A RELIABLE TEST FOR GOLD AND SILVER COIN.

The steady increase of gold and silver coin coming into circulation has tempted the manufacturers of counterfeit money into active operation, and the amount of spurious metal already in use is very great. The ingenuity of these sharpers is not confined to counterfeiting alone, as they have commenced the practice of another and far more dangerous fraud in the stealing of gold from the genuinc coinage now in circulation. This is done by the "sweating" process in the electroplating bath. A double eagle (\$20) may, for example be considerably reduced in weight by this operation. Yet the coin still remains quite perfect in appearance, and none but a practical expert would nesitate to take it. It is hardly necessary to point out the value of a simple, quick, and reliable means of detecting these frauds. The acid test is useless, and as some of the counterfeits are full weight, the ordinary scales are liable to deceive if used as a test. The specific gravity of gold and silver being much greater than that of base metal, a counterfeit must be either lighter in weight or larger in size than the genuine coin, and a scale capable of accurately weighing and measuring the coin is a true and reliable test. Such a scale is herewith illus

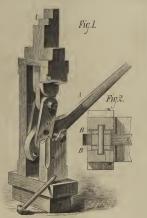
It consists in a balance lever made of hard brass, which works on a knife edged steel pivot similar to an ordinary scale beam. The operating arm of the lever is provided with gauges and adjusting stops, formed and placed in such a manner that by a single movement or application of the coin the three essential tests of weight, diameter, and thickness are made instantly. The gauge has the form of an open slot made just large enough to admit good coin. The size of the made just large enough to admit good coin. It sets ze of the coin is tested by the gauge as it enters, and when the coin touches the stop it is tested in weight by the lever, A counterfeit of the proper weight will not enter the gauge. A counterfeit that does enter will not move the lever. The

and easymeans of accurately adjusting the instrument. This adjustment is so fine that the gold test is sensitive to the one fifth part of a grain. The instrument can be made to test any coin or any number of coins, automatically throwing out the good and holding the bad. The apparatus is now in use at the United States Treasury in Washington and at the mint in Philadelphia. The inventor has received written testimonials from the Treasury experts which speak very highly of the reliability and accuracy of the device. It is very neat in appearance, strong and simple in construction, and it cannot get out of order. Patented by P. Doherty, June, 19, 1877. For further information address the patentee, at

New York city.

IMPROVED WAGON JACK.

The invention herewith illustrated is a new jack, which may be used for lifting wagons, etc., without change of pin, or to press cheese, hay, apples, etc. Its lever may be of any



SMITH'S IMPROVED WAGON JACK.

pin to two links, B, that are again pivoted at their upper ends to a lifting post, C. The latter is guided in the standards by means of interior grooves, into which the pivot pin of the links and post is extended, as shown in the sectional view, Fig. 2, and also by the cross straps of the standard. The upper end of post, C, is step shaped, so as to bear on and an entire change in the character of the bottom from the axles or other objects. The side standards are provided mud to coral, rock, and sand.

with a series of holes at both sides, which receive the pivot pin through apertures in the cam lever according to the height to which the same is set for the object to be raised. When the post is elevated to the required height by the lever, it is retained by the post, links, and lever tocking each other by coming into line. The object is lowered by swinging the cam lever down. Patented March 19, 1878. For further information address the inventor, Mr. Simeon Smith, Deersville, Harrison county, Ohio.

IMPROVED SLED.

We illustrate herewith a new and simple bob-sled, the im-



GRAETHER'S IMPROVED SLED

provement in which is found in the runners, which consist

MACHINE FOR TESTING GOLD AND SILVER COIN

further information address the patentee, at

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first pushing the root sively made, and will tend to make the sled run easier. For further information address the inventor, Mr. Theodore Graether, No. 36 Prospect street, Rochester, N. Y.

A Japanese Bronze Foundry.

