BESSEMER STEEL.

[*Continued from first page.*]

minutes. The charge of iron is first melted in a cupola and allowed to run into the converter, previously heated to redness. Before the converter is turned up into a vertical position, the blast is turned on to prevent the entrance of the melted iron into the blast holes of the tuyeres. The air, at a pressure of 20 to 25 pounds per square inch, penetrates the melted metal from 144 apertures, coming into contact with every particle. At first a reddish yellow, faintly luminous flame issues from the neck of the converter; soon it becomes more brilliant, the metal becoming in the meantime hotter and being violently agitated. Sparks appear, consisting of particles of iron and slag, which are thrown out by the rapidly disengaged gases. At this point the roar of the flame becomes terrific, and the light is intense.

During this portion of the process the iron, if it contains much silicon, would be overheated were it not for the introduction of masses of cold pig iron, which keep the temperature down. It is sometimes necessary to introduce cold iron to the amount of two tons. The iron is thrown in at the mouth of the converter in the manner represented in the engraving. This is necessary in case the iron is rich in silicon, as the very high temperature which would otherwise be produced would generate gases in great quantity, which make blow holes, cracks, and imperfections of various kinds in the ingots.

After some minutes blowing the sparks cease, the action becomes less violent, and the flame presents the bluish violet characteristic of carbonic oxide; finally, when the whole of the carbon is oxidized, the carbonic oxide flame is replaced by a stream of intensely heated gas, consisting chiefly of nitrogen resulting from the oxidation of the iron by the air. At this moment the foreman turns down the converter and shuts off the blast. A few seconds delay at this point may entirely spoil the product. A quantity of spiegeleisen, equal to 8 or 10 per cent of the whole, is now run into the converter, when another flame reaction occurs. The converter is turned still further down, and the steel runs into the ladle supported by the hydraulic crane standing in the center of the circular pit. Around the side of the pit, opposite the converters, there are fourteen heavy iron ingot moulds, seven of them being always in reserve while the other seven are being filled. These moulds contain one ton each. They are lined with a clay wash to prevent grooving and to insure the easy separation of the mould from the ingot. The ladle containing the charge of melted steel is swung around over the moulds, and the melted metal is allowed to escape through a valve opening in the bottom into the several moulds in succession.

After the steel solidifies and cools sufficiently, the moulds are removed from the ingots, leaving them standing. A hydraulic crane outside of the pit, armed with a grapple something like a pair of huge ice tongs, picks up the red hot ingots and places them on an iron car, to be trundled off to the rolling mill, where they are converted into rails, each ingot being sufficient for three or four rails. The largest production in a single day of 24 hours at these works was on December 5, 1878, when 35 tons 19 cwt. (2,240 lb. to ton) were made.

The facility with which these huge pieces of machinery are made to handle such masses of hot metal is something wonderful. The movements of the converters, the air blast, and the ponderous cranes are all controlled by the foreman, who sits in the gallery seen in the background, and by the movement of a few levers admits water here and there under a pressure of 400 pounds to the square inch, moving the strong iron arms with a celerity and precision that could not be attained by other means.

It may not be uninteresting in this connection to give the chemical changes that take place in the converter, as indicated by the changes in the composition of the gas evolved at different stages of the process.

	2 Min.	4 Min.	6 Min.	10 Min.	12 Min.	14 Min.
Carbonic oxide	....	3·95	4·52	19·59	29·30	31·11
Carbonic dioxide	10·71	8·57	8·20	5·58	2·30	1·34
Oxygen	92	...	...	...	...	...
Hydrogen	....	·88	2·00	2·00	2·16	2·00
Nitrogen	88·37	86·58	85·28	74·83	66·24	65·55

The corresponding alterations in the composition of the metal are shown by the following analyses by Snelus of portions taken out of the converter during different stages of the operation:

