

THE Scientific American.

MUNN & COMPANY, Editors & Proprietors.

PUBLISH D W E K L Y AT NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

VOL. X. NO. 7... [NEW SERIES.]... Twentieth Year.

NEW YORK, SATURDAY, FEBRUARY 13, 1864.

Contents:

(Illustrations are indicated by an Asterisk.)

*Giroud's Marine Clock and Register.....	97	American Cast-iron Guns.....	103
Gun-cotton for Cannon.....	97	The Oil Supply.....	103
New Books and Publications.....	98	Statistics of the "Reaper".....	103
Production of Coffee.....	98	Trade.....	103
The United States Mint.....	99	Special Notices.....	103
Composition of the Atmosphere.....	99	American Institute Clubs.....	103
Boiling Food for Hogs.....	99	Potato Rot.....	103
Food for Cattle.....	99	Hunt's "Hogless" Feed-cutter.....	104
Foreign Scientific Miscellany.....	99	Power from Belting.....	104
*McKell's Corn or Seed Planter.....	100	Invention, the Ally of Civilization.....	105
American Cast-iron Ordnance.....	100	"Macfie" on Patents.....	105
Defects of the British Iron-clads.....	101	Tungsten and its Alloys.....	105
The Velocity of Sound.....	101	American Flax-cotton and Machinery.....	105
Ventilation of Public Buildings.....	101	American Steel and Machine-cut Files.....	105
Small Traction Engines.....	102	The Pressure produced by Gun-powder.....	106
Precaution against Fire.....	102	Our Subscribers.....	106
Nitrogen Ox de Gas.....	102	Present Strength of the British Navy.....	106
Strength of Steam Boilers.....	102	Recent American Patents.....	106
The Crank-pin and Cross-head.....	102	Patent Claims.....	107, 108, 109
Iron rams and Timber Plank-ing.....	102	Notes and Queries.....	110
Treatment of the Sting of Bees.....	102	*Burling's Friction Pulley.....	112
New System of Cure.....	102	The Government Laboratory.....	112
Submarine Firing.....	102		
A Country without a Reptile.....	103		

INVENTION, THE ALLY OF CIVILIZATION.

It is a little singular, when we reflect upon the subject, that the physical construction of the globe is essentially the same to-day as it was 3,000 years ago. It is true that rivers have diverged from their courses, that the sea encroaches upon the land, and that lands are reclaimed from the sea; that volcanic mountains vomit forth their contents and lay waste the fairest and most fertile countries; that mines cease to give up their treasures, and that new ones are being discovered in their places; yet one might suppose, in view of the never-ending supply of new and useful tools, machines, apparatuses, processes and labor-saving appliances, that a new world had been discovered, teeming with boundless wealth, and also with suggestions ready made for the benefit of inventors and the elevation of the best interests of mankind.

No! it is not so. All the world is the "old world" as it came forth from the hand of God; as it started in its orbit to move forever, until checked by the same power that imparted the first movement to it. This assertion does not relate to the labors of man in drawing forth from the natural productions of the globe all that is useful and beautiful; and we merely call our readers' attention to the fact that, while the physical construction of the earth remains the same, the ingenuity of man is continually changing its social and political aspects. Where once the wild savage stalked and screamed his fierce war-whoop through the forest, a mightier than he now whirls upon its way; not indeed a foe to the advancement of mankind, but an ally, an aid to it. The roar of the railroad train, the shriek of the steam whistle, the clatter and jar of the factory-loom, the quick, sharp twitter of the sewing-machine, the incessant rustle of the reaping-machine through the grain, the splash of paddles, the miles on miles of telegraph wire, the hoarse booming of the rifled guns crashing their shot against impenetrably-mailed ships, the far-ranging rifles and small-arms—all these are the types and exponents of civilization as much as the savage is a symbolization of the rudest, wildest, and most uncultivated stage of the world's existence.

Behold how invention has shortened the labor of men! and how each year seems to bring us nearer to that social millennium when the fullest and most perfect development of the world's resources would seem to have been attained! In times of peace, when the arts are undisturbed by other causes, then indeed civilization makes long strides toward reducing the world to a state of cultivation and prosperity. Even when the nervous arm and the iron heel of War overruns the land, it is only by strenuous effort and arduous application that invention is able to repair the mischief, by bringing forth still better machines, more effective processes and methods than existed before. There-

fore in one sense war is a benefit because it stimulates men to greater efforts. In any case, invention is the true ally of civilization. The ax, the hammer and the saw are good in their place; likewise the plow, the loom, and the anvil; but if the world were to wait on the capabilities of these simple instruments to supply its wants, the age would be backward indeed. The progress of the period is gratifying in the extreme, and he is indeed a far-sighted individual who can predict where or when it will cease. Invention succeeds invention; no sooner are the public wants manifested than they are satisfied; and the tendency of them is to make the world wiser and better. Even warfare itself will soon be made so destructive to life that none can be found to engage in it, and nations will learn that the arts of peace are those which advance their interests more swiftly than force, fraud, or diplomacy.

"MACFIE" ON PATENTS.

Our foreign cotemporaries are just now excited over the conduct of an individual named "Macfie." This ingenuous personage has raised a storm of honest indignation about his ears for simply writing what is called a "tract," comprising only 100 pages. The title of this publication is "The Patent Question," and in it Mr. Macfie proposes to show that the granting of patents do great harm to traders, but especially to those who do traffic abroad. This grievance (says Macfie in effect) should be suppressed; and to this end he suggests that patents should only be granted for three years, and after that time publicly appraised; and the value, not exceeding \$5,000 in any one case, to be paid over to the patentee. If this person does not happen to be the real inventor (as is often the case in Great Britain and some other foreign countries), the injustice of such a proceeding is manifest at once. But there are other awards to be given to men of genius; medals are to be struck off—possibly electroplated ones—and ribbons are to be presented as incentives to still further research; and the modern inventor who has perhaps spent years of toil in bringing forward his machine or process—the man who has lightened the labor of the world, and made plenty where famine once reigned—these benefactors are to be stuck over with brass and streamers till they resemble New Zealand savages or a ship newly launched.