A visitor to a leading Japanese bronze foundry describes length, so that no stooping is required in operating it, and it may be easily and quickly adjusted. It consists of the cam lever, A, which is pivoted eccentrically to its fulcrum of a studio. The products of this foundry are now wholly of asstance. The produces of this foliating are now withing made by easting, the proprietor not sharing the sentimental enthusiasm of those who prefer archaic methods and crude work to the finer results of improved facilities. Most of the work is done to order. The customer decides on a subject and communicates his wishes to the designer, who makes a sketch on paper and a trial figure in wax. This, as amended and approved by the patron, is completed by the artist as he sits patiently before his brazier, touching the plastic wax with skillful, delicate strokes. The model is then pressed into fine clay, which adapts itself to every line. The metal is then poured in, allowed to cool, the mould is broken and cleaned away, the rough bronze filed and given a luster, and the casting is ready for delivery. Many of the best articles showed the influence of foreign ideas, and were none the worse for it. They comprised vases, braziers, candlesticks, dragons, warriors, lobsters, crabs, frogs, and many other designs. The prices for the nicer ware ranged from thirty to one hundred dollars. Sections of a thousand dollar vasc, of tasteful design and exquisite workmanship, were strown about the floor

Sounding the South Atlantic.

Commander W. S. Schley, of the U. S. steamer Essex, re ports to the Secretary of the Navy that he has successfully run a line of soundings from St. Paul de Loando, Africa to Cape Frio, Brazil, via St. Helena, which report is panied with the track chart, with soundings marked thereon and a profile of the ocean bottom.

The greatest depth found between Africa and St. Helena was 3,063 fathoms, or 18,376 feet, and between St. Helena and Brazil the greatest depth was 3,284 fathoms, or 19,704 feet (nearly 33/4 miles). The soundings taken eastward and west ward of St. Helena exhibit, in profile, that that island stands almost perpendicular in nearly 12,000 feet of water. After leaving the coast of Africa there is an abrupt descent of 900 fathoms in the first sixty miles from that coast, deepening up to 3,000 fathoms in a distance of about 700 miles, from whence to St. Helena gradual reductions in depth occur,

The soundings were taken by means of pianoforte wire, with the machine originally designed by Sir William Thompson, but improved by Captain Belknap, of the U. S. navy, who first used it in sounding across the Pacific Ocean, in

New Agricultural Inventions.

Mr. S. S. Terwilleger, of Tie Siding, Wyoming Ter., has invented an improved Sulky Scraper for grading roads and for similar uses. The scraper is in one solid piece, and is suspended at the front to the axle by hinged straps and at the rear to a curved lever which holds it in position for carrying or discharging the load.

A detachable Thumb Rest for Sheep Shears, invented by Mr. J. Richardson, Jr., of Pomona, Cal., is intended to afford a good bearing for the thumb, protecting it; and it consists of a concave plate formed on a shank adapted to fit the grasping portion of the shears, to which it is secured

Mr. J. Rabenberg, of Breckinridge, Mo., has invented a very complete Incubating Apparatus, for the artificial hatching of the eggs of hens and other fowl. It is a case provided with drawers, in which, on layers of bran, oats, or similar material, to prevent injury and admit air, the eggs are placed. The case has a metallic bottom, beneath which are lamps or stoves, and the direct heat is screened from the eggs by deflectors; while a thermometer, suitably placed, indicates the temperature

An Artificial Chicken Mother has also been provided by the same inventor, which shelters the newly hatched chicks from the sun, wind, and rain, and furnishes a snug and warm place for them, under which they can retire as under the wings of a mother hen.

