ASTRONOMICAL NOTES.

OBSERVATORY OF VASSAR COLLEGE.

For the computations of the following notes (which are approximate only) and for most of the observations, I am ndebted to students. M.M.

Positions of Planets for April, 1874.

Mercury.

This planet, which was so beautiful in the evening twight in Marcb, rises in April before the sun, and should be ooked for in the morning. Its declination is so much farher south than in March that it cannot be so well seen.

On the 1st of April, Mercury rises about 5 A. M., and sets at 4h. 31m. P. M. On the 30th, Mercury rises at 4h. 19m. A. M., and sets at 4h. 47m. P. M.

Venus.

On the 1st of April, Venus rises at 6h. 14m. A. M., and sets at 7h. 6m. P. M. On the 30th, Venus rises at 5h. 49m. A. M., and sets at 8h. 19m. P. M.

Venus should be seen after sunset, almost directly in the sun's path on the first half of the month; after that date it will be further north than the sun and can be seen for some time after sunset. Venus and the moon will be in conjunction on the 17th.

Mars.

Mars will at present scarcely repay the observer who attempts to study its phenomena, even with the aid of a good telescope.

On the 1st, Mars rises at 6h. 51m. A. M., and sets at 8h. 35m. P.M. On the 30th, Mars rises at 5h. 54m. A. M., and sets at 8h. 30m. P. M.

Jupiter.

On April 1, Jupiter rises at 4h. 50m. P. M., and sets at 5h. 14m. A. M. On the 30th, it rises at 2h. 43m. P. M., and sets at 3h. 15m. the next morning.

Jupiter is the great beauty of our evening skies all through the month. It should be observed between 9 P. M. and midnight, when it is not far from meridian. Its motion among the stars is retrograde, or toward the west, and it is so great that from night to night its change of place can be detected.

The phenomena resulting from the motions of the satellites on the 7th and 15th of the month are very interesting, and some of them can be seen with a small telescope. On the 7th the fourth satellite will disappear by eclipse—it will pass into the shadow of Jupiter, and before it comes out the first satellite will disappear by transit—that is, it will be projected on the face of Jupiter and will be lost in the light of the planet.

On the evening of the 15th, the fourth and second satellites of Jupiter make transits across the face of the planet nearly at the same time; with a powerful telescope both will be seen projected on the disk, but they cannot be detected by a telescope of low power; they will be lost in the light of Jupiter, and the planet will seem to have but two moons.

Saturn.

Saturn is very unfavorably situated, as it is far south, rises in the early morning and sets on the 1st a little after 1 P.M. and on the 30th before noon.

Uranus.

Uranns is well situated for observation, but requires a a pretty good telescope to render it interesting. It rises on April 1 at 0h. 42m. P. M., and sets at 3h. 7m. the next morning. On the 30th, Uranus rises at 10h. 49m. A. M., having set at 1h. 18m. on the morning of that day.

Neptune.

It is useless to attempt observations on Neptune at present. It comes to the meridian nearly at the same time with the sun, and makes nearly the same diurnal path.

Meteors.

But few meteors have been seen during February and the first half of March. The only one reported of any considerable size was seen on February 28, south of Sirius, at 8h. 30m. P. M. The moon was nearly full, yet it appeared brighter than Jupiter. Several meteors were seen between 8 and 9 P. M. of the 15th of March.

Barometer and Thermometer.

The meteorological journal from February 14 to March 14 gives the highest barometer, February 25, 30·51; the lowest barometer, March 10, 29·46; the highest thermometer, March 4, at 2 P. M., 53°; the lowest thermometer, February 18, at 7 A. M., 11°.

Amount of Rain.

The rain which fell during the night of February 20 amounted to 0 21 inches.

The rain which fell between the afternoon of February 22 and the morning of February 23 amounted to 0·28 inches.

The rain which fell during the night of March 3 and the morning of March 4 amounted to 0·16 inches.

A Street Fire.

