Scientific American

NEW YORK, SEPTEMBER 29, 1849.

### Simplicity of Discovery.

From the complex, yet simple and wonderful nature of the human mind, man is fond of the mysterious, the complicated, and wonderful; and he is more ready to pursue new projects through mazy labyrinths of study, than along the straight road of simplicity. The famous Philistine general who came down to the Hebrew prophet to be cured of a fatal disease, treated, at first, with contempt the simple command of the prophet, "go wash in the Jordan and thou shalt be healed." He thought that some grand ceremony, or some wild incantation, would have to be performed to remove far from him his life-eating malady. How complex are false theories in comparison with the true. How complicated were the theories of Plato, in comparison with those of Newton; and who would have thought, that from the falling of an apple, the great philosopher would have made his *greatest* discovery. By simply condensing the steam in a separate chamber from the cylinder, and admitting it to the piston at both ends of the cylinder, the immortal Watt changed the whole nature of the steam engine and gave it new powers.

We may well admire the powers of that machine which can propel the gigantic steamboat over the stormy ocean, or whirl the thundering train of cars along their iron ribbed footway, surpassing the flight of the eagle in swiftness; but seldom, very seldom, do we find one, who, in beholding such wonders, is fully impressed with that divine truth, "God hath chosen the weak things of this world to confound the mighty." What are the elements that propel the steamboat or the iron car, and how many? Only two—fuel and water. The engine, the most complex part of the whole, is but the means to convey and apply the power. With the tree from the forest, or coal from the mine, and his boiler of water from a neighboring fountain, the engineer mounts his iron steed, and when all is ready, he touches his valve rod, his iron steed feels the *breath of his life*, and well may we apply the words of Scott,

"He is off, he is off, o'er bush, brake and scaur,
They'll have fleet steeds that follow, quoth young
Lord Lochinvar."

How complex was the electric telegraph of Soemering, with his thirty-five golden points, in comparison with the effectual and simple Electro-Magnetic Telegraph of Morse, who, with a single wire, sends the whispers of affection from lake to sea, on swifter wings than those of "*Love*."

All the great discoveries that have been made, are remarkable for their simplicity, because they are based upon the truths of science, and this implies that many errors may yet be found in its woof and warp.

In saying this much upon the simplicity of discovery—a theme upon which we might easily dwell, to fill up column after column—we would exhort all those who have a taste for the pursuits of science, or the advancement of the arts—agricultural or mechanical—to remember that simplicity should be their first, second and last considerations, to success.

### Opium.

This drug is the juice which exodes from incisions made in the heads of ripe poppies, and rendered concrete by exposure to the sun. The best opium comes from Turkey, the East India kind is not so good. Opium occurs in brown lumps, not very large. Good opium is hard when cold, but becomes soft when worked in the hands. It has a strong offensive smell, and is very bitter to the taste. Proof spirit digested upon opium, forms *laudanum*. Opium has been long known as a deadly and dangerous narcotic; it has been supposed that the soporific effects of opium depended on morphia, but in 100 parts of the best Turkish opium only seven per cent. of morphia can be extracted; but morphia is not more poisonous than opium. Ure believes that the deleterious activity of opium is due to its union of an oleate or margarate of narcotine with morphia

Opium is a slow and a rapid poison. People can accustom themselves to it, and be able to eat as much as might destroy the lives of three or four at one dose, who were unaccustomed to it. Opium drunkenness is a horrible vice of the Turks and Chinese. Its drunken dreams are pleasing, but they reveal terrible results. The habit of opium eating is perhaps the most dangerous of all others—the most alluring—the most difficult to break up.

It is said that a great increase in the consumption of opium has taken place in America, especially in the Eastern States, within the past seven years, and its votaries are found principally among our women. It is a vice which should be frowned down by every person,—it is a drunkenness more deadly and vicious than that of spirits in any shape.

### Rules and Regulations for Steamboats.

Our steamboats should be compelled to use gangway roads with railed sides. Many accidents have occurred by passengers being jostled and falling over the side into the water; and not a few deaths have resulted in such cases. Last week an old man, his daughter and child fell off the gang plank, at Albany, while going on board the Isaac Newton. Only for the prompt action of some of the passengers, they would have been drowned, for the officials on board, were either too careless or lazy to use active measures in rescuing the unfortunate individuals who, from the awry manner in which the plank was placed, were precipitated into the river. At every steamboat pier there should be one or more stout-built gangplanks, with a railing on each side, and fitted on wheels. This would form a safe bridge between the boat and the dock. Another useful regulation would be to have dock officers who would look after these things, and whose duty should be prescribed by city law, to order the boats to depart at their regular hours, as advertized. It is no uncommon thing, now, for some of our steamboats—those on the North River especially—to advertize their sailing hour at 6 P. M., and then wait until 9 before they start. There should be some way of preventing such evils—for great evils they undoubtedly are, and we know of no better plan than the one we have recommended.