Mr. John Wilz, of Santa Cruz, Cal., has made an imconnected to the proper weign with not chart the gauge. provement in which is found in the runner, which consists of the contract of the proper weign with not chart the gauge. The contract of the patform by clips, as provement in Pruning Shears, enabling them to be used conform and position of the stop are of such convenience that it shown in Fig. 2. The latter are secured by bolts and nuts to remember the pruning Shears, enabling them to be used convenience that it shown in Fig. 2. The latter are secured by bolts and nuts to remember the removal of branches from the higher parts of trees. The shears are carried at the end of a pole, and lever while being weighed, and affording a remarkably quick ment is so plain from the illustration that further description the movable blade is worked by a spring and pivoted lever, veniently for the removal of branches from the higher parts The shears are carried at the end of a pole, and

which latter is operated by a cord and pul-

ley.

A simple Fence, which may be easily put up and quickly taken apart for transportation, has been invented by Mr. M. S. Zimmer man, of Indian Spring District, Md. The post sections extend only to the ground or to a base piece, and are clamped together near both ends, two pointed drive stakes being forced between the post and lower clamp, and

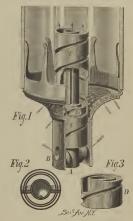
thence into the ground.

Mr. F. M. Meyer, of Shannondale, Mo., has invented a Machine for Setting To-bacco Plants. It is operated by hand, and closely imitates the movements of the lat-

An improved Hand Scraper, invented by Mr. L. F. A. Legouge, of St. Georges-la-Trétoire, France, is made with a blade having a convex cutting edge, which is notched so as to form teeth, thus forming a convenient weeding tool.

IMPROVED ARGAND LAMP BURNER.

The improved burner herewith illustrated is claimed to be the only one applicable to the common lamp which uses the



LUNGREN'S ARGAND LAMP BURNER.

true cylindrical wick, raised or lowered by a metal carrier in such a manner that the burning edge is always true. The central air tube, A, of the burner, is closed at its lower end, and connected by lateral pipes, B, to the stationary supporting tube which is screwed into the lamp. C is a threaded pipe, to which the chimney supporter and shield are attached. the latter (not shown in the engraving) serving to conduct

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ofessor. breaking circuit [1] cking sbad i railroads, N. Y.*. 387, vertical* rs, Am. Society c making*... 373, tificial. art ines, Newburyport turning* unch and engine* olume and pressure [11] nventions, mechanical... nventions, new Knife grinder*... 371,

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 128. For the Week ending June 15, 1878.

Price 10 cents. To be had at this office and of all newsdesle

ENGINEERING AND MECHANICS.—New 500 H. P. Compound Engine. Full Description, with Elevation and Plan to scale, and Indicacine. Full Description, with Elevation and Plan to seaks, and Indecent Plastrams.

In Paper note the force the Institution of Citi Brad-neers, by R. T. MALLET, H. LAMBERT, and F. M. AVERN. The Ravi Brade of R. T. MALLET, H. LAMBERT, and F. M. AVERN. The Ravi Brade of R. T. Mallet, H. LAMBERT, and F. M. AVERN. The Ravi Brade of R. T. Mallet, H. LAMBERT, and F. M. AVERN. The Ravi Brade of Raving Control of

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Exameled Plates. Direct Prints on Opal Glass.—A New Collodic
Physiological Hut to Fbotographers.

ELECTRICITY, LIGHT, HEAT, ETC.—Hughes' Teleph sonorous vibrations are converted into undulatory electri-by unhomogeneous conducting substances placed in circu ment for testing the effect of pressure on vitions substance tive acoustical instrument. 6 figures.—A Projection Pho

ASTRONOMY—The Coming Total Solar Eclipse. By J. Norman Lockyer. Visible in the United States. Liberality of the White Stating and the Pennsylvania Railway. Astronomers who will take par

Counds.—Color Bundness.

AGRICULTURE, HORTICULTURE, ETC.—Canadian Phosphate.

ineral Phosphates.—The Hop as a Vegetable.—Hot Water as a Remeeting for Plants.—Marochal Niel Rose.—Rumination.

SILVER MINING IN MASSACHUSETTS.

