

# Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

Vol. 4.

New York, May 5, 1849.

No. 33.

THE  
Scientific American.

THE  
BEST MECHANICAL PAPER IN THE WORLD.  
CIRCULATION 12,000.

PUBLISHED WEEKLY.  
At 128 Fulton Street, New York (Sun Building,) and  
13 Court Street, Boston, Mass.

By Munn & Company.

The Principal Office being at New York.  
Barlow & Payne, Agents, 89 Chancery Lane, London.

TERMS—\$3 a year—\$1 in advance, and  
the remainder in 6 months.

## Poetry.

### TUBAL CAIN.

BY CHARLES MACKAY.

Old Tubal Cain was a man of might,  
In the days when earth was young;  
By the fierce red-light of his furnace bright,  
The strokes of his hammer rung;  
And he lifted his brawny hand  
On the iron glowing clear,  
Till the sparks rushed out in scarlet showers,  
As he fashioned the sword and spear:  
And he sang, "Hurra for my handiwork!  
Hurra for the spear and sword!  
Hurra for the hand that wields them well,  
For he shall be king and lord."

To Tubal Cain came many a one,  
As he wrought by his roaring fire;  
And each one prayed for a strong steel blade,  
As the crown of his desire;  
And he made them weapons sharp and strong,  
Till they shouted loud for glee,  
And gave him gifts of pearl and gold,  
And spoils of the forest tree;  
And they sang, "Hurra for Tubal Cain!  
Who has given us strength anew!  
Hurra for the smith and hurra for the fire,  
And hurra for the metal true!"

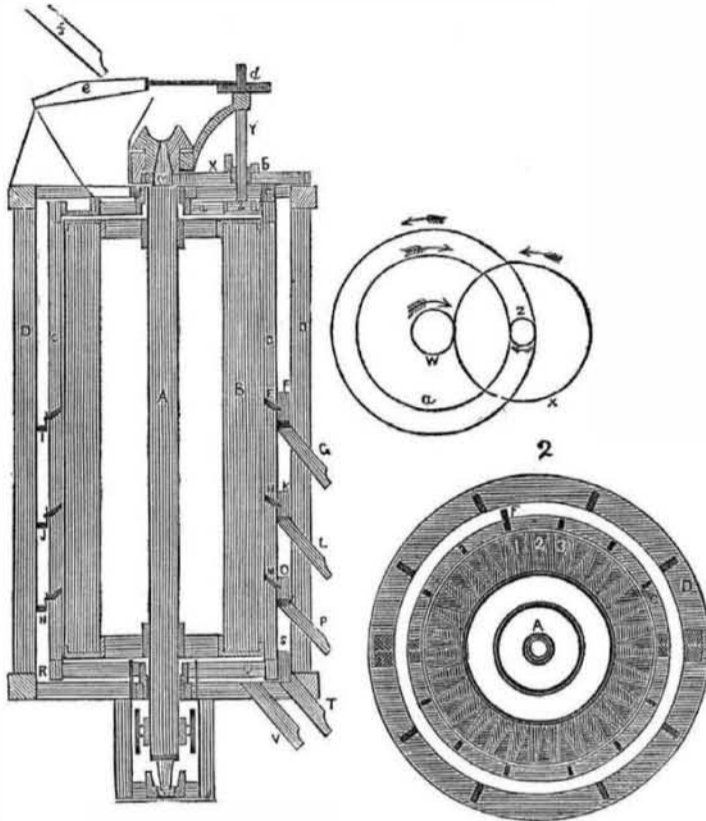
But a sudden change came o'er his heart,  
Ere the setting of the sun;  
And Tubal Cain was filled with pain  
For the evil he had done,  
He saw that men, with rage and hate,  
Made war upon their kind—  
That the land was red with the blood they  
shed,  
And their lust for carnage blind;  
And he said, "Alas! that ever I made,  
Or that skill of mine should plan,  
The spear and the sword for men whose joy  
Is to slay their fellow man!"

