

rious exhibits at the Fair—the plant of an illicit distillery. We illustrate the battered still and worm which was exhibited by the Old Times Distillery Company, and which is claimed to be the only distilling plant brought away from the mountains. The plant of an illicit distiller, or in cant phrase “moonshiner,” is very seldom preserved when captured. Either the still is destroyed before the seizure or it is destroyed by the revenue officers, as in many cases the distillery is located on the top of rugged mountains, which makes the transportation of the seized articles difficult.

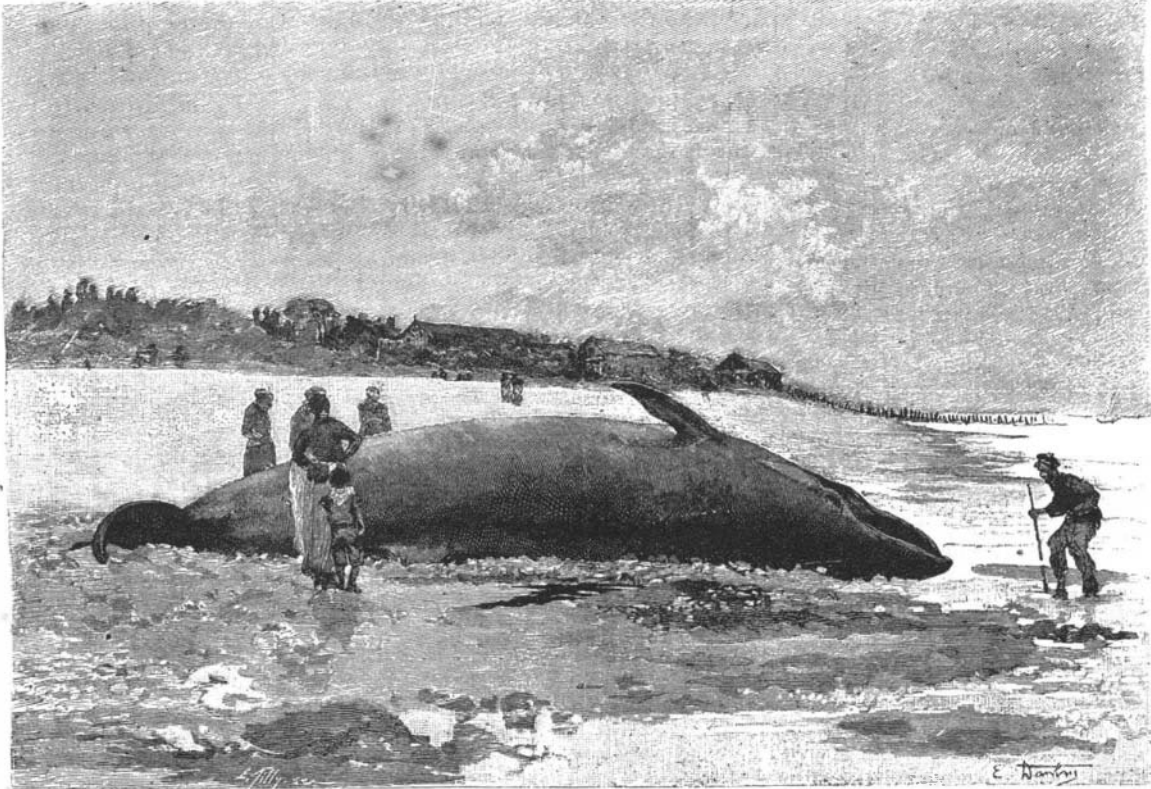
There is very little of the romance of crime left in America. The gentle art of holding up a coach is now practically a thing of the past. So that there is little left in the way of exciting adventures, except the too frequent train robberies and the occasional disturbance of the half-nomadic people of Kentucky, Tennessee and some other States, who gain a precarious livelihood by the illegal distillation of ardent spirits. Though the literature in regard to moonshiners is very limited, two or three novelists have used the stills in the mountain fastnesses as a foundation around which to weave their plots.

There appear to be three distinct classes of people who engage in illicit distilling; first, the common criminals; second, old confederate soldiers; and third, the descendants of the men who engaged in the post-revolution whisky insurrection, men who regard revenue laws as unjust and oppressive. Rye is one of the principal cereal crops in many of the States in which illicit distilling is carried on. Rye is bulky, cheap, and therefore not convenient or profitable to transport over the wretched roads. But once converted into whisky, it can easily be transported on horseback, and the commodity can be readily disposed of near home.

