

This proviso, however, they failed to keep, owing to the death of the capitalist they had engaged to help them to the necessary funds; and in consequence, at the end of three years, we find them making an application for the renewal of their grant, which was done and, as other documents show, they succeeded in making good steel in considerable quantities.

In May, 1741, the exclusive right of making potash for 20 years was given to Messrs. Willard, Hamlin, Wetmore, Chauncey & Fairchild.

In 1746, John and Stephen Jerom obtained the exclusive right for 14 years of making salt by evaporating sea water; and three years after procured a loan from the Assembly of £1,000, for two years, to enable them to continue their operations, as they had not yet succeeded commercially for want of sufficient capital.

The exclusive privilege of making glass for 20 years was given, in 1747, to Thomas Darling, on condition that he and his assignees should set up suitable works and prepare a stock of materials within four years, with a further proviso that they should make at least 500 feet of good window glass every year thereafter.

It would appear that Darling did not succeed in introducing the manufacture of glass, for in 1779 we find a grant giving "during the pleasure of the Assembly," to Messrs. Hubbard, Mosely, Little & Latimer, a similar exclusive privilege, except that only one year was given in which to commence operations. Before this year had expired, however, a memorial was filed by Mosely and Little, stating that Hubbard and Latimer had withdrawn on account of the great expense and risk, and asking that they (Mosely and Little) may be allowed to raise £2,000 by a lottery. This lottery privilege does not appear to have been granted, but instead an exclusive right for 15 years was given on the same conditions as the last.

This project would also appear to have failed, for we find another exclusive grant, three years after, to Pitkin, Bishop & Pitkin, for the term of 25 years, on condition that they began manufacturing within three years. These parties also seem to have met with little or no success, for we find a memorial from them complaining of the discouragements they had met with in their efforts, and asking that a lottery may be granted to them for the purpose of raising £400, which was allowed.

In 1753 a grant of the exclusive privilege, for 15 years, of setting up "a new invented water machine for the dressing of flax," was given to Jabez Hamlin and Elihu Chauncey.

A bounty of 2d. per quire of writing paper and 1d. per quire of printing paper or coarser paper, was ordered by the Assembly in 1768 to be paid to C. Leffingwell on all paper made by him; which appears to have been done for one year only, during which he made 4,020 quires of writing paper and 10,600 of inferior quality, after which the bounty was discontinued.

Another document, a memorial from Abel Buell, dated October 8, 1766, states that the writer had been sentenced to imprisonment for life for "altering the bills of public credit," which sentence had been remitted on account of his youth; and after stating that he had discovered a method of grinding and polishing crystals, asks that the privileges which he "had justly lost" might be restored to him, that he might carry on the aforesaid business. On his giving bonds as to future good behavior, this was done.

Three years after we find another petition from the same man stating that he had discovered the art of letter founding, and asking that he be allowed to "raise money by lottery to carry on the same, or in some other way." With the memorial he furnished specimens of his handiwork, which are said by those who have seen them to have been superior to the type of that day and equal to the average of that of a much later date. A committee of the Assembly was ordered to investigate the project, and on their favorable report the treasurer was ordered to loan Buell £100 at once and another £100 at the end of a year, on condition that he give a bond in £200 that he would pursue said business and would not leave the colony within seven years. It appears, however, that he did not meet with much success, for we find a petition from his wife, dated August 8, 1777, stating that the long absence of her husband made her despair of ever seeing him again, and requesting the Assembly to be allowed to pay £100 in full of all demands against them, which the Assembly accepted.

In 1774, George Phillips applied for and obtained the privilege of refining loaf sugar for ten years, which was to be exclusive, except that the Assembly retained the option of allowing two other refineries to be set up, and during the next two years granted such permits to other parties.

A patent was issued in the same year, granting to John Shipman for 40 years the exclusive privilege of erecting within certain territory his newly invented tide grist mill, on condition that it should be erected within five years.

