OUR DRINKING WATER.

Startling Facts Submitted to the New Orleans Sanitary Association.

An Intensely Interesting and Very Valuable Paper by Dr. Chas. Smart, U. S. A.

The following interesting and valuable paper, which merits the consideration of every thoughtful person, was last night read before the executive committee of the New Orleans Auxiliary Sanitary Association by its author, Dr. Chas. Smart, U. S. A.:

Mr. Chairman and Gentlemen—I was sent to this city by the National Board of Health to examine into the condition of the water supply. To that board my official report has to be rendered. It was my intention, however, without trenching on the ground to be covered officially, to have prepared a paper for you, but my time has been so occupied in investigating waters that I have been unable to sum up the results in a manner fit for formal presentation. I shall, nevertheless, invite your attention to what seem to be the prominent points connected with your water supply.

No doubt a good deal what I have to say is already well known to you, but it will bear repetition by me, inasmuch as I speak *excathedra*—as having an exact knowledge of the matters in question—as having seen them, and weighed them, and measured them. The importance of a pure water supply is well known to you as sanitarians, yet people generally, while accepting your arguments and acquiescing in your doctrines, go on year after year, making use of the same impure supply. Sanitary truths have to be preached again and again before the seeds fall upon good ground and ripen to a harvest of health. But I shall not occupy time in generalities.

There are two propositions connected with the question of water supply which must be constantly borne in mind. The one is axiomatic, and will be readily accepted as a truth, but the other may require to be proved before acceptance. The first is that a turbid water is always an impure water, but—and the second proposition forms the other half of the sentence—

A CLEAR WATER IS NOT NECESSARILY A PURE ONE

A turbid water contains an impurity which we can see; but the impurity may not render the water unwholesome. A little darkening from microscopic sooty particles, a little haze from invisible atoms of clay, constitute impurities in which themselves are harmless; but it so frequently happens that in rain water these harmless substances are accompanied by others of a more doubtful character, that practically a turbid water may be regarded as an impure water in the worst sense of the word impure. Besides clay, sand and charcoal particles, the turbidity consists of minute fragments of the various substances which are ground into powder on the streets of a large city, and swept up by the wind to settle on the roofs of the houses—of decaying leaves, rotting wood, insect remains, bird lime, and hosts of microscopic animalcules. In some of the samples which I have examined the microscopic appearances were such as are to be found in swamp water; while in two cases a minute worm was present in large numbers, showing a similarity in the cistern contents to the bilge-water of ships.

To rid the water supply of these unsavory solid matters, any or all of three processes can be adopted: sedimentation in the cistern, the rejection of the first washings from the roof by means of a cut-off, and filtration.

Sedimentation will clear a turbid water in progress of time if the process is not interfered with, but fresh influx of rain stirs up the sediment in part, so that the cistern seldom furnishes so pure a water as is desirable. Moreover, the solid matters accumulate, forming a layer of soft carbonaceous pulp in the bottom of the cistern, in which, especially during the heat of the summer season, chemical changes are actively going on and tainting the superjacent water with their products.

THIS PULP OR CISTERN SEDIMENT

is black and impalpable, not adhesive like clay, but mobile and semi-liquid, prompt to rise on agitation and slow to subside. Under the microscope it is seen to consist of fine particles of clay and sand, darkened by sooty deposits, with myriads of animalcules in active motion among the mineral particles. Its analysis shows 73 per cent of sand and clay and 27 per cent of carbonaceous and organic matters. A very large part of the 27 per cent consists simply of deposited charcoal or soot, but there is mixed with it quite a quantity of deleterious nitrogenous matter, so much so that about one-third of a grain of the mixed carbonaceous and nitrogenous substances is enough to render a gallon of pure water dangerous for use. With an accumulation of such matter soaking, slowly dissolving, and liable to be stirred up by the slightest agitation, it is not surprising that a number of the waters I have examined have proved to be unwholesome. No stronger argument is required to prove the necessity of preventing sedimentary accumulations, or of removing them at short intervals, than this analysis, which indicates that one-third of a grain of the non-mineral sediment is enough to poison a gallon of water. Fortunately the process of disintegration and solution is slow, but to prove that it does take place requires no chemical analysis. It is manifest both to the sense of smell and taste, and during the hot weather, when the fermentation changes, progress more rapidly. Yet were such analysis required I can produce them.