To men coming of a whisky-making, whisky-loving people, the laws of the federal government enforced by the Treasury Department seem tyranny. It is stated that whisky can be made where rye is cheap for twenty cents a gallon. The internal revenue tax is now ninety cents a gallon. So that it will be readily seen that large profits may be made if the whisky can be sold without having to pay the tax. When attacked, the moonshiners defend themselves, and as they are expert marksmen, the pursuit of the moonshiners is extremely hazardous; but they are not as bloodthirsty as they are usually painted, and it is a significant fact that most of the revenue officers who are murdered are

shot in the back. As soon as a moonshine still is broken up in one place, another is started a few miles away. The border of North Carolina and Georgia is a very bad spot for illicit stills, the people traveling from one State to the other when necessary.

The still is in form nearly always of the crudest shape, like the one illustrated, which is really a very good example of a better class still. Some of the make-shifts resorted to by these curious people are really amusing, and many of the stills are made of common wash boilers. The grain is, of course, hand-mashed. The market is generally local, seldom being outside



A STRANDED WHALE.

of the State. The moonshiner is a curious outgrowth of the revenue laws, and his history forms a very curious picture of the primitive condition of border life.

A WHALE STRANDED AT VILLERVILLE.

A whale that had strayed into the mouth of the Seine went ashore Saturday, October 21, upon the coast of Calvados, under the herbage of Criquebœuf, near Villerville, between Honfleur and Trouville. It was perceived at about six o'clock in the morning by some fishermen, who at first took it for a capsized boat, but were undeceived when they saw it spout water to a height of eight or ten feet. Having adventured too near the coast at a moment when the tide was falling very rapidly, it was caught on the beach, and, despite its efforts, was unable to regain the open sea. It struggled for seven hours, giving formidable blows with its tail from time to time. It ceased to live at one o'clock in the afternoon.

It was 10.5 meters in length. Its vertical diameter was 1.3 meter and its horizontal diameter was 1.75. Its jaw was 1.15 in width. Its flippers were 1.2 meters in length and the fin on the back 0.75 meter. The width of the tail was 1.3 meters.—*Illustration.*

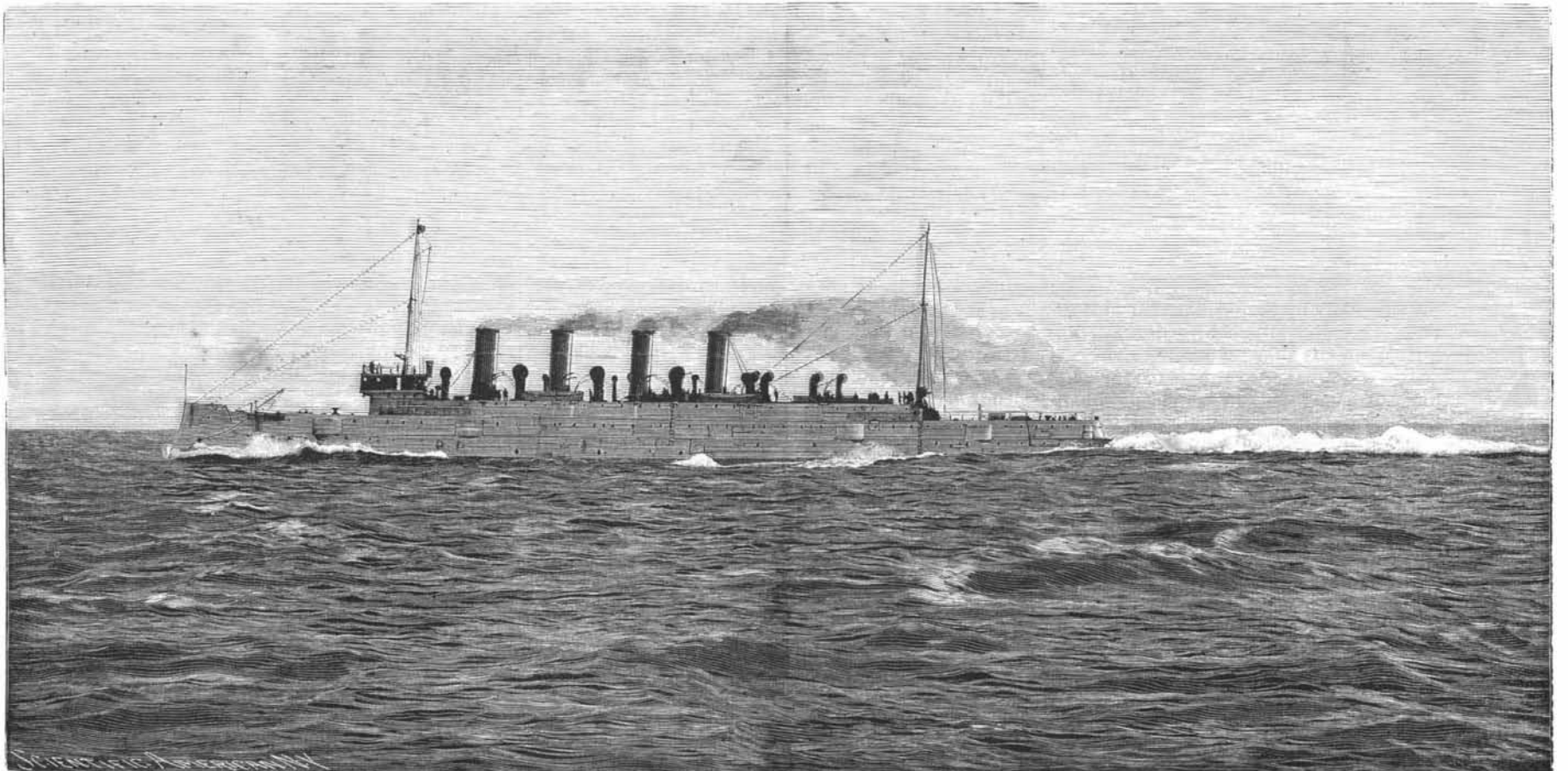
OUR PHOTOGRAPH OF THE COLUMBIA.

