THE PHOTOMETER---LECTURE BY DR. J. OGDEN DOREMUS.

Reported for the New York Tribune.

Prof. J. Ogden Doremus delivered the ninth lecture of the scientific course before the American Institute, January 22, at Steinway Hall. He said:

"In the beginning God created the heavens and the earth, and they were without form and void; and darkness was upon the face of the profound. "What pen shall describe, what tongue shall tell, what human imagination conceive of that tide of glory and splendor which undulated throughout immensity when God said, "Let light be" and light was! Such is the most beautiful and terse description offered in that Word of God which the Christian, as he leaves his anchorage on earth, blesses the Almighty that he can pillow his head upon. To tell the story of the first light which dawned upon the universe of God is beyond the power of man. To tell indeed what has been discovered concerning it would extend beyond the short time allotted to a lecture. That light moves through space with the immense velocity of nearly 200,000 miles in a second of time; that when we look at the sun we gaze at the light that parted from it minutes ago; that when we look at the stars, no one is so near us but that three and a quarter years have elapsed during the passage of that mysterious influence; and when we look up on such a beautiful cloudless night as this evening, and see the magnificent scenery of the heavens, that those worlds send us light which started on its march long before we were born, and, in many cases, ages before our race was existing upon this world—all this is known to modern science. After some further preliminary remarks, Prof. Doremus said that he should not attempt, in this lecture, to discuss these questions, but should come down to three simple points: 1. How do we produce light? 2. Of what is light constituted? 3. How do we measure it? We produce light, first, by the simple production of heat. He illustrated the production of light and heat by various beautiful experiments—burning the metal antimony in chlorine gas, phosphorus with iodine, and in the oxygen of the air; potassium on a piece of ice; zinc in oxygen, and melting and burning iron before the oxyhydrogen blowpipe. The lights thus produced were of different colors, and of great heat and brilliancy. But, said he, it is not enough to produce heat. If the product of the combustion is only gas—as he showed with the flame of a common Bunsen burner—intense heat, but very little light is produced. To change the heat to light, we must have a solid body to give out the light. By heating a bit of lime in common street gas, burned with a jet of oxygen, the brilliant calcium light is produced.

He showed the same light with small pieces of compressed magnesia, heated the same way. He also produced a similar brilliant light by burning the metal magnesium in the air. But, said the lecturer, we can produce light by certain means which far surpasses any of them. He then exhibited the electric light, produced by the aid of a battery of 250 jars, such as are used in our electric telegraphing. By using points of brass, copper, and iron, light of different colors, and degrees of intensity was produced, but with points of charcoal he produced electric light of most dazzling brilliancy, almost equal to the light of the sun. He also showed beautiful revolving lights of different colors, produced by sparks from the electric machine passing through partial vacuums of different gases. He stated several means of measuring light: by means of degrees of heat—its chemical action—or its illuminating power. He exhibited two kinds of photometers for measuring the illuminating power of light—one, that of Bunsen, the one commonly used—and the other a large screen, on which the shadows produced were successively obliterated by the light of a candle. The gas-burner, the Drummond light, the magnesium light, were successively obscured and obliterated, until the more brilliant electric light obliterated them all. The lecture was full of valuable instruction, and his experiments as brilliant and beautiful as his theme. But perhaps the most interesting of all was what he said of the new and cheap method of making oxygen gas by passing superheated steam over manganate of soda, and of the great improvement this will effect in lighting our streets, public buildings, and light-houses. He said that the improvement would effect a saving of 30 to 40 per cent, and would not render the air impure by burning up its oxygen or filling it with noxious gases, and by its harmonious blending of the different colors, would furnish a more beautiful and perfect light resembling that of the sun. It is already used in Paris and soon will be in New York, some of our heaviest capitalists having taken it in hand. With 18 burners lighted in this way, he illuminated the entire hall most brilliantly, the large number of common gas burners paling before it into a sickly yellow light. It was greeted by the delighted audience with the greatest enthusiasm.

NOTES ON THE VELOCIPEDE.