I am indebted to Dr. DeLoppre, post surgeon at Jackson Barracks, for observations on the rate of increase of the sediment. Fifteen cisterns were examined, giving for the average cistern a rate of deposit of about one inch per year.

While the majority of the people trust to sedimentation in the cistern for purifying the water supply, a few adopt the better plan of

EXCLUDING THE FIRST WASHINGS

from the roof and collecting only when the water runs clear in the conductor. This avoids the turbidity following each rainfall and lessens the tainting of the water from sedimentary accumulations. As to the form of the cut-off, the simpler the better; any arrangement is satisfactory by which the current is tilted aside until permitted to flow cisternwards in the regular channel.

But the cut-off does not free the water entirely from turbidity. No matter how much may be rejected, that which enters the cistern carries with it a certain proportion of solid matters. If a sample of so-called clear rain water be permitted to stand for twenty-four hours or more, the bottom of the vessel will be found powdered over with a fine sediment, which, when placed under the microscope, is resolved into minute mineral particles, soot, vegetable debris, and more or less of infusorial animalcules or actively moving spores. So far as turbidity is concerned this water is thus seen to be still susceptible of improvement. Among the waters furnished me for analysis by members of this association is one which is received into an iron tank from which it escapes into the cistern by means of an overflow pipe. This is an improvement on the simple cistern, as a large portion of the sediment is trapped in the tank; but as a sanitary measure it does not equal the cut-off, which casts this same proportion of the sediment entirely aside.

But the cut-off requires personal attention, and this requirement interferes greatly with its usefulness. Rains will fall when it is inconvenient or impossible to attend to it, and even when its existence is forgotten for the time being by its owner. To obviate this an automatic one has been suggested by a gentleman of this city. A vessel capable of holding four or five gallons is connected with the cut-off, and is permitted to fill slowly by trapping a small percentage of the rejected water. When filled, its weight removes the cut-off and permits of influx to the cistern.

Any means by which the first fall on the roof can be excluded from the cistern is of value as insuring a purer water. I have been furnished with samples of the cut-off or wa te water and of the clearer or stored water, but make no reference here to their analysis, as simple inspection shows that an impurity is present in the one which does not exist in the other.

TWO SAMPLES OF FILTERED WATER

were sent to me for examination; one a rainwater from the cistern of a private dwelling, the other river water from the supply tank of a school. In both instances English sandstone was the agent employed in the filtration, and in both the result was satisfactory to the eye—the water being perfectly clear.

This brings us to a consideration of the second proposition. A clear water is not necessarily a pure one. Many substances are soluble in water without impairing the clearness of the liquid. A pinch of salt may be added to a clear water; the solid disappears and the water remains clear as before. It is impure now, but not unwholesome. On the other hand, lead or arsenic may be dissolved in a similarly clear water, in which case the sample becomes both impure and unwholesome. No lead was found in any of the waters presented to me. In two or three instances there were traces of iron. However, the dissolved substances which exist in the rain water supply, are not mineral, but organic in their character. Sugar is an organic substance which disappears in water, forming a clear solution. If the water which contains the sugar is driven off by evaporation at a proper temperature, the sugar is recovered in a dry state and can be weighed. If any other organic matter is present in a water, that organic matter can likewise be obtained in a dry state and can be weighed. If the dry sugar be heated strongly, it chars and disappears, evolving a peculiar and well-known odor; and if any other matter, organic in its nature, be dried out of a water and then ignited, it will char also and give out its peculiar odor, for all organic substances blacken when subjected to a heat strong enough to destroy them. There are other and more delicate means for detecting and measuring these substances as they exist in water; but it is not my object to discuss the process, but simply to show you the existence of organic matters in a clear water, and the more strongly to impress on you that a clear water is not necessarily a pure one.