	Gray pig operated upon.	Composition of metal after blowing.			Steel.	
		6 Min.	9 Min.	13 Min.	Ingot.	Rail.
Carbon { graphitic	2·070	..	....	....	....	....
Carbon { combined	1·200	2·170	1·550	·097	·566	·519
Silicon	1·952	·795	·635	·020	·030	·030
Sulphur	·014	Trace.	Trace.	Trace.	Trace	Trace.
Phosphorus	·048	·051	·064	·067	·053	·053
Manganese	·086	Trace.	Trace.	Trace.	·309	·309
Copper	....	....	....	....	·039	·039

It will be seen that a portion of the sulphur present in the pig is eliminated; the greater part of the silicon is also separated, together with the carbon, and almost in the same proportion; but the phosphorus is not removed, and owing to the oxidation of some iron the amount is actually greater in the finished steel than in the pig iron. The copper and manganese present in the steel are due to the manganiferous pig iron added at the end of the operation.

The *Manufacturer* furnishes the following list of Bessemer steel works now in operation in the United States:

The Bessemer steel works of the Albany and Rensselaer Iron and Steel Company, Troy, N. Y., was the first erected in the United States, having made its first blow February 15, 1865. It has two 7-ton converters. The next was the Pennsylvania steel works, at Baldwin station, near Harrisburg, Pa., which has two 6½-ton converters, and made its first blow in June, 1867. The third was the Cleveland Rolling Mill Company's Bessemer works, at Cleveland, O., which made its first blow October 15, 1868, and has two 6-ton converters. The remaining eight works went into operation on the dates following: Cambria Iron Company's plant, Johnstown, Pa., July 10, 1871; two 5-ton converters. Union Rolling Mill Company's plant, Chicago, Ill., July 26, 1871; two 6-ton converters. North Chicago, April 10, 1872; two 6-ton converters. Joliet, Ill., March 15, 1873; two 6¾-ton converters. Bethlehem, at Bethlehem, Pa., October 4, 1873; two 7-ton converters. Edgar Thomson steel works, Pittsburg, September 1, 1875; two 7-ton converters. Lackawanna, at Scranton, Pa., October 23, 1875; two 5-ton converters. Vulcan, St. Louis, Mo., September 1, 1876; two 7-ton converters. The last named have been idle for several years, but we understand they will be put in operation on the 1st of October, the company already having orders to keep the works busy for six months. The Bessemer works throughout the entire country are rushed with work. They were, perhaps, never so busy before. Some years ago it almost appeared as if this business had been overdone like so many other branches of manufacture in the United States; but it does not look so now.

ENGINEERING INVENTIONS.

An improved instrument for measuring the distance of a remote object has been patented by Mr. John Boger, of Powhatan Point, Ohio. The invention is based upon the general principle of the employment of two right-angular bars, one of which is provided with a sighting-glass, and is directed toward the object, and the other graduated and provided with another sighting-instrument, which, when adjusted to a certain position upon the bar and turned to the object, indicates by the angle at such position the distance of the object, the distances which the different angles and positions together indicated being previously determined by careful measurement.

Mr. William Jackson, of Millerstown, Pa., has patented an improvement in air-compressing apparatus for locomotives, which consists in forming the wheels of the locomotive, preferably the driving-wheels, with radial air-compressing cylinders and pistons that are operated by eccentric motion of the tire with reference to the main body of the wheel, so that as the locomotive moves forward the pistons act in succession to force air through the hollow axle of the wheel into a compression-chamber, where it is stored for use in driving the locomotive.

An improved swinging gate, that is to be placed across a railroad track to keep cattle and other animals off, has been patented by Messrs. David A. Walker and John R. Smith, of Fort Benton, Montana Territory. It is to be opened by the contact of the pilot or cow-catcher of the locomotive, and will close automatically immediately after the passage of the train.

A lubricator for journals, provided with a roller arranged longitudinally in contact with the journal, inclosed in a top slot of bearing, and connected by a corresponding slot directly with the oil-reservoir, has been patented by Messrs. C. H. Leonard and W. B. Hick, of Wilkesbarre, Pa.

