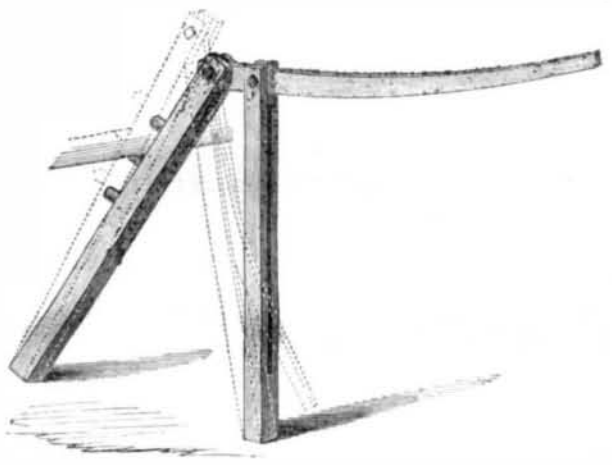
New Material for the Production of Gas.

A Mr. McKenzie, of Glasgow, Scotland, as we learn by Rylands' *Iron Trade Report*, has been experimenting by mixing the coal dust (bituminous) at the mines with crude petroleum, as a basis for the manufacture of illuminating gas. The result of his experiments is said to be very encouraging. The idea is that in the distilling of petroleum alone, a large quantity of the vapor is re-condensed into oil; but by combining the coal with it this waste is prevented, and a coke is left as a residuum which is superior to that from coal alone.

All this may be true, but as the same process has been fairly tested in this country without success, we take the liberty to doubt the professed result. What advantage there can be in the presence of the "coal gum," or siftings, for the production of gas, beyond that afforded by the oil alone, we cannot discover. If, as is stated, a portion of the vapor from oil in the process of distillation is re-converted into oil, "on coming in contact with a cool surface," the remedy is plainly a low distillation. As the oil alone is considered, in the article from which we derive these statements, as the gas producing material, the coal is no better than any other substance to retard the condensation of the gas to an oleaginous liquid.

DUNN'S IMPROVED WAGON JACK.

A lifting jack that is light, portable, and self-retaining, when the weight is imposed upon it, is a desideratum. Most, if not all, of those in general use, must be secured by a pin or otherwise, when the axle of the carriage is raised, but the jack shown in the engraving is in this respect self-operating.



The two uprights are pivoted to the lever, and when the lever is depressed the position assumed is that shown by the dotted lines, the lever shutting into the mortise or channel of the main standard, and the weight of the axle and carriage holding the jack in position. Pins placed at varying distances receive the axle and support the weight. The operation of the implement can be easily comprehended by the aid of the engraving.

Patented July 24, 1866, by Albert Dunn, Plainfield, N. J. For territorial and manufacturers' rights, address Albert Dunn & Co., as above.

[From our own Correspondent.]

FOREIGN SCIENTIFIC NEWS.

The scientific societies of London have now all closed their sittings for the season, after the performance of no inconsiderable amount of valuable work. The recent discovery in Egypt of another stone, with an inscription in three different languages and styles of writing, including Egyptian hieroglyphics, has proved a great boon to philologists. It consists of a vote of thanks from the Priests of Memphis to one of the Ptolemies, in which respect it resembles the Rosetta stone in the British Museum—the stone which first threw light upon the inscriptions upon the monuments of ancient Egypt. On the newly-discovered stone the inscription is longer, and proves that Eastern scholars have been right in the interpretations they have fixed upon many unknown characters, in the absence of direct evidence. Such is the advance in this branch of knowledge that, in past numbers of *Good Words*, *Chambers's Journal*, and other periodicals, may be found translations of fairy tales written in the time of the Pharaohs.

M. De Waldeck, an old gentleman more than 100 years of age, who served under the first Napoleon, has recently returned from Mexico and Peru, where, for a long time, he employed a staff of Indians in excavating some of the remains of the ruined cities of Central America. He has brought back and exhibited at the Ethnological Society many exquisitely-executed drawings and paintings of the grotesque pieces of sculpture dug up under his supervision. Some of the screll work of the sculptures is very Grecian in its style, and the head of the elephant is frequently reproduced. Mr. Mackie, one of the members of the Ethnological Society, is strongly of opinion that some of the characters cut upon these remains are of Assyrian origin, but is little supported in his views by his colleagues.