Sanitary chemistry cannot express the amount of

ORGANIC IMPURITY IN A WATER

in absolute weight, as being so many grains per gallon; but it can express very satisfactorily the relative impurity, calling, for instance, the water which is perfectly pure in this respect 0, that which has a certain measure as determined by the chemical process, 1, 2, 10, 18, 20, etc., as the case may be. By making use of this relative scale the character of an analyzed water can be indicated, premising that when the impurity figure is under 10 the water is wholesome and potable, when ranging from 10 to 20 it is less satisfactory in character, and when higher than 20 it should be condemned as unfit for use.

In placing the condemnation figure at 20 a latitude is given to the organic impurity which is not allowed by English sanitarians. They conceive a water to be dangerous when the impurity rises to 15; but they deal principally with well waters, where the contamination is sewerage or animal matter, while here the contamination is more of a vegetable nature. Were your water supply from wells I should, like them, place the dangerous figure at 15; but observations on rain water, carried on for several years in the Rocky mountains, have proved that while the figure of impurity remains below 20 no evil effects follow the use of the water, but when it exceeds that number remittent fevers are prevalent, increasing in severity and number as the figure of impurity rises, and diminishing as it falls. The connection between

THE REMITTENT FEVER AND THE VEGETABLE IMPURITY

in the water can be studied in the mountain region to better advantage than in lower lands or warmer latitudes, for there are no local sources of malaria to which the fevers can be referred. Here, when the remittent appears you can throw the blame on your swamps, and go on drinking poison from your cisterns. The statistical map on the wall of this room shows that you had no less than 209 deaths from malarial fever during the past year. So many deaths imply a vast amount of sickness and suffering in the cases which occurred but did not die. Nor must we forget the diarrhœal cases. How much had impure water to do with the production of the wave of disease which is represented on the map for the past year by 376 fatal cases?

Up to this time I have placed on my record the

ANALYSES OF 39 CISTERN WATERS.

Most of them, so far as I can ascertain, represent cisterns of good repute. A few are old, it is true, and have not been cleaned in many years, but to offset them others are comparatively new, have been cleaned recently or are preserved from fouling by the use of a cut-off. In fact, fourteen of the waters are from public or semi-public buildings, and six from private dwellings, where an endeavor is made to insure purity. There are thus twenty which are or ought to be good, and which were brought to me mainly for the sake of establishing their purity, while nineteen samples were collected by the inspectors to represent the contents of the average private cistern.

Of these 39 waters the impurity figure reaches 10 in nine specimens, runs from 10 to 20 in twenty-two samples, and exceeds the 20 in the remaining eight waters. Of the doubtful or suspicious waters which range from 10 to 20 the average is exactly 15, so that in a general classification into good and bad, involving the breaking up and redistribution of the doubtful waters, one-half of them would be thrown to each side, making 20 good and 19 bad out of the 39.

The recurrence of the figures 20 and 19 is liable to cause a misapprehension. It is simply a coincidence, and does not imply that the 20 waters reputed good proved on analysis to be 20, or that the 19 collected by the inspectors were all bad. Among the latter was some of the purest samples.

But these results are

BY NO MEANS SATISFACTORY,

although a knowledge of all the circumstances connected with the cistern water question prepares us for their occurrence. The fact is the fault does not lie entirely with the cisterns. A foul cistern will give an impure water, as we have already seen, but a clean cistern will not give a pure water unless a pure water is stored in it, or unless the water undergoes purification during the period of its storage. Now, the rain water which is run into the cisterns is not a pure water. I do not mean that it is contaminated with all the substances which we have seen to be washed from the roof. That is understood. What I would desire you to appreciate is that the rain water is an impure water before it touches the roof—impure as it is falling from the clouds. This is

NO SENSATIONAL STATEMENT,

based on theoretical notions. It is a serious fact which a little reflection will enable you to realize. The air is filled with all sorts of floating dust, minute particles which are carried up by the winds. You can see them dancing in the sunbeam as it crosses the room. My colleague, Dr. Sternberg, could tell you about the minerals and organisms and debris of both which pervade the atmosphere. He is here investigating that very subject.