### New York Gas.

Mr. G. M. Kentish, in a communication to the *Tribune*, is out against the New York Gas Company charging fifty cents for 100 cubic feet of coal gas, as a reduction from seventy cents, the price of the old resin gas. Mr. Kentish exposes this fraud of change in price, by saying that coal gas is only one half as dense as resin gas, and the price for the coal gas should be reduced to 35 cents instead of 50. The old price, he says, was exhorbitant, but this makes it 43 per cent. more. Mr. Kentish is right; Parnel says that two cubic feet of resin gas, is equal in illuminating power to five cubic feet of coal gas. Coal gas can be made nearly as cheap in this city, if the business was well managed as in some cities in Europe, where the poorest families—as in Glasgow—burn it, at five times less expense than oil or candles, which are about the same price as with us. It is time that our people were awakening to a scientific knowledge of these things, which embrace the nature, manufacture and the economy of gas illumination. We are in favor of gas illumination because it is the most beautiful, convenient and economical—that is where monopolies do not love too high prices. We have plenty of coal beyond the Alleghanies, for the purpose, and the Blossburg coal, Pa., makes good gas,—this we know, for we have made it.

### Navigating the Air.

Mr. Penington, the original projector of a flying machine to navigate the air, which has been noticed by us before, has returned from the far west, where he has been making some experiments on the great prairies. The Baltimore *Sun* regrets to say that he has not been sufficiently successful to enable him to come back in his own carriage. He is, however, sanguine of fully succeeding eventually in making a voyage to California, or even to Europe, in his car, through the air.

A large machine of this kind is now building near this city, by Mr. Robjohn. The canvass is all ready, and is about 80 yards in length and 50 in diameter. It is to be propelled by two oscilating five horse power engines, which are already provided and secured in the car. They occupy a very small space and are well made. They are to propel the huge gaseous monster by fan wheels, we believe. We await in calm contemplation the mighty results of this enterprise. We can say this much about it, that the workmanship will be well executed. The projector has at least great courage and deserves success—in any other department, he would attain it.

### Lake Superior Copper.

The copper mines of Lake Superior are the richese in pure copper of any others in the whole world. Some masses of pure ore are discovered which weigh 60 and 80 tons. These are reduced to pieces, in the mine, of about seven tons, and then are hoisted to the top of the mine, where they are reduced to pieces of smaller size for shipping. Mr. J. S. Hodge, an eminent minerologist, in some remarks made before the Scientific Association at Cambridge, said that at the Minesota mine, near the Ontonagon River, he had an opportunity of witnessing, in June last, the most extraordinary mass that has yet been met with. Two shafts had been sunk on the line of the vein 150 feet apart. At the depth of about 30 feet they struck massive copper, which lay in a huge sheet with the same underlay as that of the vein—about 55 deg. towards the North. Leaving this sheet as a hanging wall, a level was run under it connecting the two shafts. For this whole distance of 150 feet the mass appears to be continuous, and how much further it goes on the line of the vein either ways there is no evidence, nor besides what depth it penetrates in the solid vein. It had been cut through in only one place, where a partial thread afforded a convenient opportunity. Measuring the thickness here as well as the irregular shape of the gap admitted, it was found somewhere to exceed five feet. Allowing the thickness to average only 1 foot, there would be in this mass 1200 cubic feet, or about 250 tons.

The mode adopted to remove the masses is to cut chanels through them with cold chisels, after they are shattered by large sand blasts put in behind them. Grooves are cut with the chisels across their smallest places, one man holding, and another striking, as in driling. A chip of copper three quarters of an inch wide, and up to six inches in length, is taken out, and the process is repeated until the groove passes through the mass. The expense of this work is from $9 to $12 per superficial foot of the face exposed. Fragments of veinstone enclosed in the copper, prevent the use of saws. A powerful machine, occupying little room, is much needed which would perform more economically this work.