All the numerous telegraphic cables between England and the continent of Europe are constantly so full of work, that the experience thus gained created great fears that the Atlantic cable, when laid, would be choked with messages, and thus be a slower method of communication than by post. For this reason there is little or no complaint in England about the charges of the Atlantic Telegraph Company, since "high charges" are synonymous with "great speed." Again, the Company for twelve years has had to fight with great disappointments and difficulties, and sunk nearly £2,000,000 of capital, with interest, in the undertaking. As the iceberg season off Newfoundland begins in February next, and lasts till August, during the whole of which time the icebergs yearly ground on the banks off the coast, the public can scarcely complain that the shareholders try to reimburse themselves before the time of greatest danger to the cable begins. The "certainty" of the apparatus used for transmitting messages by the cable is now a matter of public interest. Mr. Varley, considering the delicate nature of the receiving instrument, produces wonderfully sharp and unmistakable signals; still they have not the certainty of the Morse telegraph, which prints its messages; or of the needle telegraph, where the ear assists the eye in the work of reading. The little ray of light, like a bright vertical tongue of fire, sways to and fro upon the ivory scale of the galvanometer, and from its vibrations the messages are read, yet it is very desirable to test the certainty of the apparatus by sending through it a large number of figures and proper names, so that no aid in reading may be afforded by the context, and the reliability of the method of signaling be fairly tested.

On reference to the map of Great Britain, your readers will notice that at the extreme west of England is a magnificent harbor, Milford Haven, opening to the Atlantic as if to welcome visitors from America. Yet its shores are deserted, the great tide of traffic passes outside the mouth of the harbor, and bears northward to Liverpool, to encounter all the dangers of channel navigation, and to add to the number of black spots upon the wreck charts. The natural advantages of Milford Haven have never been economized, because the counties in its neigborhood are poor, without power to develop its resources, and, till lately, there has been little railway accommodation in the district. Within the past five years, two new lines have crept down to its shores, and the direct railway from Milford Haven to Manchester is in progress. The country in the neighborhood of the harbor is rich in anthracite coal, and the steam coal from the great Aberdare carboniferous basin is within easy distance by rail. At present the only signs of life at the Haven are a Government dockyard, and the town of Milford, which is nothing more than a miserable village, with a large percentage of uninhabited houses. The late First Lord of the Admiralty, the Duke of Somerset, declared that the great want of Milford Haven was dock accommodations, which private enterprise is now taking some steps to provide. Some of the Panama line of steamships have been sent by their owners to coal in the harbor, which, from its natural advantages, will probably, in the course of years, prove a great boon to all engaged in trade between England and America.

In my last, it was mentioned that a great body of archæologists, headed by the Marquis Camden, K. G., the Bishop of Oxford, and other gentlemen, had just invaded London to examine its ancient ruins and antiquities. They visited Windsor Castle, where Queen Victoria threw open to inspection every part of the building of interest, including some subterranean passages leading from the interior of the fortress, through the chalk rock, to the bottom of a shaft 35 feet deep, opening in the park, outside the outermost walls of the royal residence. The date of construction of these passages is not known. The archæologists also explored the Tower of London, under the guidance of Mr. G. T. Clark, the trustee and manager of the Dowlais Iron Works. Mr. Clark proved a most efficient cicerone, and in the course of his remarks narrated an unpublished anecdote of the late Duke of Wellington. At the time that His Grace occupied the position of High Constable of the Tower, he kept the public records in a room above the powder vaults. A literary gentleman, on making this discovery, hastened to the Duke, and asked him, "Whether he did not think it a very dangerous thing to keep the records on the top of the powder magazine?" The listener, who regarded the question purely from a military point of view, seemed startled at the suggestion, and replied, "Oh, I never thought of that before." He then mused for a minute, and brightening up he told the querist—"Well, perhaps it is not so dangerous after all, for I really don't think they will hurt the powder!" Mr. Clark piloted his party all over the ancient building, and at last, in the chapel in the White Tower—the chapel in which William the Conqueror and his rapscallions once knelt at their devotions, such as they were—the archæological students listened to perhaps the most instructive and eloquent discourse ever delivered within its walls. He told how Lady Jane Grey, Sir Walter Raleigh, and many others, had knelt before the rude altar in that chapel, and afterward dared to suffer and to die for the sake of opinions which they believed to be true. On the Tower Green, just outside the door, the noblest blood in Englnnd had been shed, and beneath a neighboring staircase had been dug up the bones of the two murdered princes. The whole atmosphere of the place seemed heavy with crime. Mr. Clark concluded with a few remarks about the Tower as a royal residence of the Plantagenets, who having lived out their lives of virtues and crimes, were carried forth to Westminster Abbey, where now they lie upon their altar tombs, with their weapons by their sides and their hands uplifted to heaven, peacefully awaiting the final resurrection.

