

Scientific American.

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The Final Resignation of Judge Mason.

We are sorry to announce that Hon. Chas. Mason has finally resigned the office of Commissioner of Patents. Before this notice reaches our readers, he will have vacated the position upon which he has shed so much lustre for the past four years.

We regard this as a calamity not easily repaired, for it is universally conceded that no other Commissioner since the organization of the Patent Office has performed its delicate and responsible duties with equal acceptance. We have labored industriously to induce Judge Mason to remain, and have upon one or two former occasions, when he anticipated surrendering the office, done much to induce him to yield to the general wish that he should not give up a position for which he is so peculiarly qualified.

Since the establishment of the Department of the Interior, the Patent Office has been one of its subordinate bureaus, and the Commissioner has been subject to the dictation of the Secretary. It is well known to our readers that the SCIENTIFIC AMERICAN has always opposed this dictation. Previous to the appointment of Judge Mason, the head of the Patent Office had been a most obsequious tool in the Secretary's hand—a servant prompt to do his master's bidding. Judge Mason was too independent and self-reliant to bow meekly to such interference; and on one occasion it is said that the late Secretary McLelland actually reported him to President Pierce as an insubordinate officer. But to the credit of Mr. Pierce be it said, he considered it too delicate a subject for him to meddle with.

It is reported that the immediate cause of the Commissioner's resignation grows out of the fact that he had given an order for a fine collection of specimens of fruit in wax, under an appropriation of ten thousand dollars made by Congress for the advancement of the interests of agriculture, which order was countermanded by the Secretary of the Interior.

We know nothing of this alleged interference with the Commissioner's duties; but if so, it is only another argument in favor of the independence of the Patent Office from this outside control. It cannot be seriously questioned that, in view of the special objects for which the Office was established, viz., to encourage and advance the industrial interests of the country, an officer should be appointed clothed with full power to manage all of its complex and important duties without unnecessary dictation or interference. Even if it remained a subordinate bureau to the Department of the Interior, we maintain that the Commissioner of Patents should be allowed to administer its affairs independent of any active interference from the heads of other departments.

Well, Judge Mason has left the Patent Office, and it devolves upon the President to appoint a successor. Who will he be? is a question now anxiously put by all who feel interested in the future success of the Office. He will be a politician—that, we fear, is inevitable—but we have confidence in the wisdom of President Buchanan, and we believe he will appoint no one who has not such qualifications as are requisite to the proper management of the Office. Two qualities are indispensable, namely, legal acumen and general liberality of judgment. Important questions of law are almost constantly brought before the Commissioner for adjudication—questions involving great interests, and therefore requiring an amount of legal knowledge commensurate to their proper consideration. A Commissioner without this special qualification will utterly fail in his duties, however learned or scientific he may otherwise be. A mere inventor—a mere mechanic—a mere politician—a mere manufacturer—is not the person wanted. Inventors and mechanics, whose interests we are ever defending, will understand our meaning when we employ the

above language. They want an able and liberally disposed Commissioner—one who will not only protect their rights, but sedulously endeavor to foster their interests. Such a man was Judge Mason. We only hope his successor will be equal to him in all respects.

Wethereds' Combined Steam.

We are indebted to Mr. Wethered for a number of pamphlets, and other information, drawings, etc., in relation to the success of their patent system of using mixed superheated and common steam in large engines in Europe. The package was sent from Paris July 10th, and contains quite full details of operations to that date. The system has been experimented with and reported on very favorably both in Great Britain and France, and in Austria the "Danubian Steam Navigation Co.," owning 110 steamers, have been using it on one steamer, the *Neusatz*, since September last, and have now eight steamers fitted to work on this system.

