute that a pea looks large by their side; yet they are all veritable grindstones.

In the manufacture and finishing of the metals, the oil stone, or novaculite, plays an important part. Our recent exaction as to fits and measures can hardly be filled except by the use of this stone, and it is in demand for truing turned surfaces and planed areas of iron and brass, slowly grinding down the imperfections left by the finish file and the corundum wheel. Recently its powder has largely usurped the place in mechanics' valuation of flour of emery or emery of the higher grades. It is found that a finish "for fit" can be readily obtained by its use in much less time than that by the scraper; and that it does not leave embedded particles of quartz or corundum to keep up a perpetual wear. This material is not strictly an *oil* stone; it can be used with any vehicle, water, benzine, or kerosene oil; it is amenable to all of these. Perhaps its best use is with water, especially when the stone is of the harder sorts, as the Ouachita.

MAKING WIND POWER AUXILIARY.

The subject of storing the wind power evidently attracts much attention, and many suggestions have already been made, but it is manifest that no one has brought forward as yet any plan for doing practically the work intended. The ingenious soul mentioned in our paper of October 13, who runs his arastras with a current of sand, deserves a world of credit, and in his own case has at his command the means desired, for out in New Mexico or Arizona (where he appears to be) sand is to be had in abundance, and is the only thing of which that can be said. But alas! our supply of sand is limited, nor have we always a hillside to which we can raise it, and what we need is something of which we can avail ourselves every where.

Now, though the full answer to the question of storage may be too much for us at present, yet if we can contrive to secure a portion of the wind power sufficient to practically reduce the expenses of running our machinery, while we have the same steady supply of power as now, we shall surely have made a step in advance. Some weeks since (July 28), we made some remarks on one means by which this might perhaps be accomplished. Let us see if figures will show us that the thing is possible to such an extent as to make it worth attempting. We will base our calculations on the same amount of power as that formerly assumed; that is, a factory needs and uses a steam engine which gives it twenty horse power as its regular motive energy. Acting on the plan which we propose, this engine serves as an air compressor, for no other presents itself whereby we may combine the action of the steam and the wind in the same movement We need therefore a reservoir which shall be common to both, and it is at this point that we must begin our calculations.

For the sake of convenience it will probably be better to divide our space, two cylinders instead of one, though this of course is not necessary. A diameter of eight feet with a height of ten gives us in round numbers 500 cubic feet of contents. Such a reservoir, built of three-eighths iron, and sufficiently fitted to bear a pressure of sixty atmospheres, will cost about $450. The two, therefore, holding 1,000 feet we may set at $900.

This amount of air compressed to the degree stated will furnish twenty hore power steadily through a working day of ten hours, without needing renewal.

But we do not propose to supply it from the steam engine alone or chiefly; we will bring in the wind power. At such point as is convenient wind wheels are erected in number and extent as required. A simple, solid, durable, and inexpensive wheel can be built after the following plan:

A vertical hard wood shaft of twelve feet is firmly supported at top and bottom, where it revolves freely in common iron bearings. Six (or eight) blades project four feet, plain, solid, of inch pine board. We have thus a wind wheel, twelve feet high, and eight feet in diameter.

A semicircular shield, concentric with the wheel, but of larger diameter, is fitted with a movable vane. When the mill is to run at its full speed the vane is so set that, whichever way the wind blows, the revolving shield leaves constantly one-half of the mill exposed to its force, and the ful

power of the wind is exerted. This will doubtless be the case at almost all times; should it ever be advisable to let the mill lie still, the vane can be changed to a position at right angles, and at once the shield is presented directly to the current of the wind, and the mill is entirely sheltered.

Much more elegant and expensive windmills can be built, and yet not be one particle more effective. Such a mill will run for years without a dollar spent for repairs; it runs at the utmost speed of a gale, and needs no checking.

At the average speed of the wind in New York a mill of this size is good for a steady half horse power; that is, it will give 84 hours of one horse power per week, for night and day, week days and Sundays are pressed into the service. If, therefore, the manufacturer has space on which he can build fifteen such mills, he has at his command the full force of his twenty horse engine. The expense of building them will not exceed $800.