W. H. H.

London, Tuesday, August 28, 1866

The Bremen Rose-Wein.

A correspondent to the *Nation* gives an estimate of the value of the famous Bremen rose-wein, which, in the year 1624, cost $165 per cask, and is now two hundred and forty-two years old. Calculating the original outlay at ten per cent compound interest, he states that in 1865 the value of each cask was $231,883,905,000, or nearly ninety times the present debt of the United States, while each bottle was worth $161,039,499, very nearly the sum realized from duties on imports in the United States last year. Each glass was worth $20,000,000, and each drop $20,000. We should think that this wine had been kept almost too long, and the owners had better "realize" soon, unless they want to lose on it.

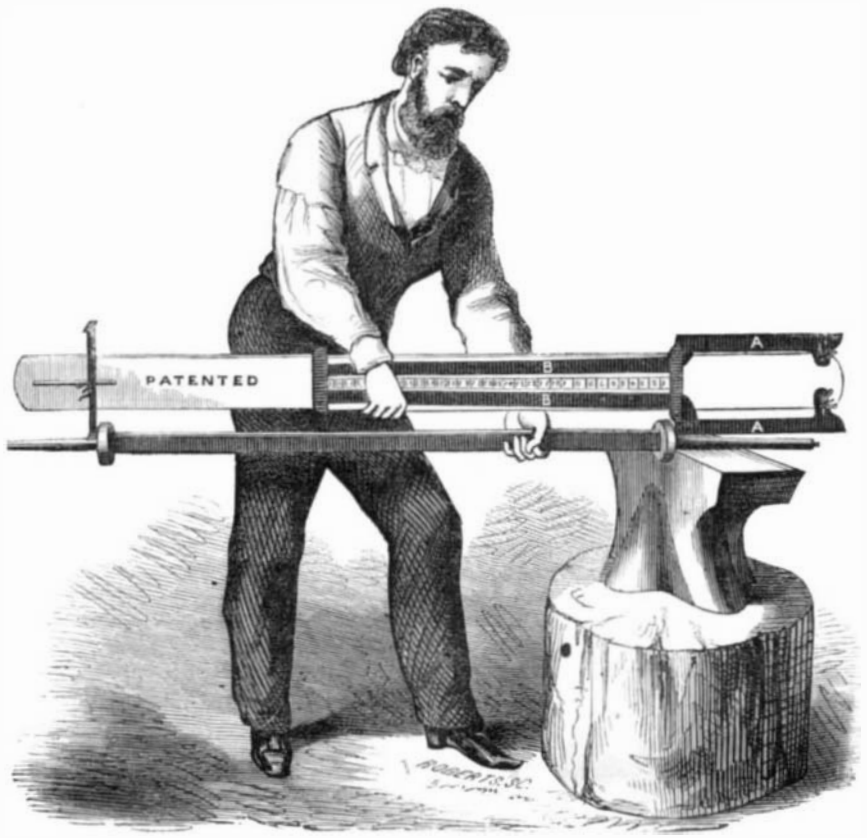
A NEW system of small coinage, invented by Mr. Hall, of Buffalo, is now under consideration by the Government, with prospect of being adopted for future coins. The plan consists in having upon the center of the one-cent pieces a raised star, the nucleus of which is represented by a hole through the coin, the two-cent coins are to have two perforated stars, the three-cent coins, three.