Dr. Jackson stated that many of the mines of copper on the shore of Lake Superior would be entirely worthless to the companies owning them, and that the most profitable mine could never pay a dividend of more than five per cent. This fact is not owing to any deficiency in the amount of the article, but to the extreme difficulty of mining it.

In our opinion the hand drill described and illustrated on page 348, Vol. 4, Sci. Am., would be a most valuable tool to the miners of Lake Superior. By the drawing, any blacksmith or machinist might make a drill for five dollars that would do more work in one day with one man than four men with hammer and jumper. It is surely a most surprising thing, in this day, that pure copper is not worth the digging, because it is found in too large masses, and has to be cut or blasted—and the miners are not able to drill fast enough, because they use only the old jumper, or chisel. If the mining companies of Lake Superior want a machine powerful and compact to drill their copper, why don't they offer a premium for one of such and such dimensions, to accomplish so much work in a certain time. If they are liberal, and not mean about the matter, we warrant them that there will be found more than one man in the country, who would construct a machine to accomplish all that the most enthusiastic might hope for.

### Great Chemical Discovery.

A Mr. Tighlman, an ingenious American gentleman, some time ago, discovered the great virtue of water, at high temperatures, to decompose certain substances, which before that period were, by the most eminent chemical authorities, supposed to be insoluble in water. He visited England and found that his discovery was not only new there, but was no sooner announced than men of wealth and scientific ability were found ready to engage in it. By water at a high temperature, Mr. Tighlman is able to take felspar and decompose it into alumina and potash, and to make from that common and heretofore useless material such salts of potash as the sulphate, chloride and chromate. Through the same discovery, Mr. Tiglman has made great improvements in the manufacture of certain acids, alkalis and alkaline salts, and they are destined to have great influence on the general welfare.

The Journal of Pharmacy states that Mr. Tighlman's discovery will be a saving of nearly one half the expense in the manufacture of soda, and we know that there is no better evidence of its value than to state that Mr. Tennant, of Glasgow, the greatest manufacturer of soda ash and potash in the world, has made an expenditure of between twenty and thirty thousand dollars in fitting up apparatus according to the plans of Mr. Tighlman. Notwithstanding the immense machinery already at work in Mr. Tennant's establishment, Tighlman's was so far superior that the privilege of using it was at once purchased by Mr. Tennant.

The above Journal also says, that it is established that there are seventy thousand tons of soda ash made in Great Britain annually, valued at forty-five dollars per ton, and equal to three million one hundred and fifty thousand dollars. The twin alkali, potash, is extensively used. Russia, Canada and New York alone export potash estimated at two and a half millions of dollars, and when it is considered that Mr. Tighlman is able to manufacture not only these, but sulphuric acid and many other highly useful articles, from common rocks extensively spread over Europe.

This discovery is one of vast importance to the whole world.

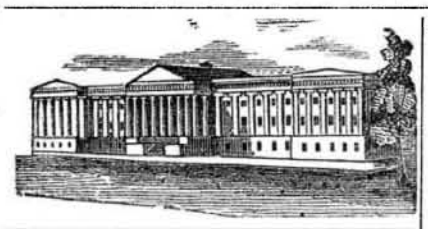
In 1838, sulphuric acid, valued at five millions of dollars, was manufactured in Great Britain, and Mr. Tiglman can obtain it from the same kinds of sources he gets his material for making soda and potash.

### A Word to some Friends.

During a recent visit to Boston on business, we had the pleasure of making the acquaintance with several Editors, all of whom we found emphatically good fellows. We are especially grateful to Mr. Norris of the *Yankee Blade*, for his kind assistance in facilitating our business. Speaking of the *Yankee Blade*, it is one of the most sterling papers in this big country, and if any of our readers want a journal sparkling with bright scintillations of wit together with profitable reading, we would advise them to send $2 to Messrs. Matthews, Stevens and Norris, Boston. Mr. Simonds, the gentlemanly publisher of the *Saturday Rambler*, and *Pictorial National Library*, (a valuable monthly) stands ready to furnish the public with a journal excelled by none and equalled by few, save it may be the *Olive Branch*, published by T. F. Norris, which is too well known to require a puff from us.

Both of the above journals are prominent for their literary and moral excellenee. Mr. Kelly, the enterprizing and brilliant Editor of the *Aurora Borealis*, illuminates a large circle of subscribers by the weekly visits of his great northern light, not only that he is a tolerably good looking fellow but has a tongue of junior lightning. Last but not least among the mamany excellent Boston literaries, comes the *Boston Museum*, edited by Mr. Putnam, a very talented writer; in point of mechanical execution this journal stands at the head, and its weekly visits to our *sanctum* are always acceptable.

