LAUNCH OF THE IRON BATTERY "KEOKUK."

On Saturday, the 6th ult., the iron-clad, turreted battery *Keokuk* was launched from the foot of Eleventh street (E. R.) This vessel is one which was projected by Mr. C. W. Whitney, of this city, and differs materially from any of the other iron-clads now building or about to be built. She is 159 feet long, 36 feet 3 inches beam, and has 13 feet 6 inches depth of hold. There are two fixed turrets and a short smoke-pipe visible above deck; these alone break the smooth surface which everywhere slopes to the water's edge. Below the water-line the *Keokuk* is an ordinary sea-going craft of good model; above this mark however, she hassomepeculiarities worthy of mention. The side armor extends 4 feet below the fighting draft, which will be about 8 feet 6 inches, and for a portion of the length, amidships, presents an angle of 37° to the horizon. This inclined armor runs up to the main deck on each side, which is but little wider than the turrets. The bow and stern of the *Keokuk* round away to the water, and present the same appearance to the eye that a wasp's body would immersed. The stinger however, is not in the same relative position. The deck beams are a continuation of the ships ribs, which are of iron 4 inches deep by 1 inch thick, placed 18 inches apart. Over these ribs a ½-inch plate is laid, and that relaid again with a 5-inch wooden deck; this latter is caulked water-tight and then armed with two ½-inch iron plates, somewhat similar to the Ericsson *Monitors*. The casemated portion of the vessel, 5¾ inches thick, is laid with iron 4 inches deep by 1 inch thick, placed 1 inch apart; the interstices being filled in with yellow pine. The remaining 1¾ inches are made up by the outside sheets. This armor is fastened on with countersunk bolts 1⅛ inches in diameter and 12 inches apart, secured inside with strong, six-sided nuts. The deck has only seven-eighth bolts through it.

The turrets, two in number, are stationary, and mount one 11-inch gun each. They are 14 feet in diameter at the top and 20 feet at the base, extending 7 feet above the deck, and twenty inches below it; upon a platform constructed at that line the guns are mounted. The turrets proper consist of wrought-iron skeletons, made of flat iron, 5 inches deep by 1 inch thick, placed edgewise, 15 inches apart and secured to a ½-inch sheet by 4 wrought-iron clamps 4 inches deep by 1 inch thick. The 15-inch spaces remaining inside are filled up with wood, and afterward covered with a thin, sheet-iron lining to make a smooth finish; outside of the turret-skin, ½-inch plate, the protection is the same as that of the casemates. Each turret has its own shot, shell and powder magazine, communicating from the deck, just underneath the tower, by hatches. In the after-end of the forward turret is the pilot-house, which is 2 feet higher than the main structure, where the helmsman controls the vessel by the usual steering apparatus.

The turret gun decks, 20 inches below the main deck, consist of a circular iron frame 6 inches deep by ¾ of an inch thick, supported by 12 wrought-iron beams 2½ inches in diameter. This frame is further crossed at regular intervals by 14 wrought-iron beams, also 6 inches deep and ¾ of an inch thick. At right angles with the latter a strong box girder, 12 inches by 18 inches across the angles, is riveted to the circular frame, being strengthened in the middle by a heavy wrought-iron column 5 inches thick. Upon the top of the 14 beams, previously mentioned, a wooden deck 5 inches thick is laid, to which the gunways are made fast. In the centre of the turret the gun is pivoted; three ports are made for it in the turret—two broadside and one aft or forward, as the case may be—through which it pays its compliments to the enemy. A lateral range of 8° and a vertical one of 10° can be obtained for the missile. From the lower deck, inside the turrets, two doors permit communication with the forecastle and also the engine-room and officers' quarters. There are two water-tight compartments in the vessel, one fore and aft, to which access is had by the usual man holes; these can be filled with water, if desirable, in a short time, and will, it is calculated, settle the ship one foot. The forecastle is large and roomy, so much so that 100 men can swing their hammocks in it. Alongside of the vessel, just behind the casemates, are the coal bunkers, and immediately inclosed by them and two fore-and-aft bulkheads, are the steam boilers. Before a shot can strike the latter it must pass through the inclined side, the coal and also the two stiff bulkheads or partitions, just mentioned; they are therefore very fully protected. The officer's quarters promise to be cool, well lighted, and thoroughly ventilated; as the lower part of the turret is entirely open, or can be rendered so, there will be, apparently, at all times a free circulation of air. They are also further ventilated by thirteen 6-inch deck lights.

The *Keokuk* is propelled by engines of 500-horse power, designed for her by Mr. N. A. Wheeler, of this city. They consist of two twin-engines, one upon each side, the cylinders of which are 23 inches in diameter by 20 inches stroke, worked by two return tubular boilers, of 3,000 feet fire-surface and 82 feet of grate surface, having side furnaces. There is also one of Sewell's surface condensers, having galvanized iron tubes. The engines are of the locomotive finish in respect to the fittings of the connecting rods, link-motion, &c. They drive a true screw, under each quarter, of about 7 feet diameter. A stout ram, 5 feet long, projects from the bow, which seems capable of doing some damage to an adversary. Our space warns us that we must omit other details for the present.

