An Ohio Gas Well.

At Shelby, Ohio, May 5, the largest vein of gas ever struck in Ohio was reached at a depth of 480 feet. The men were warned of its presence by a roaring sound, and fled for their lives, hardly escaping before the gas rushed from the orifice with a tremendous report, shattering the derrick and throwing the dirt and mud many feet into the air. A temporary pipe, seventy feet in length, has been laid, connecting with the well, and it furnishes a steady stream of fire twenty-five feet high. The discovery will supply the whole town with light and fuel for dwelling houses and manufactories.

Lumley Electric Light.

The Lumley system of lights and dynamo machines, which has been in use for two or three years in England, is now being introduced into this country; it comes to us with quite a favorable recommendation. The filaments in the incandescent lamps are arranged in the outline of a cross, and, according to the statements of the company, give more light to the horse power than can be obtained from any other system. They have not yet, however, been subjected, we believe, to any competitive tests. The filament is prepared from a fiber whose origin is kept a secret. The lamps range from 10 to 300 candle power, and are guaranteed for 1,000 hours, though there are lamps at the company's factory which are stated to have been burned over 4,000 hours without any apparent loss of power. The arc lamp is constructed to be run, when desired, in the same circuit as the incandescent. The dynamo is a modified Gramme machine, and has the merit of being quite cheap and very compact. Particular durability is also claimed for it, but as the life of any good dynamo is, with proper care, almost indefinite, the machine can do no better in this respect than to share the general merit of longevity. It is run at 1,600 revolutions, which may possibly account for the excellent results obtained.

IMPROVED TRACTION ENGINE.

The accompanying engraving represents a traction engine embodying new and valuable forms of construction, and which may be employed to plow, saw wood, gin cotton, thrash and grind grain, haul, or to do any of the work commonly performed by a steam engine. Heretofore in the operation of traction engines a serious difficulty has been caused by the slipping of the wheels in passing over sandy or soft soil. The engine here illustrated overcomes this to a great extent, as the surface of the wheel in contact with the ground is practically largely increased. This is accomplished by means of a V-shaped chain connecting each pair of wheels, thus forming a track on the pulling or tight side of the chain, that is laid on the ground for the drivers to roll on. Besides increasing the bearing surface this enables the engine to utilize more of its power than it would if rolling on the ground. The pilot wheels are of the same width as the drivers, and the weight is distributed on all four points; the guiding of these wheels is accomplished with a short axle pivoted at the center of the face of the wheels, so that the length of the chains is not altered when turning a corner. The engine rolls on its own rail, the pilot wheels laying it down; and being connected with the drivers they help forward the latter by taking their proportion of the weight of the engine.

In regard to the work which this engine will do, the inventor, Mr. Geo. F. Page, of No. 5 N. Schroeder St., Baltimore, Md., states that "with my twelve horse engine, I pulled through the red clay mud, up a grade of one in twelve, ten tons in two six horse wagons. The engine made better time, with less water and coal, than the old wheels on a dry road of the same grade."

Discovery of the Missing Link.

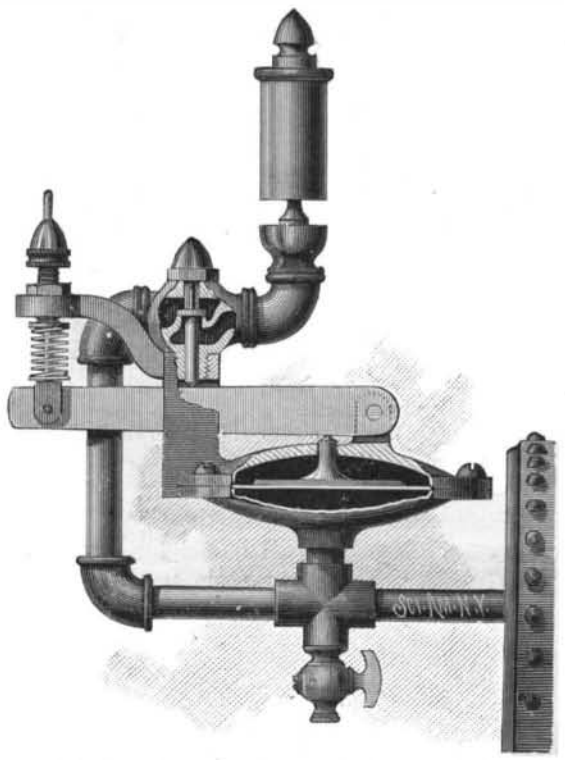
"They can talk all they please about their great scientists," said the brakeman to a Chicago *Herald* reporter, as he stepped between two freight cars and made his arms go up in the air, "but I did something the other day that Darwin, Haeckel, Huxley, and all them evolutionist fellers never could do, with all their larnin'. We were running along with about thirty cars, when our train broke in two sections. We stopped 'em, an' were goin' to couple up again, when we found we couldn't do it. Something was gone. 'Wait a minute,' says I to the conductor, and then I skipped out and run back along the track. It was then what I did what the crack scientists have never been able to do."

