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NEW YORK, FEBRUARY 23, 1850.

Improvements in Rail Roads in Virginia-- Governor's Message.

Governor Floyd, of Virginia, has sent a message to the General Assembly, recommending them to build a rail road to connect the depot of the Fredericksburgh and Petersburg Rail Road, to test fairly an invention of James S. French, Esq., of Elizabeth City, Va., whereby he proposes to ascend much higher inclines than the greatest now overcome, and likewise prevent the cars from being thrown off the track, by any ordinary accident.

As we do not know exactly, the full nature of this invention—the means proposed to accomplish these desired objects, we cannot say anything about it. We will, therefore, briefly review the Message of the Governor, as there are some points in it worthy of attention, and upon which we believe we can throw some light.

He says: "Railroads have failed in many instances to realize the anticipations of their projectors," (as subjects of investment for capital,) "owing to the increased weight which has been given to the locomotive since its first introduction. This weight is still increasing, and from a little over three tons in 1829, in England, it has now reached 40 tons; and on many of the our northern roads, 30 tons, and on our southern roads, 15 to 20 tons." (The rapid destruction of heavy rails, he attributes to the weight of the locomotive.) "The locomotive of 1829, with enlarged wheels, and two or more driving wheels, with a great addition of size and weight, is the locomotive of to-day. They draw no greater loads in proportion to their steam power, nor have they added anything to their adhesion or fulcrum for progressive motion, but sprinkling sand upon the rails and by various devices, heaping weight upon the engines; nor up to the present time, have any means been devised for keeping the engine and cars from being thrown off the track."

Here, we differ in opinion from Governor Floyd. By the above, the idea is conveyed, that it is customary to sprinkle sand on the rails to make the wheels adhere to them. This is never done except when the rails are wet, (to start,) or grease has been sprinkled on them, and this is seldom done. It is true that the weight of the engine is employed to give greater adhesion to the driving wheels, and this is a peculiar feature in the system; but surely the increased weight of locomotives is a great improvement, if not, our railways have been improving backwards. It is well known that with the increase of weight in our locomotives and the increase of weight in the rails, so in proportion have our railroads become profitable. This is true of the whole line in this State, from Albany to Buffalo. Many plans too, have been devised, to spread over or throw the weight at pleasure upon and off the driving wheels, so as to throw great paying weight upon the driving wheels when ascending inclines, and then spread it upon the other wheels when running on levels. Dr. Lewis, of this city, invented a plan to do this more than three years ago, as illustrated in No. 25, Vol. 1, Scientific American. The same invention also provides a very ingenious plan for preventing the cars from running off the track. We have also seen many other plans for accomplishing this same thing. The question with Gov. Floyd is this: "Can the weight of the locomotive be safely reduced and the engine still retain its capacity for usefulness? He believes it can, and so do we; but will all its useful effects be maintained? We say yes, when light trains are not drawn: but we say no, when heavy trains are to be drawn. This accords with the past experience of the railway system.

A locomotive weighing only 9 tons, named the "Fairfield," on the Bristol and Exeter R. Road, Eng., has carried 50 passengers at the rate of 24 miles per hour, 32 on the level; and it ascended a gradient of 35 feet to the mile, and 3½ miles long. Gov. Floyd says, that there is only one ton in the six, of adhesion in the locomotive, and at that rate, there would be only 1½ tons in this 9 ton locomotive. It

could not then by any common possible means, have drawn 50 passengers, whose united weight would be no less than 3 tons. How then did it draw its load at all? and how did it ascend the incline of 35 feet to the mile?—We will answer. The weight of the passengers was used as an adhesive power; the very thing which Gov. Floyd says is wanted, so as "not to depend upon the weight of the engine." He is, therefore, positively correct in his theory; but it has been carried out into practice already. But it can only be useful for light trains. This was the opinion expressed by R. Stevenson, C. E., (and there is no man more capable of judging,) at a late meeting of the Institution of Civil Engineers. We, however, like the recommendation of Governor Floyd—there is nothing like experiment for testing the value of an invention. We have no doubt but there are many excellent inventions slumbering in neglect, because the inventors of them have not the means to bring them into favorable notice; and the invention of Mr. French, may be of very great value and importance.

Explosions of Steam Boilers.

