

For the trimming, blacking and staining, buffing, and burnishing of the soles and heels, a number of very ingenious machines are kept at work; but an entirely new thing in the finishing process is a treeing machine, here shown for the first time. It is so arranged that a dozen boots can be operated on at a time and moderately heated by steam while on the trees, so that the stuffing is warmed through with the leather, and the boot can be made to look, as one manufacturer said, "a dollar a case better."

Of the arrangement of goods and machinery, alike for convenience of access, facility in operating, and effectiveness of appearance, as well as the general management of the Exhibition, it may be said that too much praise cannot be awarded the officers and the executive committee. They are public-spirited men, manufacturers and merchants who have inaugurated the enterprise for the pride they have in Boston and in New England manufactures, and in such a spirit they are carrying it on.

**PROMOTIONS IN THE PATENT OFFICE.**

The following changes were made in the staff of the Patent Office, July 1, 1881:

Marcellus Gardner, of New York; John W. Babson, of Maine; and Schuyler Duryee: from fourth class clerkships to be chiefs of division—salary \$2,000.

Samuel B. Roane, of New York; Reuben S. Parks, of Ohio; and Louis W. Sinsabaugh, of Ohio: from second assistant examiner, to be first assistant examiner—salary \$1,800.

David G. Purman, of Wisconsin; Marshall B. Cushman, of Massachusetts; Edward M. Bentley, of Connecticut; and Albert C. Fowler, of District of Columbia: from third assistant examiner to be second assistant examiner—salary \$1,600.

William L. Augenbaugh, of Ohio, from first class clerk to be second assistant examiner—salary \$1,600.

The following have been promoted or newly appointed to the office of third assistant examiner—salary \$1,400: John W. Clements, District Columbia, from second class clerk; James B. Littlewood, of Illinois, from first class clerk; Rufus A. Morrison, of Pennsylvania, from copyist; Robert G. Read of Pennsylvania, and Walter F. Rogers, of Pennsylvania, new appointments. George R. Byington, of Cincinnati, promoted from first to second class clerk—salary \$1,400.

The following have been promoted to first class clerkships—salary \$1,200: William Hendlay, District Columbia; Frederick W. Crocker, New York; St. Clair F. Sutherland, Mississippi; Frank P. McLean, New Hampshire; Thomas Hoge, Pennsylvania; Mrs. Frank R. Lybrand, Ohio; Daniel Clarke, Maryland.

Frederick R. Gantt, from draughtsman, at \$1,000, to skilled draughtsman—salary \$1,200.

The following rise from copyist, at \$900, to first class—salary \$1,200: Henry E. Baker, of Mississippi; Julian C. Dowell, North Carolina; Milnor R. Sullivan, Ohio; Frank M. Ward, District Columbia; Thompson J. Hudson, Ohio; George H. Evans, District Columbia. To a salary of \$1,000, the following: Gormond Crandall, New York; William B. Atkinson, District Columbia; William A. Redmond, District Columbia; James M. Pollard, Louisiana; Thomas H. Mitchell, Tennessee; Archibald McNaught, Wisconsin; Mrs. Mabel Hatch, New Hampshire; William H. Chapman, Ohio; Thomas R. Stuart, California, to draughtsman.

**REVIVING OLD REJECTED CASES.**

Under the former practice of the Patent Office cases occurred in which widely established industries, worked for years free of any patent, were suddenly injured and crushed by the unexpected reissue and grant of some aged, long slumbering, rejected case.

It would appear from a recent decision by the present Commissioner of Patents, Mr. Marble, that he is not one of those who favor such revivals.

In a recent appeal to the Commissioner of Patents, in the case of F. W. Smith, applicant for a patent for a sweat leather, it appeared that the application was originally filed and rejected in 1871. In 1879, nearly eight years having elapsed, the inventor files a new application, intending thereby to revive the old case.

The Commissioner says:

"The law applicable to this case is section 32 of the act of 1870 (Rev. Stats., sec. 4,894), which reads as follows:

"All applications for patents shall be completed and prepared for examination within two years after the filing of the application, and in default thereof or upon failure of the applicant to prosecute the same within two years after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable."

"The authorities cited in behalf of Smith (*Colgate vs. Western Union, Smith vs. Dental Vulcanite Company*, and others) to show that this diligence has been reasonable, and that he has not abandoned the invention, were cases under the law of 1836, and are therefore inapplicable to the present case. Under that law an application might be renewed after a lapse of any period of time unless it appear that the invention had been in the meantime abandoned (*Bell vs. Daniel*, 1 Bond, 212), and that, too, though the first application had been withdrawn. (*Godfrey vs. Blames*, 1 Wall., 317.)