Here, then, is our case. We have the wind wheels each driving its air pump leading to the receiver, and we have the steam engine similarly connected. We will assume that by the action of one or the other or both, we have the receiver stored with air at a pressure of 1,000 pounds. At starting work in the morning there is no occasion to think of steam, for there is on hand a reserve of force sufficient for the day's running, and the engine lies idle. The work goes on, but so do the wind wheels go on, for they take care of themselves and need no attention, and they never can make a revolution without adding to the stock of compressed air. When the factory shuts down at night, the chances are very strong that the pressure in the receiver is as great as it was at starting, or if not it will probably be fully up by morning.

A factory thus fitted will run with no outlay for current expense of power during a very large part of the year, and it certainly does seem as though the plan was worth a trial. It does not solve fully the problem of storing the wind power, but it may perhaps help us in that direction.

A.

ASPECTS OF THE PLANETS FOR NOVEMBER.

NEPTUNE

is morning star until the 12th, when he becomes evening star. He retains until that time his pre-eminence among the planets on the morning roll, being the first to make his appearance in the field. On the 12th, at 4 o'clock in the morning, the event in his synodic period most interesting to terrestrial observers takes place. He is then in opposition with the sun. As the word implies, he is opposite to the sun, rising when the sun sets and setting when the sun rises. He is at his nearest point to the earth; the sun, the earth, and Neptune being in a straight line, with the earth in the center.

An observer on the sun, endowed with visual power to take in the system at a glance, would behold the earth and Neptune, far beyond, directly in line. He would also find, just before the time of Neptune's opposition, six of the seven planets on one side of the sun, leaving Venus as the sole planetary representative on the other. The movements of the planets as seen from the sun would be far less complicated than they are as seen from the earth, who is herself traveling around the sun, and changing constantly her position in regard to the other members of the system. Neptune at opposition is under the most favorable conditions for being seen with the telescope. Though the third planet in size, he is too far distant ever to be visible to the naked eye. He is now among the small stars of the constellation Aries, near the boundary line of Taurus, and nearly west of Aldebaran, the only bright star in his neighborhood. A good telescope sweeping the field where he lies will quickly detect his presence. For a small, ill-defined sphere will suddenly spring into being, while the surrounding stars will remain mere points of light.

Neptunian astronomers have an advantage over terrestrial ones, and can find little difficulty in measuring the distance of the fixed stars. While the earth has 180,000,000 miles—the diameter of her orbit—for a base line, Neptune sweeps round the sun in an immense orbit whose diameter, or base line for measuring the distance of the stars, is 5,550,000,000 miles. But there are disadvantages to counterbalance this advantage. It takes Neptune 165 of our years to revolve once around the sun, and astronomers there must wait more than eighty years to make measurements in opposite points of his orbit. The sun as seen at this far away planet measures 64″ in diameter, a little more than the greatest apparent diameter of Venus as seen from the earth. Our glorious sun to the Neptunians is therefore but a brilliant star, giving only a thousandth part of the light we enjoy.

The right ascension of Neptune is 3 h. 12m.; his declination is 16° north; and his diameter is 2·6″.

Neptune rises on the 1st at half-past 7 o'clock in the evening; on the 30th he sets about half-past 5 o'clock in the morning.

SATURN

is morning star until the 28th, and then evening star. On the 28th, at 11 o'clock in the evening, Saturn is in opposition with the sun, the culminating point of his size and brilliancy for the present year. He will be a superb object for observation during the month, rising now an hour and a half after sunset, coming every evening earlier above the horizon, and shining so serenely in the evening sky that he needs no one to point him out as he travels on his way near the Pleiades and Aldebaran, with whom he has long kept company. Very clear sighted observers may see him in an elongated aspect, on account of his widely open rings. A telescope of moderate dimensions will give a surpassingly lovely picture of this unique planet, and every one interested in astronomy should make an effort to obtain a telescopic view of this wonder of the skies.

On the 1st, at midnight, Saturn is in conjunction with Alpha Tauri, or Aldebaran, the star being 3° 30′ south. This is the second conjunction of the same planet and star during the year, the previous one having occurred on the 13th of August, at almost the same point in the sky, with only a difference of 10′ in declination. Therefore Saturn is nearly in the same position in the heavens he occupied in August, although he has been wandering in his orbit in true planetary fashion, sometimes straight forward, sometimes backward, and sometimes stationary.

