The Memphis Appeal.

ESTABLISHED 1840. MEMPHIS, TENN., THURSDAY, JANUARY 3, 1889. VOL. XLVIII—NO. 342

A GREAT FIND!

Natural Gas at Fort Smith, Ark.

A Discovery of Extraordinary Moment to the Arkansas People.

The Fluid Fuel Found at a Depth of 2,680 Feet.

The Astonishing Pressure of 250 Pounds to the Inch.

A Flame Thrown to the Hight of Fifty Feet.

The Superb Triumph of Courage Over Immense Difficulties.

A Close Investigation Made by An Appeal Representative.

Possibly the Very Best Well Ever Sunk in America.

How Patience and Persistence Silenced the Croakers.

The Roar of the Gas Causes the Earth to Tremble.

Doubters Dumb in the Presence of the Tremedous Force.

The Region Round About and Its Illimitable Wealth.

Coal, Iron, Lead and Manganese Within Easy Reach.

Its Fruit Products Wonderful in Variety and Abundance.

The Very Place Where a Gas Well Should Have Been Found—The Honor of the Discovery Due to the Heroic Determination and Nerve of Harry Kelley.

Last Thursday there came to THE APPEAL office a copy of a pamphlet issued, for the year 1888, by the Chamber of Commerce of Fort Smith, Ark., which set forth the natural and commercial advantages enjoyed by that community. The pamphlet, in the main, had evidently been written early in the year, but upon the back of this particular copy was pasted a slip poorly printed in red ink, announcing that natural gas had been found near the city. Upon reading the slip it was discovered that it bore the date of November 30, 1888, and that the claim was made that the gas well developed a pressure of 250 pounds to the square inch. This was an astounding statement. In view of the fact that scarcely anything had been reported from Fort Smith to the world abroad of the magnitude of the discovery, THE APPEAL felt justified in taking up the matter as something of sensational interest. Within six hours after reading the pamphlet Mr. Thomas G. Boggs, of THE APPEAL staff, was on his way to Fort Smith with instructions to ascertain the exact facts and take any amount of space to report them. Mr. Boggs was given the assignment because of his knowledge of natural gas derived from close observation and study while residing in the gas regions of Pennsylvania. The result of his careful investigation is to be found in the following report:

NATURAL GAS AT FORT SMITH.

The Kind of Courage That Was Shown in Finding It.

FORT SMITH, Ark., Jan. 1.—In this battle of life the men most to be admired are the courageous; those who, in whatever station they may be found, are continually endeavoring to improve their condition in spite of adversity; those who, although misfortune may overtake them, wear cheerful faces and keep on; those who, notwithstanding the croaks of croakers, exhibit that quality of stick-to-it-iveness which has made everything that is a success a success. It is among this class of men that we find the motive, as well as the mental, power that has given us the printing press, the telegraph, the steamboat, the cotton gin, the rolling mill, the electric light, and in fact, every convenience enjoyed by millions of people today. If we, who have the daily newspapers brought to our breakfast tables every morning containing the day's events all over the world, could realize the work and anxiety of the inventors of these things, who toiled day and night and night and day, never allowing any cloud, however dark, to interrupt their determined purpose to benefit mankind, our admiration would be intense.

These dissertations may seem irrelevant to a paper on a new discovery of natural gas at this place, but they are not. There are several species of courage, but it is courage wherever found. The man who goes into a new country for the purpose of building it up, making it habitable and attractive to people anxious to get out of the crowded cities of the East and begin life anew, giving additional opportunities to the great army of bread-winners, is to be admired quite as much as the men who have given to the world the luxuries of the present day. To a certain extent a successful man owes it to his fellow beings to inaugurate such movements as will aid his less fortunate contemporaries in the struggle of life. This liberality is not compulsory, however, and, alas, too many lock up their riches in such a way that nobody is benefited therefrom. Such a man is selfish, is deserving of no credit and very seldom gets it. But the man who has accumulated wealth, and who has the courage to go into the wilderness or a sparsely settled locality and by the means he possesses begins to cut down the trees and to build houses for people in search of homes and new fields of labor, whether he does it to increase his own wealth or not, is doing a good service for the nation and mankind. If this man goes still further and spends his money in developing the natural resources of the country, taking from the earth its hidden treasures—gold, silver, iron, coal, copper and lead—so much more credit should he have. If the resources of a country are untouched by the hand of the laborer nobody would be benefited by their existence. Then the growth of a city, State or nation is due entirely to the men who put their shoulders to the wheel and push the chariot of progress along all manner of roads, lifting it out of the mudholes of misfortune and tugging it manfully over the hills of discouragement.

