

and its tenacity is $\frac{1}{2}$ of that of copper; tin, 2 volumes and $\frac{1}{2}$ volume, and its tenacity is $\frac{1}{3}$ that of nickel; lead has 2 volumes and $2\frac{1}{2}$ volumes, and its tenacity is $\frac{1}{4}$ that of nickel; while silver has 3 whole volumes, and its tenacity is $\frac{1}{5}$ that of iron. To zinc this does not apply; it has probably 5 very short atoms. From these facts and calculations I conclude that platinum, silver and zinc have each at least one atom of iron, which atom has the whole of the tenacity of the new metal; gold, at least one of copper; and lead and tin, one of nickel. I have assumed that iron, nickel and copper are the primitive and not the compound metals, from the fact which appears by reference to table No. II, that there is no relation to the tenacity of tin and lead, except through nickel, and the same is true of zinc, silver and platinum. I would invite the attention of those who cannot believe these deductions, to consider the curious fact that tin has a volume not equal to 1, 2, or 3 of any other metal, but is equal to the sum of 2. The density and weight of the atoms will be the subject of a future article.

The following table shows the force required to twist one inch round bars of different metals:—

English wrought, $12,063=603 \times 20$ or $482-4 \times 25$.
Blistered steel, $20,025=603 \times 30+482.4 \times 4$.
Shear steel, $20,508=$ blistered steel $+603$.
Cast steel, $21,111=$ shear steel $+482.4$.
Cast copper, $4,825=4-10$ ths iron or lead $\times 4$ or 603×8 or 482.4×10 .
Tin, $1,688=1-10$ th iron, $1-10$ th copper or lead $+482.4$ or $603+2+482.4$.
—Lead, $1,206=1-10$ th iron or $1-4$ th copper or $603+2$.
The numbers 603 and 482.4 are to each other as 5 and 4.

It will be seen, by reference to the last table, that all the metals have a common origin, from the fact that they have all two common units of strength, whose relative values are to each other as 4 and 5; how these quantities arise I have at present no knowledge, but their relation to each other is a fit subject for calculation. It will be seen that they are not only composed of the two whole quantities of strength, but that the natural metals have a rational relation to one another; thus, copper has a strength equal to 4-10 that of iron, and either of them can be divided by either of the units without a remainder, and that none of the others can; from which I infer that had the table contained nickel it would also have been divisible.

From the foregoing, I have arrived at the conclusion that all the metals have a common origin, forming my opinion on the relation of their tenacity, and the fact that their whole strength is made up of the two units of strength, as shown in the last table.

WILLIAM COUTIE.

Troy, N. Y., Aug. 31, 1860.

TWO POINTS OF PATENT LAW.

MESSRS. EDITORS:—Suppose A patents a combination, but afterwards finds his machine will perform to better advantage with a part of the combination omitted. But instead of applying for a re-issue, he sends out B with a power of attorney to sell territory for him, with a model of the altered improvement to be sold under the original letters patent. C not being well posted in nice points in patent law is induced to purchase, and does not discover any flaw until afterwards. Has C any remedy at law?

2. Suppose, also, that attached to the deed given by B to C, there is a printed copy of the original Letters Patent, with claim and specification, all correctly copied, except a single word in the specification, which has evidently been altered to make it correspond with the alteration in the machine. Does this not amount to a fraud, amenable to the laws?

H. C. F.

McGaheysville, Va., Sept. 5, 1860.

[In answer to the above questions, we need only say, that frauds of the kind above stated subject the guilty party to the same penalties when connected with the sale of a patent as when perpetrated in other transactions. The only questions to be considered, when the case is brought before the proper court, will be, whether a fraud has been committed by the defendant, and whether such fraud has caused an injury to the party complaining. If both these are found in the affirmative, suitable damages will be awarded to the plaintiff.—Eds.]

HOWE'S PATENT EXTENSION.

MESSRS. EDITORS:—I noticed on page 201 of the present volume of the SCIENTIFIC AMERICAN, an editorial article on the subject of the extension of Howe's patent. It seems to me that the views expressed in that article are taken from the argument of Mr. Gifford, the learned counsel in the case, rather than from the entire case as presented. The most important points were two in number, presented to the Commissioner of Patents for his decision, after it was determined that the invention claimed by Howe was legitimate. First, how much of the value of the present modern sewing machine was due to the invention of Howe; and, secondly, what is meant by the language of the statute, which says that, "if, upon the hearing of the matter, it shall appear to the full and entire satisfaction of said board [now the Commissioner of Patents] having due regard to the public interest therein, that it is just and proper that the term of the patent should be extended, by reason of the patentee, without neglect or fault on his part, having failed to obtain, from the use and sale of his invention, a reasonable remuneration for the time, ingenuity and expense bestowed upon the same, and the introduction of them into use, it shall be the duty of the Commissioner of Patents to extend the patent." Does this mean that a patent shall be extended without regard to the amount the inventor may have realized for his invention, provided said amount is proved to be much less than the value of the invention to the public? Or does it mean that if the inventor has either met with loss in giving the public a useful invention, or has been inadequately rewarded for fourteen years of constant and diligent labor, together with his expenditures, such sacrifice shall be made up to him by prolonging his term of patent? It was contended, in opposition to the grant, that the latter was the proper construction, and that the legislators did not intend to have the present value of the invention to the public, or its saving to them, brought into the question. And it was urged that as Mr. Howe had received half-a-million of dollars for his fourteen years' labor, expense, and ingenuity, he has received more than ordinarily falls to the lot of any man, however talented. This is a very important question in the abstract, and the decision of the Commissioner opens a new era in such cases. Judge Mason refused to extend Burden's patent, on the ground that he had been sufficiently remunerated for his time, labor, and ingenuity, yet, with vastly greater labor and expenditure than Mr. Howe, he had not received a fifth of the money. It would be well to know what is to be the rule of action, the present decision determining that no limit of receipts shall be a bar to the extension of a patent. If that is correct, would it not be better that every patent should be extended, of course, by the payment of a certain sum of money. There being no inquiry at the Patent Office, except into the original novelty. Was the law so changed, it would relieve the Commissioner of Patents from the heavy responsibility that now rests upon him, and the odium which you declare has been cast upon the present able officer at the head of the bureau, and which I regret to hear he has been subjected to, as I am confident it is wholly undeserved.