IN Turkey, the income of the sovereign absorbs ten and eight-tenths per cent of the entire revenue. In England six-tenths per cent are applied for supporting royalty.

Improved Axle Gage.

It is surprising how much of the work on implements and machinery, the perfection of which depends upon exactness and absolute operation, is still intrusted to the unreliableness of manual dexterity, or determined by conjecture and guessing. "Practice makes perfect," is a generally received axiom, but not entirely and always correct. The most skillful workman sometimes makes a mistake, but where work is done by an unvarying gage there is no excuse for errors.

The engraving represents an implement designed to take the place of the guess-work by which carriage axles are now generally set. It is very important that the "dish" and "gather" of carriage wheels should coincide with the set of the axles, and this result is now attempted by repeated trials of heating, bending, and cooling the axle arm or journal, and swinging the wheels. It is claimed by the proprietors of this patent that, by the use of this gage, two axles can be set in the time now required for one, and that the work will be done much more accurately. The gage is simply a board, corresponding in length to the longest axles, and having two flat levers of thin iron, pivoted at a point representing the collar or washer of the axle. These levers are slotted at the end of the arm, A, through which slots pass bolts, having thumb-nuts designed to secure either in a fixed position. Opposite the arms, B, of the levers, on the board, is a graduated scale of inches and their fractions. At the other end is a cross arm, b, which, by means of a bolt and thumb-nut, can be moved through a slot in the board and secured at any point, the margin of the slot bearing a scale of inches.



BAMBERGER'S AXLE GAGE.

The operation is simple. The taper of the arm, or journal, is ascertained by callipering at the ends, and the long arms of the lever are moved inward a distance corresponding to the whole taper of the journal, at a point twice the length of the box or journal. This shows the taper of the journal. Then, at a distance corresponding to half the diameter of the wheel, set the lever out to a point equal to the "dish" of the wheel, and secure it by the thumb-nut. Now apply the gage to the axle, the dog, or cross arm, b, at the other extremity, resting against the opposite journal, at the collar or washer. This will show how much the axle journal is to be set, the short arm of the iron lever bearing against the surface of the journal when bent to position.

For the "gather" proceed with the lever on the opposite side, except that the second movement should be out toward the edge of the gage for the front of the wheel, and in for the back of the wheel. A movement of one eighth of an inch will give a "gather" of one-quarter, bringing the wheels one-half an inch nearer together in front than rear. Practical carriage makers will easily comprehend the advantages of this gage, which is absolute in its movements and always reliable.

Patented by W. C. Bamberger, Nov. 15, 1859. For territorial and manufacturing rights apply to Wilson & Dougherty, Box 623, Newark, N. J.

The Doctrine of the Correlation of the Physical Forces.

There are signs of some reaction against that doctrine of the correlation of the physical forces which for the last twenty years has so dominated scientific thought, or, at least, against that interpretation of it which makes it teach that all forces are modifications of one force, and are mutually convertible into each other. Thus, in the last number of the "Quarterly Journal of Science," a mention, in an article on "De la Rue and Celestial Photography," of the appearance in the photographs of the solar eclipse of 1860 of solar prominences invisible to the human eye, calls forth the following very noteworthy remarks:—"A curious question arises from the consideration of the chemical power evidently possessed by these prominences, be they flames or clouds. We never, as we have already stated, under ordinary circumstances obtain an impressed image of the sun without finding the indications of a protected circle—that is, one which proves a paucity of chemical power—surrounding the photographic disk. Yet, when the light of the solar disk is interrupted by the body of the moon, the radiations proceeding from the edge, or rather, perhaps, from beyond it, have a strong photographic power. What is the cause of this most remarkable difference? Why is it that the photographic tablet is impressed during an eclipse by objects which do not give light enough to be visible even at the period of totality, and that they do not effect the required chemical change upon our sensitive plates when the sun is unobscured? The only reply which we are at present in a position to give is that the diffused light when the sun is shining is sufficiently powerful to overcome the weaker chemical radiations of those solar clouds or flames. If this reply approaches correctness, we have additional evidence confirming the view that the two principles existing in the sunbeam, light or luminous power, and actinism or chemical power, are not modifications of the same 'energy,' to use the accepted term of the day, but rather forces balanced against each other, acting indeed in antagonism." Are our men of science coming round to the doctrine of Swedenborg and other "mystics," that there are two primary forces, and not one only—one attractive and the other repulsive.—*Mechanics' Magazine.*

