Communications.

Our Washington Correspondence.

To the Editor of the Scientific American:

Since my last a bill has been introduced by Mr. Wadleigh into the Senate "to cure defects in certain letters patent for inventions and designs," which is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all instruments purporting to be letters patent of the United States for inventions and designs heretofore issued under the seal of the Patent Office, and signed by the Secretary of the Interior, and countersigned by an Assistant Commissioner of Patents, under the title of Acting Commissioner of Patents, when there was no Commissioner of Patents, be, and be held to be, valid and of the same force and effect as if such Acting Commissioner of Patents had been Commissioner of Patents, and had countersigned as such.

This bill is supposed to have reference to patents signed by Assistant Commissioner Doolittle during the time when there was no Commissioner, before General Spear was confirmed.

Another Senate bill, which was introduced by Mr. Dawes, will, if it becomes a law, extend the wood pulp machine patent of Henry Voelter, now about to expire, for seven years longer, thus making its duration twenty-eight years.

Senator Boutwell has presented a petition from E. N. Horsford, for an extension of his patent on making baking powder.

Senator Logan presented resolutions of the Illinois legislature instructing the senators and representatives from their State to use their utmost efforts to secure such amendments to the patent laws of the United States as will allow any person to use any patented invention upon executing a bond in such sum and with such security as the Circuit Court of the United States for the District, in which such use is to be made, shall direct, such person to pay to the owners of such inventions a proper license fee for the use of the same: which bond shall be filed in the office of the clerk of said court, and that in all cases the measure of the license shall be such sum as will give the inventor reasonable compensation for his time, labor, ingenuity, and expense, not in any case to exceed the fee fixed for such use in contracts made by the inventor or owner, and such license fee to be the measure of damages in all actions and proceedings for the infringement of patents, and no other recovery for damages or profits to be allowed. The resolutions were read and referred to the committee on patents. This is substantially the style of legislation that the Grangers tried to push through Congress some two or three years since, when a bill was introduced, by Mr. Sayler I believe, with provisions very similar to the above.

In the House, Mr. Vance, on the part of the committee on patents, reported adversely on the application of Mr. Horace Woodman for an extension of his patent on stripping cotton cards; and the same gentleman reported favorably on the application of E. A. Leland for an extension of his patent on paint cans.

In accordance with the request of the Smithsonian Institute, mentioned in my last, a bill has passed both houses of Congress appropriating $250,000 for the erection of a fireproof building, 300 feet square, on a plan designed by General Meigs, for a national museum, to be built on the Smithsonian grounds, for the exhibition of the various contributions to the Smithsonian Institute of the foreign commissioners at the Centennial. If General Meigs succeeds in putting up a fireproof building in this city of that size for the price stated, it will be the cheapest building ever erected, that Uncle Sam had to pay for.

The Agricultural Department has also had various donation from different commissioners, and $2,000 have been allowed it for erecting a gallery in its museum for their proper display. Thirty thousand dollars have been appropriated to the same department for seeds, to be distributed in that portion of our country that has been ravaged by grasshoppers.

A short time since, the President sent a memorial from some of your prominent citizens, asking for a site to be given on one of the islands in New York harbor for the erection of the Bartholdi statue of Liberty, and to-day Mr. Hewitt reported from the committee on foreign affairs a resolution authorizing the President to accept the statue when presented, and donating a site for its erection.

Mr. E. M. Marble, of Michigan, has been nominated by the President for the position of examiner-in-chief, who, it is reported, is to take the place of Mr. Woodward on the Board of Appeals.

Rear Admiral Goldsborough, commandant of the Navy Yard in this city, was buried to-day. This makes the sixth of his high rank who has died within a little more than a month. He was an officer of great experience, having joined the navy as a midshipman in 1812, and thus served his country for a period of over sixty-five years.

Some time since, Congress appropriated $200,000 to complete the Washington monument in this city; but before expending this amount it was determined to ascertain whether the ground was solid enough to bear the immense weight which would be placed upon it if the monument was erected in the style contemplated in the design, and about $2,500 have been expended in boring, etc., to test this important matter. The examination is said to have developed the fact that the completion of the structure in its present site is impracticable, and it is therefore suggested that the part of the monument now erected be taken down and erected in another portion of the city in a different and, it is to be hoped, a better style, one that will not be thought, like the present nondescript structure, to be a shot tower or glasshouse, and one that will be an honor to him whose virtues it is intended to commemorate.