The August Meteors.

On the 10th of August last the earth, in its accustomed journey through space, reached the outer edge of the supposed meteoric ring which it annually passes through at this period of the year. In the vicinity of New York large numbers of meteors were seen during the night of August 10, some of them being of comparatively large size, very bright, and leaving long trails. Dr. Lewis Swift, in a recent letter to the Rochester *Express*, gives the following information concerning these remarkable heavenly bodies:

Meteoric astronomy now takes rank as a distinctive branch of astronomical science. Not forty years have elapsed since it was ascertained that star showers are periodical. Even then, and for many years after, it was supposed there were but two, called the August and November showers. Now, not less than one hundred have been detected, and others are constantly being added to the list. The accounts of the showers that occurred in ancient times came down to us clothed in such extravagant language that, until the great star shower of November 13, 1833, astronomers were loth to believe them. Now they know not only the cause, but are able to predict their recurrence with almost as much exactness as eclipses, and the popular mind observes these displays with equanimity and delight instead of fear and alarm, or thinking the day of judgment has come. Science has disarmed not only them, but eclipses and comets as well, of their terrors.

All know what a shooting star looks like, but no living man can tell us what it really is, for not one has ever been known to reach the earth. Those heavy, stony, and still more weighty metallic masses, called meteorites, meteoric stones, etc., which occasionally fall to the earth from the celestial regions, of which the one that recently fell in Iowa was a remarkable example, belong to another class of objects entirely, of the origin of which man knows nothing.

A shooting star is only visible while undergoing the process of combustion, which lasts from one to three seconds, seldom longer. Previous to this they exist in a dark, probably solid condition, not much, if any, larger than peas, too small to be seen by daylight, and in the night, being in the earth's shadow, are eclipsed, and consequently invisible. Only while being burned are they visible to us, as then they shine by their own light.

Each meteoroid moves in an orbit, revolving around the sun with as much regularity as the larger planets. In fact, each is in every sense of the word a planet, obeying strictly the laws of gravitation and planetary motion. All space is filled with them; they are as numerous as the sand. The earth and they in their journey round the sun encounter each other; the earth by its superior attraction draws them toward it, but to reach it they must pass through the atmosphere, which not one is able to do. Only meteoric stones are able to reach the earth, and they have their surfaces blackened, and converted to scoria by the terrible heat engendered by the friction with the atmosphere and by arrested motion.

Shooting stars move in all directions, and at velocities probably equal to the earth's, nearly nineteen miles a second. One moving retrograde, therefore (from east to west), would plunge into the atmosphere at a relative velocity of some thirty-eight miles a second, and, if allowance be made for accelerated motion caused by the earth's attraction, probably double that, or seventy-five miles a second. The encounter is fearful, and but for the atmosphere which acts as a cushion, the effect would be disastrous, for not less than 800,000,000 would rain upon the earth every day.

The source from whence these meteoroids come is comets, especially from their tails. The tail of the great comet of 1811 was 150,000,000 miles in length and 15,000,000 in diameter. It is improbable in the highest degree that the comet could gather its tail to itself again. It is left behind, forming part of a ring, which in time may become continuous. Another comet comes and it does the same, and during the ages which are past this process has been going on till the interplanetary spaces are filled with not only meteoroids, but something still more marvelous.

In about three thousand years that great comet will return again and repeat the process, forming part of another ring, or adding to the first, depending on circumstances which need not be considered here. Whenever the earth, in its annual journey, passes through any ring made by some comet, no man knows when, we get a star shower. The four most notable ones in our times take place at the following dates, namely, on the mornings of August 11 and November 14, and the evenings of November 24 and 27. The last two are caused by the earth passing through the track of meteoroids left behind by the fragments of Bida's comet, which divided into two parts in 1846. In this way meteoric rings are formed, of which the solar system is filled, but none are visible to us, except those the earth passes through. By some such process was the August ring formed, which the earth passed diagonally through on the evening of the 10th and morning of the 11th of the present month.