We give this week an engraving of the new war ship Columbia, taken when the ship was running at highest speed on her recent official trial. It will be noticed there is an absence of undue wave. The three propellers at the stern throw up the water considerably, and form a rather wide cataract ten feet high, which subsides gradually, and no heavy waves are formed. The bow waves are comparatively light, and in this respect are in strong contrast to some other war ships. The Columbia is one of those poetic vessels that seem to “walk the water like a thing of life.”

The Columbia is 412 feet long on the load water line, 58 feet extreme beam, 22 feet 6½ inches normal draught, and displaces 7,350 tons. Her power consists of three three-cylinder vertical inverted triple expansion engines, having about 22,000 collective indicated horse power and driving three screws, one on the middle line, as in single screw ships, and the other two under the counters, as in twin screw vessels. This power is calculated to produce a speed of 21 knots an hour, which the contract for the vessel calls for, the builders to receive a bonus of \$50,000

for every quarter knot the vessel makes over the required twenty-one knots. On the official trial she made a mean speed of 22.81 knots, thus netting for the fortunate builders, Messrs. Cramp & Company, the handsome bonus of \$350,000 above the contract price.

Notwithstanding the above successes, it cannot be said the speed of the Columbia is commensurate with her great power. We believe she is the highest engineered boat of any ship afloat of her size, but not the fleetest. Her displacement is 7,350 tons, with 22,000 horse power, or 3 horse power per ton of displacement. The two new Cunard ships, built to serve as war cruisers, are of 12,500 tons displacement, 30,000 horse power, twin screws, showing 2½ horse power per ton of displacement. These boats have made the Atlantic voyage of nearly 3,000 miles at an average of 21.3 knots per hour. It would doubtless be impossible for the Columbia to make such a voyage at that rate. Smaller ships, with higher engine power in proportion to dis-



THE NEW WAR SHIP COLUMBIA.

From a photograph by W. H. Rau.

placement than the Columbia, have been built. For example, the Japanese cruiser Yoshino has a displacement of 4,000 tons, horse power 15,000, or 3.75 horse power per ton. Her mean speed on the official trial was 23.031 knots.

The Columbia is, however, a splendid ship, highly creditable to the country, and unsurpassed by any other vessel of her size. Our navy department having done so well in the production of this vessel, we hope will continue its good works until we can really boast the possession of a vessel that can run as far and as fast, or faster, than any of our Atlantic liners. Not till then can we really claim to own a "commerce catcher and destroyer."