Under the date of February 3, 1776, we find that the sum of £60 was ordered to be paid David Bushnell, as some encouragement for him to proceed in preparing his machine for blowing-up ships, etc. No particulars of the plans appear on the files, but from other sources we learn that this, "the American Turtle," as it was called, the prototype of the modern torpedo boat, was composed of two shells joined together water-tight, and of sufficient capacity to contain the operator and air enough to support him under water for half an hour. The "turtle" was caused to rise or sink by pumping the water from or allowing it to enter into a chamber beneath him, at the same time lowering or raising an in-

got of lead of 200 lbs. weight, which might be made to touch bottom. The propelling force was an oar worked from a compartment in the forepart; and at its stern a magazine of powder was attached, which could be detached and secured to, or sent against another vessel. The magazine was provided with a gun-lock to fire the powder, which was operated by clockwork calculated to run sufficiently long after being set in motion to allow the operator to reach a place of safety previous to explosion. With this apparatus he made an attack on the British ship "Eagle," of 64 guns, in New York harbor, but only succeeded in frightening the crew, although he afterwards succeeded in blowing up a schooner at New London.

In 1778, the Assembly granted permission to two widows named Hannah Watson and Sarah Ledyard, to raise £1,500 by lottery to rebuild a paper mill owned by them, which had been destroyed by fire. From a statement in their memorial, it appears that the Hartford newspapers of that day circulated about 8,000 copies weekly.

In 1783, a patent was granted to Benjamin Hanks for fourteen years for "a clock or machine that winds up itself by help of the air, and will continue to do so without any other aid or assistance until the component parts thereof are destroyed by friction." This was probably a clock provided with a windwheel set in such a position that the heated air escaping from a room would operate the wheel and so keep the clock continually wound. A clock similar to this was patented to Robert Hitchcock, September 10, 1861.

The exclusive right to make snuff was granted to William Pitkin in 1784, for 14 years.

In 1787, an act was passed giving to Samuel Loomis the exclusive right of erecting works for the manufacture of wool, cotton, hemp, flax, and silk, "upon a new constructed plan," on the east side of the Connecticut river, or within ten miles west thereof, for seven years, and an exclusive privilege for seven years longer on any ground within thirty miles of such works.

In addition to the above we find a number of rejected applications for special privileges in manufacturing various articles, from pins to perpetual motions. (The perpetual motion man's memorial was endorsed "Prisoner in jail.") Some of the applicants wanted an exclusive right only; others wanted loans from the Assembly—some with interest and some without; and still others, to enable them to start the manufacture of some article not then made in the colony, petitioned for the privilege of raising stated sums of money, ranging from £100 to £6,000, by means of lotteries—which last appears to have been a favorite mode of "raising the wind" in those days, if we may judge by the number of applications for the privilege.

From another series of documents, too long to give even a synopsis of them here, we find that considerable attention was given to the manufacture of iron, both cast and wrought, and that as far back as 1736 iron works were building in Salisbury, where during the revolutionary war about 60 men were employed in casting cannon alone, to say nothing of other work.

NOTES OF PATENT OFFICE DECISIONS.

PATENTS.

In the recent interference case of Anson vs. Woodbury, the Commissioner of Patents has decided that the Patent Office will take judicial notice of matters of public notoriety affecting the right of an applicant to a patent. Anson applied for a patent for the use of a presser bar in a planing machine, but the Commissioner holds that, as a matter of public notoriety, presser bars of the description claimed by Anson have been in public use for upwards of twenty years, in support of which he cites the SCIENTIFIC AMERICAN for July 5, 1873, vol. 29, p. 7; and November 20, 1875, vol. 33, p. 25. He therefore dissolves the interference and rejects Anson's application. The rule is laid down in this case that, on a motion to dissolve the interference on the ground of notorious public use for more than two years prior to the filing of the application for the patent, *ex parte* affidavits made by adverse parties cannot be received to impeach the patentability of the applicant's invention. It is immaterial that such affidavits were not submitted to show any particular instances of use, but rather to show notoriety of use. In admitting and considering such affidavits as evidence, the Patent Office would be adjudicating upon the rights of applicants on testimony not taken in accordance with any requirements of law, and of witnesses which the parties in interest had no opportunity to cross-examine.

A claim for an improvement in ant-guards, consisting of a concave flange, arranged on the leg of a table or other piece of furniture, and coated on the under side with chalk, is decided in the case of Strong vs. Cruikshank to be lacking in patentable novelty. The peculiar property possessed by chalk, rendering it an impassable barrier to the march of ants, is well known, and the use of concave flanges on corncribs, trees, etc., to prevent the ascent of insects is old in the art. The only novelty that could be claimed, therefore, was the fact that protection was afforded by the flange to the chalk. This is not patentable, since it is but the exercise of simple intelligence to put the chalk on the under side of the flange, where it is best protected from being rubbed off.