This dust, mineral and organic, would collect around us and stifle us in its turbidity but for the rain. Your city has no mountains in the distance, but you have seen some elsewhere, hazy and uncertain in outline after six weeks of hot and dry weather. Again, you have seen them on the morning after a heavy shower standing out in bold relief. The rain had washed the turbidity from the air—to use the customary expression, it had purified the atmosphere. But if the atmosphere has been purified, what has become of the impurity? Manifestly it is to be found in the rain water. One of the objects of your association, I understand, is to procure a water-supply to flush the streets and cleanse them from all sewage accumulations. Nature raises water by evaporation, condenses it into cloud and precipitates it as rain to flush the atmosphere and cleanse it from all of its impurities.

RAIN WATER IS ATMOSPHERIC SEWAGE.

One of the processes by which the chemist collects the impurity in the air in order to investigate it is by spraying a given volume of air and examining this artificial rain.

But, while granting all this, it may be objected that practically the impurity is of no moment. Here chemical analysis steps in to show that, while the impurity in rain water collected in clean dishes varies with atmospheric conditions, its figure is frequently such as to condemn the water. I have watched over the rainfall for the past six years in the Rocky mountains, on the coast of Maine and in Tennessee and Mississippi. I have not been able to secure a sample of the New Orleans product as yet, but hope to be favored with one before I leave the city. The impurity is high in the water collected during the first part of a shower, usually much higher than in samples taken from the latter part of the fall. In this, more than in the rejection of the roof washings, consists the value of the cut-off. At the end of several days' continuous fall the rain is at its purest, its figure of impurity dropping within the limits of good water, but only just within it. Nine is the lowest figure which I have obtained.

Since rain water is thus impure, it may sound rather anomalous to record that one of the thirty-nine cisterns gave a water with an impurity of 7, while two gave 8 as their figure. Yet these are facts. Water which is stored in a clean cistern tends, as the expression goes, to purify itself. It would occupy too much time to discuss the why, and practically the discussion would be valueless. There is one point, however, which should not be passed over. The rain water in

THE UNDERGROUND CISTERNS OF MEMPHIS,

excluding those in which leakage and soil contamination existed, were purer waters than those in the cisterns of this city. Impurity figures of 2 and 3 were found, while 5 and 7 were common. The cause of this difference must be either in the material or in the situation of the cistern. It is not attributable to the material, for I have examined water from brick cisterns which were not sunken and the results agreed with those which I am obtaining here. Heat is the factor which appears to interfere with the natural purification during storage. The sunken cisterns are protected from its influence—the others are not. Sunken cisterns cannot be built here, but a protection from the heat might be measurably obtained by some other means.

The result at which we arrive is that a clean cistern with a cut-off which is managed intelligently will give a wholesome water, purer indeed than the rain water which was its source. This is why I would insist on the use of the cut-off; not merely to exclude the gross turbidity which comes from the roof, but to reject the impure water which falls from the clouds long after the roof is free from every trace of impurity. This, also, is why the cistern should be preserved from sedimentary accumulations by systematic and regular cleaning, not merely to prevent the disintegration and solution of solid impurities, but to permit the impure rain to purify itself from the hidden contamination which exists in it, notwithstanding its clearness and apparent purity.

By such means a comparatively pure water can be obtained, especially in winter, for potable use. But sedimentation and storage are not the processes which nature adopts for the elimination of organic matter from the rainfall. Her method is much more efficient and yields a water which is organically pure in many instances. Sedimentation and storage as conducted naturally furnishes what is known as pond water, which has by no means a good reputation. It is impure rain water, rendered yet more impure by dissolving organic products from a foul reservoir; just as bad cistern water is impure rain water rendered yet more impure by dissolving organic products from an unclean cistern.