Railway Accidents.

According to the Fifth Statistical Report of the Interstate Commerce Commission, the number of railway employes killed during the year ending June 30, 1892, was 2,554, the number of employes injured being 28,267. The number of passengers killed was 376 in 1892, as against 293 in 1891; while the number of passengers injured was 3,227 in 1892, as against 2,972 in 1891. An assignment of casualties to the opportunity offered for accidents in 1892 shows 1 employe to have been killed for every 322 employes, and 1 employe to have been injured for each 29 men in the employ of the railways. A similar comparison shows 1 passenger killed for each 1,491,910 passengers carried or for each 35,542,282 passenger miles, and 1 passenger injured for each 173,833 passengers carried or each 4,140,966 passenger miles. The largest number of casualties to employes resulted from coupling and uncoupling cars, 378 employes having been killed and 10,319 injured while rendering this service. Of the total number killed in coupling and uncoupling cars, 253, and of the total number injured, 7,766 were trainmen. The accidents classed as "falling from cars" were in this year, as in previous years, responsible for the largest number of deaths among employes, the number killed in this manner being 611. Of this number 485 were trainmen. Collisions and derailments were responsible for the death of 431 employes. Of this number 336 were trainmen. This class of accidents is responsible also for the largest number of casualties to passengers. Thus 177 passengers were killed and 1,539 were injured by collisions and derailments during the year. Collisions alone were responsible for the death of 286 employes and 136 passengers.

The True Physician.

The money-making idea is one that is dominant in the majority of humanity, and every occupation is looked upon as a trade. Philanthropic motives, pure and simple, are either sneered at as visionary, uncharitably branded as a trick of trade, or considered as a mere advertising dodge. True medicine, however, proclaims that the true physician is most happy when the patients are most healthy; this idea the common mind rejects as an absurd and impracticable doctrine. There is a belief very generally spread that the physician has no interest in the preservation of health, but rather rejoices when there is the most sickness. This may be true in rare cases, but as a rule it is untrue. The physician who practices his profession for mere mercenary motives has certainly a very low character and a decidedly sordid spirit. Some one has most truthfully said that the sanitary engineering and preventive skill which make our homes sweet and comfortable tend to check disease and impoverish those who dare to bring down medical art to the level of a trade. No tradesman would get up in the middle of a cold winter's night, and ride ten miles without the prospect of pay, and yet the physician does this often. The true physician, therefore, becomes a teacher of benevolence.—*Med. Summary.*

Poisonous Gases.

Carbonic oxide is one of the most dangerous gases; it is disengaged especially by the combustion of coal. Leblanc found that the difficulty of breathing air impregnated with coal gas is due especially to the carbonic oxide thus generated, and not to carbonic acid, which is not generated in sufficient quantity to account for the poisonous quality of the air. A kilogramme of glowing coal will suffice to make the air in a space of 25 cubic meters unbreathable. An equally poisonous gas is sulphureted hydrogen. In the experiments of Dupuytren and Thenard $\frac{1}{1500}$ of this gas in the atmosphere proved fatal to a greenfinch, $\frac{1}{100}$ to a dog, and $\frac{1}{250}$ to a horse. Chauffier observed that both this gas and ammonia vapor proved fatal to animals in a few seconds. Chlorine gas cannot be inhaled, as the epiglottis closes spasmodically; even the smallest quantity mixed with the air provokes violent coughing. It kills animals quickly. Many poisons inhaled in gaseous form are equally as dangerous as if introduced into the blood in other ways. The noxiousness of the vapor of quicksilver is well known. Arsenious gas is one of the most dangerous poisons; and numerous deaths have occurred from the inhalation of cyanogen gas.—*Der Stein der Weisen.*

Does Farming Pay?

"Nine-tenths of our farms are mortgaged for all they are worth." This statement has been made so often that the general impression among all classes of people is that it represents the facts. Nothing could be further from the real truth. But not until the census of farms, homes and mortgages was taken in 1890 was it possible to get at the truth on this subject. These returns are now sufficiently compiled to warrant the following startling statements.

Three-quarters of all the farms in the United States are owned free of incumbrance. Only one-fourth of the total number of farms in the United States are mortgaged. Or, to express it more specifically, out of every hundred American farms, more than 70 are fully paid for and less than 30 are mortgaged.