Early in 1873, considerable public interest was awakened devote to them. and some speculative excitement aroused by the announcement in local journals of the discovery of mines in the vicinity of Newburyport, Massachusetts, which were yield ing even at the surface ores rich in silver, and in some eases containing appreciable amounts of gold. The reports were, as is usually the ease under like eircumstances, greatly exaggerated, and those who expected to find gold in nuggets and silver in the native state were considerably disappointed to encounter both metals only in the form of sulphurets, the one occasionally in auriferous pyrites, the other in argen tiferous galena and in gray copper (tetrahedrite). The first assay of the new found galena showed that one ton of the ore represented a value of \$179, lead and silver together, the latter existing in the proportion of 68 ounces to the ton, and as other trials resulted in even more promising data measures were at once set afoot to develop the mineral resources thus brought to light. With the speculative mania which ensued, whereby land hitherto deemed little more than a rocky desert suddenly became exceedingly valuable, and with the vieissitudes of the numerous concerns which were started to mine the precious metals, it is not our purpose here to deal; especially as at the present time the era of speculation seems to have gone by, and several mining experts of long experience in the silver mines of the West have entered (though in a limited way) upon the systematic de velopment of certain veins, which offer, we are informed. every indication of large and valuable yields.

The region where the ores abundantly exist (for it

seareely possible to break an outcropping rock without finding traces or even a good showing of galena) is a barren and forbidding tract, located about two miles to the southwest of the town of Newburyport. Over how large an area the metalliferous deposit extends no two estimates seem to agree. The geological formation, or rather lack of formation, almost defics classification, for it is evident that great natural forces have here been at work both to roughen the face of the country and inextricably to intermingle the strata. The metal bearing veins are known to ramify over an area of five by two miles, for a shaft sunk almost anywhere within these limits is reasonably certain to strike ore, and it is reported that in reality the metalliferous beds underlie a much more extended region. There is hardly a farmer in the vicinity who has not dug down and found ore, and mere well digging has brought to light some remarkably fine de-These little shafts, however, can hardly be counted, but beside nearly every one, and most of them appear to be abandoned, there is a heap of ore from which rich specimens of galena ean easily be pieked out. Oeeasionally this shal low excavation demonstrates the existence of a large v in the ease of the so-ealled "Big Quartz Vein," which, though prospected only to the depth of 30 feet, is found to be 18 feet wide on the surface, with outeroppings at a distance of some 2,500 feet. It lies between a wall of feldspathic trap or greenstone on one side, and a taleose slate on the other, and surface assays yield gold and silver in about equal value to over \$20 per ton.

It may be said of all the mining operations thus far eondueted in the vicinity that they are little more than surface prospecting, a fact clearly apparent from the details of some of the principal mines given further on; and we are assured by experts, who have made special examinations, that deeper mining offers every prospect of substantial success. The difficulty, however, is lack of capital to put up the neces works for treating the ores on the spot. Owners and parties interested in different mines all agree in stating to us that a mill, eapable of handling the 200 tons (rough estimated) per day taken from the principal shafts, would probably prove remunerative to whoever would establish it; but where here were so many small disunited interests it was useless to expect the same result through co-operation. The fact seems to be that the mines that are still worked require all the available resources of the owners to keep them free from water, and the ore that is taken out simply lies in heaps in the sheds.

The mine known as the Merrimac is the largest, and be sides has the most extensive plant. It is under the superintendence of Mr. Edgar Shaw, who informs us that one pocket of gray eopper that was encountered in it yielded 8 tons of ore, which was sold at \$2,150 per ton in Liverpool. The pay streak of galena now being worked is 2 feet wide, and thus far 312 feet long, yielding about \$70 per ton. The shaft has a depth of 200 feet. This mine has been open about five years, and has paid 12 dividends, showing a net profit of about \$80,000. Owing to a defalcation and loss of funds its operations are at a standstill, although a new milling plant for concentrating the ore by the Hooper pro has just been erected.