OCCASIONAL.

The Iron Plow.

To the Editor of the Scientific American:

I notice in the "Scientific American Handbook," an account, with portraits, of some distinguished inventors: among others Jethro Wood, whom you style the inventor of the modern cast iron plow, patented 1814; and you add: "Previously to this time, the plow was a stick of wood, plated with iron."

This is a mistake. Joseph Smith established a plow factory and made and sold plows at Smithtown, on the Delaware river, in Bucks county, Pa., in 1805. I have before me an account of the number made each year to 1814: In 1805, 20 plows; in 1806, 50; in 1807, 70; in 1808, 88; in 1809, 83; in 1810, 83; in 1811, 141; in 1812, 196; in 1813, 285; in 1814, 239.

These plows were made with cast iron moulds and land sides, and some had cast shares. They were made under a patent granted to Robert Smith, or to Robert Smith and Joseph Smith. The old deed is still in existence, but I have not seen it for a long while.

When Jethro Wood was advised by my grandfather, Joseph Smith, of what he had accomplished, Mr. Wood declared him to be a pirate.

J. HESTON SMITH.

Lambertville, N. J.

The Balestrieri (?) Reflector.

To the Editor of the Scientific American:

It is but fair that this, like every other question, should be decided in accordance with the facts in the case. In 1857, I made that reflector, as complete as an invention as it is to-day. The form, number of rings, etc., were precisely as they appear in your engraving. This I am prepared to prove by a number of living witnesses.

In a communication to you, written, I think, in January, 1870, and published by you in February, 1870, I stated that, 12 or 15 years previously, I made this apparatus, and that it proved a powerful reflector.

DAVID SHIVE.

Allentown, Pa.

The Commercial Value of Scientific Knowledge.

At the annual meeting of the Birmingham and Midland Institute, England, the chairman, Mr. J. Thackray Bunce, in the course of his address spoke at some length on what we may term the commercial value of scientific knowledge, or on the value of that kind of information to those engaged in manufactures and in industrial pursuits of all kinds.

"By a study of Science we do not mean study in its highest and best sense, a search after knowledge for its own sake, but that amount of study which is undertaken for the advantage it gives in competition with other manufacturers or professionals, and with other nations. As a nation we must be workers, producers; we cannot afford to wander about the by-ways of learning for the mere pleasure of gaining knowledge; we must, or the great majority of us must, tread the broad roads already graded and laid out by previous workers, picking up all the information we can, and storing it in orderly fashion in our mental wallets for use by and by. Others amongst us—a gradually increasing number—will strike out paths for themselves across untrodden fields, and seek for new treasures with more or less of success. We cannot all make researches and experiments, nor are we all fitted for the work; but we can all learn something of what is known already, and so prepare ourselves to take advantage of and utilize the discoveries of scientific investigators. Every artisan in the kingdom can, if he will, make himself acquainted with the principles on which the practices with which he is familiar are based, and there is no manufacture and no industry in the country which would not be benefited by such knowledge on the part of its workers. In a few years now a considerable portion of our workers will be men who are more or less well grounded in theory; they are receiving a technical education, and when they enter the ranks of the ndustrial army they must, in the natural order of things, occupy prominent places. Even now Whitworth scholars, at present a comparatively small number, make their way readily to the front, and in competition with mere rule-of-thumb men gain an easy victory. This patent fact will shortly make an impression on the artisan world, and in a few years we shall see that technical education will be regarded as a necessary part of the training of our mechanics and other workers.

"It will be readily understood how important is the possession of both theoretical and practical knowledge by the worker, for, while the scientific man is capable of pointing out improvements in processes, he is so placed in the majority of cases that he is unacquainted with the methods of working; on the other hand, the practical man, looking upon his processes as trade secrets, and being unacquainted with their defects, never seeks the aid which a knowledge of Science places at his disposal." Many instances of a persistence in wrong methods or in wasteful processes might be collected, but one alluded to by Mr. Bunce will sufficiently indicate the commercial value of a knowledge of Science. "Birmingham, as is well known, reckons amongst its most important industries the manufacture of jewelry, and in the processes of coloring and refining gold and silver considerable waste of the valuable metals was, and probably is still to some extent, incurred. In the process of coloring gold articles a minute portion of the valuable metal is washed off; but owing to a want of acquaintance with the chemical processes involved, only a percentage of the gold is recovered from the washing waters. Thus, in recovering silver from the liquor, the usual process is to throw it down as chloride by means of common salt, but the workmen and the employers, being unaware of the fact that an excess of salt redissolves a portion of the silver, have for years been throwing away a considerable quantity of silver. On the authority of Mr. Woodward, the Professor of Chemistry to the Institute, it is stated that one firm has effected a very material saving in this process entirely by the knowledge gained by one of its members while attending the classes of the Institute. Here we have a definite instance of the commercial value of a knowledge of Science; but, if the proposition were not obviously true and required to be demonstrated by evidence, many instances might be gathered together."