The right ascension of Saturn is 4 h. 29 m.; his declination is 19° 46′ north; and his diameter is 19″.

Saturn rises on the 1st at half-past 6 o'clock in the evening; on the 30th he sets a few minutes before 7 o'clock in the morning.

JUPITER

is morning star throughout the month, and when his regal head appears above the eastern hills star gazers pay involuntary homage to the brilliant planet that unerringly pursues his stately course in the star depths, and is visible through the entire night. Observers will not need to sit up late to obtain a glimpse of him, for he rises now at half-past ten o'clock, and, rising four minutes earlier every night, will be above the eastern horizon at half-past 8 o'clock at the close of the month.

On the 22d he is stationary near Præsepe, the same luminous cluster in Cancer that Mars immortalized by his passage through it in October. Those who desire to observe a planet in a stationary phase will find an illustration in Jupiter, who scarcely varies his position during the month.

The right ascension of Jupiter is 8 h. 25 m.; his declination is 19° 35′ north; and his diameter is 37·6″.

Jupiter rises on the 1st at half-past 10 o'clock in the evening; on the 30th he rises at half-past 8 o'clock.

MARS

is morning star, but contributes no incidents to the annals of the month. He is in the constellation Cancer, though he makes his way into Leo before the month closes. His increase in size and ruddy color is plainly perceptible, his apparent diameter having doubled since the 1st of October. As he rises 22 minutes after Jupiter, he can readily be found. Mars illustrates direct motion at present, that is, he is moving eastward according to the signs of the zodiac.

The right ascension of Mars is 8 h. 47 m.; his declination is 19° 18′ north; and his diameter is 14·6″.

Mars rises on the 1st ten minutes before 11 o'clock in the evening; on the 30th he rises a quarter before 10 o'clock.

URANUS

is morning star, and pursues his slow and solitary way among the insignificant stars of Virgo. He, like Mars, is moving in a direct course, but at present is an object of little interest.

The right ascension of Uranus is 11 h. 47 m.; his declination is 2° 5′ north; and his diameter is 3·5″.

Uranus rises on the first about 3 o'clock in the morning; on the 30th he rises a few minutes after 1 o'clock.

MERCURY

is morning star until the 26th, and evening star the rest of the month. On the 26th, at 1 o'clock in the morning, he is in superior conjunction with the sun, passing behind and below him, and reappearing on his eastern side as morning star. He takes no active part in the events of the month, but contents himself with pursuing the swift tenor of his way.

The right ascension of Mercury is 13 h. 38 m.; his declination is 8° 17′ south; and his diameter is 5·4″.

Mercury rises on the first about half-past 5 o'clock in the morning; on the 30th he sets about half-past 4 o'clock in the evening.

VENUS

is evening star during the whole month, the only planet that plays this part without change. She will not long remain at the foot of the list, but will soon put forth her claims to notice, when the other planets will hide their diminished heads. Though setting now forty minutes after the sun, at the end of the month she will be above the horizon a little more than an hour after sunset and can be easily seen. Her place will then be far south in the constellation Sagittarius, 2° 35′ south of the sunset point.

The righ ascension of Venus is 15 h. 9 m.; her declination is 17° 25′ south; and her diameter is 10·2″.

Venus sets on the 1st about half-past 5 o'clock in the evening; on the 30th, she sets about half-past 5 o'clock.

THE MOON.

The November moon fulls on the 14th at forty-one minutes after 11 o'clock in the morning, New York time. None of the planets lie near the moon's path until she nearly reaches the full, when she is in conjunction with Neptune, the planet being 15′ south. On the 15th, at noonday, she is in conjunction with Saturn, being 1° 2′ south. Observers in some localities between 28° and 71° south declination will see Saturn occulted, making the eighth occultation of this planet during the year. On the 19th the moon is at her nearest point to Jupiter; on the 20th she is near Mars; on the 23d she is near Uranus. On the 29th, the new moon is in conjunction with Mercury.

OCCULTATION OF BETA CAPRICORNI.

The moon the day before the first quarter occults Beta Capricorni, a star of the third magnitude in the constellation Capricornus. The immersion of the star takes place five minutes after 8 o'clock in the evening, Washington mean time. The emersion occurs four minutes after nine o'clock, Washington mean time. The occultation continues 59 minutes. The phenomenon is a beautiful one, is worth taking pains to see, and the hour of exhibition is convenient. As the moon travels with her dark edge foremost from new to full, her illumined side being next the sun, observers will see the star apparently blotted from the sky as it disappears behind the unillumined portion of the moon.