The China mine was opened in last September, and has a shaft 90 feet deep. The vein being worked is about 4 feet in width. About 300 tons of ore have been taken out, aver aging in value \$200 per ton. Gray copper assaying as bigh as \$1,000 per ton, a few specimens of ruby silver, and considerable zinc are also reported to have been found. Of the other mines, the richest bonanza is believed to exist on the so-ealled Noycs property, where gold in the proportion of galena. In the Newhall mine, gold has been found in patches in the gray copper, and the ore has assayed at \$26 per

The other mines are sinking shallow shafts, and are A hole through the coin, however, condemns it-a fact, we

worked in a spasmodie manner, as the owners have funds to

So far as our superficial inspection of the mining region, and as the statements of those familiar with the operations extended, there seems to be no reasonable doubt as to the existence of the large metal bearing deposits alleged to exist. Nor in view of the general prevalence of rich looking ore already on the surface, and the results of apparently well authenticated assays, does it seem improbable that the value of the deposits is in any degree less than the experts on the spot allege. As to whether the refractory ores ean practieally be manipulated on the spot, so as to pay, and whether the products of the mines will hold out in uniform richness, these, besides many others, are questions for the mining engineer to answer after proper examination of the present status of the field. It is but right to say that the value of the mines has been disputed, and there seems to be a lack of exact information relative to them which suggests the idea that it might be to the interest of mining experts, as well as of public importance, to have more extended surveys and investigations made at an early day. Assays of specimens of galena, collected at random from numerous ore heaps at the mines, yield an average of \$27.96 per ton in gold and silver

COUNTERFEIT COIN.

It would hardly be supposed that so large an amount as two million dollars in counterfeit silver and gold coin is now afloat in this country, but such, according to the estimate of Treasury experts, is the fact, and, moreover, the total is constantly increasing. This spurious money passes through thousands of innocent hands, until finally it is caught in the meshes of the nets laid by the Secret Service or is recog-nized by a lynx eyed expert in some large bank. Then the unfortunate holder becomes the vietim of the counterfeiter's skillful raseality.

In order to imitate a coin successfully-that is, so that it will deceive, not the general public, because probably most persons never take a second look at the coin they receive, provided its appearance seems right, but the clerk or cashier moderately well accustomed to handling money-the counterfeiter must regard both execution, size, and weight. The last is most important in gold eoin, because the least current weight of the latter is established, whereas in silver a coin of light weight, so long as the reduction is not manifestly too great, will pass. The standard weights and least current weights of gold coin are as follows:

Any decrease in weight below the latter figures subjects the holder to a loss equivalent to the difference. crease may occur hy wear, or, as is very often the case, through sundry nefarious processes, which, though not properly counterfeiting, nevertheless belong to that species of crime.

These operations are perhaps the most dangerous to the community, because as a rule the coin preserves its appearance, is apparently genuine under the acid test, and in fact is genuine except in weight. It is impossible, for example, to tell whether a coin has been "sweated" or not without weighing it, and by sweating is meant the use of the coin as the anode in the electroplating bath, the gold being abstracted from it and deposited on another surface. Of course a uniform quantity is removed from the entire surface, and the imprint retains its original sharpness. As much as two dollars' worth of gold is sometimes taken from the double eagle in this way. A less scientific plan is one too commonly adopted by conscienceless jewelers, who when they want a little gold, instead of buying the precious metal, purchase a twenty dollar piece, file off with a dead smooth file a sufficient quantity, reburnish the place, and pass off the coin at full value. The most extensive fraud perpetrated on gold coinage is "splitting." The operator uses a fine saw to split the coin neatly in two. Then he gouges the gold out of the center until only a thin outside shell is left, and substitutes a silver and platinum alloy for the metal thus abstracted. The two parts are then joined with gold solder, and the edge is remilled. In this way, we are informed, gold to the value of \$15.50 has been taken from a single piece. The operation, however, generally destroys the ring or tone of the coin, leaving it, besides, either too light or too thick. Another swindle is to bore into the edge, and it is said that John Chinaman favors this game, buying up the pieces, sending them to China, so that his dexterous compatriots may there manipulate them in safety, and subsequently reimporting them to set them adrift upon the unsus pecting American public. The holes whence the gold is taken are refilled with silver, covered with gold solder, and the edges are neatly finished; but the light weight reveals the theft. From 5 to 71/2 dollars' worth of gold has thus been taken from one coin, and the pieces of course have every appearance of being genuine. Real counterfeits—that is, coin wholly spurious because made of base mctal—are almost invariably below weight. An exception to this, however, exists in a \$5 piece which is of the exact standard weight of 129 grains. It is composed of an alloy of gold and silver, and is worth from \$2.70 to \$3.40. Its appearance over 20 dollars' worth per ton is found in auriferous pyrites, and tone are excellent, but it is thicker than the genuine coin, besides a rich showing of silver in the gray copper and and hence may be detected by the gauge. Still it is one of