THE ONLY ORGANICALLY PURE WATER

which is found in nature appears on the surface in the form of springs. Deep wells which tap subterranean currents may be regarded as artificial springs. These waters have left their turbidity behind them in the interstices of the gravel and the porosities of the sand and other permeable strata through which they have percolated. They are perfectly clear, and, so far as organic matter is concerned, they are perfectly pure. They may not be wholesome waters for drinking, as in their subterranean course they may have encountered soluble strata and become highly charged with such minerals as lime, magnesia and iron; but the atmospheric sewage has been completely removed.

The agent which accomplishes the destruction of the organic matter is the atmospheric gas oxygen, which is condensed in the pores of the soil. It follows that, if the percolating water-current is continuous for any length of time, the air will become used up and the soil lose its purifying power. But nature's process of filtration is an intermittent one. The rain falls, and ceases; the water percolates through the soil, and leaves it to be re-charged with air for the next percolation.

In the two cases of filtration through English sand stone which I mentioned a little ago, the result was stated as being satisfactory to the eye; but it was satisfactory to the eye only. Chemical tests showed the impurity in the one to be 9, and in the other 27. Efficient filtration should have given 0 in each instance; 1, 2 or 3 might have been considered as satisfactory, but certainly not over 4. The cause of the failure in these instances is obvious. The sand stone is small compared with the volume of water which has to pass through it, and the passage of the water-current is continuous. The stone is water-logged, and dissolved organic matter passes through it unchanged.

There is one substance, however, which exercises a powerfully destructive influence over organic matter in water.

ANIMAL CHARCOAL IS WELL KNOWN AS A PURIFIER

and deodorizer. It condenses a large volume of oxygen in its pores, and appears to have the further power of causing the air which is dissolved in the waters to participate in the attack upon the organic matter. Waters with an impurity figure of 30, 40, 50, etc., will be reduced to the purity of natural springs by passing through a stratum of this substance. It is used in all the patent filters, granulated, caked, mixed with mineral matters, or layered with other substances, to increase its powers or give individuality to the filter. These are more or less costly; but there is no reason why every householder in the city should not be able to draw from his cistern a water supply pure as that from the springs of nature. Charcoal is cheap, and the fittings can be simple and home-made. Certain obstacles, however, stand in the way of the general use of this method. Ignorance of the filtration virtues of the charcoal is one which can be easily overcome. Ignorance of the organic impurity of a clear cistern water—or rather a firm belief in its purity because it is clear—will require more effort for its removal. Lethargy in the matter of water supply must be dealt with on general principles. Viewing

THE QUESTION OF WATER SUPPLY IN THIS CITY

from my standpoint as analyst, I would strongly urge the necessity for filtration. There are too many hazards attending the other methods of purification for them to be held as trustworthy. The charcoal filter should be recognized as a formal part of the cistern, so that builders would no more think of making one without a filter than they would of putting one up without a lid, or indeed without a bottom.

I do not enter into specific details of filtration methods. These will be best investigated by a committee which can test its ideas experimentally.

One point only remains to be mentioned. Charcoal, when in constant use, loses its power of purifying. The term of its efficiency has not been determined; but after a time—usually stated as so many months—it certainly becomes as inert as a mass of English sandstone. It has then to be replaced by a new stock, or burned, to renew its virtues. Experiments should be made to define the period of its usefulness. No doubt, much will depend on the character of the water which has to be purified; but the average cistern can easily be found in this city. The weight of the charcoal would have to be noted, and a record kept of the volume of water which is transmitted through it, while, at monthly intervals, samples of the cistern and filtered waters should be submitted for chemical examination. By these means the progress of deterioration could be watched, and definite rules given concerning the management of the filter.

I have no doubt the National Board of Health would co-operate in such an investigation by superintending the examination of the samples periodically submitted.