The first August shower mentioned in history occurred on July 25th, A.D. 811, and has appeared with unfailing regularity down to our own time, except a break of eighty-three years between 841 and 924, and another and much longer one of three hundred and ten years, between 933 and 1243, owing, probably, to breaks in the ring, or, which is more likely, to a failure to record them. The period of the above comet is about one hundred and twenty-three years, and it will therefore make its next appearance about the year 1985.

The eccentricity of the August ring is very great, its perihelion distance being equal to that of the earth, and its aphelion distance far beyond the orbit of Neptune, making the circumference of the ring more than 11,000,000,000 miles, and as the earth is ten days passing through it, its thickness must be at least 16,000,000 miles.

A Fall of 260 Feet.

Recently Mr. David M. Anderson, of this city, joined a party of friends who had been picnicking on the Palisades, near Englewood, N. J. Being engaged in business during the day he did not join the party until evening. The horses were hitched near the edge of a deep gorge which indents the face of the cliff, and one of them becoming restless Mr. Anderson started to remove it to a safer position. As he stepped forward, horse and carriage began slipping over the precipice. Seeing this, and thinking he could save them, he sprang upon what he supposed was solid ground between two openings in the cliff. His footing proved to be nothing but a bush growing outward, and gave way as he stepped upon it. He was precipitated 260 feet, striking upon rocks and stones as he partly fell and partly slid. He was found in an upright position, tightly wedged between rocks and trees. His face was so cut and torn by the rocks that it could with difficulty be recognized. Near him lay the dead horse and broken carriage. Strange to say, Mr. Anderson was not killed; and though severely injured was, at last reports, likely to recover.

Mr. Gladstone on America's Future.

At the opening of the Art Exhibition at Chester (Eng.), August 11, Mr. Gladstone said that when America learned to trust entirely to her own splendid natural resources, the great genius of her people, and their marvelous proficiency in the adaptation of labor-saving appliances, in which she was at the head of the world, she would be a formidable competitor with the English manufacturer.

Are we to infer that America has not yet become a "formidable competitor" to England? If so, the attention which American manufacturers are receiving in England must be curiously out of proportion to existing conditions.

Adaptation of Electricity to Useful Purposes.

Until the invention of the electric telegraph it had not been found practicable to apply the power stored up in electricity to useful purposes. Its nature and characteristics had indeed engaged the attention of scientific investigators for many years, and nebulous ideas of the possibility of utilizing it for the service of mankind had occurred to those who were engaged in its study, but without practical result. Finally Cooke in England and Morse in America, neither of whom belonged to the scientific fraternity, succeeded in solving the problem which had so long baffled the most able scientists of the world, and invented systems of electric-telegraphic communication which proved to be practical and successful. It is but justice, however, to concede that their inventions were only possible through the investigations and discoveries of the philosophers who for so many decades previously had made electricity a study.

These inventions have had an importance and a far-reaching effect, which probably was but dimly foreseen, even by the inventors or the enthusiasts whom they succeeded in interesting in their inventions. Within little more than the life-time of a generation they have revolutionized the social and business systems of the world. Year by year the telegraph is more and more indispensable, and has already become so essential that a total suspension of telegraphic communication, even for a day, would be regarded as a public calamity. The crude but effective apparatus at first used has been simplified and improved upon, and the capacity of conductors for electrical transmission has been developed and practically utilized, and these have become so familiar to the public that results which but a short time since would have been regarded as marvelous and scarcely credible, are now looked upon as of no very special note. Inventions which double and quadruple the available capacity of conductors are not regarded as worthy of special notice, and we are looking expectantly for the time when these results shall be notably exceeded, and six, eight, and even a larger number of circuits shall be regularly operated over a single conductor, as six and eight have already been worked in experimental trials.