THE EVOLUTION OF A GAS WELL.

The Trouble, Vexation and Superb Courage It Took to Get It.

Fort Smith has natural gas, and its discovery was brought about by just such courage as spoken of above.

There is no indication of natural gas upon the surface of the earth or in the geological formations underneath. There are no cross-roads posts pointing to the locality in which it may be found. It does not crop out on the tops of mountains or in the ledges of hills. It is indeed a hidden treasure. It is only confidence and courage and determination that will find it. How many people ever thought that here in Northwestern Arkansas, far below the surface of the earth, lay a vast reservoir of natural gas? Anybody who would have predicted such a thing two years ago would have been laughed at and drummed out of town, so to speak. To have told the people here or elsewhere that there lay underneath Fort Smith a great lake of fuel, that did not need the sinking of a shaft to reach it, nor the pick of a miner to loosen it from its fastnesses, nor the services of a mule to get it out and then did not have to be carried to houses and factories and shoveled into grates and furnaces, would have provoked smiles of ridicule and the pointing of the finger to the head.

Such is the case, however. Fort Smith has natural gas (as every place else has, as the writer will later on show) and more—it has a natural gas well. It is not all in having natural gas. The well's the thing.

The following story tells its own tale and gives a complete picture of the evolution of a gas well and the obstacles incident thereto:

Under the leadership of Mr. Harry Kelley, a young man who came to this city from Kansas, who had seen natural gas and appreciated its advantages, a company of twenty-two gentlemen, mostly citizens of this place, was organized in August, 1887. Its purpose was to experiment with the view and hope of finding natural gas. It was a bold undertaking of Mr. Kelley, but he believed, and rightly too, that if Kansas and Pennsylvania and Ohio had natural gas, why should not Arkansas and Fort Smith have it? He had faith in this conclusion without any knowledge of natural gas. It was just on the general proposition of the "I'm-as-good-as-you-are" doctrine and "I will believe it until I find and prove to myself that I am not." He was deeply impressed with the fact that Arkansas was as rich in natural resources as Pennsylvania and was determined to demonstrate to the world that such was the case. So after much hard work and many setbacks, the company was securely established with himself as President and general manager. The money for the necessary machinery was paid in. The drilling outfit arrived in due time and in September, 1887, the boring began on a site in the eastern part of the city. By March, 1888, a well 1,380 feet deep had been drilled. In this hole four veins of coal, aggregating a thickness of eleven feet, had been passed through. The thickest vein was five feet and was found 550 feet below the surface.

At about 1,200 feet natural gas was struck, but the hole filled up with water. This paralyzed the company. The precious stuff was touched off with a fire brand, and it burned. Everybody in the company was thoroughly ignorant of natural gas and how to overcome this obstacle, which could have been easily remedied by "casing in," they were at a loss to know. After burning six weeks the flame, which was the flame of hope to the anxious members of the company, who went out every day to see if it were still burning, was choked off by the water and extinguished.

This was a sad event, so depressing to some of the company that their dreams of ever having natural gas were also choked off by the water in the well, and they sincerely regretted that the well didn't "run dry."

The leading spirits, however, did not succumb to the misfortune, but worked along until 1,330 feet were drilled out. Still the water troubled them. They had learned nothing by the bitter experience. They were so absolutely ignorant about the details of their undertaking that "casing in" never occurred to them. They had water on the brain. This was an instance where a little learning would not have been a dangerous thing.

This well was given up in disgust, in spite of the fact that gas had been found. The reader may believe that the croakers had a jolly time over the failure. For all that is known they may have held a convention and thanked God that natural gas had not been found, simply because "they told you so."

To the aggravation of some of the company and to the delight of the croakers, "experts" visited the town, looked over the situation "learnedly," as if they could tell whether natural gas existed here or not. They positively said it could not be found from the indications present. This, too, when it was known to have burned six weeks, and was only stopped by water.