And for many a day old Tubal Cain  
Sat brooding o'er his wo—  
And his hand forbore to smite the ore,  
And his furnace smoulder'd low.  
But he rose at last with a cheerful face,  
And a bright courageous eye,  
And bared his strong arm for the work,  
While the quick flames mounted high;  
And he sang, "Hurra for my handiwork!"  
And the red sparks lit the air;  
"Nor alone for the blade was the bright steel  
made!"

And he fashioned the first plowshare.  
And men, taught wisdom from the past,  
In friendship joined their hands,  
Hung the sword in the hall and the spear on  
the wall,  
And plowed the willing lands;  
And sang, "Hurra for Tubal Cain!  
Our staunch good friend is he;  
And for the plowshare and the plow,  
To him our prize shall be.  
But while oppression lifts its head,  
Or a tyrant would be lord,  
Though we may thank him for the plow,  
We'll not forget the sword."

The ice was nearly an inch thick at Pitts-  
burg on Monday week.

## IMPROVED BRAN SEPARATOR.



This is the invention of E. R. Benton, of Milwaukee, Wisconsin, and it has been deemed one of no minor importance. The following description of its construction and operation in connection with the accompanying engravings, will enable our readers fully to understand it.

Fig. 1 is a sectional view, and fig. 2 a sectional plan with the top parts removed in order more plainly to show the parts represented in fig. 1. A, is the shaft. B, the cylinder. C, the inner revolving shell; and D, the outer or stationary shell. The cylinder is made by framing staves, of the form and in the position represented at 1, 2, 3, &c. fig. 2, into corresponding cast heads. The staves thus forming the longitudinal and working surface, and which may be covered with any kind of material that will make it rough and durable. Air is let into the cylinder, the best at the lower end, through equidistant holes around the centre, and the quantity gaged by a circular revolving slide and spaces between the staves emit it to carry the flour and other stuffs through the several qualities of wire cloth with which the inner surface of the revolving shell is covered. The cylinder is driven by a belt and pulleys, as is represented at the bottom of fig. 1, and the bridge and oil pot for the point and step, and the fixture for supporting the upper journal box of the shaft, are cast in a piece with their respective heads of the outer shell; thus rendering this part of the machine perfect. The inner surface of the revolving shell is covered with the above named wire cloth. Thus, the space between the top and the beveled dividing ring E, fig. 1, is covered with a quality that will let through little else but pure flour, which falls and by the aforesaid dividing ring is conducted into an endless trough I, attached to the inner and sheet iron or zinc lined surface of the stationary shell, and by the sweepers F, attached to the revolving shell, is brought around and discharged at the spout G. The space between the dividing rings E and H, is covered with a quality that will discharge an inferior quality to the above, which falls as above into the endless trough J, and by the sweepers K, is brought around and discharged at the spout L. The space between the dividing rings H and M, is covered with a quality that will take out the fine particles of the bran, called

dusting, which falls as above into the endless trough N, and by the sweepers O, is discharged at the spout P. The space between the dividing ring M, and the bottom, is covered with a quality that will separate the shorts from the bran, the shorts falling to the bottom, or into the endless trough R, and by the sweepers S, is discharged at the spout T, the bran passing down inside of the revolving shell, and by the arms U, of its cast head, is swept around to, and discharged at the spout V. The revolving shell is driven by a combination of gear wheels, thus: "The pinion above on the principal shaft A, fig. 1, drives the wheel X, on the small or centre shaft Y, and the pinion Z, on the last named shaft, drives the projecting cogged wheel rim a, cast in a piece with the top head, which will turn it the same way with the cylinder, and to turn it the contrary way, the projecting rim a must be so large as to circumscribe and be driven by the pinion Z working into cogs upon its inner periphery, as seen by the figures W, of pitch circles, the figures denoting the corresponding pitch circles of the wheels and pinions in fig. 1. b, fig. 1, is a circular inclined plane, so calculated as to lift a mallet or hammer to strike upon the end of the revolving shell to keep the cloth from clogging, the blow to be struck upon a block resting upon its upper rim, and projecting up through a corresponding hole in the stationary head, as at C. d, is a set of cams on the shaft Y, which shake a wire sieve e, that receives the uncleaned and unseparated bran, shorts and dustings from the bolts, as through the spout f, the sieve carrying off all coarse extraneous stuff that might injure the machine, the bran falling through the sieve and entering the machine passing between the arms of the upper head of the revolving shell, on to the head of the cylinder.