In this city, recently, a one horse truck laden with twenty-seven cases of naphtha was being driven up Third avenue by an employee of the Gas Meter's Saving Company. When near 14th street, the driver struck a match and threw the end of it among the cans. In an instant the whole contents were in a blaze. The driver sprang out and left the vehicle to its fate. The horse, a fine young animal, reared and plunged with fright, but the traces and harness confined him to the burning pile. Superintendent Hartfield, of Mr. Bergh's socity, riding up on a car, sprang off at the spot, and, under a scorching fire, unhitched the animal and saved it from a horrible death. In ten minutes the wagon was a small heap of charred fragments. The flames reached the top story of the house at the corner of 13th street and Third avenue. An alarm of fire was sounded by telegraph, and the hook and ladder apparatus was quickly on the spot and assisted to put out the flames.

The Basking Shark.

An interesting ichthyological discovery has lately been made by Professor Steenstrup, of Copenhagen. He finds that certain comblike bodies, which have been supposed to be appendages of the skin of certain sbarks, are really shifting organs appended to the interior of the gill apertures of the basking shark; and he infers that this fish, the largest shark of the northern regions, which attains a length of thirty-five feet or more, lives, like the still more gigantic whales, upon the bodies of small marine animals strained from the water by these peculiar fringes. The very fine rays composing the fringes are five or six inches long, and were some years ago shown by Professor Hanover to consist of dentine, so that each of them may be regarded as, to a certain extent, the analogue of a tooth. It is remarkable that Bishop Gunnerus, who originally described the basking shark (*selachus maximus*) and regarded it as the fish that swallowed the prophet Jonah, noticed the existence of these branchial sieves more than a century ago.—*Science Gossip.*

PRIZE FOR AN ALCOHOLOMETER.—M. Léon Say has proposed to one of the commissions of the French Assembly that a prize of 200 francs should be offered for the discovery of a process by which it may be possible to determine immediately and practically the amount of alcohol in any mixture, no matter how composed. The commission voted unanimously in favor of the proposal, and M. Dampierre was charged to draw up a report on the subject.

A REDDISH BROWN PAINT FOR WOOD.—The wood is first washed with a solution of 1 lb. cupric sulpbate in 1 gallon of water, and then with ½ lb. potasssum ferrocyanide dissolved in 1 gallon of water. The resulting brown cupric ferrocyanide withstands the weather, and is not attacked by insects. It may be covered, if desired, with a coat of linseed oil varnish.

Mr. W. R. Norris, the inventor of the diagonal planer illustrated on page 198 of our last issue, desires us to state that the capacity for work of his machine is fifty doors, each 2 feet 6 inches by 6 feet 6 inches, per hour, and not per day, as stated in the description.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From February 24 to March 2, 1874, inclusive.

CARTRIDGE MACHINERY.—C. H. Webb, Brooklyn, N. Y.

CORRUGATING MACHINE.—H. W. Lafferty *et al.*, Gloucester, N. J.

EMERY GRINDING.—C. Heaton (of New York city), London, England.

FEED WATER HEATER, ETC.—I. P. Magoon, St. Johnsbury, Vt.

FLOOR COVERING.—J. L. Kendall, Foxboro', Mass.

JOURNAL BOX.—J. N. Smith, Jersey city, N. J.

LOOM HARNESS, ETC.—J. Sladdin, Lawrence, Mass.

PRESERVING EGGS.—D. Miles, Boston, Mass.

SEWING MACHINE.—I. M. Singer (of New York city), Paignton, England.

TWISTING FRINGE.—W. Brooks, Remington, Vt.

DECISIONS OF THE COURTS.

Supreme Court---District of Columbia.

CONKLIN AND STAFFORD.—PATENT STRADDLING CULTIVATOR.

[Application for reissue.—Appeal from the Commissioner of Patents.—Decision March 2, 1874.]