The speaking telephone opened up a new field of telegraphic experience and research, and although but recently invented, has already been generally adopted for special and private lines. By means of telephone exchanges, which are being established in all parts of the country, a person is placed in direct oral communication with the persons and places of business of those with whom it is desired to confer, and thus business and social intercourse is facilitated and promoted. The number of telephones already manufactured and in use in this country is probably not less than 50,000, and is being increased as rapidly as they can be manufactured. It naturally makes its way more slowly in Europe, but is being extensively introduced there, and the American system of telephone exchanges is beginning to be looked upon with favor.

By the invention of the telephone we are enabled not only to communicate orally over considerable distances, but also to study the utterances of nature. The voices of the volcano and the earthquake, telephonically reported, reveal to us the titanic workings in the great laboratory of the earth. The lightning announces its coming before even the flash is visible. The pulsations of the vital fluid within our veins and arteries convey to the ear of the physician and surgeon valuable information of our physical condition. Daily new uses are found for the telephone and microphone, and it is not likely that these will be soon exhausted.

Electricity guards our buildings and property against the spread of conflagrations and the attacks of burglars and thieves; it gives us light rivaling almost the brilliancy of the sun itself; it pierces the hardest rocks and metals, and furnishes the motive power required to run our sewing machines. It traces our pictures, and prepares the plates for the printer; it regulates the movements of our clocks and plows our fields (though not the latter as yet to any considerable extent). It is, in fact, becoming the universal servant and agent of mankind, and it is impossible for us to conceive to what uses it may not yet be put for our convenience and benefit. So much has already been accomplished through electrical agency that the public mind is prepared to credit even the most marvelous achievements which may be claimed for it. It is indeed a wonderful manifestation of a force without doubt co-extensive with the universe itself, and one of the most useful and terrible agencies.—*Journal of the Telegraph.*

The Colors of Double Stars.

To test the question whether the colors of double stars depend in any way upon their relative distance from the observer, M. Niestein, of the Brussels Royal Observatory, has drawn up a table of colors of 20 binary groups, according to nearly a century of observations by astronomers. The results of his inquiry, as given in the London *Times*, are briefly these:

1. In systems with well marked orbital motion, and especially in those of short period, the two components have ordinarily the same yellow or white tints.

2 In systems, about which we have color observations sufficient to enable us to connect the color with the position of the satellite in its orbit, the principal star is white or pale yellow, when the companion is at its periaster (*i. e.*, nearest the principal), whereas, in the other positions, it is yellow, gold-yellow, or orange.

3. The companion follows the principal star in its fluctuation of color, and often surpasses that in color as it withdraws from periaster.

4. The same similarity of tints in the two stars appears both in binary groups with rectilinear motion, and in those with orbital motion and long periods of revolution.

5. In perspective binary groups the companion is almost always blue. This last observation is thought to point to a superposition of tint (as in the case of distant mountains looking blue). From these groups the small star may be reasonably supposed much further distant than the large one; in fact, near the confines of the visible world. May not this blue color (it is asked) be due to a gaseous medium expanded in celestial space, acting on luminous rays which traverse it quite like our own atmosphere, of which it is, perhaps, merely the continuation?

The Cost of Living.

The following table of the retail prices of the more important articles of food and clothing in Lewiston in 1860 and 1879 will be found, says the Lewiston (Me.) *Journal*, of value in determining whether farm products and the wages of labor to-day will secure more or less of the conveniences of life than they would before the war:

	May 11, 1860. Retail.	May 11, 1879. Retail.
Beans, bushel	$1.25 @ $1.75	$1.70 @ $1.85
Beef, pound	6 @ 12	8 @ 20
Cheese, pound	10 @ 12	10 @ 12
Chickens, pound	9 @ 11	12 @ 13
Coffee, pound	12 @ 25	15 @ 30
Corn, bushel	— @ 1.00	— @ 55
Eggs, dozen	12 @ 14	12 @ 14
Flour, barrel	5.50 @ 8.00	5.50 @ 8.00
Molasses, Havana, gallon	26 @ 28	— @ 40
Molasses, Porto Rico, gallon	35 @ 36	— @ 50
Oats, bushel	— @ 40	— @ 37
Pork, pound	8 @ 10	6 @ 9
Potatoes, bushel	40 @ 42	80 @ 90
Raisins, pound	10 @ 14	8 @ 12
Sugar, white, pound	10 @ 11	8 @ 9
Good print, yard	10 @ 13	5 @ 6
Sheetings, yard	8 @ 12	7 @ 8
Tea, pound	36 @ 65	30 @ 60
Butter, pound	18 @ 20	18 @ 20
Dry hardwood, cord	4.50 @ 5 00	5.0 @ 5. 50
Hay, ton	10.00 @ 13.00	10.00 @ 13.00