New Form of Electrical Accumulator.

Julius Elster and Hans Geitel show that Zamboni's dry piles can be used as accumulators. The copper pole of the pile is connected with the positive, and the tin pole with the negative poles of a Holtz machine. After the latter has been worked for a few minutes the dry pile is found to be charged. After repeated discharges the pile is found to contain a charge of considerable intensity. The authors recommend the following form of pile: The plates of the pile are strung by means of a needle upon a silk thread and then stretched between the poles of a Holtz machine. A pile of 11,000 pairs of plates of one square centimeter surface, after ten minutes charging, gave shocks one millimeter long and made a Geissler tube luminous. The light of the tube was continuous at first, but afterward became intermittent. Dry piles were also made of one metal. Plates of lead foil were coated on both sides with tissue paper by means of potash water-glass to which a little oxide of lead was added. A pile of 7,000 of the lead plates one square centimeter in section could be charged so as to exhibit strong polarization. A certain amount of moisture must be communicated to the piles. The superoxide of lead deposited electrolytically acts more powerfully than when deposited in any other way. A pile of 1,000 plates, coated on one side with chemically produced superoxide and on the other with protoxide of lead, gave proportionally much less tension. These piles are well suited to exhibit to a large audience the principle of Plante's or Faure's accumulator.—*Wiedemann's Annalen*; *American Journal.*

Preparation of Butylene.

Puchot says that butylene, C_4H_{10}, can be conveniently prepared from butylic alcohol obtained by fermentation, as follows: 100 parts of sulphuric acid are placed in a flask or retort, and 100 parts of butylic alcohol poured in carefully so that it will float on the acid. The flask is then placed in cold water and shaken until the two mix without much rise of temperature. Then 160 parts of gypsum and 40 of sulphate of potassium, both in powder, are introduced, still shaking the flask until the mixture is homogeneous.

On heating very gently the gas is given off. About 30 parts of butylene are obtained from 100 parts of alcohol, or nearly 40 per cent. The rest of the alcohol collects in the wash bottles, together with other interesting substances.

By the action of chlorine upon butylene in diffused daylight a liquid was obtained homologous with $C_8H_6Cl_2$, but in direct sunlight a substitution took place and formed $C_8H_4Cl_6$. If the flask was heated while chlorine was passing through, he obtained $C_8H_2Cl_6$.

Butylene is one of the constituents of illuminating gas, but its nature is so little known that we are not yet able to separate it from the other constituents of the gas.

A Steamer Comes into Port on Fire.

Late in the afternoon of October 22, the large iron steamship Heimdal, of the Thingvalla line, plying between New York and Amsterdam, came into this harbor with the signal, "I am on fire." Prompt assistance was rendered, the passengers and mails removed, and the ship saved. Including the crew, there were 350 persons on board. In the cargo were 1,000 cases of safety matches, consisting of brands manufactured in Norway, Sweden, and Denmark.

A smell of fire was noticed on the day preceding her arrival here, and upon investigation the matches, in the main hold, were found to be on fire. Steam from the boilers was turned into the hold, which reduced the heat.

The heads of these safety matches may consist of a pasty mass composed chiefly of chlorate of potash and sulphuret of antimony. They are lighted by being drawn across a surface on which is glued red or amorphous phosphorus mixed with very fine sand. This is generally put upon the outside of the box. It is considered probable that the fire was the result of spontaneous combustion.

THE new and thrifty town of Pullman, near Chicago, lies on a flat prairie, and the problem of drainage, which is so difficult to solve in a great many places, had to be met in Pullman. The following is the one adopted, and it is said to be satisfactory in its workings and profitable in its results: Sewers are built to empty into a sunken tank, from which the sewage is pumped through a twenty-inch main to a farm three miles away. The system cost $80,000; the farm yields a profit of $8,500 a year.

AT the beginning of 1882, Sweden possessed a mercantile navy of 4,151 vessels, measuring 530,000 tons, of which 3,397 were sailers, with 450.000 tons, and 754 steamers, with 80,000 tons. The number of sailing vessels had during the year decreased with 184 ships.