We have explained the nature of the invention on previous occasions—see No. 27, page 210, and No. 30, page 235, this Vol. It consists briefly in leading a portion of the steam through heated pipes, so as to superheat it, and mixing it with the remainder—which latter is conducted off in the ordinary manner—at or near the point where it enters the cylinder. The efforts to make it practically valuable in the early experiments, were defeated by the oxydation and destruction of the heating pipes, which were placed within the furnace; but in these Transatlantic efforts the experience on this side has enabled them to avoid this evil, and the system appears to have been very highly successful. H. B. M. steamer *Dee*, a vessel used as a means of instruction to the boys in the naval schools, and a vessel admirably adapted to careful and accurate experiment, was the first to which it was applied. Her boilers are multi-tubular, or rather, what we should term in this country return tubular, the tubes lying nearly horizontally above the fire, and conveying the products of combustion from the rear or back of the boiler to the front above the furnace. The pipes are placed in a convoluted form in the chimney or up-take, and the waste heat only is used for superheating the portion of steam which passes through them. In all the applications made, the system has, it is stated, proved highly advantageous in every respect, the economy of fuel varying from 30 to 52 per cent.

Mr. W. writes that "pipes for superheating which have been in constant use for fifteen months were lately examined by order of the Admiralty, and found to be perfect in every respect. The fact that sufficient heat can be obtained for superheating from the waste heat without injury to the pipes, is highly important."

"We first offered our new system for application to one of the United States steamers after it had been practically tested by the Engineer-in-Chief of the Navy, and reported on most favorably, but regret to say that the offer was declined; we then submitted it to the Governments of Great Britain and France, both of which, I am pleased to say, appreciated it, and offered us every facility for developing and bringing to a successful issue a system of so much importance to the commercial and manufacturing industry of the world."

Since the experiments in Europe have been found tolerably successful, efforts are again being made to render it available in this country. The agent of the Collins' steamers, who tried the earliest and very prolonged and careful experiments both on a stationary and marine apparatus, has always been hopeful of its success. On her last voyage the steamship *Atlantic*, of that line, went to sea fully provided with all the apparatus for superheating, but so arranged that it could, without difficulty, be dispensed with at pleasure. On trial trips here, the engine—which could only make 13 revolutions per minute with ordinary steam at 20 pounds pressure—made 14 1/2 revolutions with the combined steam, even at only 15 pounds pressure—all other conditions being apparently equal. But although this great result was obtained on the trial trips, the invention was not used, we be-

lieve, except during the first few days of the outward passage, nor was it used at all on the return. We have not learned the reason for this, and presume some difficulty has been met with which may be ultimately overcome. It is difficult to see how and why the mixture is more efficient, but the evidence seems to establish the fact, and we hope the obstacles to its use will not prove insurmountable.

Sharpening Irregular Tools.

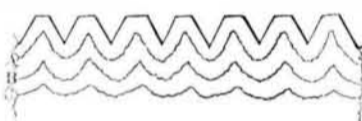
When an angle or cutting edge has become rounded off, or dulled, a removal by any means of a coating from the surface, will restore the sharpness of the angle. This principle has been made to some extent available in a number of ways, one of the most obvious of which is the sharpening of old files by heating them to redness in a common forge fire, and plunging them in cold water—in other words, by heating and hardening them over again. There is nothing in the hardening itself which is at all superior to that originally imparted to the file by its manufacturer, indeed it is generally much better hardened by the professed file maker than any smith can subsequently do it; but the files so treated are very generally improved by the operation, on account of their superior sharpness. One effect of the heating of the steel in the open air is to oxydize a thin coating, or in ordinary language, to "raise a scale" on the whole surface, and this increases the sharpness of each tooth of the file. The operation is, of course, of no service unless the teeth have become very dull, and it is inexpedient to employ this means of rejuvenating more than once.

The cut annexed, Fig. 1, explains very clearly how the removing of a uniform coating can increase the sharpness of a dulled edge. Fig. 2 shows the same effect applied to the teeth of a file, and also shows why it is not well to attempt to repeat it several times, owing to the gradual obliteration of

Fig. 1



Fig. 2



the teeth, even if the scale could be made of exactly uniform depth in each instance. The successive lines, A A, B B and C C, show the outline of the surface after one, two and three repetitions of the process. In practice there are two objections to this method of sharpening files, aside from the difficulty of hardening them properly: these are the irregular depth of the oxydation, which gives a very rough and imperfect form to the teeth, and the decay or rotting of the steel. Steel may be worked an indefinite number of times if it is well hammered at each operation; but when, as in this method of sharpening files, the metal is more than once heated and hardened without hammering, its cohesion becomes enfeebled, and after several repetitions of the process it cracks into fragments.