We believe we are not saying too much, when we assert that no subject, from first to last, has engaged so much attention and has been the object of so much investigation as that of "Steam Boiler Explosions." It has often engaged the attention of Congress, and Report after Report on the subject have been issued by the Commissioners of Patents. Juries without number have sat to determine the cause and report on the same, but all these things—reports, decisions, investigations and what not—have been nothing but mere shams, so far as it relates to the good accomplished by them. It may sound well to hear of philanthropy contributing its thousands for the benefit of those whose friends have been sent in a moment to eternity. This is right—but will this bring the dead to life, will it animate the ashes of the urn, or will it prevent such catastrophes occurring again. We answer, no. The only way to prevent such accidents, is the certain fear of punishment to those who are the principal causes of them; and who are those? Generally the proprietors, or those who have the supreme command. Cupidity is at the root of all the evils. Every body knows that the bursting of a boiler is caused by the pressure within being greater than the binding force without—the steam becoming the Sampson, the boiler the binding withs.

The late explosion in this city, whereby 63 persons were killed, has been the subject of investigation by a jury, of which Mr. James Renwick was foreman. The witnesses examined were men of scientific attainments, and the majority of them of great practical experience. Looking at the names of those witnesses, we would expect that if any testimony would be of the least benefit to guide us to a correct conclusion respecting the cause of said explosion, it would be the testimony of those men. But what do we find? Very contradictory opinions indeed: one, a practical boiler maker, believed that the boiler could stand a pressure of 100 pounds to the inch; while another believed that it could only stand the pressure of 40 lbs. (We cannot go over the evidence, because it is very long.) We had hoped that the jury would have given some reasons for the verdict which they rendered, but none were given. The following is the verdict:—

First—That Messrs. A. B. Taylor & Co., were the direct cause of the recent explosion in Hague street.

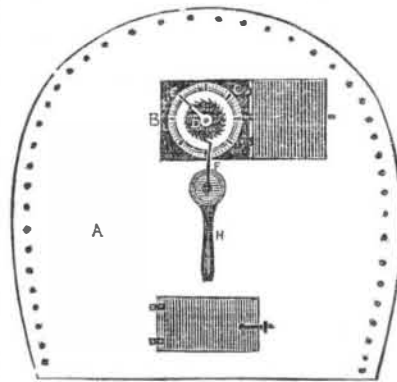
Second—That Messrs. Walker & Milligan were the indirect cause of the recent explosion in Hague street.

Third—That Messrs. Pease & Murphy are deeply reprehensible in selling the boiler, knowing its imperfections, and after it had lain in the open air for more than one year.

From the evidence submitted we are of opinion that verdict first was all that was required. By an examination of the boiler, a few days before the explosion, Mr. Birbeck told Mr. Ford, in the presence of Mr. Taylor, the proprietor, that it was not safe to carry any more than 40 or 50 pounds pressure of steam. Af-

ter this what do we find? The steam increased to 100 lbs. pressure. They wished to get 60 per cent. more out of the boiler to the danger of life and limb, than the boiler was capable of performing. Oh, cupidity, what sins thou must answer for! What would be done to the man who would wantonly or selfishly load a twelve pounder with grape and fire it through one of our crowded streets? He would be consigned to the scaffold or State Prison for life. Look, then, at the act of increasing a pressure of 60 pounds on that boiler. It amounts to the astonishing pressure of 4 tons 640 pounds on the square foot. What terrible effects such a pressure is capable of producing, when, like a maddened giant, it bursts from its weak fetters. The cause of the explosion was a too great pressure of steam, and the dreadful effects produced were the result of quantity also—in other words, the pressure was high and the water was low. The boiler might have burst with the pressure while it had plenty of water, but the effects would not have been so disastrous. Two hundred cubic feet of steam, at the same pressure, is just double the effective power of one hundred, and would produce double the amount of labor under control, and double the amount of damage by an explosion. It is true, that as the steam had room to expand, its effective pressure would decrease, but then we have its destructive velocity,—as Mr. Paul Stillman expressed himself, "a tornado let loose."