"What was that?"

"I found the missing link."

SAFETY VALVE AND ALARM FOR STEAM BOILERS.

The object of the device herewith shown is to cause an alarm, in case the safety valve fails to open, by the use of a pressure detecter in conjunction with an ordinary safety valve, so constructed as to insure the invariable opening of the valve when the pressure reaches a given point. Connected to the steam pipe attaching the device to the boiler is a steam chamber, across



SAFETY VALVE AND ALARM FOR STEAM BOILERS.

which is secured a thin metallic diaphragm carrying a plunger extending through the upper side of the chamber into contact with a lever at a point near its fulcrum. The valve chamber is sustained by a slotted post through which the lever passes. To the outer end of the lever is pivoted a rod extending upward loosely through a sleeve nut screwed through the end of an arm projecting from the post; by turning the nut the tension of a spring surrounding the rod and the pressure on the lever can be regulated. Beneath the valve, the casing of which is broken away in the engraving to show the interior, is a slide pin extending through the lower part of the valve chamber to the lever. The valve stem extends upward into a guide mortise, and is fluted so to reduce the friction. A whistle is connected to the outer part of the valve chamber.

When used on a boiler provided with an ordinary safety valve, the lever is set by adjustment of the spring at the same pressure as the safety valve. In case the latter fails to open when the maximum pressure is reached, the steam, acting against the diaphragm, raises the lever, thereby pushing the pin and valve upward and admitting steam to the whistle. The form and arrangement of the valve are such that it is not liable to stick, and it opens easily and readily. When there is no pressure in the boiler, the lever rests on the bottom of the slot in the post, thus relieving the diaphragm of all weight.

This invention has been patented by Messrs. W. B. Railing and C. N. May, P.O. box 160, Mechanicsburg, Pa.

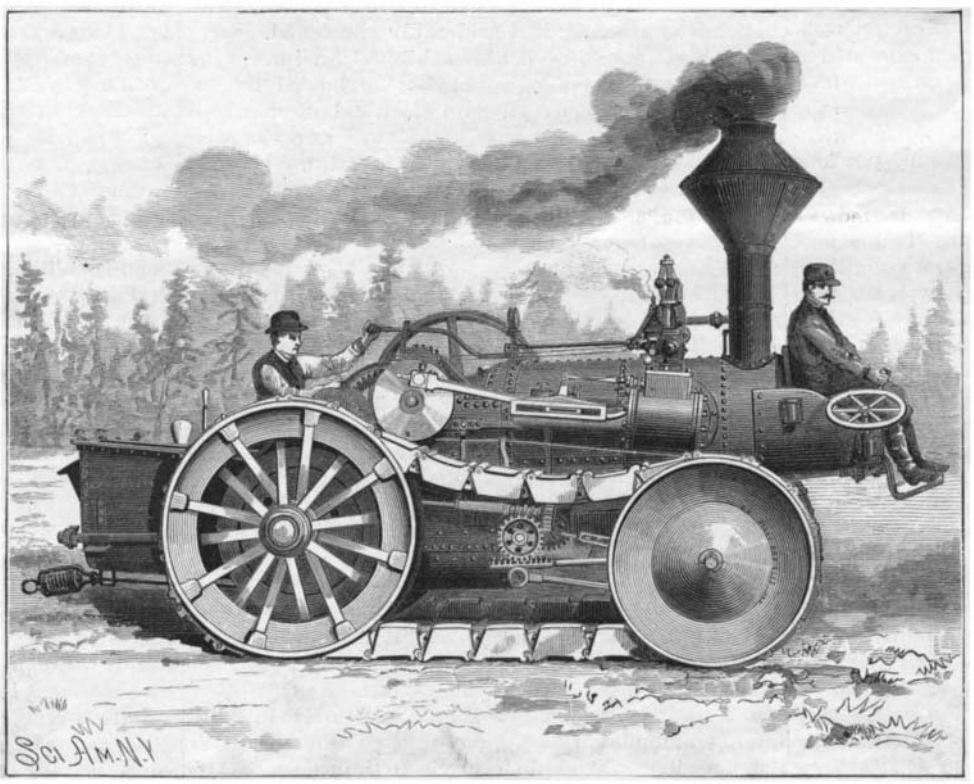
A Land Flowing with Wine, and the People all Drunkards.