In conclusion, I would respectfully recommend these matters to the consideration of your association, as being of much importance to the sanitary interests of the city in view of the death rates from malarial and diarrhœal causes, which are assuredly influenced by the contents of your cisterns.

"IRELAND'S SONGS."

Everywhere throughout this broad country the cry of the hungry in Ireland's storied land has been heard, and a generous and substantial response given. On the seventeenth instant (St. Patrick's Day) entertainments have been devised in all the larger cities, the proceeds of which will be devoted to the relief of the suffering Irish peasantry. Never behind in deeds of charity nor unmoved by the wail of distress, New Orleans will, on the same day, follow the example of her sister cities in the North and West.

Several means of raising funds have been devised, the most conspicuous of which will be a concert at the French Opera House under the management of that accomplished musician, Prof. H. A. Blake. The subject of the concert may be briefly described as "Ireland's Songs," which was admirably selected as a contrast to "Ireland's Tears." The richest gems of Irish melody will be sung, and Prof. Blake has succeeded in securing the services of ladies and gentlemen who rank with the finest singers in the country. The concert will be under the auspices of several military and benevolent associations, and will undoubtedly be found to be a rare and most excellent musical treat.

PURIM BALL.

The elite of our Jewish population and many of their friends assembled last night at Grunewald Hall to celebrate the consecrated feast of joy and liberty for the Israelites. And well was it done. Of all the types of feminine beauty few can compare with the classical features of the Jewish maiden, whose arching eyebrows, searching black eyes, beauty of complexion and dignified grace are proverbial. From 9 o'clock in the evening a flow of beauty and manliness ceaselessly poured into the spacious hall, till it was ablaze with loveliness and light. The hall was splendidly decorated. Rows of evergreens had been placed, as if growing there, on each side of the staircase leading to the hall. At the head of the stairs a frame made of evergreens was suspended from the ceiling, with the word "Welcome" worked in white and red roses. The balcony where the musicians discoursed sweet music was lined with hangings and garlands of evergreens encircling the motto, T. I., Purim and H. B. A." (Touro Infirmary, Purim, and Hebrew Benevolent Association.)

The dancing continued until the small hours of morning, and up to the last moment all seemed to enjoy themselves as if forgetful that there could ever be a morning to end such a brilliant night.

GRAND OPERA HOUSE.

Mr. Frederick Paulding appeared last evening as *Shylock* before a half house. Mr. Paulding, whilst he again evidenced that he possesses talent, was as uneven and unfinished as in his other performances—only a little more so.

THE IRISH BENEFIT TO-NIGHT.

The play in which Mr. Paulding has appeared to best advantage, and in which he evidences qualities of a high order as an actor and reader (without reference to his youth and the short time he has been on the stage), will be presented at this theatre for the benefit of the Irish relief fund. We refer to the Lady of Lyons, in which Mr. Paulding assumes the favorite character of "Claude Melnotte." Bulwer's play will be supplemented by the Sprigs of Shamrock, Mr. Frank Lawlor as "Shamus O'Brien," and end with St. Patrick's Day; making altogether a bill of unusual attractiveness and characteristic in a great measure of the event.

The benefit is given under the auspices of Gov. Wiltz, Lieut.-Governor McEnery, Hons. J. W. Preston, T. J. Semmes, J. W. Patton, Frank McGloin, John J. Finney, J. C. Denis, John Hindman, Esq., Col. Aug. Reichard and a host of other prominent citizens of New Orleans.

Beyond question the Grand Opera House will be filled in every one of its parts and a handsome sum reaped for the sufferers of the old country.

ACADEMY OF MUSIC.

Milton Nobles and company closed their engagement at this popular place of amusement last night, and this evening B. Macauley will open for a short season, appearing as *Uncle Dan'l* in A Messenger from Jarvis Section, supported by a company which has been pronounced by the critics a strong one.

The play is declared to be a production of superior merit, and entirely different from the common run of latter day comedy dramas.

LOUISIANA.