"The present law was devised to overcome the many evils which had sprung up under this practice, and provided that all applications filed and rejected previous to the pas-

age of the law would be presumed to be abandoned by the parties at the expiration of six months from the date of the passage of the act, unless in the meantime they should be renewed (section 35, second proviso), and that for the future all applications for patents not prosecuted within two years after any action therein shall be presumed to be abandoned by the parties, unless it shall be shown to the satisfaction of the Commissioner of Patents that the delay was unavoidable. I am not aware that this section of the law has as yet received judicial attention, but I find no difficulty in discovering the application of the law to the facts of this case. It is clear that only an extraordinary combination of circumstances could unavoidably prevent an inventor from taking some step in connection with his application for a period of nearly eight years.

"Attaching full credit to the statements of the affiants that Smith was continuously in straightened circumstances, and that he expressed at various times his desire to obtain a patent for his invention, I do not find that at any time he made any serious efforts to obtain assistance in prosecuting his application, or that it is clear, as a matter of fact, that it was his constant intention to renew the application or procure a patent for his invention.

"I must hold that Smith's application, filed in 1871, was abandoned by operation of section 4,894 of the Revised Statutes, and that he must stand upon his present date of filing.

**STEAM-BOILER NOTES.**

The percentage of active steam boilers that violently explode with fatal effect is not at any time very large; statistics show that there is but about one in two thousand annually of those in use in England, equal to one per cent in twenty years. The number of cases, therefore, that may be actually observed by any one person in a lifetime that is devoted to the common business of life is very small, so, there being not more than one person in a thousand of those who do observe these accidents who is capable of forming a reasonable opinion as to the cause, and not more than one in a hundred thousand who, being capable, does actually see and study more than his quota of cases, it is not strange that there are differences of opinion that result in bickering and recrimination among those who are accustomed to have their opinions respected and who have set up in the business of teaching a branch of engineering that they themselves have not practically studied.

The number of persons who attempt to make a thorough study of boiler explosions that have the opportunity to see one in the act is still smaller, and perhaps not a single one qualified by previous experience and by scientific attainments to be a good judge, and devoting sufficient time to the subject, has even favored the public with his views.

It seems to be a defect in the means of getting information that the informants are not reliable, being frightened out of their wits by the explosion or interested in making out that they had done their duty faithfully in the management before it occurred, and their testimony is, therefore, of the most unreliable sort, although they appear while giving it before juries to be respectable and reliable witnesses. Many times, perhaps most often, a careful examination of the remains of the boiler and its attachments would show that some of them are mistaken; that without a reversal of the laws of nature their statements could not be true; but being accepted, the whole thing becomes an inexplicable mystery. Some theory must be applied to the case by the wisecracks who should have carefully examined every detail of the wreck and eliminated all impossible and contradictory elements before giving their opinions as experts, weighing carefully all the possibilities and discarding all alleged phenomena that are in contravention of natural laws and depend on human acts, perceptions, or emotions.

**DR. HEATH'S DISCOVERIES IN SOUTH AMERICA.**

In the SCIENTIFIC AMERICAN of June 18, 1881, an account was given of the successful journey of Dr. E. R. Heath down the previously unexplored portion of the Beni River, Bolivia, and his discovery of abundant rubber and cinchona forests there. The Kansas City Review for September contains further particulars of the expedition, compiled from Dr. Heath's letters to his brother in that city, with a sketch map of the part of the river now for the first time opened up to geography and commerce.

Dr. Heath writes that the news of his successful passage through the country of the cannibals spread like wildfire. New rubber forests are to the people of that region what new gold fields are to the inhabitants of North America, and immediately something like a stampede occurred. Everybody talked "Beni," and 10,000 men had gone down to the new rubber region. Last year the export of rubber from the Beni was 15,000 pounds; this year it will be 750,000 pounds; and next year it will probably rise to 6,250,000.

Dr. Heath has proved himself to be not only an enthusiastic but an exceedingly plucky and capable explorer. He writes that he intends to return home this fall to organize an expedition for exploring the Madre de Dios, a river much larger and longer than the Beni, and quite as little known. His plan is to begin his survey at the ancient Inca capital of Cuzco, in Peru, and descend the Madre de Dios from its smallest beginnings, spending at least two years in the work. Besides the work of exploration he hopes to discover rich deposits of the precious metals, new forests of cinchona trees, valuable textile and medicinal plants, rubber forests, and other contributions to commerce and science.