What are the remedies for the evils of explosions? We answer. A plentiful supply of water in the boiler, and a pressure commensurate with its strength. Mr. Dunham and other witnesses stated that careful engineers and good guage cocks were the best safeguards. No one can doubt this. We believe however that a "tell-tale" attached to the guage cock, and shut up from the fireman, would be a good thing. Various plans could effect this object. Here is one:



A is the boiler. B a view of the box, (to be locked up); C is a dial; D a ratchet wheel on a spindle, which has a pointer, E, on it, turning and pointing to the dial. F is a ratchet attached to the upper part of the guage cock handle, H. By turning the handle to test the boiler, say every 15 min., one tooth of the wheel would be moved round, and a wheel of 40 teeth would answer for 10 hours. The box should be examined every hour by the Superintendent whether it is the Chief Engineer or some other person. It may be said, that "it would be easy to turn the wheel round four times at once, if it had been neglected before. The man who forgets his duty once, would not be likely to remember how many times he had neglected it; and for a certainty, it would lead to regular habits of examination—and "habit is second nature." It would be easy to place a vertical spindle in combination with the ratchet wheel, and it might extend up to a room above the boilers, and be carried by bevel gearing, either into the Engineer's or Superintendent's room; and then the little dial would faithfully report the duty performed below.—Every mechanic will understand how this may be accomplished.

Steam boilers should be kept in a place apart from the main building or factories, and above all, we recommend prompt punishment for all who may be the direct cause of such accidents. Let the fear of the law be the beginning of wisdom.

The questions now to be asked, are: Will this investigation lead to the adoption of effective measures for the prevention of the like evils? Will this catastrophe lead to no defi-

nite results, whereby the lives of innocent working people and the travelling public will be more safe? Will cupidity and recklessness still be allowed to hold up their brazen fronts and offer Pilate's mock oblation? There is too much false philanthropy in our midst. Justice must reign as well as generosity—they must go hand in hand, or there can be no safety.—By two recent explosions, the one in N. Orleans and the other we now speak of, no less than 300 of our fellow beings have suddenly been deprived of life. In Rome, he who saved the life of a citizen was rewarded with a great public honor, but the lives of our citizens seem to be held at a low valuation. If this is not so, why do the guilty go unpunished?

An engineer would rather work an engine at a low, than a high pressure; but he has not his choice in such matters—he must make the engine do the work, and the value of many engineers is estimated by their recklessness. The laboring force of an engine is not in its piston-rod, crank, or shaft; it is the steam that is the power. How often have we heard men say; "what an astonishing amount of work we get out of that little engine. We only bought it for ten-horse power, and it works up to fourteen; it makes things hum like a top." They do not seem to know that the boiler is the magazine of power, and that with their increase of power, they are risking the lives of the innocent.

Cheap Postage.

We are gratified to perceive that strong efforts are being made here and in other parts of the country, to effect a still farther reduction in the rates of postage. This subject is confined to no section or class, it is universal,—a point that seems to be overlooked by the wise savans congregated at Washington. The Cheap Postage Association, in this city, passed a resolution to the effect:

"That as one of the original and fundamental objects of the Association is to effect a postal reform, by which pre-paid letters, under half an ounce, shall be carried for two cents to all distances in the United States, it be recommended to the friends of cheap postage throughout the Union, to petition Congress to establish this rate."

It is certainly important to petition Congress, if any further reduction is desirable, as it cannot be accomplished in any other way, and we hope to see the people moving strongly in the matter from all quarters. We can learn a profitable lesson on this subject from Great Britain.

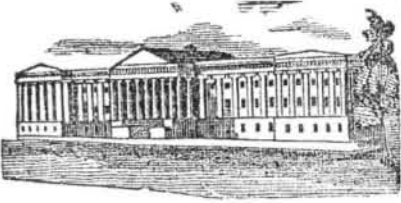
The Iron and Zinc of New Jersey.

In New Jersey there is an abundance of the red oxide of Zinc, combined with Franklinitite. This latter is an iron ore resembling small black peas. It is peculiarly an American ore. For a long time this ore, and the Zinc, lay silent and useless; but now good metal is made out of both. The Zinc is superior to the zinc of commerce, and the Iron is equal to the very best iron known in commerce. The iron is of a strength equal to 77,000 lbs. per square inch, and the zinc equal to 10,000 lbs. We believe that the best Swedish iron is only of the strength of 72,064 lbs., and the best English is only 61,000.

Receipts for Washing.

We have received quite a number of receipts from friends respecting different ways to shorten the process of washing. We are very much obliged to them for the interest they take in casting their gifts into the treasury of science. This is a subject with which we are intimately acquainted, chemically, and no doubt many who have but lately adopted some new improvement are not aware that the said improvement has been long applied in public works—such as bleach works.

