Charles M. Keller and the American Patent Office.

MESSRS. EDITORS: In your issue of the 16th ult. Mr. Keller is spoken of as a boy in the Patent Office, who was "sweep, duster, porter, door-keeper, tinkerer, and jack-of-all trades," &c. Permit me to say that this statement is incorrect. Mr. Keller was not the "messenger." His father had charge of the "model room;" and young Keller rendered no services but such as were voluntary, as he was there without appointment, salary, or duties of any kind.

The elder Mr. Keller swamped his fortune in the attempt to establish in this country a branch of manufacture which, in the early part of the year 1816, he had brought with him from France. His familiarity with the progress of invention, and his accurate mechanical knowledge, led, as above stated, to his appointment in 1822, by John Quincy Adams, then Secretary of State.

On the death of his father in 1829, young Keller, though still a minor, was appointed to the vacancy. In the year 1834, Mr. Pickett, of Kentucky, afterwards appointed Fourth Auditor of the Treasury, succeeded Dr. Craig as Superintendent of the Patent Office. The act of 1793 being to grant patents for discoveries and inventions, "new," &c., and the practice of the Office seeming to be in violation of the spirit of the act, for want of a proper officer in the department charged with the duty of determining "novelty," young Keller suggested to Mr. Pickett the propriety of causing the practice of the Office to conform to the spirit of the law. The intimate knowledge of domestic and foreign inventions by this acquired by Mr. Keller from his position in the Model Department, induced Mr. Pickett to assign to him the new duty of advising applicants as to novelty or want of novelty in their inventions. In 1835 Mr. H. L. Ellsworth succeeded Mr. Pickett. By this time young Keller had still further matured his ideas, and as soon as the new Superintendent was fairly in working order, he ventured to submit for his consideration not only a plan for re-organizing the department itself, but also a project of law. Mr. Ellsworth was a man of too noble a nature to reject the plan merely because the suggestion came from a subordinate, and too liberal and comprehensive in his instincts and his intelligence not to see the beneficial workings of the project and the plan, both for inventors generally and for the Office itself. It is needless to add that this gentlemen addressed himself to the work of reformation with his accustomed and natural zeal of character.

The Hon. Judge Ruggles, of Maine, was Chairman of the Senate Committee during the session of 1835-6. But for his untiring exertions in the work, inventors might, perhaps, have, to this day, remained in their former comparatively unprotected condition. Stimulated by the condition of the Office and the inefficiency of the laws, as portrayed by the young but earnest Examiner-inchoate, Mr. Ruggles worked unceasingly during the whole of that (to inventors) memorable session. As one of the class who are reaping the substantial and practical benefits of the Act of 1836, I feel a peculiar pleasure in being able to publicly express my acknowledgements to the man who suggested and to those who co-operated in perfecting the reform. In my view, this part of the "History of the American Patent Office" is of especial interest to inventors, and the men who were instrumental in accomplishing so important a work ought never to be forgotten.

In the nightly intercourse and interchange of opinions between Judge Ruggles and the subject of this notice, incident to the work of reform during the session of 1835-6, the young machinist acquired his first taste for, and lessons in that science which he has since so signally adorned.

After the passage of the new law, and under the new *regimé*, Mr. Keller was the first appointed Examiner. In his subsequent position as Examiner-in-Chief of the Department, his talents, industry and fidelity have left a record which any man might well be proud of, and which his successors may safely imitate. In May, 1845, against the earnest remonstrance of the Commissioner, Mr. Keller resigned his position in the Patent Office to enter upon a new but more extended sphere of usefulness. As an advocate in patent cases I believe there is but one opinion of his taleut; and as a man, they who know him best are best fitted to pronounce his eulogy.

I am yours, very truly,

THADDEUS HYATT.

New York, May 9, 1859.

Tempering Steel Tools.

MESSRS. EDITORS:—There are some facts in the hardening, tempering and heating of steel articles and tools that are not commonly known or attended to. All workers in steel are, very properly, more or less careful not to injure it by over-heating; but it may as certainly be deteriorated by a too-long continued or a too-often repeated moderate heat. Good new steel, when broken, will exhibit an uneven splintered fracture, which indicates toughness. This quality, by a repetition of moderate heats without hammering, or a prolonged heat (as in annealing), will, in a marked degree, disappear, and the steel is now without body—not brittle, but rotten.