> As we have stated a silver piece passes current so long as the imprint is not budly defaced or weight greatly reduced.

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT NO. 87 PARK ROW, NEW YORK.

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VOL. XXXIX., No. 21. [New Series.] Thirty-third Year.

NEW YORK, SATURDAY, NOVEMBER 23, 1878.

Contents.

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TABLE OF CONTENTS OF THE SCIENTIFIC AMERICAN SUPPLEMENT

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For the Week ending November 23, 1878.

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HMGLOOT.—The Berlin Paper Exposition of 1978.—The Blue Carlield Religion of 1978.—The Blue Asyrana and Exprima.—Deteroration of Oil Panishration.

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Process of M. Andrieux.—To Detect Aprico Oil.
ANYHROPOLOGY AND ARCH, Fol. Dof. V. Mummy Head and Egyptian Antiquities from Thebes. The Harpers Tomb. Great Tombs of Collection from the Ancient Cemeter at the Bay of Locato, Peru. By John H. Blake. 8 engravings.—Ancient Pottery found in Missouri Mounds. By A. J. Coxava, A.M.

souri Mounds. By A. J. GONANY, A. M.

17. MEDICINE AND HYGHINE—Oxychloride of Zinc as a Dental Fulling. Combination and Therapoutic Action. of some filling materials.

Discusses of the Displaying.—Fleucistyness in Agno.

19. International Value of Chemistry.

10. International Value of Chemistry. By Profossor MAXWELL SIMPSON, M. D., F. R.S.

A Chance for Electric Competition.

The Brazilian Minister, having received from his government authority to invite proposals for the illumination of the city of Rio Janeiro, will receive bids from citizens of the Chited States up to December 2, and they will be opened at Rio Janeiro on January 1, 1879. The contract with the British Gas Company, which now illuminates that city, will expire on March next. That company would dispose of all its material, buildings, and machinery for \$2,651,756.

This would seem to offer an excellent opportunity for electric lighting companies to demonstrate their capacity on a grand scale. If they can do what they claim to be able to do, there should be no difficulty in their underbidding the gas men, with a wide margin for profit.

THE STEAM VALUE OF OIL FUELS.

Careful experiments made to ascertain the steam values of coal oils and petroleum have shown at times, when the combustion and all other conditions were perfect, results exceeding the theoretic efficiency of these fuels. In the experiments at Woolwich, a heavy oil, made from Boghead coal, that, theoretically, should convert into steam 17.5 lbs. of water per pound of oil, gave, as a maximum result, 17.8 lbs, of water converted into steam per pound of oil. Reasonably assuming that 12½ per cent of the actual heat generated was lost in radiation and in creating the draught in the chimney, we have the practical very far exceeding the theoretic

With these fuels, which leave no residuum, complete combustion assures clean flues and boiler surface, the absence of any non-conducting deposit thereon to interfere with the best heat-transmitting conditions, and is an evidence also that the proportions of air and superheated steam are adjusted as correctly as practicable and thoroughly mixed with the oil vapors. Yet such conditions in themselves fail to account for an evaporation in excess of that due to the generally ac cepted value of the chemical combinations of the elements present.