A better way of producing a similar effect on fine articles is to corrode the surface by the application of diluted acid. This is subject to the same evil of irregularity and roughness as the other, but produces no bad effect on the character of the metal. In fact, it has been affirmed to improve the quality of poor or imperfectly hardened steel. Any of the acids which bite steel can be employed, but sulphuric or vitriol is generally preferred, using only about one part acid with from ten to twenty parts water. Knives after being thoroughly cleansed of grease and allowed to lie some half an hour in this bath receive a smooth fine edge with very little whetting; and although the action is rather too slow and feeble to be generally applicable for renovating files, it may be used with very good effect on sickles and the like toothed cutters. The work should be very thoroughly rinsed in pure water after its removal from the acid, and then dried.

Ocean Steam Navigation.

Two-fifths of the gross value (not the bulk or weight) of importations from England and France into the port of New York is by ocean steamers, mostly foreign. Mr. Kennedy, Superintendent of the emigrant depot at Castle Garden, has showed that of 86 080 passengers arriving here during the last six months, 18,460 were brought on steamers, and that of 57 steamers bringing passengers during the last eighteen months, only two were under the United States flag, against 35 under the British. The English are now very rapidly outstripping us in steamers. One of our cotemporaries says that at this moment there are no less than three hundred steam propellers, ranging from one thousand to fifteen hundred tons, building on the Clyde and in the ports of Great Britain. The British steam engine builders were never more busy than at present. Side-wheel steamers are spoken of as likely to be wholly superseded—no vessels of that description being constructed. Meanwhile our shipyards are deserted, and scarcely a single steamship of any size is building in the United States.

Our New Volume.

CALIFORNIAN and FOREIGN SUBSCRIBERS are hereby notified that a new volume (13) of the SCIENTIFIC AMERICAN will commence on the 12th of September, and it is therefore time for those whose subscriptions expire with this volume to remit without delay, in order that they may be sure to get the first numbers of the new volume. Californian subscriptions are received at our regular rates. See Prospectus. The following are the rates per annum required to cover subscription and advance postage to the countries annexed:—

Great Britain,	\$3 00	France,	\$3 00
Belgium,	\$3 50	Prussia,	\$3 50
Russia,	\$3 50	Germany,	\$3 50
Austria,	\$3 00	Italy,	\$3 00
Spain,	\$3 00	S. America,	\$6 00
West Indies,	\$3 00	Mexico,	\$3 00
Sand'h Isl'ds.,	\$3 00	Canada,	\$2 26

As the circulation of our journal is becoming very extensive in Europe, we deem it important to publish the above list as a guide for those who may desire to subscribe for the new volume.

A Gathering of Savans.

The eleventh annual meeting of the American Association for the Advancement of Science will be held at Montreal, C. E., commencing on Wednesday, August 12, at 10 A. M. The officers of the Association for the Montreal meeting are, Professor J. W. Bailey, President; Alexis Caswell, Vice President; Dr. John Leconte, General Secretary; Prof. Joseph Lovering, Permanent Secretary; Dr. A. L. Elwyn, Treasurer. Local Committee, Sir William E. Logan, F. R. S., President; A. N. Rennie, Esq., Secretary.

Mysterious Disease.

The "National Hotel disease" has suddenly made its appearance in the capital of Russia. After a dinner which took place at a large educational establishment in St. Petersburg for the daughters of the nobility, under the patronage of the Empress, a number of young persons who were present on the occasion were taken suddenly ill. Five of them died within twenty-four hours, and the sixth was in the greatest danger. The Emperor visited the establishment, and ordered a most searching investigation to be instituted, but nothing has yet been discovered to throw light on the subject.

Inventors Looking Up.

At the recent Commencement of Union College, Schenectady, N. Y., under the presidency of the venerable Dr. Nott, himself a patentee of several improvements, Hiram Berdan, of this city, the well known inventor, received the degree of Master of Arts. This recognition of men of genius by our colleges will tend to elevate in the social scale a most worthy class of our citizens, hitherto quite neglected, so far as the bestowment of honors are concerned.

Twenty-five camels arrived in San Antonio Texas, on the 22d ult., for the use of Lieut. Beale's party in opening the new wagon road to the Pacific.