Natural gas experts remind me very much of the critics in the play, "Peg Woffington;" they don't know the real thing when they see it. I will deal with the question of "indications" directly. To use not a very elegant, but still an expressive phrase, "there were no flies on Mr. Kelley." He had seen the gas burn. He knew it was here, and would not permit his way to be blocked by what professionals said about it. So, after the thought to have been fizz had fizzled its last fizz, Mr. Kelley determined not to be named "mud," and he made a desperate effort to get out of the "soup." With his characteristic vim and executive ability, he went to work again manfully. The alleged "consolidated fizz company" we e organized. The k tested shricks of the croakers filled the air. That human bird seemed to haunt the progressive men at every step. His sardonic grin was encountered at every turn, but these Mephistos had some tough Fausts to deal with. They could not be induced to leave the path they had chosen. The jeers of these stalking corpses only added fuel to the flames of hope of success burning in the breasts of Mr. Kelley and his associates. They were dauntless and more anxious than ever to make a new trial. The "casing" business had not yet been thought of by them or they could have proceeded with the first well and would have been as successful as they have been with the second.

Accordingly in May, 1888, heavy machinery, capable of sinking tools 3,000 feet, was purchased. About this time some of the scary members of the corporation stopped paying assessments, just at the very season money was most needed. But they had listened to the voice of the croakers and had lost faith. Those who remained in the company had to go down into their pockets and pay the proportion denied them by the lights that went out. They did it, and on July 18, 1888, having secured the farm of Henry Carnall, six miles southeast of Fort Smith, began again to drill for the coveted gas. Mr. Kelley went to Pennsylvania to learn something of well drilling. To his astonishment he learned that water in wells did not trouble those people. They told him it was always present, and when it became annoying they simply "cased 'er in." "Cased in" was a chestnut to them, but it was a new joke to Mr. Kelley. For the first time he learned that his first well would have been a success had he only "cased in." To Mr. Kelley

Of all sad thrusts of sword or pin
The saddest is "cas—ed in."

He felt like chasing himself back to Arkansas with a red lantern. He underwent the sensation of a man who had been shot at and missed. He brought back with him some experienced well drillers for fear he might strike a soap mine and not know what to do with it.

When he returned to Fort Smith he found things progressing nicely at the new well. The inevitable water appeared after a short distance. It got worse and worse. But what did Mr. Kelley care for water now? A deluge wouldn't have troubled him. He began to "case in." There wasn't a prouder man on earth than he when the six-inch casing was driven down as the tools worked deeper and deeper. The water was shut off from the cable and apparatus, and one would have thought that there was no water there. It didn't require much "casing," however, because not a drop of water was found below 150 feet. The well is as dry as a prohibitionist.

This is the most remarkable feature of gas well drilling in the United States. I cannot recall an instance, and do not believe there is another well in existence, that did not have water at a much greater depth than this.

There was an event in store for Mr. Kelley and his company that was less expected than any trouble from water. Had Mr. Kelley not learned what he did while visiting Pennsylvania this coming unlooked for trouble would have given the croakers and clams another opportunity to have used their cowardly weapons. If the water had been a source of annoyance this discounted it. One day when the drillers least expected it and after a long period of peaceful and steady work, the tools dropped from the cable with electric suddenness and were lost. To show how unexpected was this accident, the unfortunate company had purchased no fishing instruments. They had no idea that any piscatorial sport was so near at hand, else they would have had the bait and tackle ready. This was an expense and a delay as the tackle had to be sent for at a great distance. The necessary tools came and after much tedious labor the fishermen got a bite and pulled in their game. Where the drilling tools located themselves cannot be told as one cannot see down a small hole 500 feet with the naked eye.

Work was resumed and went on right merrily. Everybody was getting happy and hadn't ceased congratulating each other over the success at fishing when, as startlingly as before, at a depth of 600 feet another fishing excursion was inaugurated. They fished and fished and fished. There seemed to be a subterranean vault along the side of the well. This fishing business wore out the patience of everybody, but they proceeded. The whole operation was stopped however; the fishing tools broke from the cable and were lost too.

Now Mr. Kelley, with all his profound knowledge gathered in the combustible regions of Western Pennsylvania, never dreamed of losing fishing tools. It never occurred to him that it would have been a safe precaution to have carried a surplus of the valuable instruments. He did not think that many men carried large sums of money for no purpose but to feel safe. It is always well for a well driller to have several sets of tackle, as Mr. Kelley has learned.

At this time another embarrassment presented itself. The company was about "busted." It hadn't money enough to buy more fishing tackle, and certainly, further operations were impossible without it. Fortunately in Scott, an adjoining county, there were a number of men employed in boring for petroleum. In sore distress, and as a dernier resort, Mr. Kelley went down to Scott County to see the oil prospectors and ask the loan of their fishing tackle. Impressed with his earnest manner and woe-begone countenance, through pity for his desperate condition, they kindly lent him the desired "hooks." This was another flappy day, and Mr. Kelley began to believe that every dark cloud had a silver lining, and he had resolved, not like Jennie, of the song, to "wait until the clouds roll by," but to wait for nothing, not even for the company to buy fishing tackle, but to borrow it. Polonius's advice, "neither a borrower nor a lender be," awakened no responsive chord in his bosom.