Opinion of the court delivered by MacArthur, Judge:

The appeal in this case is from a decision of the Commissioner of Patents refusing to grant a reissue of a patent to the representatives of a deceased inventor. The refusal to allow the reissue is placed by the Commissioner on the ground that the claims for which the reissue is denied have been abandoned to the public use, and are, therefore, not patentable. The facts of the case are as follows:

Daniel S. Stafford made application for letters patent August 30, 1860, for a new and useful improvement in corn cultivators, which he described in his specification as that kind of cultivator that can be raised or lowered, or turned to the right or left, by the operator from his seat on the machine, so as to adapt the machine for passing over or turning to one side of an obstruction, or to cause it to follow the crooks in the rows of plants. And this is followed by an elaborate description of the invention in all its details. The original patent was issued to him January 15, 1861, embracing three claims: First, the combination which enabled the driver to guide the machine so as to follow the crooks in the rows of plants; second, the combination of the seat and the bent axle; and third, the long bent share blades or cutters for the purpose of throwing the loosened soil toward the plants.

In 1866 Daniel S. Stafford died, and on the 13th September, 1870, his assignee and widow, who has since married and is now Mrs. Conklin, filed an application for a reissue, embracing seven claims, five of which were allowed, and two of them were rejected for the reason already mentioned, that Stafford had abandoned the subject matter of such claims previous to the issuing of the original patent. These claims are in the following language:

The combination, in a straddle row cultivator, of two wheels, B, an axle, C, frame, A, and series of plows, G, arranged in two gangs, so as to till or cultivate the soil on both sides of a single row of plants simultaneously as set forth.

Also the combination, in a straddle row cultivator, of two wheels, B, an axle, C, frame, A, series of plows, G, arranged in two gangs, and a seat, E, for the driver, for the purposes set forth.

The application for the reissue was necessarily made under the fifty-third section of the revised patent law of 1870, which seems to be the only provision in the statute authorizing the Commissioner to issue a new patent for the same invention. This section declares that whenever any patent is inoperative or invalid, by reason of a defective or insufficient specification, or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new, if the error has arisen by inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, the Commissioner is authorized, on the surrender of such patent, to cause a new one to be issued, with corrected specifications.

It will be seen by the terms of the statute that in order to entitle a party to the reissue of a patent it is incumbent on him to show that it is inoperative or invalid by reason of a defective or insufficient specification, or that the patentee had claimed more than he invented, and that the error had arisen by inadvertence, accident, or mistake, and without any fraudulent intention. Unless these circumstances exist in an application of this character, I can find no authority by which the Commissioner can reissue a patent; as he is an officer of special and limited power, his action must be restricted to the particular cases mentioned in the statute. I refer to these requirements of law, because if the original patent is neither inoperative nor invalid, and if no error has been occasioned by accident or mistake, there must be a presumption of law and fact that the patentee has abandoned to the use of the public everything which he may have invented, but which he did not include in his claims and specifications. The law presumes that every one who applies for a patent will embody his invention in specifications sufficiently definite to preserve as much of his discovery as he desires to protect by a patent. If, from mistake, he has overlooked anything within the scope of his invention, he may surrender his patent on that ground, and claim a new one, in accordance with amended specifications. The party asking this relief must be denied it unless he brings himself within the statute. When he knows all the facts relating to his own case, but, through culpable negligence or misconduct, has failed to claim all of his discovery, the law will not extend its aid to him, but will leave him to enjoy only such limited advantages as he has actually secured. The law reserves its remedies for the careful and vigilant who may have been misled from any of the causes mentioned in the statute.

Courts of equity very often grant relief in cases of mistake when a meritorious case is established by the pleadings and proofs; but the remedy is regulated by well established rules of law, and undoubtedly Congress had the same rules in view when it extended this remedy to similar cases under the patent law which they enacted.