It would be difficult to find, in this country, five newspapers of more substantial merit than the *Yankee Blade*, *Saturday Rambler*, *Olive Branch*, *Aurora Borealis*, and *Boston Museum*." We wish them every success.



## LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

*For the week ending September* 18, 1849.

To Franklin Jenney, of New Bedford for improvement in machinery for Dressing Shingles. Patented September 18, 1849.

To James Thomas, of West Chester, Pa., for improved machine for making Brooms. Patented September 18, 1849.

To Henry Bleecker, of Albany, N. Y., for improvement in Flues for Cooking Stoves. Patented September, 18, 1849.

To Wm. Wheeler, of Troy, N. Y., for improvement in Cooking Stoves. Patented September 18, 1849.

To Wm. Sours, of Mount Jackson, Va., for improvement in Cooking Stoves. Patented September 18, 1849.

To Elias Kaign, of Camden, N. J., for improvement in Cooking Stoves. Patented September 18, 1849.

To J. H. Doughty, of New York, N. Y., for Signal for Privies. Patented September 18, 1849.

To George Leonard, Jr,, of Shrewsbury, Mass., for improved Fire Arm, with several stationary barrels and a revolving hammer. Patented September 18,1849.

To Abraham Christ, of Unity, Ohio, for improvement in the Landside of Plows. Patented September 18, 1849.

To Enock R. Morrison, of Angelica, N. Y., for improvement in machinery for Riving and Dressing Shingles. Patented September 18, 1849.

To Lewis W. Colver, of St. Louis, Mo., for improvement in Rotary Churn Dashers. Patented September 18, 1849.

To D. N. Egbert, of Hudson, Ohio, for improvement in Rotary Churn Dashers. Patented September 18, 1849.

To Joseph D. Alvord, of Springfield, Mass., for improvements in Couplings for Cars. Patented September 18, 1849.

To Albert Woodhull & Charles Minturn, of New York, N. Y., (Assignees of John Watson & Edward Cart, of Hull, Eng.) for improvement in Gas Generators. Patented September 18, 1849.

To H. L. B. Lewis, of New York, N. Y., for improvements in Coupling for Cars. Patented September 18, 1849.

For the Scientific American.

### For the Crank.

MESSRS. EDITORS—In the last number of the Scientific American, a correspondent, under the signature of "Pulley," boldly throws down the gauntlet against all those engineers, and others, who have not seen enough, to perceive that the crank is an "*inefficient, bungling and wasteful* contrivance." He says, that "arguments, tables and drawings have been adduced to prove that the *whole power* of the steam, as applied to the piston, is faithfully transmitted (by the crank) to produce a rotary motion of the shaft, "and that ridicule has been heaped upon those who dared to question its soundness." Mr. Pulley is certainly mistaken on this point. No tables, nor arguments have ever been adduced to prove that the *whole power, exactly*, of the steam is communicated from the piston to a shaft by the connecting rod and crank. The ground assumed by the friends of the crank, is this, that it is the most economical mechanical contrivance that has yet been discovered to convert the reciprocating motion of the piston rod into a rotary motion, to drive a revolving shaft. The only ridicule that has been heaped upon those who dared question thistruth, was of their own production—the numerous *bungling* contrivances which they have brought forward as substitutes for the crank,—they alone have sat, and do sit, in the chair of the *scorner*. He says, "of the arguments adduced, they appear to me but *reasoning in a circle*, and the tables and drawings but the *modus operandi* of the crank engine." Pulley is correct on this point; the friends of the crank have too much good sense to get out of a circle to reason—they leave that kind of metaphysics to their opponents, and if *they* are content to revolve on their toes, whirling round on the outside of the circle, or fly off at tangents, good and well. The *modus operandi* reasoners of the crank are too well versed in the subject not to know that both staics and *dynamics* are embraced in the working of the steam engine. There has been so much said by eminent men for and against the crank, that it would now be a jangling of words, to enter into a controversy on the subject. The debate with Mr. Stevenson and Mr. Onion, on this point, at a meeting of the Association of British Practical Engineers, last year, might satisfy any man upon the subject. The great difference between the *modus operandi* friends of the crank and their opponents, lies in this—the crankites can whirl round in their *circle* and cleverly whisk over the dead *power points*, whereas the anti-crankites, by traversing outside of the circle, either go down head foremost at the lower point, or get transfixed at the upper one—like the western horse that was found sticking to a rock of loadstone. As we are only on the defensive, we complain of a want of candor and generosity on the part of the opponents of the crank, to blame us for our ingenuity in getting over obstacles, which to them are insuperable.