By generally accepted value, we mean that estimated upon the known calorific power of carbon as contained in wood charcoal, which even now almost invariably forms the basis of calculations for determining the calorific power of carbon in any state.

But the often observed fact that the practical heating power of some coals and of the liquid hydrocarbons exceeds their estimated power, cannot be explained by the charcoal carbon rule, but only on the hypothesis that the different forms or conditions of carbon have each a value of their own, which can only be determined by actual experi-

An eminent authority, Professor Henry Wurtz, who has studied, perhaps, more thoroughly than any one else, the phenomena of the combustion of liquid fuels, and whose conclusions have been indorsed by many other scientists, says, in explanation of these variations; that the heating effect of carbonaceous fuels "depends upon the density of the burning vapor and the concentration and intensity of the heat; that carbon, like everything else, has a latent heat of fusion or of liquidity, though the amount of this is as yet unknown, but it seems probable that it is large in amount. In case of oil fuel we are clearly dealing with liquid or fused offered a prize of £100 for an essay on hydrophobia, its carbon, which, according to this view, should yield us more effective heat for equal weights than solid carbon in coal. This has been overlooked in the accepted modes of estimating the calorific effectiveness of liquid fuels, and they must have been underestimated accordingly.

The rapidity of thermal action is due, in a great measure, it is well known, to the difference between the temperature of the radiant and that of the recipient, is greater at high than at low temperatures, and the effects are especially noticeable in boiler firing where there is a large difference between the rabies during life, and the anatomical and chemical changes two sides of the boiler plates. The transmission of heat not but is greater for each degree of difference.

In these facts we have an added explanation of the great advantages of intense and concentrated heat.

The values of these several points, for the correct determination of the heat efficiency of fuels, can be ascertained only by long and careful experiment; and to nothing of greater

Ignorance of these has, in many instances, led to the reection or suppression of results of boiler experiments which indicated higher calorific power for the coal than theory permitted.

coal, and the average evaporation for the whole time was on or before January 1, 1880. The essay must be accom-15·164 lbs. of water from 213° Fah. per pound of coal. The panied by a scaled envelope containing the name and address fuel was reduced to an impalpable powder—almost equal to of the author and bearing a motion on the outside, the same liquid carbon—and injected by a current of air into the motio to be inscribed on the essay, which may be the joint heated fireplace; igniting instantly, it was perfectly con-sumed, giving a flame of great intensity and concentration; doing far better than the old law allowed, yet less, perhaps, than our progress in thermal science tells us should have

The old formula must be revised to meet the issues pre sented by the new fuels and the improved methods of firing.

A NEW BANK NOTE PAPER WANTED.

The government has for some nine years been using for bank notes, etc., a paper made exclusively at the Glen Mills, a comfortable income from their exclusive contract. The Secretary of the Treasury came to the conclusion some time since that too much was being paid for the paper, and sent a committee to the mills to see if the paper could not be mannfactured more cheaply and what the profit was to the company, but the committee were unable to make any sugcost of manufacture, etc. The prices now paid by the gov ernment are very high, from sixty to seventy cents a pound, the various tests. according to the use to which it is put, the sixty cent paper being used for bank notes and the higher priced for bonds In view of these facts the Secretary has determined to ad-

may be used, and which if adopted will become the exclusive property of the government. The paper must be made from pure linen stock, the distinctive feature to be produced by the introduction of silk or other colored fibers. paper will have to be manufactured under the supervision of the government, and if deemed necessary, under the protection of a guard stationed at the mill to prevent counter-

feiters stealing it. The bids will be opened on December 4 The Secretary has from time to time received specimens of new kinds of paper for which were claimed all the merits of the fiber paper and more besides. He now proposes to make a change, if an equally good and more economical paper is offered, and it would seem as if this was a chance for some of our inventors to get up some new and better paper than any heretofore made, and thus get a profitable contract from

TRADE MARK TREATY WITH BRAZIL.