I presume it is well known to machinists that a drill becomes worthless if several times hardened and tempered without forging. The effect can be seen in the discoloration of the grain, its appearance being muddy and dead, and lacking the peculiar gloss and splintered texture of tough steel. In the hardening and tempering of thin saws the influence of time, as well as temperature, is often forcibly illustrated. For example, hand-saws will bear their teeth set at a given temper, but if (as sometimes happens) the saw is not sufficiently heated to harden when dipped in the bath, and it has to be re-heated, it will require to be drawn to a softer temper to admit of being set without breaking the teeth. The same pernicious effect occurs when the heat of the furnace is too low and requires extra time, and in a still greater degree if the saws are exposed to the flame of soft coal. It has been found that the toughness of the saw is in a direct ratio with the quickness of the heat and the clearness of the fire.

It is erroneously supposed by many persons that some sort of virtue is imparted to steel by being hardened in specific baths. With the exception of files and sheet-steel, clear water is the best hardening medium for about all kinds of tools. If the tool is of a slender form the water should be heated to about 100° Fah., to prevent warping. Forged tools have their surfaces brightened to remove the scale before heating; they will then harden at a low heat and more regularly, and, as a consequence, will not be so liable to warp. For sheet-steel or small delicate tools, a bath composed of 1 gallon of fish-oil and 1 lb. resin, and made warm for use, is as good as or better than a more mysterious compound. It will strip off the scale of the steel and make it harden uniformly and moderately, which is all that is required. Steel hardened in this liquid is of about the same degree of temper, without drawing, as it would be if drawn to a deep straw color after dipping in water; and this should be allowed for accordingly in fixing the temper.

WM. CLEMSON.

East Woburn, Mass., May, 1859.

[Our correspondent is a practical mechanic of great experience, who has personally hardened more than 500 tons of steel during the past ten years. The deleterious effects of long continued low heat on steel, in tempering, so far as we now remember, has never before been presented through our columns. It is a practical fact of much importance, and was discovered by Mr. Clemson in a series of experiments undertaken to make the best quality of wood-saw. He thought that if he took more time than was ordinarily allowed in heating the steel, he would produce a superior temper; but instead of this being the case, saws made of the best steel, and submitted to long low heat, were not so good as those made of common steel—they would not set at so high a temper. A rod of $\frac{3}{8}$-inch steel, forged down to about 12 of the wire gage, is much stronger than steel wire of the same size; the several annealings to which the latter must be subjected greatly injures its strength.—EDS.

Gutta-percha for Submarine Cables.

MESSRS. EDITORS:—In some recent numbers of your paper there were communications on gutta-percha as an insulator for submarine telegraph wires. I had a cable 47 miles above New Orleans, and the gutta-percha casing, both outer and inner, cracked in the manner described by Mr. Norris, and it stopped communication, of course. There were no iron wires covering it, but before I laid it down I wrapped it in tarred canvas. The canvas in the water soon rotted off, but that part of the cable above the water was sound and did not crack; so that a covering of tarred canvas, when practicable, will prevent the cracking. I may state that a small piece of the cable which was not covered did crack badly. Your latest correspondent cries out against condemning the best insulator we have, and he seemingly deprecates saying anything against it. Now, I think it much better that every man should give his experience, so that the faults may be guarded against. Though I found that gutta-percha would crack in the water, I was far from condemning it; for I laid another and better cable in place of the bad one, and I also laid a cable during last fall across the Tombigbee River, near Columbus, Miss., where I could have erected a mast for the cost of the cable, but I preferred the latter.

Very respectfully, your obedient servant,

D. FLANERY.

Supt. of N. O. & O. Tel. Lines.

Jackson, Miss., April 4, 1859.

Inquiry About Gunpowder.

MESSRS. EDITORS:—Please to inform me, through the columns of your valuable paper, how long gunpowder will retain its properties provided it is kept in a proper vessel? I have now in a my possession a quantity of gunpowder which I bought twenty-three years ago; at that time it might have been manufactured some years. Will it gain or loose in quality by age? As these are important questions, some records may exist on this subject.