Whence Comes Indigo?

There are some fifty or sixty species of plants of the order *leguminosæ* and genus *indigo-fera*, which, by undergoing a process of fermentation, yield the beautiful dye known as indigo. These plants are indigenous in Asia, Africa and America, and in some of the East and West India islands. The discovery of the dye was very ancient, its use being mentioned by more than one of the ancient Latin writers, and in terms which make it very certain that it was the same that is now so well known by the name. It was very early produced in India, from which country the name was derived, as it was called Indicum, and this is the country in which it is now most extensively cultivated and prepared. Its importation into several European countries was for a long time prohibited, for various reasons; in England and France because it was thought to injure the texture of the cloth in dyeing. In Germany it was prohibited for the sake of protecting the native woad, a miserable substitute for the genuine article—a distinguished instance of the wisdom of those who are desirous of protecting home productions without any regard to their comparative value. On the same principle the advocates of this system ought to exclude from our own country yellow dyes, for the sake of protecting the well-known native dye made from butternut bark. The plant from which indigo is commonly produced grows to the hight of from four to six feet. It contains the coloring principles in the leaves and stems in a colorless fluid, which is changed to the dye by fermentation and oxidation. The seeds are sown in March or April, and before the plants attain their full growth, the same season, they are cut early in the morning, before the sun has fallen upon them, and carried to the factory, where they are laid in great stone cisterns, some twenty feet square and about three feet deep. Heavy weights are placed upon them by which they are kept down below the surface of the water, which is let in so as to cover the plants, and fermentation is allowed to go on for ten to fourteen hours, according to the condition of the plants, the temperature, etc. The liquor is then in an active commotion, very much as if it were boiling. Bubbles of air continue to rise, which assume a purple hue, indicating that the fermentation has had the effect of producing from the limpid water the color desired. When this process is complete, the water is drawn off into another vat, where it is violently agitated by artificial means for an hour or two, until the coloring matter begins to be precipitated, and it is then left to settle. The water is drawn off again, and the indigo is taken out, dried and prepared for commerce.

The cultivation of the plant and the preparation of indigo, wese commenced in South Carolina about the middle of the last century, and have been kept up ever since until the commencement of the late war, which interrupted so many of the Southern productions. At one time the finest indigo in the world was made in that State, and it was greatly sought after by dyers, calico printers, and leather dressers, but both the quality and quantity fell off many years since, and the yield, for some time past, has been inconsiderable. The finest quality now comes from Bengal and the adjacent provinces. There are many grades, according to commercial language, such as superfine, pure blue, ordinary blue, fine purple. The finest quality has the least specific gravity, and floats upon the water; the poorer qualities having an admixture of earthy substances which add to their weight. The finest indigo may also be tested by its not readily leaving a mark on drawing it when dry across a piece of paper, and also by the clear blue which it imparts to water when dissolved. The culture of the plant is quite precarious, and the amount produced varies greatly from one season to another. The total shipment from the East Indies averages 12,000,000 lbs. per year. Last year there was imported of this first quality into the United States 415,575 lbs. valued at $324,207—its foreign gold cost.—*Exchange.*

THE British mint has ceased to coin half-crowns for some years past. In like manner, the four-penny piece is made to give place to the three-penny, no coin of the former denomination appearing in the returns since March, 1855.