The average mortgage represents only one-third the value of the farm upon which it is secured.

The total amount of farm mortgages in the whole country is hardly one-tenth the total value of all our farms.

In 1880, nearly one-fifth of the mortgage indebtedness rested on farms; but in 1890 farm mortgages represented only one-seventh of the country's total indebtedness on real estate.

Out of every hundred families on American farms in 1890, 47 owned their farms free of mortgage, 20 owned but with incumbrance and 32 hired the farms they lived on and worked.

Of those who cultivated their own farms, 70 per cent owned without incumbrance and only 30 per cent had mortgages. Of the farms occupied by tenants, less than 10 per cent were incumbered.

Four-fifths of the amount of debt on farms and homes was incurred for the commendable purpose of buying and improving the property, and a like proportion of the numbers of farms and homes were mortgaged for the same purpose.

The total real estate mortgage debt that existed in the United States in 1880 is estimated at $2\frac{1}{2}$ billions of dollars, equally divided between lots and acre tracts. In 1890 the total amount of such incumbrance had more than doubled, but only 34 per cent of it was on acres and 66 per cent on urban property.

The total mortgages on actual farms were about 525 millions of dollars in 1880, and ten years later were about 875 millions, an increase of 350 millions of dollars in the decade.

During these ten years no less than 600,000 new farms were created at the West and South. If only one-half of them carried the average-size mortgage, this would readily account for the increase in the total debt on farms.

Mortgages on other acre tracts than farms proper were in 1890 about 1,163 millions of dollars, or an increase of 438 millions during the decade.

The mortgages on lots, that is, on city and town property, amounted to 1,250 millions of dollars at the opening of the ninth decade, but in 1890 were estimated at nearly 4,000 millions, or an increase of over 2,700 millions during the ten years.

The total mortgage indebtedness in June, 1890, is estimated to have been some 6,000 millions of dollars, as against 2,500 millions in 1880, an increase of 3,500 millions.

These figures look large, but show that the total indebtedness on all real estate in the United States is only about \$92 per capita. Add to this the per capita amount represented by the public debts of the United States (\$14.63), of States and Territories (\$3.56), and of counties (\$2.27), a total of \$20.40, and it appears that the total public debt and all real estate mortgages in the United States amount to only \$112 per capita.

In other words, in June, 1890, the sum of \$112 from each man, woman and child in the United States would have paid all the mortgages in the country and also all the national, State and county debts. In France, the national debt alone exceeds \$116 per capita, England's national debt is nearly \$90 a head, while the public debts in the older Australian colonies are \$300 for each inhabitant. There are good reasons for believing also that mortgages in England, France, Germany and Australia vastly exceed the American average of \$92 per capita.

The official figures for 33 States, upon which the foregoing statements are based, were prepared for the *American Agriculturist* by George K. Holmes, special agent in charge of division of farms, homes and mortgages of the eleventh census, and are given in full in the December issue of that magazine, in connection with Mr. Myrick's article. Another interesting fact is that the number of families is practically one to a farm in most States, but for 22 States these farm families comprise 35 per cent of the total number of families. In this group of States only one-fourth of the farms were occupied by tenants in 1880, whereas now nearly one-third of the farm families are tenants—a gain in the wrong direction. The article concludes with the following statement:

"Certain it is that enough has been set forth herein—most of it for the first time—to demonstrate that the facts about farm mortgages have been grossly distorted and exaggerated. The indications now are that the

final figures will show that over two-thirds of our four and a half millions of farms are owned free of debt, and that all the mortgages on actual farms in the whole United States to-day do not exceed the value of one year's hay crop.

"The whole truth will be known when the census is completed, but enough is now done to indicate that the final result will differ from the above conclusions in amount rather than in proportion. A revulsion in public sentiment favorable to agriculture should follow a widespread discussion of these facts."—*American Agriculturist.*

How to Light Machine Shops.