With these tools all the lost ones were recovered, and real work began again with renewed vigor. Before the 1,500-foot point was reached something began to bubble and hiss, and an unusual excitement among the workmen might have been observed. The hissing kept up and threw a gentle spray about the aperture of the "diggings." There were suspicions that the gas had come. The foreman got a long pole, attached to it a firebrand, and nervously, not through fear but exultation, made ready to test the gas. The suspense among the men while these preparations were going on was intense. Slowly the foreman, as if through reverence, brought the torch nearer and nearer to the aperture through which, from the deep hole in the ground, came the invisible gas from the mysterious regions below. Quick as lightning the gas ignited with a suppressed detonation, and threw out a flame as high as a man's head. This wasn't much gas, the pressure being very slight, but it revived the hopes of even the recent clams.

At 1,900 feet the tools were again lost, and again at 2,000 feet. At both times they were easily recovered, because fishing tackle was plenty, perhaps.

At 2,100 feet another stratum of gas was tapped, which greatly increased the flow and pressure of the first vein. So much was coming now that it was used as fuel under the boiler, thereby saving the company $16 or $18 a day. This was a big item to the now almost bankrupt company.

At 2,150 feet the tools were dropped for the fifth time and at 2,200 feet the whole rig, cable, tools and all were lost in the vast reservoir and made an effort to go to China. This was heart breaking. So depressed did the company become after this series of awful misfortunes they were on the point of abandoning the enterprise entirely.

The fishing tools—well they had done much to overcome difficulties, but now they were useless. It was found that the hole was too small to admit them and the big job of "reaming" or making the hole bigger had to be begun. After serious trouble the reaming was finished and the hunt for lost tools resumed. The good time was coming. It had been coming a long time but now it was surely at hand.

At the great depth of 2,680 feet (more than a half a mile), another bag of gas anxious to be set free was punctured.

This time more than a hissing sound came from the aperature. It was a roar, as of some huge wild beast with lungs of unimaginable strength. The force with which the natural gas rushed out of the pipe was terrific. The earth trembled. The noise was heard for miles. The gas was ignited and the explosion that followed was equal to that of a hundred pieces of artillery discharged simultaneously. The flame shot angrily into the air and lighted up the surrounding country with a strange and lurid glare and reached a hight of fully fifty feet. It was an awe-inspiring sight and looked just as your correspondent saw it Sunday night last. It was a grand achievement, and the glory and the force and the great light of the flame was a fitting ending and an appropriate celebration of the courage and determination of the men whom no adversity could impede—men who deserve the tribute paid in the first few paragraphs of this attempt to give the readers of THE APPEAL some idea of the vexations and adversities of boring a gas well.

If these gentlemen make money out of it, which is beyond any question, they certainly deserve it. The only hope is that should they have a monopoly in supplying the gas to the city they will not be oppressive in their fees and will even heap "gases" of fire upon the heads of the poor, unthinking clam.

Since that great flame has been burning out on the meadows, even the croaking frog, being startled, has ceased to croak and the birds of the covert fly blindly into the fiery focus.

TO BE SUNK DEEPER.

Evidences of Petroleum Worthy of Further Investigation.

This last stratum of gas struck, after the excitement over its discovery had subsided, increased the pressure of the fluid to more than 250 pounds to the square inch. This is a paralyzing statement, but is true. Heavy weights were put in the aperture and blown like feathers into the air. The plain gas, as it came from the well, was run into the cylinder of the engine instead of steam, and the pressure was so great it had to be modified in order to do this with safety; and the engine fairly hummed under the great natural force. The last stratum was struck on November 23, 1888, when operations were suspended owing to the decline of the cable, which had, like Mr. Kelley, never given out during all the trouble and anxiety. But on this very day, November 23, after a noble service, the strong cord that had extended nearly 3,000 feet into the earth began to disintegrate. It was necessary to get a new cable to proceed farther, and on this day, having settled the gas question beyond doubt, and having unmistakably proved to the world that it was here, operations were suspended.

The new cable, which, by the way, cost $1,000 itself, was started in on a different mission than that of its predecessor. Its duty was, if possible, to discover petroleum. Accordingly on Christmas day work was again resumed. The object sought, the prize that is desired now, is coal oil, and the drilling will go on until 4,000 feet are passed through. We often speak of people wanting the earth, but this only signifies that which is found on the surface of this terrestial ball; these men not only want the earth and everything on the outside, but all the treasures that lie in the bowels thereof.