We are daily receiving long tedious letters from subscribers which require more time to read than we can devote to them, without trespassing upon time which is valuable to us. In all such cases we are obliged to put them on file, and take them up in regular order, and we have to request in future that subscribers writing long letters will bear with a little delay, recollecting that no letter from a subscriber, which is post-paid, escapes attention either through our columns or by mail.



LIST OF PATENTS CLAIMS
ISSUED FROM THE UNITED STATES PATENT OFFICE,
For the week ending February 16, 1850.

To S. Andrews, of Perth Amboy, N. J., for improvements in Barrel Machinery.

1st, I claim, the eccentric groove and cap extending over or around the shaft to the side opposite the knife, the said constituting a part of the eccentric cam ring passing around the shaft, and having an opening through the said cam ring at the posterior termination of the cap, where the staves make their exit.

2nd, I claim the whirl or secondary shaft, as described, in combination therewith.

3rd, I claim the right and left stave holders in the jointer, having flanges or thumb-pieces to support the edge of the stave during the operation of jointing, and to ensure an equal width at each end.

4th, I claim the horizontal jointer in combination with an inside and an outside frame, to which the right and left stave holders are attached by hinges, and by which arrangement four or more boys may work around one horizontal wheel or jointer and operate simultaneously, being also thereby enabled to joint the staves with the grain of the wood, without loss of time.

5th, I claim the movable centre in the head machine in connection with the opposite face plate on an universal joint, between which the head block is held before it is brought in contact with the rubber of the face of the chuck, and the slide which holds the chisels, constructed substantially in the manner set forth.

6th, I claim the combination of the cutter with the jointed spring cutter and levers, for cutting the locks in wooden hoops, substantially as described.

To F. Bradshaw, of Greene Co., Ala., for machine for cutting cotton stalks in the field.

I claim the adaptation of iron and steel knives or cutters to the cutting down and cutting to pieces of cotton stalks either in a green or dry state, in the manner and for the purpose described.

To A. C. Carey & D. C. Bagley, of Amesbury, Mass., for improvements in machinery for Folding Cloth.

What we claim is the mode of folding and laying the cloth on the table or platform kept in a state of equilibrium by the weight, wheel, chain and rod, which, by means of the notched bars attached to the radial rods secured to the shafts, with combs attached to the shafts, and segmental plates, bent bars, and horizontal and inclined connecting rods, and slotted arm or crank, constructed, combined, arranged and operated as herein set forth.

[An engraving of this machine will be found in No. 5, this Vol. Sci. Am.]

To C. Chinno k, of New York, N. Y., for improvement in Rule and Socket Joints.

I claim the application to the rule joint and to the ball and socket joint of the rod which is hinged into the ball or rule joint, to hold the joint as firm as desired, by means of the spiral spring on the india rubber spring as described.

To J. Dermond, of Paterson, N. J., for improvement in arrangements of Fliers and Spindles.

I claim the manner of suspending the flyer separate from the spindle by the flyer being connected to and forming a part of the tube, the lower end of which revolves in a socket bearing, allowing the spindle of the bobbin to pass and move through it without touching it, so that however great the speed of the flyer may be, it will be prevented from vibrating the spindle.

To H. A. Engles, of Cincinnati, Ohio, for improvement in Air-heating Furnaces.

I claim constructing a furnace for heating air, with a spiral flue passing up between concentric cylinders when this is combined with a conical roof to the furnace, within the inner concentric cylinder, thus obtaining the most

extensive radiating surface within the least space and in the most compact and simple form.

To Geo. Flautt, of Cave Town, Md., for improvement in Augers for Boring Machines.

I claim making the pod of an auger separate from the stem on which it is revolved with a considerably greater velocity than the cutting bit substantially as herein set forth.

To B. Hovey, of Brookfield, Vt., for improvement in Horse Rakes.

I claim the method of working the rakehead by means of the treadle, in combination with the hand bars and the back piece, as described. I also claim the attachment of the stilts to the thills, in the manner and for the purposes described; all of which gearing being so arranged that a person on his seat, may change and discharge, or suspend the rake held at pleasure, as herein set forth.

To M. G. Hubbard, of Hume, N. Y., for improvement in hanging carriage bodies.

I claim the combination of cross reaches and spring, substantially in the manner and for the purpose set forth.

To James Ingersoll, of Grafton, Ohio, for improvement in Railroad Trucks.