### Substitute of the Potatoe.

Mr. Masson of Paris, has lately grown a new root, called the ulluco, which can it is thought, replace the potatoe. It originally came from Peru, and grows perfectly well in the open air; the flower is very near the same as that of the potatoe. The part above ground furnishes a very agreeable vegetable, something like the bean in flavor. Three crops of the green part can be obtained in the same season,

## RAILROAD NEWS.

### Saratoga and Whitehall Railroad.

The completion of the Saratoga and Whitehall Railroad, is already proving a decided benefit to this city. Opening up a rapid communication with Lake Champlain, both for the transit of passengers and merchandise, it adds one more to the great facilities for reaching New York from the North and West. The road is an excellent one, and is conducted in the most satisfactory manner.

### A Locomotive Loose.

The Sandusky, of March 26th, says:—On the 25th, as the Mansfield train came into that city, the passenger and baggage cars were uncoupled, as usual, from the locomotive, some distance back, and left to come in with the force they had acquired; but when Mr. Morgan the conductor, desired to stop them, he found the brake entirely powerless, and the cars constantly increasing their speed. Notwithstanding this alarming position, the conductor remained at his post, and the passengers at their places, until the cars were stopped by the walls of the depot, which was thereby cracked from top to bottom. The position of the conductor was eminently perilous, as he stood upon the platform between the cars, the roofs of which were smashed over his head. Nobody was hurt. The car was new, everything had been carefully examined at Monroeville, but the defect in the brake was occasioned by the loss of a nut from a bolt.

### Safety of Railway Travelling in Britain.

An analysis of the returns of all the railways in operation in Great Britain and Ireland for the last six months, of 1848, shows this result: 112 persons killed, 120 injured; thirty one millions five hundred thousand persons conveyed on the roads, or about one accident to every 140,000 persons—in other words, making the chances of safety 140,000 to 1 for every passenger. The proportion of safety becomes still larger when, on farther analysis, we find that of actual passengers there were killed only 15 and injured 73. Of these only three were killed and 68 injured from beyond their own control; the others suffering by reason of their own misconduct or incaution. Twenty-three persons were killed and five injured by crossing, standing, or otherwise trespassing on the railway.

### House's Telegraph New Line.

This line we understand, is to be completed by the middle of June. It runs from Boston to Providence, from there to Springfield, and from thence to New York, via Hartford and Middletown. More than one half of the posts of the entire route are already erected. This line is built for durability, and will, without doubt, be a superior one.

### Wood and Coal in the East Indies.

Capt. Johnson and Lieut. Wood of the British Navy, made some valuable experiments in the East Indies, to ascertain the relative value of Wood and Coal, which resulted after a trial of various kinds of wood in favor of Coal.

Lieut. Wood states that "with the very best description of wood the furnaces were replenished once in 7 minutes; with coal, not of the best quality, once in 15 minutes. This gentleman ascertained that coal has an advantage over wood fuel of two to one; and when the superior performance of machinery driven by coal was taken into account, appeared doubtful which was the more economical to navigate the Indus—with Coal brought from England, or with the jungle growing on the banks of the river. The question which was then (in 1845) one of expense simply, has been since set at rest by the satisfactory discovery of abundance of excellent coal on the very banks of the Indus itself.