Of course this additional drilling will not impair the natural gas supply, as its light specific gravity precludes any possibility of its dropping into the lengthened hole. There is no danger in losing it in that direction, unless the Chinese are overtaken with that great desire to own the earth and attempt to rob us of American natural gas by boring a well 8,000 miles deep, or as we are dealing feet, 42,240,000 feet. So the flow of gas will be uninterrupted by the extension of the drilling.

The evidences of the existence of petroleum are always apparent. Of course there is no criterion by which the quantity of it can be foretold. It is usually found in a sand-stone. While many specimens of saturated sand-stone, which would burn if thrown into a grate shows that oil exists in the stone, it does not necessarily follow that there must be any quantity of petroleum in the locality where the evidence is found. On the other hand, a little piece of this sandstone found led to discovery and the consequent development of some of the richest petroleum fields of Western Pennsylvania.

Here in Fort Smith and in the contiguous country very rich specimens of this sort have been found. Upon this basis the gentlemen who have plodded through so nobly in the wearisome search for the other boon are so greatly encouraged that they feel warranted in pursuing the undertaking, if for no other reason than their satisfaction in deciding the problem for themselves, and settling pending doubts. The result will be neither a surprise nor a disappointment, whether the coal oil is found or not.

The following is approximately the thickness and nature of strata passed through as the well stood Christmas Day:

	Feet.
Surface clay	15
Slate and shale	2,000
Sand stone	165
Slate and shale	499
Total	2,680

The enormous thickness of the sand stone stratum is another extraordinary feature of this well. This is perhaps the greatest sand stone vein in any well in the United States. To sum up, this Fort Smith well, No. 2, has these features: The absence of water below 150 feet, the immense stratum of so called "gas producing" sand stone and the unusually great depth at which a utilizable pressure was found, 2,680 feet.

SCENES AT THE WELL.

What the Gas Does, How It Does It and the Noise It Makes.

Late Sunday evening, December 30, through the courtesy of President Kelley, Representative Rogers and myself were driven out to the "gusher." The roads thither were in a frightful condition, but the company having notified the public through the press that all would be welcome to see the well, a large number of people had assembled. The work of drilling had been suspended for the day, so that the foreman, Mr. C. J. Wilson and his assistant, Mr. George H. Derry, could give all their attention to the interested spectators and prevent any danger that might have been feared had the work continued.

If there is any one thing that will stir up the enthusiasm of one who has seen most of the important gas wells of Pennsylvania, it is the sight of the familiar derrick at some point outside the Keystone State. If this fraction of a skeleton pyramid, as it was seen in the distance, and in a country situated almost on the line which divides civilization from barbarism, aroused his interest, his enthusiasm knew no bounds when he arrived on the spot. To have imagined that away out here, in a place which only a few years ago was familiarly known as the "jumping off place" and from which place you could not travel by rail except over the same route that had carried you into the town, had that element that had saved the Pittsburg manufacturers from being ruined by Southern iron, created a peculiar sensation.

After looking over the works, the gas was ignited at a small pipe, the aperture of which did not exceed a half inch in diameter. It burned in the good, old, familiar way described under the sub-head of "The Evolution of a Gas Well." The genuineness of the gas could not be doubted. It roared and hissed and created a great racket, and your so-called natural gas man became as fitful and capricious as the grand and leaping flame that threw out its power and heat into the air. The delight with which he viewed it could not be estimated, and in the vision of the near future he saw in Fort Smith rolling-mills, blast furnaces, copper and lead smelters and manufacturing industries of every description. He saw a city of 100,000 inhabitants, with beautifully paved streets and handsome residences. He saw small and highly cultivated farms in close proximity to the city. He saw the beautiful villas of suburban residents, and heard the rumbling of many accommodation trains, carrying these people to and fro as they do in Chicago. He saw newsboys selling metropolitan papers. Knowing so well what natural gas has done for such towns as Beaver Falls, Rochester, Brighton, Tarentum, Butler and many others in Western Pennsylvania, this dream is by no means extravagant or improbable.