Very respectfully,

L. R. B.

New York, May 2, 1859.

[Gunpowder, if kept in a suitable vessel, perfectly dry and carefully protected from the hygrometric changes of the atmosphere, will keep for any length of time without deteriorating. In all the arsenals of Europe they have some old gunpowder which is undistinguishable from new.

American Steamboats in Scotland.

At a late meeting of the Glasgow Philosophical Society, a paper was read by Mr. J. Downie, on constructing steamboats for the Clyde, provided with the spacious and comfortable accommodations of the American river boats. Some of the members objected to the top cabins of our boats, and asserted that they would not answer for the high winds and frequent storms on the Scottish coast, but all admitted that a reform was necessary in their boats, and that they must combine the American system, if they wished to increase the comfort of the passengers. Improved ventilation, a promenade deck, and more space were required, and the American steamers in regard to these improvements were models to copy after. At the same time, most of the members thought that the hulls of such boats should be made of thin steel plates, a material which is now coming rapidly into use in England for such purposes.

Under Brain-work.

Overwork of the brain, against which we hear so many people cry, and which we hear so many cosy-looking men deplore very complacently in their own persons, is not by a good deal so dangerous as under-work of the brain, that rare and obscure calamity from which nobody is supposed ever to suffer. The Rev. Onesimus Howl drops his chin and elevates his eyes, upsets his digestion with excess of tea and muffin, and supports, upon the doughy face he thus acquires, a reputation for great strain on the brains caused by the outpouring of a weekly puddle of words. His friends labor to prop up his brain with added piles of muffin. Paler becomes his face and more idiotic his expression, as he lives from New Year's-day to New Year's-day rattling about in his empty head the few ideas of other men he has contrived to borrow, and tranquilly claims all the sweets of indulgence on account of the strain put upon his wits. Dr. Porpice is wheeled about from house to house in his "brougham," and prescribes his cordials and his mild aperients; treats, by help of what knowledge gathered from a past generation may happen to have grown into his habit of practice, all the disease he sees; now and then turns to a book when he is puzzled, but more commonly dozes after dinner. Yet very gladly does the doctor hear the talk about immense strain on his mind, large practice, great responsibility, and the wondering that one poor head can carry all he knows. He seldom passes a day without having taken care to confide to somebody that he is overworked. Once a week, indeed, if his practice be large, he may be forced into some effort to use his brains; but that he does really exercise them once a week, I am not certain. The lawyer elevates his routine into a crush of brain-work. The author and the merchant flatter themselves, or account themselves flattered, by an application to their labors also of the same complimentary condolence. The truth is, that hard work of the brain, taken alone—apart from grief and fears, from forced or voluntary stinting of the body's need of food or sleep, and the mind's need of social intercourse—does infinitely more to prolong life and strengthen reason in the workers than to cut or fray the thread of either. Men break down under the grind of want, under the strain of a continuous denial to the body of its half-a-dozen hours a day of sleep, its few necessary pounds of wholesome food, and its occasional exercise of tongue and legs. If an author spends his whole life in his study, his mind fails under the pressure of the solitary system. If a great lawyer refuses himself month after month the necessary fourth part of the day for sleep, he wears his brain out, not by repletion of study, but by privation of something else. Under all ordinary circumstances no man who performs work for which he is competent is called upon to deny himself the first necessaries of life, except during short periods of encroachment which occur to men in every occupation, and which seldom are of long duration, and can almost invariably be followed by a period of ease sufficient for recovery. Healthy men, who have bed and board assured them, while they can eat, sleep, stir, and be merry, will have sound minds, though they work their brains all day, and provide them for the other five or six hours with that light employment which is the chief toil of Dr. Porpice or the Rev. Onesimus.

[We copy the above from Dickens' *Household Words*. It is a pretty sharp method of pushinghome truth and sound philosophy, and we doubt not as respects the English clergy the case of Onesimus is not a rare one. Many of these "rectors" are well fed and sleek, and having the enjoyment of a "living," are not so likely to be concerned about their meat and drink as are the clergy in this country who have not the aid of the state to support them. The clergy here, as a class, are generally hard-thinking, laborious men. The philosophy of this, however, is sound.