At a recent meeting of the Institution of Mechanical Engineers, London, Mr. B. A. Dobson gave an interesting description of his experiences in shop lighting:

In endeavoring to improve the lighting of his shops at Bolton, Mr. Dobson naturally turned to electricity. Incandescent lamps were tried, but these were not a very great improvement in illuminating power over gas; while with the arc lamp the shadows were so hard and strongly defined that the workmen preferred a very much weaker illumination, if more diffused. When traveling on the Continent, Mr. Dobson visited some cotton mills, and here he found what seemed a very perfect system of illumination. Arc lamps were used, but they were placed in an inverted position to that which is usual, the negative carbon being above and the positive carbon below. This, of course, threw the greater part of the light rays upward, as most of the illuminating power proceeds from the crater of the positive carbon. The ceiling is kept well whitewashed, so that the light thrown up is again reflected downward. The sides of the room are also whitewashed, in order that a reflection may come from them. The result is that, without any definite source of illumination being observable, the whole room is flooded with a well-diffused light.

Mr. Dobson had very kindly arranged to have one of these lamps in the large visitors' room of the Institution of Civil Engineers, so that members were able to judge of its efficiency for themselves. The result was very perfect in regard to absence of shadows. One could stand in any part of the room, facing any way, and read a book or paper without any very perceptible shadow being thrown; indeed, the diffusion of light appeared to us as good as in the open air. Such a result is of the greatest importance, and it is to be hoped that libraries and reading rooms especially will in future largely adopt this system; or at any rate, that it will be introduced to the exclusion of the direct arc lighting, like that adopted with such unpleasant results in the reading room of the British Museum. In regard to cost, Mr. Dobson cannot speak positively on the subject, not yet having sufficient data to go upon; but he anticipates that it will be higher than gas at 2s. 8d. per thousand, which is the price in Bolton. There will, however, be a much larger volume of light than when the gas was used, and the advantages of the system, in his opinion, altogether outweigh any possible additional cost.

In the discussion which followed, Mr. A. P. Trotter gave a good popular explanation of the advantages of a dead white surface for reflecting light, as compared to that of a looking glass or bright surface. Good white blotting paper, he said, reflects back 82 per cent of the light cast upon it. Many persons are under the impression that looking glass must be a better reflector than paper or a whitewashed surface, because, with looking glass, a strong shadow can be cast, while from a dead surface no heavy shadow is obtained. The reason, of course, is not so much that the reflected light is less from the dead surface, but that the reflection is concentrated in the case of the looking glass. With paper or whitewash it proceeds from a vast number of points.

A modification of this system of reflected light, which is of interest, has been adopted by Mr. Aspinall, the chief engineer of the Lancashire and Yorkshire Railway, at the Horwich shops, where the rolling stock for the line is produced. In these shops the roof is not adapted for putting in large whitewashed reflectors above the lamps, the jibs of traveling cranes, belting, shafting, etc., being in the way; but Mr. Aspinall, having seen the very perfect illumination obtained by Mr. Dobson at Bolton, determined to see if he could not obtain a modified result. He therefore inverted his arc lamps so as to get the positive carbon below, as in the case of the Bolton installation, and the major part of the light would be thrown toward the ceiling. Above the lamp, and therefore not shielding it from view, was a whitewashed screen of boards, acting as a reflector.

The effect was far superior to that of the ordinary method of arc lighting, where the dazzling stream of light pours upon the spectator, to the derangement of his eyesight, and at the same time casting heavy and impenetrable shadows. This arrangement, however, is inferior to the complete system, as described by Mr. Dobson, but may be taken as a very good substitute where, from local causes, the entirely reflected principle cannot be adopted.

The Decimal Pointer.

In both France and Germany one-fourth reduced to a decimal is written as 0,25; in England it is written 0:25 (always with the period at the top of the line), and in the United States in this way, 0.25. France and Germany always use the comma, England and the United States the period, the only difference being the manner in which it is placed upon the line. Sir Isaac Newton is given the credit of originating the present English method of using the decimal point, his reason being that by placing it at the top of the line it could be distinguished at a glance from the "full stop" punctuation mark. All English mathematicians use the mark in the way proposed by Newton, and the period as a sign of multiplication.

THE COLUMBIAN EXPOSITION—STATUE OF "THE NORTH."

The main basin, which occupies the center of the Court of Honor at the Columbian Exposition, is decorated by several groups and pieces of statuary which

how his record compares with others of like age. Directum has started five times against the watch and five times against competitors. He has proved himself a race horse and not one of the dress parade kind. The slowest mile that he has trotted in public this year is the 2:14½ in his opening performance to the old style sulky at Cleveland the latter part of July. He has lost but three heats, two to Walter E. and one to Pixley, and his fifteen winning heats in his five races were in the average time of 2:09.9. That is, all of Directum's miles are at a faster average than any one either in a race or against time by any 4-year-old up to the beginning of the present season. His fifteen winning heats average nearly a second faster than any other stallion of any age has ever trotted in a race. His twenty heats, in races and against time, are in the average time of 2:09½, which is faster than any 3-year-old trotter or pacer has gone up the present year.