Well, the gas burned. It had to be covered with a hood to keep it from blowing itself out, so great was the pressure. The pressure is the important feature of natural gas. Without a good pressure it is useless. The only instrument convenient to test it at that hour was the steam gauge on the boiler. Into it the gas was turned. In a jiffy the gauge pointed to 120 pounds to the square inch. Now the boiler was not an excellent one and was only warranted to carry sixty pounds and it was thought advisable not to test its qualities any further. The gas which had now filled the boiler with this pressure was used in a novel way, spoken of before. It was turned into the cylinder of the engine and used as steam and the result was ridiculous and laughable. The flywheel spun and the engine was icy cold. Think of a steam engine being ice cold! The oil on the journals was congealed in a few minutes. At every place any water that got on the cylinder was frozen into ice.

At the aperture of the small pipe, at which the gas was ignited, ice was formed at the tip immediately after the gas was extinguished. This proved that the natural gas formed water by uniting with the oxygen of the air, and it is made cold by the probable icebergs and frigid caverns through which it passed from the great depth of 2,680 feet.

Since Christmas day 110 feet more have been drilled, so that the well has now reached the uncommon depth of 2,790 feet, which, with one exception perhaps (one at Shamokin, Pa., I believe), is the deepest natural gas well in the United States.

The company is now engaged in putting up a rig for the purpose of sinking another well right in the city, at the head of Seventh street. There is no doubt that it will be found. It may be obtained in nearly every spot tapped in or about Fort Smith.

This is the first successful drilling for natural gas in the South, and it should encourage progressive men to investigate the matter everywhere. It will not cost much to experiment, and we may be able to obtain it in Memphis at a practicable depth; who knows? It is worth trying. Let us do it.

WHAT IS IT?

Some Speculations as to Natural Gas and What Produces It.

A gentleman interested in the gas movement here asked me today how long I thought it would last. I astonished him by what he thought to be a shocking statement. I said "forever." Of course he was desirous of knowing my reasons. They are the same reasons printed in THE APPEAL over two years ago, at which time I said in a paper on "Natural Gas" that it would not only last forever but may be found at any place. The finding of it at Fort Smith is no surprise to me. I may have said in answer to the question "Where can it be found?" said Bangor, Me., Seattle, W. T., the City of Mexico, Fort Smith or Memphis. That I have often stated that it could be found in Memphis I know. Not from any indications on the earth or in what I learned from the strata passed through in boring the artesian wells there, but simply on account of the belief that it can be found there. It is entirely a question of the thickness of the earth's crust above the reservoir in which the gas is generated. Coal, petroleum, Trenton rock, sand stone, or whatever geological conditions may be found, have nothing whatever, in my opinion, to do with natural gas. It is my impression, not from mere off handed speculation, but from close and interested chemical study, the result of which has long since been published, that natural gas is hydrogen gas. The result of the flame when it is united with the oxygen of the air and ignited shows every evidence of hydrogen. It is said to produce a dew, a dampness when burned. It is known to be impossible of combustion if not united with oxygen. This shows that it is not oxygen, of course, (a ridiculous statement, but one that serves a purpose in making it plainer). It is known that the gas which comes from the well, has a great affinity for the oxygen which it meets in the atmosphere. So great is this affinity for oxygen that an explosion occurs when it is ignited. The force of this explosion, produced by the union of hydrogen and oxygen, is greater than that of any two gases. It surpasses the destructive qualities of dynamite or nitro-glycerine. It is a well known fact that the gases which compose water are only these two. Every molecule of water that ever existed contained two atoms of hydrogen and one atom of oxygen, and its chemical symbol is H2 O.—water. Now if this gas, which we call natural gas, unites with such force as we know it does with oxygen in the air, if it has to be mixed with a certain amount of atmosphere in order to get a proportion of oxygen equal to one in three, the hydrogen being one and the oxygen two, is it not reasonable to conclude, when we know that these gases only unite in that proportion, and when they do unite water is formed, that if one of the gases is oxygen the other must be hydogen? Quod erat demonstrandum. Since the oxygen of the air by being united with the natural gas gives every evidence that water is produced, the unknown quantity (natural gas) must be the other gas, which is hydrogen. By synthesis we learn that the water results from the combustion of the two; therefore the natural gas is a component part of water. We know that, by intense heat, the gases of water can be decomposed, separated. We have every evidence that the interior of the earth is entensely hot. This heat is sufficient to separate these gases, making of water two distinct and unlike qualities. We know that there are great bodies of water on the earth's surface, and below its surface (much to Mr. Kelley's regret) and that it rains upon the earth. We know that this water is absorbed by the earth and plenty of it reaches the inner surface of the earth's crust and is there decomposed by the intense heat. The oxygen which has lost its partner, is unfaithful and takes up with all kinds of elements. He soon forgets his recent companion, for whom he had great affinity, goes off finding new companions, forming oxide of calcium, the oxide of iron, oxide of barium, strontium or the oxide of anything with which he comes in contact. But Miss Hydrogen, she is ever faithful, of light specific gravity, and not caring to form new associations like the inconstant oxygen, she goes and hides herself in the sand stone or any porous stone in which she can find space to occupy, and refuses to be comforted. Man begins to dig natural gas wells and her dwelling in the porous rocks is given an outlet, and she comes forth like a thunderbolt, so anxious to leave the scenes of her sorrow. On she rushes up the pipe, but not until light is furnished does she see her unfaithful spouse, oxygen. But when light is thrown on the subject she embraces him with terrific force and great eclat, and is again happy.