The Rio de Janeiro correspondent of the Evening Post reports that a convention between the United States and Brazil, for the reciprocal protection of trade marks, was signed September 24, and now awaits the formal ratification of the two governments. It is described as a simple straightforward instrument, giving to the citizens of either country all the rights and privileges of the other in the matter of registering patents, brands or trade marks as a proof of ownership or agency, and of secking legal redress whenever such rights and privileges are infringed upon.

At the outset, Minister Hilliard was prepared carefully to specify in the document itself what steps should be taken by either party to secure the desired results; but an examin-ation of the Brazilian laws relating to this subject showed them to be so full and so satisfactory that any concession beyond the right of appealing to them was wholly unneces sary. Under these laws a registered trade mark is entitled to the same protection, and the proceedings and penalties for infringement are much the same as with us.

In view of the increasing trade of Brazil with this coun try, and the already large demand there for American goods, imitations of which are largely foisted upon those markets, it is incumbent on every manufacturer who cares to maintain his rights to avail himself of the protection which this treaty will secure.

THE TREATMENT OF HYDROPHOBIA.

Mr. Stanford, a member of the English Parliament, has nature, prevention, and treatment, and the British Minister at Washington has brought the matter to the attention of the Department of State, that the necessary publicity may be given to the offer in the United States. The prize is to be awarded by the Royal College of Physicians of London. The questions which are thought by the college to require special investigation are: The origin and history of outbreaks of rabies, particularly in the British dominions; the best mode of prevention of rabies; the characteristics of which are associated with the disease in its successive only increases with the difference between the temperatures, stages, particularly in its commencement; the origin of hy drophobia in man, and the chemical and anatomical morbid changes observed in the subjects of the disease, with special reference to those having their seat in the organs of the nervous system and in the salivary glands; the symptoms of the disease, particularly in its earlier stages, and the diag nosis of the disease in doubtful cases, from conditions more or less resembling it, together with the alleged prolonged be turned.

or less resembling it, together with the alleged prolonged latency of the discase and the efficacy of the various alleged remedies and modes of preventing it; and what plan of treatment, whether prophylactic or curative, it would be most desirable to recommended for future trial.

The conditions under which the prize is to be competed In one instance which we have in mind, a 48 hours' run for are that the essay must be in English or have an English was made with a boiler fired with pulverized Cumberland translation accompanying it, and be delivered to the college production of two or more authors. If not published by the author within a year, it is to become the property of the

THE MECHANICAL AND OTHER PROPERTIES OF IRON AND MILD STEEL.

All who have to handle iron and steel, or who are interested in the question as to the adaptability of steel for taking the place of iron in mechanical and eivil engineering opera tions, will find in the last issue of the SCIENTIFIC AMERICAN SUPPLEMENT (No. 150) one of the most valuable papers on the near Philadelphia, the proprietors of which have derived behavior of these metals under critical tests that has appeared in a long time. The paper was read by Mr. Daniel Adamson, of Manchester, Eng., before the European Iron and Steel Institute, at its session in Paris, September 16, and it is illustrated by some sixty figures, exhibiting the effects of various strains upon irons and steels of varying composition and structure. It is also accompanied by a full page gestious on this head, as the company refused to divulge the table showing the chemical composition of the metals tested, the dimensions of the specimens, and the results obtained by

Mr. Adamson writes from the standpoint of the practical user of these metals, as well as an experimental investigator of their properties. His object has been not merely to vertise for bids for supplying paper suitable for the purpose. go over the ground covered by previous investigations, to
The advertisement will call for a distinctive paper, and for a prove by experiment the tensile strength of iron and steel, device or devices which can be placed upon the paper that but to supplement them by more comprehensive tests, in con