**The Exhibition of Electric Light at Paris.**

To the Editor of the Scientific American:

The first public exhibition of electric light, which took place on the evening of Saturday, Aug. 27th, was, in many respects, a failure, but few of the systems being in good order, and many of them unable to be exhibited at all. Notwithstanding this fact, those who were present were forced to admire the brilliant display of the new and wonderful progress of electric lighting, and to speculate upon its future career.

It is thought by some, it is true, that the gas companies will be encouraged rather than otherwise by the exhibition of electric light, and will have confidence in their security for some time to come; but whether electricity is to take the place of gas or not, depends in a great measure upon the final decision of the general opinion of the public. At the present moment I am inclined to be of the same opinion as the gas companies themselves. Those portions of the exhibition of lights which are worth mentioning, are first, and above all, the Siemens and Halske lamps. It is only fair to say that there was nothing in the whole exhibition to compare in brilliancy and effect with the luster of the two great lamps of this firm. The Jablochkoff lamps which we have heretofore so much admired were quite thrown in the shade and actually had a mean appearance before these exquisite burners.

Next in order to the Siemens and Halske lights must be mentioned those of Brush. This was a truly fine display, and attracted general admiration and wonder, not only on account of the great number and perfect working order of the lamps, but also because that the system is said to be by far the least expensive, and, therefore, the most practical on exhibition. Next in order may be mentioned the Jaspas lamps, with immense reflectors. These lamps gave a very agreeable, steady light, and for some purposes may be considered very practical. Before going further, I must speak of a new system which gave great satisfaction and was much admired by the visitors, viz., that of the Austrian engineer, Gulcher.

This exhibition consisted of eight fine lamps, which gave a steady, soft, mellow light of a yellow color and of great strength.

The light of the Siemens and Halske firm, as also that of Brush and of Jaspas, is more white in color.

The exposition of the Swan and Edison and Maxim lamps of incandescence afforded a particular surprise and pleasure to those who had not heretofore witnessed them. They gave an impression of elegance and taste which recalled vividly to mind the candle chandeliers of our ancestors, which still retain the post of honor in many European mansions. But of the practicability of these systems we are not yet informed.

To the unprejudiced eye of the general spectator there were no other systems on exhibition which were worthy of note. However, as we have said, many of the lamps of other systems were not yet in order, and there may be occasion for a different opinion in future, in case some of these unfinished systems should excel those we have named.

The French department was a cause of regret and wonder as far as regards their exhibition of lights, that department being quite thrown in shadow by the more successful and brilliant foreign departments.

The light-house, which was intended as a great addition to the general display, proved in fact to be a perfect nuisance, its colored, revolving lights casting a ghastly and ominous shade over the different systems of lamps in the gallery and prohibiting the spectator from forming any just estimate of their value.

Some of those systems which were ill worked made a most ludicrous display, puffing and winking, now darting fire, now presenting a mere dull coal to the looker on, sometimes even going entirely out.

Finally, whatever else may be said in favor of electric light, there remains one serious and insurmountable objection to it, which will place one half the human race in direct opposition to its adoption, and that is, that it lays bare all the secrets and defects of the complexion, nay, even adds hideousness to it, whereas the mellow gaslight adds many a charm and smoothed many a wrinkle.

Whether our scientists and speculators in the scientific mines will take this last-mentioned fact into consideration remains to be seen. One thing is sure, the pleasure felt in gazing upon the electric lights is much destroyed by the disagreeable feeling experienced in looking upon each other, though it must not be forgotten that the incandescent lamps are an exception in this respect, and, therefore, if practical in other respects, will no doubt take the palm for all indoor use.

GUSTAVE GLASER.

**Look Out for the Pilgrim.**

A mysterious star, called the Pilgrim, which was observed in 945, 1264, and 1572, is expected by astronomers to appear before long. It was described in 1572 as brighter than Jupiter, and "such was its brilliancy that persons were able to detect it at noon in a clear sky, and at night when the sky was so overcast as to hide all other stars." If it appears it will probably be visible for several weeks in the constellation of Cassiopeia.

DEEP SHAFT IN VICTORIA.—The Melbourne Age states that the Magdala shaft, Stowell, has a total depth from the surface of 2,930 feet, or 1,566 feet below sea level. This is the deepest shaft in Victoria.