It will be noticed that most of the articles which are higher than before the war are farm products, and this increase is beneficial to the farmers. Beans, beef, chickens, potatoes, and some other articles of farm produce are higher than before the war, while most articles of manufacture, pork, corn, sugar, prints, and sheetings are lower than before the war. Butter, hay, and flour are about the same. On the whole, a family can probably purchase the necessaries of life at least as cheaply as before the war, while wages are generally higher than they were then. The expenses of many families are greater than before the war, because flush times led all of us into new purchases. More and better clothing is bought, many and more frequent changes in obedience to the dictates of fashion are made, and many more articles of luxury are purchased than before the war. By the practice of as strict economy in all respects as before the war, the same degree of industry would be better rewarded than it was then.

Who will Can Cream?

A London physician, J. Milner Fothergill, M.D., thinks that we ought to export cream to be eaten with the canned fruit which we send abroad so largely. He says, in a recent letter to the *Herald*:

"It is quite certain that such cream would soon sell freely, and at a price which would be remunerative. What practical difficulties there may be in putting cream into tins, and whether the lactic acid would act upon the tin injuriously, and whether the cream should be prepared after the Devonshire fashion or the ordinary plan, of course I can form no conjecture. But these could soon be overcome I feel sure, and an unlimited supply of cream would not only be a boon to the householder, but would be of service to the medical profession. Cream with stewed fruits would be a very palatable food, much more so than cod liver oil, and could be had all through the winter if prepared in the manner I suggest. For invalids, dyspeptics, and convalescents such a dietary in winter would be most desirable, to say nothing of those who would take it from choice.

"If cream could be so provided, and the practical difficulties overcome, the American farmer would be benefited and the English consumer would be grateful."

A Better Butter-package Wanted.

A correspondent of the Cincinnati *Commercial* maintains that there is a fortune awaiting the man or woman who can devise a neat, cheap, tasteful package which will enable the tidy housewife and the careful dairyman to place before the public their gilt edged butter all redolent with new mown hay, and suggestive of cool springs, shady groves, rich pastures, and peace and plenty among clover blossoms and fragrant shrubs. A package is wanted that will protect the handiwork and pride of the dairymaid from the ruthless, greasy touch of the huckster and grocer's boy. The butter makers want to place their choicest butter in its freshness, sweetness, and fragrance in dainty pats and attractive form, on the table of their customers unsullied by the defiling touch of any middleman. He may be and must be their carrier, but the wants of the business will never be met until a neat, cheap, and tasteful butter-package protects the butter in the transit from the milk house to the table of the consumer.

Particular stress is laid on the appearance of the package, for the imagination of the buyer is first and mainly appealed to through the eye. That organ captured, he tries by the nose, and that not offended, the butter must be tasted. If the first appeal is a captivating success, the butter will sell, though the organs of smell and taste be not so highly pleased. Assuming that the butter itself is good and satisfactory in all respects when packed, the dealer, in selecting his package, will be careful to guard against four things, which will depreciate the butter before it may reach the consumer:

1. Any foreign taste of wood, or gum, or oil.
2. All contact with air.
3. The variations of temperature.
4. Leakage or soakage.