The launch was very successful. A delay took place owing to the cold weather, which hardened the grease upon the sliding-ways. As the vessel had but a slight inclination she was loth to start from her comfortable position. Once off, however, she glided down gracefully to the river, making a parting salaam to the assembled multitude who responded with vigorous hurrahs and hat-wavings. Mrs. Whitney, wife of the projector, christened the *Keokuk* as she was descending. A fine collation was prepared in the boiler-shop of the Works, to which, after the ceremonies were concluded, a large number of guests repaired. Toasts were given, and cheers proposed for Mr. Whitney, which were responded to by a Mr. Ryan, of California; Mr. Whitney's modesty preventing him from answering to the calls of his friends. The different engineering firms were represented by Messrs. Quintard, of the Morgan Iron Works, Mr. Thomas Faron, of the Navy Yard, Mr. Underhill, of the Dry Dock Works, &c. Navy officers were also in force on the occasion. Commodore Alexander C. Rhind will command the *Keokuk*, and we shall look with interest to her nautical and naval performances, and also endeavor to give our readers some account of the former.

CHEAP OXYGEN GAS---LIGHT AND HEAT.

The oxyhydrogen or Drummond light is produced by burning currents of hydrogen and oxygen gases upon a piece of lime. This is the light which is usually employed in exhibitions of the "magic lantern," and it is so brilliant that the eye cannot gaze upon it. A sphere of this light resembles a miniature sun, and could it be produced at a moderate cost and a very durable material in place of the lime obtained, it would be the best and most desirable of marine lights for dangerous coasts and for the illumination of cities and other purposes. This light was discovered by Dr. R. Hare, of Philadelphia, but it received its more general name from Lieutenant Drummond, who first applied it practically at night, many years ago, in making a government survey of Scotland. The oxy-hydrogen light also gives out a most intense heat, and it is eminently adapted to the reduction of the most fractious metals, such as platina, &c. In fusing common metals with the blow-pipe, atmospheric air is blown through the flame of alcohol, oil, and common gas, and thus a very intense heat is produced; but the temperature of such flame can be intensified five-fold by the use of pure oxygen gas in place of common air for the blast, because the latter contains only one-fifth of oxygen, which is the supporter of the combustion. Atmospheric air is composed of nitrogen, 79; oxygen, 21; therefore when it is used for the blast of a flame, and as a supporter of combustion, the great quantity of the inert nitrogen acts as a cooling medium, because it is heated with the products of combustion, and carries off a large quantity of heat. Could pure oxygen gas be obtained at a moderate cost, so as to be used for the blast of smelting furnaces and as a supporter of combustion for illumination, a complete revolution in many arts would be effected thereby. It would effect a great saving of fuel; and many minerals which are now held to be too fractious for common smelting operations could be reduced with ease and economy. All combustible substances burn with great vigor, and many of them with wonderful brilliancy, in oxygen gas. The most common way of manufacturing it has been from the chlorate of potash and the oxide of manganese, submitted to heat in a retort. Although oxygen is the most abundant substance in nature, the price of materials and the expense of manufacturing it have been so great, that it could not be made for less than from four to five dollars per hundred cubic feet—a cost which precludes its common use entirely. Chemists, metallurgists and others have long been in search of a cheap method of producing this gas, but hitherto without satisfactory results. Some of our late foreign exchanges, however, contain accounts of such a discovery by Mr. J. Webster, London, who has secured a patent, and a company has been organized to manufacture the gas and introduce the invention. The materials used for producing it are the nitrate of soda and the crude oxide of zinc. A description of the process has been given in the *Chemical News*, by J. H. Pepper, professor of chemistry. The materials, in the proportion of ten pounds of the nitrate of soda and twenty pounds of the crude oxide of zinc, were first moistened and mixed together, then thoroughly dried to expel all the moisture, and afterward placed in an iron retort, heated to dull redness in a furnace. From this quantity of these substances 32.968 cubic feet of a mixed gas was obtained, the composition of which was 59 per cent of oxygen and 41 per cent of nitrogen. Nitrous acid also passed over, but it was absorbed in the purifier which contained moist caustic soda. It is stated that the residuum of these materials are said to be valuable products, and may be sold so as to reduce the cost of gas. The materials used for making this gas are only about one-fifth the cost of those used to make oxygen gas in the common way. Pure oxygen gas, however, has not been obtained by this process; still it is much superior to common air for illumination. This has been determined by experiments. Judging from the nature and cost of the materials used and the results obtained, we conclude that an advance has been made in this department of chemistry, but other discoveries and improvements must be made before oxygen gas will be obtained for general use in the arts. We trust this notice will be the means of inciting others to investigate this subject at further length, as it is one of great importance and promises to be fruitful in useful results.

A Singular Shot.

A few days ago a paragraph appeared in the Boston *Journal*, headed "A Singular Shot," and stating that, at the navy yard at Washington a 130-pound solid shot fired from a 10-inch smooth-bore Dahlgren gun at the distance of 500 yards from the target, penetrated four inches of iron plating and ten inches of white oak planking. A correspondent at Washington, who witnessed the experiment, writes to the *Journal* in order that the facts of the experiment may be stated. He says:—"A 10-inch Dahlgren was charged with 30 pounds of powder and a 130-pound solid shot, and was fired by means of a slow match. The shot made a clean hole through the target, which is composed of one iron plate, 4½ inches thick, and six other plates each one inch thick, bolted to a framework of white oak planking 18 inches thick. The target may be about 500 yards distance. These are the main facts as I observed them. Our English and French friends won't think we have made much progress if, on extraordinary occasions, we can only get through four inches of iron and a 10-inch oak plank."

A Difference.—The annual pay of an English soldier averages $100, and that of the French $50. A French colonel (full pay) has $1,500, and an English $6,000. In France a vice-admiral has $8,000, in England $12,000. The French rear-admiral receives $6,000, and the English $17,000. Few of our army and naval officers manage to live as cheaply as the French naval lieutenant, who has to find his own uniform and food out of 120 francs a month, or less than $300 a year.