Directum has trotted 10 miles this season at an average a trifle lower than 2:07½, which is faster than any other stallion has ever trotted a single mile under any

ed, where all winds, except the west and northwest, bring the surcharged atmosphere from other manufacturing districts, producing at any season of the year, if the wind happens to be slight, a sky ranging from dull lead to dark brown. For four years in succession it has occurred at the writer's works that on June 21, the longest day, the gas in every room, amounting to nearly 7,500 jets, has had to be lighted by eleven o'clock in the morning, and remained lighted until work ceased; and this has occurred also in other towns, in weather that ought to have secured abundant sunshine. To such an extent does gloom prevail, that in clear weather the effect of bright sunlight becomes even distressing to the eyesight, simply from the rarity of the contrast.

One Million Pounds of Sugar in One Week.

Mr. L. Godchaux's Elm Hall refinery barreled up 1,000,000 pounds of sugar recently, the production of seven days' grinding. About 900 tons of cane per day passes through the rollers, 40,000 pounds of gran-



THE COLUMBIAN EXPOSITION—STATUE OF "THE NORTH."

possess real merit, as the sculptors have taken subjects which find their motives in American life. The statue of "The North," which is in front of the Manufactures building and near Mr. French's effective statue of the Republic, is a good example of one of these groups. The farm hand holds the powerful horse by the bit with one hand, while with the other he holds a spade. The man and the horse are of heroic size, and the group, when viewed either from the land or the basin, is very effective. At the extreme right one of the six rostral columns will be noticed. These columns are emblematic of victory, the projections in the sides representing the prows of captured triremes. The columns are surmounted by statues of Neptune.

Directum, 2:05¼.

In a general way it is understood that Directum is the greatest 4-year-old, the fastest stallion and the best race horse the trotting turf has ever seen. But how completely he surpassed all previous trotters of his age can only be appreciated by a careful review of all of his performances during the present season. Such a review will not be attempted at this time, further than to outline what the California colt has accomplished, and

condition. And so his superlative qualities could be enumerated almost without limit.—*Inter-Ocean.*

Lancashire Smoke.

Although Lancashire coal has a number of excellent qualities, yet it is one that makes the most smoke of any. A large portion of the Lancashire manufacturing industries, great and small, date from a number of years back, when smoke-consuming and smoke-preventing apparatus had not yet been devised; and many of the factories are working at the present day under pretty much the same conditions as when they started. Hence the atmosphere in all manufacturing towns in Lancashire is heavily charged with unconsumed carbon, producing an excess of cloud and fog, which, while inducing an excess of rain, acts also as a screen against the rays of the sun, and thus does a double injury to the neighboring agriculturist, the producer of the country's native wealth. A circle of thirty miles radius around Manchester is said to include a larger population than an equal circle around any other place in the world; and within this circle, about twelve miles northwest of Manchester, lies Bolton, the town with which the author is best acquainted.

lated sugar falls from the vacuum pans every six hours, and under the skillful management of Mr. Eddie Godchaux there is no let-up in this vast aggregation of machinery, not for a minute; with 500 men under his supervision, not one hesitates, but all know their duty and do it by some kind of instinct, as it were.

During the day a hundred wagons feed the maw of this monster mill with cane, and at night 500 cars are pulled in with a thousand tons of cane to appease the ever-crying call for more cane. About eight miles of railway are required to handle this vast crop. A Baldwin locomotive, with Mr. Clarke at the throttle, will take the place of mule propulsion in a few days; yet with all this immense acreage and all this cane to handle the indomitable enterprise of the manager has led to the incorporation of about 300 acres more of new land, and even now can be heard the terrible blasts of dynamite operating with fatal effects on the stumps that block the progress of the plow. If any one were to mention the fact that this country was now in the throes of a great financial panic (that is, in this section), he would be sent to an asylum for safe keeping. Times were never better, and altogether prosperity is on top, and everybody is happy.—*N. O. Times-Democrat.*