An old negro staying on Sheriff Gordy's place, near Franklin, was accidentally burned to death recently.

Gilgal Church, near the line of Webster and Claiborne, has been rebuilt. This church was destroyed by fire last year.

The Ouachita *Telegraph* is very anxious to have the Fagan and Corona, both Ouachita boats, run a race on that river.

A negro nurse in Shreveport dropped a baby of Mrs. Sprague's in Shreveport last Wednesday, it fell on its head, producing concussion of the brain, and will die.

Many of our farmers have planted large crops of oats, which are already up and growing finely, to meet the short corn crop of last year.—[Claiborne Guardian.

The Minden *Democrat* speaks hopefully of Minden's prosperity. Many new residences and store-houses are going up. A handsome railroad depot in the near future is spoken of as one of the possibilities.

Two weeks ago a stranger came to town and sought for temporary board. He had then about $150 with him. After a brief stay he left for Vermilionville. He had been there but a few days, when he was found hanging in a stable near the house where he was lodging, but no money was found on his person.—[New Iberia Sugar Bowl.

We have taken more than ordinary care to ascertain the condition of the seed cane from the inception of the planting season to its completion. "Splendidly," is the general reply; "never saw any superior to the seed put down in 1879." The impression among planters who are thoroughly posted in cane culture, appears to be that, if no unforseen accidents should transpire in the future, the crop of 1880 will be the largest made since the war.—[Assumption Pioneer.

The most melancholy accident we have been called on to chronicle for a long time occurred at the residence of one of our most esteemed citizens, Capt. T. L. Morse, on Wednesday, the twenty-fifth ultimo. The captain's youngest child, a dear little girl only about nineteen months old, swallowed some concentrated lye, and although every means to save the little sufferer's life that human ingenuity could devise was resorted to, she died the following morning.—[New Iberia Sugar Bowl.

On the Bell place, in East Carroll, 525 acres were planted in cotton. The ginning was completed on February 10, and the footing up shows 701 bales of cotton grown on and gathered off the 525 acres. An examination of the weights show that the 701 ties were equal to 774½ commercial bales. This we regard as a good crop—perhaps the largest average crop that has been made for a great length of time in the parish; close up to 1½ bales to the acre. Fully 5000 bushels of corn were made on the place; potatoes, peas and vegetables of all kinds in abundance.—[Carroll Conservative.

No better evidence of the purpose to plant very largely in cotton the present year on Red River, and on the hills, throughout the entire section of country tributary to this important center of trade need be cited, than the fact that there have been sold in our market nearly 1200 head of mules since the middle of last December, to be used for plantation purposes, and the demand for stock of that kind is still brisk. If we should be blessed with a season as favorable as that of the past year, North Louisiana will send to market the largest cotton crop she will have ever made. The outlook is most encouraging, and if no untoward accidents intervene, and the price of cotton maintains anything like its present value, our planters and farmers as a class will be vastly better off a year hence than they are to-day.—[Shreveport Standard.

From Staub's famous repository of news and useful knowledge, the DEMOCRAT received yesterday the New York Herald, Times, Sun, Philadelphia Times and Frank Leslie's Illustrated Journal. Staub holds forth at Goldthwaite's, corner of Canal and Exchange Alley.

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In every case of Malarial Fever, and Fever and Ague, while for disorders of the stomach, torpidity of the liver, indigestion and disturbances of the animal forces, which debilitate, it has no equivalent, and can have no substitute. It should not be confounded with triturated compounds of cheap spirits and essential oils, often sold under the name of Bitters.

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THE EASE AND COMPARATIVE CHEAPNESS

With which BARBED WIRE can be transported, the small amount of time and labor required to put it up, its wonderful efficiency as a Fence, and its Comparative Cheapness, has made for it a most wonderful and remarkable success. The amount of sales have been unprecedented, and though little was heard of it four years ago, it is now known all over the civilized world, and used in all the States and Territories of the United States.

We are Prepared to Execute All Orders, Small or Large, Promptly and at Very Low Prices.