The proverb says "Republics are ungrateful;" but if Macfie's little proposition is acted upon, what shall be said of Principalities and Powers? Supposing after all the time and toil which Wilson bestowed upon his sewing machine, that our Government appraised its value at \$5,000 and, handing over that sum, together with a red ribbon and a brass medal, set him adrift! With what justice then might we not repeat that "republics are ungrateful." We might bring Morse into consideration, Colt upon the stand, Manny, McCormick and others, as evidence in point that such an absurd proposition as Macfie's shows little knowledge of trade, the first principles of the value of a patent, or even expresses sentiments of common justice. And yet this gentleman is chairman of the Liverpool "Chamber of Commerce!" Herein we find the key to the whole matter; this fact, connected with the assertion that "patent laws are an injury to trade" (the silliest and the baldest nonsense ever uttered), shows convincingly the animus of the writer. Says Macfie, substantially:—"Here is a greasy inventor; he has no education, he has neither money nor friends; but by his ingenuity he has constructed a machine that accomplishes ten times as much as was formerly done, and he is in a fair way to make money—to 'get on' in life. In the meanwhile, however, what are the distanced competitors in trade to do? This machine will revolutionize the trade; it is in this respect an injury to it, we can't compete! What must be done?"

Why what, of course, but to abolish the patent laws! Take away the legal protection afforded to talent and ingenuity, rob the inventor of his discovery, and what is the result? Simply a return to the old time processes, the slow methods in vogue ages ago; that is one way to benefit trade. And this is just what Macfie proposes to do. He has not honored us with one of his pamphlets, but we gather our facts from the London *Engineer*, and we are pleased to see the vigor with which our contemporary repels this attack upon the rights of inventors—a common brotherhood of genius all over the world.

TUNGSTEN AND ITS ALLOYS.

Some important and interesting experiments have lately been made in France, by order of the Minister of War, to determine the influence produced by tungsten upon gun-metal, steel and cast-iron, when combined with them and forming alloys. Tungsten is one of the rare metals, which the great majority of persons have never seen. Its name signifies "heavy stone," and it is also called *wolfram*. In its native state it is found as an ore associated with iron, manganese, sulphur and arsenic. It is reduced from the ore by fusion with carbon, and with a current of hydrogen gas. In the metallic state it is difficult of fusion, hard, brittle and gray in color. There is only one mine of tungsten ore in France. When roasted the sulphur and arsenic are driven off, leaving iron and manganese combined with the tungsten. The experiments, which were conducted by M. Caron, satisfactorily proved that when one per cent of tungsten was added to cast-iron, the grain of the latter became more regular, and there was greater homogeneity exhibited. The addition of one per cent of tungsten to steel increased its hardness and tenacity. A steel rifle barrel, containing that amount of tungsten, was subjected to severe tests, and it withstood larger charges of powder and heavier shot than any other steel barrel of the same dimensions tested. M. Caron recommends the employment of tungsten in all French steel to improve its quality. On the other hand it was found that tungsten was incapable of forming true alloys with copper, tin and gun-metal; it mixed with gun-metal, but rendered it less homogeneous and tenacious.

AMERICAN FLAX-COTTON AND MACHINERY.

We have repeatedly called the attention of our readers to the importance of developing flax culture throughout the Northern States. This valuable fiber may now be extensively cultivated and employed in various manufactures, and a favorable opening exists for the invention and introduction of improved machines to clean and prepare it for spinning. The subject is already receiving considerable attention, and we anticipate that the time is not far distant when this branch will become one of the great manufacturing industries of the country. We have recently received from Joseph Taylor an excellent sample of flax-cotton such as is now being made at Lockport, N. Y., by the Lockport Flax-cotton Company. The fiber is white and strong, much resembling coarse wool, and it is made up in battings, which find a ready market. Considerable quantities are sold to woolen cloth manufacturers who mix it with wool as a substitute for cotton. The Company has appliances for producing about 2,000 lbs. per day; but our correspondent states that an improved machine for cleaning the flax so as to free it completely from shives, also a good carding machine, are much needed. This Flax-cotton Company has been in operation but little over a year, and during that time several valuable improvements have been made, yet there is an ample field for many more.

AMERICAN STEEL AND MACHINE-CUT FILES.

New branches of industry, embracing many improvements over old modes of manufacturing, are being continually developed, and especially has this been true since the beginning of the war, which has taxed the productive resources of the country to their utmost. Among the many new industries which have sprung up, as if by magic, is that of manufacturing files by machinery. At Bridgeport, Conn., a few days since, we witnessed the operation of file-cutting by a very simple yet beautiful mechanical contrivance. The steel was operated upon by a hammer-chisel, which produced the same effect as if the blow had been struck by hand, but of course much more rapidly. The files also appeared to be quite equal to those made by hand, and the manufacturers assured us that they gave equal satisfaction.

We learn (from the *Commercial Bulletin*) that the Whipple File Manufacturing Company at Ballardvale, Mass., is also doing a very large business in manufacturing files by machinery, and that no less than one hundred and forty machines are now in operation and forty more are being built. The *Bulletin* states that this Company manufactures their own steel, which is of a superior quality. Several tons of it are now turned out daily. We believe that this is the