It is conceded that the Supreme Court has decided in several cases that the granting of a reissued patent closes all inquiry into the existence of inadvertency, accident, or mistake. A presumption then arises that the proofs have been regularly made, and that they were satisfactory. "No other tribunal is at liberty to re-examine or controvert the sufficiency of such proofs if laid before him when the law has made such officer the proper judge of their sufficiency and competency." (Railway *vs.* Stimpson, 14 Peters, 459. Seymour *vs.* Osborne, 11 Wall., 542.)

In the case at bar no such presumption arises, for the patent has not issued, and the proofs are before us to be examined and weighed, and we are called upon, as preliminary to the granting of the patent, to judge of the sufficiency and competency of the proofs to sustain the application in conformity to the essential requisites of the statute. The decisions referred to can have no application to an appeal of this kind.

In this case Stafford during his lifetime never pretended to any one that his patent was inoperative, or that the specifications were defective in any respect, or that he had omitted or added accidentally or by mistake. On the contrary he always claimed for it the highest merit and practical utility. The evidence in the case of Sayles *vs.* Hapgood, used by consent on this application, establishes beyond any doubt that it was a valuable invention, and, as one of the witnesses expresses it, a strong, durable, and efficient farm implement. It appears that more than 15,000 of the machines had been manufactured under the patent up to the time of his death in 1866, and sold to the public. Another circumstance of much significance is not to be overlooked in this connection, and it is that, after the original patent had been obtained, Stafford made further improvements upon the same cultivator, and for one of these he procured a distinct and independent patent. About three weeks before he died he gave his brother a description of a model for another improvement, which was patented after his death; and during all the time he was employed in devising models of new improvements upon his invention there is not a particle of evidence tending to show that he claimed there was anything wanting in the specifications which he had filed in the Patent Office when he obtained the original patent in 1861.

It seems quite clear, upon this state of the case, that Stafford never intended to patent more than he had carefully and definitely described in his original application, and that everything else which he might have invented up to that period was abandoned to the public. This intention is clearly indicated by his acts, and is as fully proved as it is possible to prove the purposes of one now dead.

It is noticeable that the application for the reissue states none of the causes mentioned in the statute for which a new patent might be issued, and careful examinations of the proofs discloses the fact that not a particle of evidence has been taken to sustain these pre requisites of the law. No presumption can prevail here that the proofs have been made, as would be the case if a patent had issued, and the only rational belief that can arise upon the case as it now stands is that Stafford abandoned what he did not include in his specifications.

We are aware that the Commissioner has presumed abandonment from what he deems proof of the public use of the invention for several years previous to the issuing of the original patent. While we may not be satisfied that a public use is shown of such a character as to establish abandonment, yet the testimony on this subject, taken in connection with the facts I have already mentioned, adds considerable force to the presumption that Stafford never intended to patent what is now claimed.

He made his first machine in 1842, and it comprehended in a rude form all the elements of the combination for which in 1861 he obtained a patent. It was a two wheeled straddle row cultivator, with plows on each side, so as to cultivate a whole row at a time, with a seat for the driver, drawn by two mules, and did as good work as a single plow. To explain the delay which took place from his first machine, in 1842, until he obtained his patent, eighteen years afterward, in 1861, the appellant claimed to have proved by the testimony of several witnesses that during all that time Stafford was in poor health, and was greatly embarrassed in his circumstances; that he was employed from time to time in improving his invention, and constantly declared his intention to obtain a patent as soon as he could procure the means. Whether this was the real cause of delay or not, such a protracted period of reflection and experiment afforded him extraordinary opportunities to ascertain and describe his claim with precision and accuracy.

There is no proof that he was not entirely satisfied with what he did. The application for the reissue is not made until 1871, a period of nearly five years after his death, and thirty years after he had reduced his invention to a practical form. In the meantime at least one hundred distinct patents have been issued for cultivators, and the numerous manufacturers in the west and northwest are respectively manufacturing on a patent of their own. The art has probably received many valuable additions from the efforts of so many persons; but if the claim of these appellants be allowed they would have a monopoly of every form of cultivator with wheels, axles, plows, and a seat for the driver.