Among the new missionary stations established by the American Board is that of Inhambane, on the east coast of Africa, situated in about latitude 24° and about 200 miles northeast of Delagoa Bay. The missionary at this station, the Rev. Dr. Richards, lately made an inland tour of 150 miles from the coast, to see what he could see, and in a recent number of the *Missionary Herald* is given a very interesting account of this journey, from which we abstract the following:

On the third day out the explorers came upon the Amakwakwa tribe, of whom Mr. Richards says: "They have no gardens at all. They are so frequently robbed by Umzila's *impis* (soldiers) that they have become quite discouraged. Another reason is that the native fruit is capable of sustaining life, and is abundant; and, again, the palm wine flows freely all over the country. This palm tree is usually four or five feet high, seldom ten feet. It manifests little life, save at the top, where a few leaves appear, looking like a flower pot on a stump. These leaves are all cut off, and from the cut each tree yields daily about a pint of delicious juice, but highly intoxicating when allowed to stand for a few hours. There seems to be no limit to these trees, and we were surrounded on every hand by drunken men and women. Even little children were staggering about as ingloriously as their parents. It was difficult to avoid trouble with these people, yet our guns were respected, and a ball fired carelessly at a near tree would produce quiet for half an hour. They were coarse, rough, drunken fellows, often plundering, often plundered, and accustomed to quarrels and fights not altogether bloodless. One could scarce expect to find pleasure in passing among them."

Nobert's Ruling Machine.

The world renowned ruling machine of the late M. Nobert was exhibited at the last meeting of the Royal Microscopical Society. It has been purchased by Mr. Frank Crisp, one of the secretaries. The foundation of the machine is the ordinary dividing engine used in the graduation of circles and sextants; this, by a vast amount of delicate superposed mechanism, is made to rule lines at a very minute but determinable distance; strange to say, the lines are not straight ones, but portions of a large arc; the lines, however, not exceeding one-fiftieth of an inch in length, the curvature is not perceptible. The diamonds used for ruling are worked to knife edges, in some instances ground, in others chipped, but made with such delicacy that microscopical examination fails to detect any serrations; in this and the glass employed would seem to lie the secret of the fine quality of line produced by M. Nobert. The note book of the inventor accompanies the machine, and in it the performance of each diamond has been recorded, and much useful information that will probably enable the machine to be used. Experts who have examined the machine since it has been in England do not consider the mechanical contrivances the best that could have been devised; but the fact nevertheless remains that Nobert contrived to execute rulings which have not been equaled. The resolution of the nineteenth band, in which the distance of the lines—according to the measurements of Dr. Pigott—is 112·595 to the inch, and formerly supposed to be impracticable, is now accomplished without much difficulty. There is also an adaptation for ruling the longer and comparatively coarser lines for diffraction plates for spectroscopes.



PAGE'S IMPROVED TRACTION ENGINE.

Effects of Heat and Cold on Steel Tools.

There are steels and steels. Some of them act queerly. A planer man was much annoyed at the breaking of his cutting chisels every morning in the cold weather. He had become infatuated with a "high" steel that was worked at a low red heat and was not hardened for tempering, but was left to cool under the hammer. But his planer was near a basement wall on which the frost has stood every cold morning during this "open" winter. Soon as he started a chip, away would go the point or edge of the tool. At last he put his thinking cap on, and procuring a small alcohol lamp from a glue pot, he swung it on the crosshead saddle so that the blaze came up by the side of the tool. This heated the tool so that it was almost painful to feel it. He had no more snap breakages. After the tool got heated by the friction of its work, the lamp was turned off. Another machinist, working on threading taps, heats up the threading tool in the morning by grinding it on an emery wheel.