The great object of all debate should be the advancement of truth—to elicit something new. The best argument which can be based in defence of the crank, is its universal use—its victory over every opponent that has contended for the mastery, as its substitute. Mr. Pulley has advanced no new idea that can lead the benighted advocate of the *crank* into a better system of mechanical contrivances and combinations. He has only found fault, and I wait to be made wiser by some remedy suggested by him, to banish what he calls *the bungling crank*, from every engine. And let me tell him that he must speak in deeds, and not stigmatize the advocates of the crank, for using it, because there is no better. If he cannot produce a better, he should not speak out on the subject. Many of *us*, advocates of the *crank*, were once reasoners outside of the circle, and to our cost, and we don't want to be told that it is a *bungling contrivance*, we want to see a better substitute, and Mr. Pulley may rest assured that, whenever he produces a better (the whole economical results alone can tell) there are men ready to pay well for the use of the discovery.

As it regards the leverage of the crank, it would be more than weakness to answer him, —there can be no *two* opinions among enlightened engineers on the subject and to do justice to the friends of the crank on this point, it would require a diagram for explanation.

PINION.

*Allaire Works.*

### Wagons and Carts.

A farmer in England, named Edward B. Liddington, has produced a prize essay on the comparative merits of wagons and carts, which should arrest the attention of our farmers, for if he is right our farmers, in general, are wrong. After five years' experience with wagons, and nearly the same with one horse carts, on a farm of one hundred and seventy acres of arable and eighty acres of pasture, he came to the conclusion that the carts were of the greatest advantage. As our farmers all use wagons, let them pay some attention to his statement. He says :—I have no light plowing land, nor have I more than twenty or thirty acres of very heavy land. I will, therefore, relate my actual experience. In the employment of wagons and the old broad-wheeled dung-carts, I required one wagon, one cart, and three horses to every fifty acres of arable land. I also kept a light cart for general purposes. Now that I am empolying carts, I find that I get through my work much more easily with two horses and two carts to fifty acres."

In the calculation ofitems, his saving was nearly four dollars on the cultivation of one acre, in the year. Again he says, it is admitted that one horse attached to a given weight will move it more easily than two horses attached to double that weight. This arises not only from the advantage gained by having all the power of draught close to the work but also all the power applied at the same moment which it almost impossible where two or more horses, having different wills and steps, are attached to the weight ; and for the same reason one horse will travel more quickly.

When a cart is filled there is no delay in attaching the trace-horses, during which operathe one horse would be two hundred yards on the road. I know this might be done more quickly by having men ready to change the horses, asin the practice of opposition coaches but I am speaking of the matter-of-fact working of the system. Then again, when the load is deposited, the one horse turns in much less time than the two or three. These facts are too self-evident to admit of the contradiction ; indeed, I believe the economy of carting manure with one horse carts is generally allowed, but the employment of them in harvesting is much objected to. In this respect, however, I find them equally expeditious and economical. My actual experience is, that three carts, with the harvest frames attached, will convey as much hay or corn in the straw as two wagons, and that they are bound with the ropes in the same time ; therefore no time is lost in binding. They are easier to pitch into than wagons, and not more difficult to unload ; and all the advantages are gained of speed in travelling.

My attention was first drawn seriously to the subject from hiring a man to draw some stones for draining. He came with a horse only fourteen hands high and a small cart, when the work he accomplished so supprised me that I at once decided to try two light carts which after succeeding well in all other operations, I employed in the harvest field ; and being fully satisfied with them in this capacity, I soon discarded every wagon from the farm.

### Lazy Beavers.

It is a curious fact, says a trapper, that among the beavers there are some that are lazy and will not work at all, either to assist in building lodges or dams, or to cut down wood for their winter stock. The industrious ones beat these idle fellows, and drive them away ; sometimes cuting of a part of their tails, and otherwise. injuring them. They only dig a hole from the water running obliquely towards the surface of the ground, twenty-five or thirty feet from which they emerge when hungry, to obtain food, returning to the same hole with the wood they procure to eat the bark. They never form dams, and are sometimes to the number of five or seven together ; all are males, It is not at all improbable that these unfortunate fellows have, as is the case with males of many species of animal, being engaged in fighting with others of their sex, and after having been conquered and driven away from the lodge, have become idlers from a kind of necessity. The working beavers, on the contrary associate males, females, and young together.