Pure tin will meet these conditions, but it is too costly. Tin-lined wood answers indifferently well. Paper will not do at all. Possibly, however, a case of moulded paper saturated with pure white paraffine, or some other inert, inodorous, clean, and comparatively inexpensive water and acid proof compound, might answer the requirements for the inner package. Of course the external envelope must be stronger to bear exposure and rough handling. Our inventors ought to take this matter in hand.

Platinum in California.

Mr. Edison's call for platinum has developed considerable interest in the search for that metal. According to Prof. Stewart, of Virginia City, Nevada, platinum has been found in Santa Clara county, California, in a seam of talc, incased in hard schistose rock. About two years ago men worked the mine, selling the platinum in San Francisco for $12 or $15 an ounce. They mashed up the talc and separated the crystals of platinum by some simple process. The schistose rock was so hard, however, and the seam of talc so narrow —being only from 12 to 15 inches wide—that the men were compelled to give up the work as unprofitable. But the professor has an idea that by the application of proper instruments the mine might be made to pay. The seam, although narrow where explored, might widen as depth was gained. At any rate, that probability would be in favor of the miners.

It is also stated on the same authority that in Trinity and Humboldt counties, California, in the early days, the gold was so heavily alloyed with drift platinum that the purchasers of gold dust, not knowing the value of platinum, frequently refused to buy the alloy at all. Sometimes the gold would be alloyed to such an extent that it would not fetch more than $3 or $4 an ounce. The presence of platinum joined with the gold of those localities leads Prof. Stewart to think that a body of the mineral might be found there if looked for. No platinum has yet been found in Nevada.

Catching the Bonito.

At the north point at the mouth of the bay (St. Vincent, Cape Verde Islands) was a regular fishing station, where two young Africans were fishing, and where the whole rock was reeking of dead and decaying fish, and a small cave was full of débris, having evidently been made use of by fishermen for many years. The two young negroes at first occupied themselves in catching small fish with a short bamboo rod, baiting with pounded fish, and catching various little rock fish and a scarus. They then began pounding and breaking up the small fish and throwing the largest pieces into the verge of the surf off the point to attract large fish. They watched until they saw a large fish taking these baits on the top of the water, and then they threw a bait on a hook attached to a long cod line. They thus caught a large cavalli (*Caraux*) of the mackerel tribe, which they had to play for some time and finish with a spear. Large garfish (*Belone*) sometimes came within reach and were easily caught, being very ravenous. One fish, a kind of bonito or tunny (*Thynnus argentivittatus*), of about 25 lb. in weight, was attracted by the baits, and coming close in, swam backward and forward in front of the stand on the rock, taking every bait thrown on to the top of the water. The negroes kept feeding the fish for some time to give it confidence. A very strong piece of cord, with a hook like a salmon gaff made fast to it, was then baited with a small bit of fish, just enough to cover the point of the hook, and a stout bamboo was used as a rod. The cord was hitched tight round one end of it, with about a foot of it left dangling with the hook. One negro held the rod and the other the cord. The bait was held just touching the surface of the water. The fish swam up directly and took it. The negro holding the bamboo struck sharply and drove the big hook right through the fish's upper jaw, and both men caught hold of the line and pulled the fish straight out on to the rock. The negroes evidently felt quite certain of their fish directly they saw it swimming backward and forward in front of the rock. I was astonished that so large a fish could be caught in so absurd a manner. The negro holding the pole was not six feet from the fish when it took the bait. —*H. N. Moseley.*

RECENT DECISIONS RELATING TO PATENTS, TRADE MARKS, ETC.

By the U. S. Circuit Court.—Southern District of New York.

STOVE TRADE MARK.—FILLEY *vs.* CHILD.

The plaintiff having acquiesced for a long time in the manufacture and sale by defendant of cooking stoves containing certain improvements patented by plaintiff, and to which the name "Charter Oak" had been applied as a trade mark, and the patent having expired, defendant cannot be prevented from calling such stoves by the name of "Charter Oak," so long as he does not represent them as being made by the plaintiff, or induce others to believe that they are made by the plaintiff.