I claim the combination of an endless track on the frame of the carriage with an endless series of rollers running thereon and guided by flanges; the endless track being supported on the peripheries of the rollers which intervene in endless succession between it and the surface of the ground or rail, and which are broad enough to keep themselves erect and steady without the use of axles or rods extending across the carriage.

To N. G. Norcross, of Middlesex Co., Mass., for improvement in Planing Machines.

I claim the combination of the rotary planing cylinder, and the rest, with mechanism, by which the two can be freely moved up or down simultaneously, and independently of the bed or platform, or any analogous device, substantially in the manner and for the purpose of reducing a board to equal thickness throughout its length, all as herein above specified.

I also claim making the under side of the rest concave, in combination with so extending the part under the rest, and applying it to the concave part thereof, as to cause the board as it passes across the rest to be bent and presented with a concave surface to the operation of the rotary cutter planing cylinder, substantially as specified, the same being for the purpose before mentioned.

To F. A. Rockwell, of Ridgefield, Conn., for improvement in Bedclothes' Clasps.

I claim the use of the cam and lever, acting on the spring, to constitute a clasp in the manner and for the purpose set forth.

To Wm. H. Rosenthal, of New Oxford, Pa., for improvement in Tanning Apparatus.

I claim, first, revolving the tanning cylinders alternately in opposite directions substantially as herein set forth.

2nd, Handling the hides in the spent liquor from the tan vats, substantially in the manner herein set forth.

3rd, Liming hides or skins in a close revolving cylinder, substantially as herein set forth.

To L. Smith, of Troy, N. Y., for improvement in Smut Machines.

I claim, first, the grates in the top of the machine, in combination with the scrolls or spiral chambers and spouts for discharging smut and other light materials carried up by the blast, as set forth.

2nd, I claim the chamber at the bottom of the cylinder which concentrates and gives free discharge to all foreign matter to be separated from the grain by the blast in the last stage of operation of the machine, in the manner described and represented.

3rd, I claim in combination with the concave bottom which gathers the grain for its discharge from the machine. The distributors which give direction in the discharge of the grain separated from the foreign matter by the blast.

4th, I claim the draft floats, in combination with the scouring surfaces, for cleaning buckwheat, as set forth. The whole being constructed, arranged and operating substantially as set forth.

To S. B. Snedaker, of Cincinnati, Ohio, for improved method of bolting in window-shutter openers and fasteners.

I claim fastening the window blind at any suitable point by means of bolts projecting on opposite sides of the pintle of the hinge by a driver, the bolts and driver being suitably guided, and the bolts passing into suitable notches on a plate attached to the blind or to the upper leaf of the hinge, thus not only retaining the blind in any desired position, but also at the same time relieving the pintle of the hinge from any strain athwart its axis, the whole being arranged substantially in the manner and for the purposes described.

To Wm. S. Thomas, of Norwich, N. Y., for improvement in Electric Telegraphs.

What I claim is the making of signals or marks for telegraphic purposes by the agency of the heat generated, induced or controlled by a current of electricity passed along attenuated conductors, wires or points, substantially as herein set forth; the signals being the flashes of light emitted by the heated conductor or points are manifest to the eye of the operator; the marks being produced on the paper by the heated points or conductor are the record of the message.

To S. B. Ulmann, of New York, N. Y., for improvement in Castors for furniture.

I claim neither the ball, the socket, the vertical pivot, or either of the pivots of the ball, but the combination of the whole as above substantially specified, whereby the ball of the castor is enabled to revolve across the two centres of the two axes of the ball.

To Geo. Vandenhooft, of Paterson, N. J., for improvement in connecting Trucks with Car-bodies.

I claim the mode of attaching car bodies to Trucks by means of the trough, (with the sloat and king bolt) and the rail, constituting the segment traverse, as above described.

To S. West & H. Plumb, of Honesdale, Pa., for improvement in machinery for turning umbrella sticks, &c.

We claim the combination of the hollow shaft or cylinder, graduating cutters or knives, made and ground exactly alike, and arranged on opposite sides of said shaft or cylinder and cutting inward and in exact unison with each other—the feeding rollers arranged in front, and the receiver or carriage, arranged in the rear of the shaft, together with the case, U, surrounding the cutters and wings, for enabling them to act as a fan or blower to discharge the shavings: the whole being arranged and operated substantially as set forth.