### The Horse.

The general contribution of the horse and his rider is alike in many respects. Disease arising from excessive fatigue, overheating, and exposure to the air, want of exercise, improper diet, both as respects quality and quantity, and from many other causes, affects the horse and his master alike, and neglect in either case must terminate fatally. Indeed when a man or horse has acquired, by a coarse of training, a high degree of health and vigor, the skin of each is an infallible index of the fact.

It has been often remarked in England, that the skin of the pugilist, who has undergone a severe course of training, when he appears for the fight, exhibits a degree of beauty and exceeding fairness that excites the ad miration as well as the wonder of the spectators. So with the horse—his skin is the clearest evidence of the general state of his health. Even the common disease of foundering is not peculiar to the horse, but is merely a muscular affection, to which many men, who have overstrained themselves at any period are subject. The medical treatment of the horse and his rider ought to be the same.

### Transplanting Trees.

We find in the Utica Gazette, facts showing that it is not necssary to select small trees for transplanting, in order to ensure their growth. Large trees may be as successfully planted as small ones. The mode and result of an experiment, made by Messrs, Pomeroy and Dutton, of Utica, are thus given : Those gentlemen transplanted trees, comprising maples, elms, beech, ect., some thirty feet in height, which were transplanted without being shorn of any of their branches. The process of removal was as follows : In the fall, before the frost, a trench was dug around the trees selected, from ten to fifteenfeet in diameter, and the roots severed. In the winter, when the ground had become solid from freezing, the trees were pulled out by the aid of oxen and levers, with the mass of earth firmly attached to the roots. They were then transported erect on a strong sled, built for the purpose, and set out.

These trees grew in open land, a mile and a half from the city. They put on their foilage last spring as if wholly unconscious that they were not still in their native soil, and the enterprising gentlemen who undertook this unusual course are rewarded with shade trees which by the old practice it would have required twenty years to produce.

[This old and well known plan of transplanting should always be pursued, by those who build their houses on exposed situations, unprotected by standing trees.

### Value of Birds.

Many years ago, the coffee plants, in the island of Madagascar, were attacked by a grakle a well known bird on the Africa coast. The grakle is an insect feeder, but, having used up the supply, it betook itself in pure necessity to coffee. An edict was speedily issued and carried into effect, for the annihilation of grakles, and every bird on the island was destroyed.—All went on very well for a year or two ; when, lo and behold, the insect and their larvee, having the field to themselves, began to make sad havoc upon the coffee. Whatwas to be done? There was no alternative but that of bringing back the grakle, which was in due season imported. The coffee planters had, however gained something by experience, and they resolved to profit by the same ; they managed to keep the grakle, within bounds, and they well knew that he would do the same by the insects. And they were right. By preserving a *justo-millieu* doctrine between the two, they were enable to grow coffee.

### To Cook Without Fire.

Let a utensil be strongly constructed of Tin in the shape of a small chest, 4 feet long, 4 feet broad, and 4 feet high, formed to contain a box at the top, to be closed or fastened down with a lid ; one drawer to fit tolerably close in the centre, an other at the bottom. Half fill the box at the top and the drawer at the bottom with Quicklime, and pour upon it as much as will be necessary to pulverize it by absorption ; then put down the lid of the box and fit in and nearly close the drawer. Afterwards. nearly fill the central drawer with the beefsteaks, mutton or pork chops, properly seasoned with onions, &c., without adding thereto any water ; then close it. After the expiration of eight or nine minutes, or thereabouts, the meat will be cooked, retaining all the richness of its flavor.

### The age for Learning to Sing.

The earliest age, that of six or seven years says Mainzerthe great music teacher is the most appropriate for learning to sing—voice and ear so obedient to external impressions, are rapidly developed and improved, defects corrected and musical capabilities awakened.—With several children a few weeks' practice suffice to change the entire character of their voices, which though a first weak and indifferent, and of almost no extent, become strong extended, clear, and in some cases of fine quality. Such instances are best calculated to dispel the predjudices existing against musical instruction at an early age.

Wheat steeped first in strong salt water, and then in a solution of salamoniac, is said to be better prepared for sowing than by any other process.