It would, indeed, be a patent for a cultivator generally. Such a claim should not be assented to unless it can be shown with reasonable certainty that, if patentable at all, it has never been deserted and abandoned by the inventor.

We are of the opinion that the decision of the Commissioner should be affirmed.

Some discussion occurred during the argument concerning the jurisdiction of this court on an appeal from a decision of the Commissioner of Patents. The forty-eighth section of the act provides for the appeal, and the next section directs that the appellant shall file in the Patent Office his reasons of appeal in writing, and the fiftieth section enacts that the court shall revise the decision appealed from, and that such revision shall be confined to the point set forth in the reasons of appeal. A majority of the court are of opinion that by a true interpretation of those sections we can only examine into the reasons of appeal, and the record and proceedings, so far as they apply thereto, for the purpose of ascertaining whether the Commissioner has made an erroneous decision; and that we cannot revise the decision on any other ground than that upon which the application was rejected. In the case now under consideration the reissue was denied for the reason that the inventor had abandoned to public use the subject matter of his two claims, and the appellants assign their reasons for appealing to be that the Commissioner erred in refusing the claim on the ground of abandonment. The issue is thus clearly defined in the mode designated by the law, and we are forbidden to set the decision aside on any other ground. Nor can we go into the record at large for the general purpose of seeing whether the decision is right on some other ground, not passed upon by the Commissioner nor stated in the reasons of appeal.

It has been suggested that a case may occur in which the true grounds of error are not set forth in the reasons of appeal, and yet the decision be sustainable on some other ground. It is, however, a sufficient answer to this view that it is not our duty to put a forced construction on statutes to remedy supposed evils. Besides, if the party wishes to test his general right to a patent, he can do so under the fifty-second section, which declares that he may have a bill in a court of equity if he has been refused one by the Commissioner.

We have deemed it proper to dispose of this point in the present case for the purpose of settling the practice on a disputed point in this class of cases.

On the question of jurisdiction, Judge Olin dissented.

* * * The Commissioner, he says, as near as I understand the reason assigned by him for his refusal to reissue this patent with the improved specifications proposed, holds that where a patentee has been experimenting by way of improving his machine for a period of about twenty years, and then applies for a patent for his improvements, and a patent is granted for all he asks as his invention, and after the lapse of some eight or ten years, during which this machine has been manufactured and scattered broadcast over the country, the patentee shall be deemed to have abandoned to public use all such inventions or devices in the original patent for which he did not ask protection in his application for the original patent granted him.

I think the reasoning of the Commissioner by which he arrived at that conclusion is sound; and still I think he might well have placed his decision upon the ground that, by law, the facts of this case did not authorize the reissue of the Stafford patent. * * *

No new matter, the statute says, shall be introduced into the specifications, nor, in case of a machine patent, shall the model or drawings be amended except each by the other.

What is here meant by the statute which says that upon the reissue of a patent "*no new matter* shall be introduced into the specification," etc.? I understand it to mean this, and this only, that upon the reissue of a patent, the patentee is allowed to surrender his specifications in such a way as to render valid and operative the patent originally granted, but that no new matter shall be introduced into the reissued patent which was not claimed in the original application and specifications. By new matter is here obviously meant setting up a new claim for some patentable device or invention which was not claimed in the original patent. My conclusion is, therefore, that this case, all the facts appearing before us, did not authorize the Commissioner of Patents to grant a reissue of the patent in this case. * * *

From the claims, as set forth in this application for a reissue of the Stafford patent, it will be clearly seen that an attempt is made to *straddle over* every possible invention and improvement known in this kind of machine, and to render them all subject to the payment of a royalty to the assignee of Stafford, and to his widow, Mrs. Conklin.

Well, we think the Commissioner might have paused before granting such an extraordinary claim.

E. L. Stanton and *A. MacCallum*, counsel for appellant.

Marcus S. Hopkins, for the Commissioner of Patents.