To James P. Heiss, of Philadelphia, for improvement in Studs for shirt-bosoms.

I claim constructing the shank in two sections the first being fixed to and projecting from the back of the stud, and the other being hinged to the first in such manner that it can be brought in line with or be turned across it, as herein set forth, but I make no claim to the mere fastening of a stud, by means of a cross bar attached to a chain, or other similar arrangement.

RE-ISSUES.

To Wm. Beach, of Philadelphia, for improvement in Curry Combs. First patented March, 13, 1849.

I claim combining the trough-shaped bars, which have the comb-teeth on their edges, with the folded strips of metal and with the wires running through them in the manner substantially as herein set forth, so as to form a curry comb with open or hollow back. I do not claim separately either trough shaped comb-bars, or combs with open backs, but only in the combination herein set forth.

I also claim the shank constructed with the fastening hole therein, made without drilling or welding, and combined with the comb as herein above described, so as to act as guards to the ends thereof.

DESIGNS.

To S. D. Vose, of Albany, N. Y., for three designs for three Stoves.

They are much more liberal in England on postage affairs than we are. A single printed volume, without cover, and open at one end can be posted to any part of the kingdom at sixpence a pound.

The Astronomer, Leverrier, has announced to the Academy of Science that the sun experiences a very considerable perturbation not hitherto calculated.

Inventors and Patent Agents.

We notice by reference to the Patent Office Report of Ex-Commissioner Burke for the year 1848, (a full copy of which has just been sent us by the present Commissioner) that the whole number of applications for patents received during that year, amounted to 1628, out of which number only 660 were granted—a fact which we have before noticed. The cause of many rejections, no doubt, results from the loose and ambiguous manner in which inventors allow their papers to be presented to the office, causing the Examiners much trouble in arriving at a proper understanding of the nature of the invention, and extent of claim. We not unfrequently meet with those who, for the sake of saving five or ten dollars, entrust their business in the hands of those who are perfectly ignorant of the Patent Laws, or the manner in which the drawings and specification should be made out, and more particularly that part (the claims) which require much care and attention, in order that they may be properly based. Many inventors suppose that business of this kind naturally forms a part of the profession of a well-bred lawyer; the idea is a mistaken one; very few lawyers are sufficiently versed in the arts and sciences to enable them to describe properly the nature and operation of a mechanical combination, and hence it is that in a majority of cases the inventor is either subject to the mortification of a rejection, or an increased expense in having his papers returned for proper amendment. We feel it our duty to caution inventors against entrusting their interests in the hands of incompetent and inexperienced persons, rather seeking advice and counsel from those whose position enables them to render it properly.

There are in this and other cities Patent Agents to whom inventors can apply with confidence, that an honest opinion will be given, while at the same time it cannot be expected that the adviser's opinion will be sustained in every case by the Commissioner: some allowance is necessary, inasmuch as human judgment is not infallible. In giving advice to inventors we have ever made it a point to speak as we think, and we confidently assert that in proportion to the amount of business yearly transacted at our office, as few rejections follow as from any other respectable agency. If we should attempt to make application for all the inventions that are presented to us for consideration, we should require an examining force, ten times larger than we now have.

It is not to be disguised that inventors are many times unreasonable in charging upon their agents "foul play," whenever they fail in obtaining a patent for their invention, which may have been regarded by the Commissioner as infringing another patent; they should bear in mind that in order to conduct a successful business, the man who establishes himself as a Patent Agent, has an object in securing the confidence of the inventive community, in order that his business may become to him a source of importance. This could never be accomplished by an intended false expression of opinion, or a manifest disposition to secure his fees, leaving the interests of his client altogether out of the question. In transactions of this kind a man's success depends upon careful management, and not upon how many inventors he can secure to start with, for according to the terms upon which patent business is transacted in this country, it would take a long time to become a Cæsus or an Astor, while depending solely upon the paltry sum which is usually paid for a well executed set of drawings and a specification.

In conclusion we have only to state that we shall continue to advise with all who may choose to make application to this office, and also to conduct Patent business with our usual facility and despatch. We do not intend, in any case, that an inventor shall be compelled to wait week after week for his papers, after he has deposited the model in our hands.

Lord Brougham has been lecturing on light at the Institute in Paris, with great success. He demonstrated on the blackboard, chalk in hand, a variety of novel problems.

Perhaps there is no man in the whole world, take him for all in all, that possesses so much general information.