We have thus drawn attention to a subject, says the *English Mechanic*, which, in the course of the present year, will be much talked of in the principal seats of industry throughout the country. In speaking of the value of Science from a merely commercial point of view, we have endeavored to convince the masses of its importance to them as a matter of business, but we know that many of those who commence the study of Science for the less noble purpose will be induced to pursue knowledge for its own sake, while none can be utterly insensible to its refining and elevating influences.

Do Snakes Catch Fish?

A. W. Chase, of the United States Coast Survey, describes, in a note to the editor of the *Popular Science Monthly*, a contest which he and a brother officer witnessed in 1867 on the Purissima, a small trout stream about twenty-four miles south of San Francisco:

"We had been fishing on the stream, and came to a high bank which overlooked a transparent pool of water about ten feet in diameter and four feet in depth. This pool was fringed with willows, and had on one side a small gravel bank. The trout at first sight was lying in mid-water, heading up stream. It was, as afterward ascertained, fully nine inches in length—a very desirable prize for an angler. While studying how to cast our flies to secure him, a novel fisherman appeared, and so quick were his actions that we suspended our own to witness them. This new enemy of the trout was a large water-snake of the common variety, striped black and yellow. He swam up the pool on the surface until over the trout, when he made a dive, and by a dexterous movement seized the trout in such a fashion that the jaws of the snake closed its mouth. The fight then commenced. The trout had the use of its tail and fins, and could drag the snake from the surface; when near the bottom, however, the snake made use of its tail by winding it around every stone or root that it could reach. After securing this tail hold it could drag the trout toward the bank, but, on letting go, the trout would have a new advantage. This battle was continued for full twenty minutes, when the snake managed to get its tail out of the water and clasped around the root of one of the willows mentioned as overhanging the pool. The battle was then up, for the snake gradually put coil after coil around the root, with each one dragging the fish toward the land. When half its body was coiled it unloosened its first hold and stretched the end of its tail out in every direction, and finding another root, made fast, and now, using both, dragged the trout out on the gravel bank. It now had it under control, and uncoiling, the snake dragged the fish fully ten feet up on the bank, and I suppose would have gorged him. We killed the snake and replaced the trout in the water, as we thought that he deserved liberty. He was apparently unhurt, and in a few moments darted off. That the water-snake of our California brooks will prey upon the young of trout, and also smaller and less active fishes, I have noticed, but never have seen an attack on a fish so large or one more hotly contested."

Dried Potatoes.

A German journal thus describes the manufacture of "dried potatoes," as conducted at Carsten's works in Lubeck: The potatoes are peeled with the hand, and cut into disks by a machine. These are put into a basket, and this into a boiler, where the potatoes are nearly, but not quite, boiled. The disks are next put on wire frames in a dry oven, where they are dried quite hard. It is important to preserve the color of the potatoes, and to prevent their turning gray, as they would by the above process alone. The material, after slicing, is treated with cold water, to which has been added one per cent of sulphuric acid, or one to two per cent of muriatic acid. Then it is washed in pure water, and the drying proceeds. The preparation obtained, which has lost none of its starch, is of a slightly citron-yellow tint, and transparent like gum. Boiled with water and a little salt, it is said to resume the natural color and fibrous structure of potatoes, and is not distinguishable in taste from the newly boiled vegetable.

Adulterating Rubber.

The use of the salts of barium for adulterating goods sold by weight is on the increase. Some rubber goods have been found with these salts in the material, which on combustion left as much as 60 per cent of ash, pure rubber leaving only 2·5 or 3 per cent. The adulterated goods cracked and lost their elasticity.