And just as long as it rains on the earth, and as long as that rain permeates through the earth just so long will we have natural gas, and it may be found anywhere, the practicability of finding depending only on the thickness of the crust of earth above the deposits of hydrogen.

THE VALUE OF NATURAL GAS

So Great That It Cannot be Estimated—Some Ideas.

There are very few people who have not lived in or visited a natural gas country who can in any way appreciate the value of it. Pittsburg had it within a hundred or so miles for ten years before any effort was made to even experiment in search of the bonanza. Of course it did not excite Pittsburg people to hear of burning wells in the oil regions. Everybody thought it was an accompaniment of petroleum and was coal gas, and an uncertain and valueless adjunct to the pumping of oil. Many have been the oil wells that have been abandoned because this mysterious and troublesome gas appeared. Its real value was never realized until the Murrayasville well was drilled and the product piped to Pittsburg to the various mills which abound in that city. It proved to be such an overwhelming success that the result of one year's trial as a fuel was startling. Companies with unlimited capital began to buy up every place where they could find some alleged indication of the gas. Wells sprung up everywhere about the city. Almost every man who owned a dog dug a well. These big companies would bid oh his property and he was benefited beyond every expectation.

It was regarded with great fear at first and the telegraph columns of THE APPEAL have contained the accounts of a number of terrible explosions. These, however, were the result of unpardonable carelessness, and the people began to grow less timid about it. The rival companies began laying their pipes throughtout the cities of Allegheny and Pittsburg. Both cities are a perfect network of pipes. The people began to look at it as the ground hog would. It was just as dangerous to walk on the streets, if there was danger at all, as it was to have it in one's house. They concluded since they had to live in Pittsburg they might as well have some of the benefits of the gas. If they were to be killed by explosions it would be better for them to die in their own house, or the house of a friend, than to die out in the cold, cold world. So the natural gas was put into the houses, and now you couldn't get the people to use anything else as fuel. There is no smoke, no dust, no dirt of any kind, and it is much cheaper than coal. Notwithstanding this, the people would be willing to pay more for natural gas than to give it up. They couldn't be induced to give it up.

These are only the smaller benefits of the greatest natural bonanza of the nineteenth century. It is when it is used as a fuel in manufactures that its great and inestimable value is appreciated and realized. It makes the fuel of a rolling mill amount to nothing, simply nothing. The big mills have their own wells on the plant and their fuel costs absolutely nothing. There are many iron firms in Pittsburg which must save as much as $200,000 or more a year by the use of natural gas. It can be used in any kind of a grate or stove or furnace, except the blast furnace for the manufacture of pig iron. I understand, however, that there is a blast furnace grate to be soon introduced which will overcome the difficulty in this direction. It is needless to go further into the question of the value of this gas. Everybody who has lived where it is, and they ought to know, say it is worth its bulk in gold. Suppose Mr. Milburn, of Memphis, didn't have to pay anything for the fuel he consumed in his immense works? The question is partly answered in the supposition.

It is a notable fact that the people of this place do not realize what they have. I believe many of them who have seen the flame believe that it will not burn, or that it is not natural gas. They will appreciate its value some day, however, and the future of the already prosperous city is assured, if its leading citizens will profit by the experience of towns that have been "boomed."

YESTERDAY, TODAY AND TOMORROW

Fort Smith as It Was, as It Is, and as It Will Be.

In 1817 Fort Smith was a military post, and remained so until 1867. Its only business during this half century was the trade carried on with the red men of the Indian Territory, and about the only thing it was noted for were the convictions of murderers under the jurisdiction of the United States Court, and the wholesale hangings that took place there. In 1880 it had a population of 3,000, and today it is claimed the number of residents of the corporation reaches 18,000. This may be somewhat exaggerated, but certainly 15,000 souls live there. The number of negroes, fortunately, does not exceed 1,500. This small proportion of the African race is a boom that all Southern cities yearn for and that few, if any of them, can boast of.