On the application for a reissue of letters patent in the case of a machine patent, the model and drawings cannot be amended except each by the other, and the Commissioner cannot go outside of the record to ascertain what was the scope or detail of the original invention. Thus in the case of Stockwell vs. Haines, just decided, the Commissioner re-

jects affidavits offered to prove that a certain pin—not shown in the drawing or specification, although there was a horizontal perforation in the model, in which such pin might be placed—did form a part of the original invention. An invention not set forth in the original specification, nor fully shown in the original drawings, cannot be incorporated on reissue, where its existence depends upon the restoration of a missing element to the model in a particular position, it not appearing that such position is necessarily the only one it can have, and both original specification and drawings failing to indicate its location.

TRADE MARKS.

An application for the registration of an arrangement of a star and crescent as a trade mark for soap was lately filed by Cornwall & Brother. The Examiner of Trade Marks referred them to a registered trade mark consisting of the figure of a star alone, also applied to soap, and contended that the employment of the combined symbol of a star and crescent would be likely to deceive parties desirous of purchasing soap having the brand of the star alone. This decision has just been reversed on appeal.

The fact is referred to that the flags of two nations are distinguished by almost the same difference in symbol as that employed by Cornwall & Brother to distinguish their soap from that made by the owners of the registered trade mark. The flag of Egypt is a crescent on a red ground, and the Turkish man-of-war flag is a crescent and star on the same colored ground, but there is no mistaking one flag for the other by persons of the slightest discernment; and the same may be said when those symbols are applied in a similar way to the soap of two different owners.

The application for the registration of the figure of a "swan" with the words "Our London Swan Gin" as a label is refused to John D. Park. The figure of a swan with some other arbitrary matter had previously been registered by other parties as a trade mark applied to this article. The Commissioner decides that as Park's label includes arbitrary and fanciful words and figures constituting a proper trademark, in addition to matter properly a label, he should first register the fanciful matter as a trademark; but before he could do this, under the circumstances, he must first establish his right to the trademark. This he could do by proof adduced in an interference proceeding, or by an adjudication of a court of competent jurisdiction establishing his title to the same.

MUSCULAR CONTRACTION AND ELECTRICITY.

Muscular contraction is always accompanied with electrical phenomena. The difference of electric force between two points of a muscle undergoes a diminution, which, according to Beunstein, precedes the contraction by $\frac{1}{100}$ of a second. M. De la Roche has recently examined the electrical power of the human heart. The electrodes consisted each of a plate of amalgamated zinc with a pledget of muslin saturated with sulphate of zinc at the lower extremities. These were applied, one with its muslin wad opposite the heart on the left breast, the other on another part of the chest, and connection was made with a capillary electrometer. The mercury column executed a very distinct series of periodic pulsations, synchronous with the pulse. Each pulsation marked the double movement of the heart. The result obtained corresponded to $\frac{1}{1000}$ of a Daniell element.

BOILER TEST CHALLENGE.

To the Editor of the Scientific American:

Being an interested party at the Centennial boiler test, and knowing that the Root boiler is ahead, according to the official report issued by the Director-General, Hon. A. T. Goshorn, and as certain interested parties have put restrictions on the further issuing of the report as officially made, and as Messrs. Babcock & Wilcox are not satisfied with the result, we propose to make an economy test against them at the American Institute this fall, for from one thousand to five thousand dollars a side, each party to select one man and those two to select the third, as judges, they to make all rules and regulations, and their report to be final.

Yours respectfully,

ABENDROTH & ROOT MANUFACTURING COMPANY.
New York, August 16, 1877,

Professor Edward Heis.

The death is announced of Professor Edward Heis, of Munster, one of the most assiduous and accurate observers in those branches of astronomical research which can be cultivated, without any powerful instruments, by means of observations made with the naked eye. He was born in 1806. He made observations of the relative magnitudes of all stars visible to the naked eye, the results of which were embodied in his *Uranometria Nova*, published in 1843, the first really trustworthy Star Atlas. Heis, being gifted with eyes of uncommon acuteness, devoted many years to the observations requisite for a greatly improved edition of this work. Variable stars, shooting stars, auroras, the zodiacal light, the course of the Milky Way, etc., were diligently observed by Heis, and his publications referring to them are of great value.

Seeing the Crescent of Venus.

Mr. D. H. Temple, of San Francisco, Cal., informs us that he saw the crescent of Venus at Mazatlan, Mexico, on the morning of January 24th last. This is considered a very difficult feat of vision.