FRIEDMAN'S INJECTORS AND EJECTORS.

The special attention of manufacturers, mill owners, and other parties using steam, is called to the great economy of employing Injectors as a means of supplying water to steam boilers.

In most cases these Injectors may take the place of Steam Pumps to great advantage, and even where the latter have been set up and are now in use, it would be a matter of economy to apply one of the former also to your boiler, for the following, among many other reasons equally pertinent, that might be given:

The Best of Pumps Will Sometimes Get Out of Order,

others frequently, in which case much valuable time is lost while making repairs. Here, under such circumstances, is a comparatively inexpensive machine, always in order and ready to start at a moment's notice to take the place of the disabled Pump and allow the work to go on as if nothing unusual had occurred. Then again *it may be used to great advantage in replenishing the Boilers during the nighttime, so as to be in a good condition to set up a full head of steam without delay in the morning, effecting by this operation alone a*

Great Saving in Fuel, and Wear and Tear of Boilers.

The Steam employed in working the Injector is returned to the Boiler with the Feed Water, thereby raising its temperature, and preventing the unequal expansion so disastrous to Boiler Plates, caused by pumping in water at a low temperature.

The Feed Water enters the Boiler through the Injector in a continuous stream, which is great advantage over the unavoidable intermittent supply produced by all kinds of pumps.

These Injectors are warranted to work with the most perfect regularity, and when properly applied, according to the instructions given, guaranteed to work to the fullest extent of their capacity, as laid down in our table.

They will also, if desired, be sent on trial to responsible parties for thirty days; to be accepted if found to work as represented, otherwise to be returned free of expense except for transportation.

DEALERS IN

JUDSON AND ALLEN GOVERNORS,

Shapley & Wells'

PORTABLE ENGINES AND BOILERS.

STEAMBOAT, CHURCH AND PLANTATION BELLS.

Bar, Hoop, Sheet and Boiler Iron,

WHITE LEAD,

Machine and Carriage Bolts,
Nuts, Washers and Nails,
Steel Blacksmith Tools of all description,
Files, Sand and Emory Paper, Emory Cloth,
Sugar-House and Railroad Lamps and Lanterns,
Putnam's Polished and Pointed Horse Shoe Nails,
Worcester Self-feeding Upright Drills,
Morse Patent Twist Drills,
Tank, Coopers' and Boiler Rivets,
Packers' Rachets,
Hand Bolt Cutters,
Eclipse Fan Blowers,
Spencer Flue Brushes,
Portable Forges,
Iron Roofing
Single and Double Trees,
Chains and Anchors,
Revolving and Plain,
Road Scrapers

MORRIS TASKER & CO.

Lap Welded, Steam and Gas Pipe,

STEAM AND GAS PIPE FITTINGS,

Steam and Gas Pipe Tools of all Kinds.

Brass and Iron Globe and Angle Valves; Brass and Iron Full Opening Valves; Brass and Iron Safety Valves; Brass and Iron Horizontal and Vertical Check Valves; Brass and Iron Steam and Vacuum Gauges; Steam and Service Cocks; Brass. Air, Cylinder and Gauge Cocks; Brass Gongs.

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For Journal Boxes, Engines, Shafting, for Slow and Fast Motion, we claim will save FIFTY PER CENT over the use of oil.

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HYDROSTATIC AND SELF-ACTING LUBRICATORS AND OILERS

MACHINIST AND BLACKSMITH TOOLS OF ALL KINDS; SHOVELS AND SPADES, Anvils, Vises and Bellows; Dirt, Garden and Iron Wheelbarrows; Rubber Hose. Belting and Packing of all kinds; New and Second-Hand Portable and Stationary Engines, Boilers, Shafting and Pulleys.

RAILROAD AND MILL SUPPLIES OF ALL KINDS.

Estimates for New Boilers Furnished on Application.

Parties desiring to purchase will save a Large Percentage by calling on us before purchasing elsewhere. Send for our Revised Catalogue.

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