It is not the purpose of this article to boom or to unduly praise Fort Smith. To simply tell the truth should satisfy the most enthusiastic of her citizens. The word "boom" is synonymous with "lie." It is an inflation, a deception, a misrepresentation. Something not founded on facts. It is wind. It is gas. A dangerous gas too. More dangerous sometimes to the commercial and industrial progress of a city than escaping natural gas is when carelessly ignited in a room by an unthinking person. Booms are explosive. In fact they are explosions. They always "bust" when pressed too hard. To learn the bitter experience of the victims of these dangerous incidents of a city's life, one needs only to recall Los Angeles, Cal.; Sheffield, Ala., and Birmingham, Ala. It is true that Birmingham is a great city today, but it would have been greater had it not have been subject to "booms." Like Birmingham, Fort Smith needs no "booming."

Natural gas and an absence of a large negro population are not its only blessings. The gas would be of no particularly striking advantage to it were its surroundings not as we find them. As it is, natural gas will be as valuable to that city as it is to Pittsburg and as it could be to Birmingham, for within a hundred miles and at much less distance are inexhaustible deposits of iron, copper, lead and manganese ores and an abundance of coal. With these resources the great fuel can be utilized and open up markets for the productions of the blast furnaces, the rolling-mills and the factories of Fort Smith and enable it to compete with any city in the country with ease, and great ease.

Not only in the vicinage of this wonderful little city are metals in great quantities, but the agricultural adaptabilities of the soil in Sebastian and adjoining counties and in the great Indian Territory is unsurpassed. The Arkansas and Poteau Valleys under cultivation would teem with the fruits of the earth. The fields and orchards today yield luxuriant and magnificent crops of grain and fruit as well as cotton. The apples and pears, and grapes and strawberries; the wheat and the oats, and grasses and vegetables, give the territory the just and well deserved title that Boggy Johnson, who lived in those part in "ye olden time," gave it—the garden spot of the world. So with all these resources, the circle which has for its center Fort Smith, would convince any man, without any extra touches, that Fort Smith is a great place and will be greater.

In the building of a city many natural and precarious policies are apt to be pursued. When such resources as these become known to the world people are attracted. People who, not being satisfied with eking out an existence which has become distasteful to them in the crowded cities, will naturally turn to that place which, in their opinion, offers the greatest inducements. It has been a custom of some town builders, when they found that they had resources which challenged the attention of capital and labor, to put the prices of their lands and the rents of their houses beyond all reason and justice. This does not help a growing city. This is a boom. It keeps those classes of people who make a city away. It is not the wealthy man who makes a metropolis. Far from it. The best people to populate a town with are the middle and laboring classes, the skilled mechanic and the artisan. These people make comfortable livings and spend their earnings freely. They do not, as the rich man, horde, but circulate money. They make money useful. They spread it. Without them there would be no months to feed, and no backs to clothe. They make the world. Without them no merchants would be necessary and no industry could be pursued. They are everything and they work out the schemes of civilization. Of what benefit would coal and iron and copper and gold and natural gas be, if the hand of man wasn't employed in developing them? The only answer is apparent—of no benefit. Then it is certain that these are the people to induce to come to a growing city. They are attracted by the natural resources and possibilities of a locality. Now the policy for the builders of a city to adopt is to foster this class of people, build them comfortable homes and charge them reasonable rents. Real estate should not be put up to ridiculously high figures, because the most progressive and best citizens are those in moderate means. This is an important point and should be earnestly looked after. There seems to be little disposition on the part of Fort Smith land owners to do this. If the "booming" inclinations of other towns should present itself, the leading and public-spirited citizens should crush it. For, by "booming," prices may reach a point that could never again be attained.

This advice is well timed, because from the present prospect of rapid and unimaginable growth it would be the most seductive error to fall into. Watch it.

THE APPEAL is glad of this opportunity to record to the world fuller than any other paper has done the new discovery of natural gas in the border city of a grand and progressive State. The State of Arkansas is not excelled in any way by any State in the Union as far as natural resources go, and with the snap and get-up-and-get that is now prevailing, immigration will be diverted from the cold and disagreeable northwest to her delightful clime.

THE APPEAL heartily wishes Fort Smith and all the rest of the State a very happy New Year, and may it not be long till she has a metropolis such as Memphis is.

THOMAS G. BOGGS.