I should not trouble you with this notice on account of any strictures you have thought proper to indulge in, in relation to the opposition to this patent extension, and I have no desire to defend it—that must stand or fall on its own merits; but the great public question is important. The whole community is interested, as well as one of the counsel in opposition who had both client and friends to defend, although the opposition was entered in his name.

MESSRS. EDITORS:—I am an inventor, and have taken out several patents, some of which are useful and important to the public. My inventions—no matter what I may get out of them—are of vastly more importance to the public than they ever can be either to me or to my assignees. I worked hard to produce these inventions, and the credit is due to me for them—not to some unknown one who might have made them at a later period if I had not. These inventions being the product of my brains, why, I would like to ask, are they not my property as much as a wheelbarrow made by my own hands? The law sets a limit on my otherwise

natural right to these inventions, solely from considerations of policy, and not from mere absolute right. The law says I may hold an absolute authority over them for a term of fourteen years, and, under certain circumstances, seven years more, after which the public may freely use them forever. Against this I have no appeal, and must, at the appointed time, surrender all my rights to those who had nothing to do with the toils and troubles attending the production of my improvements.

The author of a book, I am told, has a copyright for 28 years; and why should not the inventor be permitted to have the use of his invention for at least 21 years?

These suggestions occurred to me from reading your editorial remarks upon Howe's extension case. I have for so long a time listened to the views of those who were opposed to the extension, that my mind had become prejudiced against the case, and I thought it would be wrong to extend it further. I however fully agree with your views—they are, in my opinion, right—and every inventor in the country owes you a debt of gratitude for your defense of their rights. I know what it is to contend against the prejudice of men, and to be snubbed as a half-crazy inventor. Many years ago, I got up a valuable invention, and after much patient labor made a nice working model of it. I took it to a large manufacturer in Boston and showed it to him, and asked his aid in trying to get out my patent. His reply was, "if you are a fool, you make a mistake in trying to spot me as one. I advise you to go to hoeing corn; you will do somebody good; your invention ain't worth a cent." I was discouraged and did not get a patent for it. If I had done so, it would have been worth more than \$100,000 to me. C.

New York, Sept. 23, 1860.

MESSRS. EDITOR.—I see by the SCIENTIFIC AMERICAN, page 201, present volume, that the Commissioner of Patents has decided that \$468,000 is not enough for a patent, and you defend him in this decision. Will you please inform your readers what is enough?

When Mr. Howe was struggling to get food for his family to live on, if he had been asked the question whether \$400,000 for his patent would satisfy him, can there be any doubt that he would have said yes?

That Mr. Howe himself should have greedily asked for more is not strange, but by what process of reasoning the Commissioner came to the conclusion that he ought to have it at the expense of the poor sewing-girls is, most decidedly, a mystery.

MODERATION.

New York, Sept. 26, 1860.

CASELL'S ILLUSTRATED BIBLE.

We have received from the publishers—Messrs. Cassell, Petter & Galpin, London and New York—the first volume of Cassell's "Illustrated Family Bible." This work is far more profusely illustrated than any edition of the Holy Scriptures that has ever been published.

Nearly half the pages are adorned with large woodcuts, most of them half a page in size, though quite a number cover the entire page. The illustrations consist principally of groups of figures, though maps and bird's-eye views of Egypt, Canaan, &c., are given. The text is accompanied with copious explanatory notes, full of information in regard to the manners and customs of the East, and other matters which elucidate the narrative. The drawings are very natural and spirited, the engravings, the type and the printing are excellent specimens of the art. It is published in parts of 32 pages each, which are issued on the 1st and 15th of each month, at 15 cents a piece. The first volume contains 457 pages, and embraces the books from Genesis to the first book of Samuel, inclusive.

This great work, it seems to us, opens a fine field for active agents to operate in. It ought to be found on the table of every family in the land.

PROSPERITY OF THE PATENT OFFICE.—As an evidence of the activity among inventors and the prosperous condition of the Patent Office, we would state that we have paid into the treasury, to the credit of the patent fund, during the six days previous to going to press (Saturday, September, 30th), twenty-six hundred and forty-three dollars.