The Commissioners of Prospect Park, Brooklyn, have not only decided to admit velocipedes, but are, we understand, making preparations to afford special facilities for this delightful sport. In regard to schools of instruction in that city, the Brooklyn *Morning Union* of Jan. 20th, says: "The first school for instruction in the art of riding velodipedes had not opened its doors a month before it had to be enlarged, for though commencing with twenty-five pupils, it closed the first month's book with a list of two hundred and twenty-five. Of course another school had to be started, and Pearsall's Twenty-second Street Academy, up town, was followed by Monod's William Street School, down town, the former being crowded at early morning and in the evening, and the latter at spare half hours in the middle of the day. Last night, too, Parker opened a school on Broadway and Forty-ninth street, and the Hanlons open another on eleventh street and Broadway. What New York had Brooklyn must have; and as we found a man who could beat New York fearfully in gymnasiums, we looked to him to whip them in velocipede schools, and our energetic, enterprising townsman, Avon C. Burnham, 'has gone and done it' in his usual masterly style, and now we can crow over having the best velocipede school in the country." It is proposed to use the Clermont Avenue Rink as a great school, as soon as the frost breaks; and it is stated also that the Capitoline, a popular skating park, will also be utilized in this way. So much for Brooklyn, which nobody thought to be a fast place.

The velocipede fever is raging in Massachusetts. A flourishing school exists in Middleboro', and another one is to be opened in Plymouth, where a building recently occupied as a Methodist meeting house is to be fitted up as a rink.

The Cincinnati Velocipede Club have been giving a series of races of which the following is a brief account from the Cincinnati *Commercial*: "The first race was one of a mile in three heats, six runs around the hall being counted one third of a mile. The contestants were Mr. George W. Gosling and Mr. George C. Miller.

"Mr. Gosling lost the first heat by a fall. Mr. Miller made his first third of a mile in one minute and twenty seconds. Mr. Gosling maintained his equilibrium in his second heat and came home in 1:16. Mr. Miller beat this time in his second heat, finishing his sixth round in 1:15½. Mr. Gosling made his third heat in 1:16½, and Mr. Miller accomplished his third heat in 1:16, and was declared winner of the race, and the prize, a handsome silver goblet, worth $100, given by Mr. William Wilson McGrew.

"The second race was one of a third of a mile, the fastest rider to receive a silver wine-service, the contribution of Henry R. Smith & Co.

"Mr. Gosling was the first in the field. He made the third of a mile in 1:29 2-5. Mr. Miller followed, and made the distance in 1:16 3-5. Master Curtis, a vigorous little velocipedist, made a valorous struggle for the prize, but his brisk little pony was not equal to the task. He made the six rounds in 1:35. Mr. McKinney followed, but lost by a fall. He gave way to Mr. H. L. Perry, who lost by touching the floor with his foot in the second round. At this juncture St. Clair, the skater, plunged in with an impetuous steed, which made directly for a post, and threw him to the floor, thus being the means of losing the race for Mr. St. Clair. Mr. Wm. H. Davis put his animal on the track, but unfortunately gave him so much rein that he broke badly in the third round and lost the race. This ended the race, and Mr. Miller was declared the winner.

"The third prize, a silver goblet, contributed by Duhme & Co., was the person who could ride the velocipede at the slowest gait. This slow riding on the velocipede is a delicate task, and good requires judgment and a deal of fine management on the part of the man who attempts it. Mr. Gosling prolonged his three circles around the hall to 3:15 3-5, and the spectators thought him very slow. But Mr. Miller, his only rival, was much slower, and crept around the hall like a tortoise, finishing the feat in 5:10. By this achievement he won the third prize, and the plaudits of the whole assembly. The sport wound up with an exhibition of the skill of all the velocipedists present. All the races were interesting, and those for the fastest time were very exciting indeed, rousing the spectators, and drawing from them cheer after cheer as the particular favorites gained advantages."

One of the Troy, N. Y., dailies having asked the question, "Who is the young man destined to be the first to introduce the velocipede in Troy?" has received the following answer from a correspondent:

"You ask in your Thursday's issue, 'Who is the young man destined to be the first to introduce the velocipede in Troy?' That young man has long since 'gone to that bourne from whence no traveler returns.' The velocipede is no new thing in Troy—it may be new to the present generation, but it long since rattled over the streets of our city at a rate of speed that would make the famous 'Dexter' sweat, or a second class locomotive puff and blow like a Third avenue clam horse. Forty-six years ago, or thereabouts, a then young man (and one of the best that ever lived in this city, too), by the name of Silas Davis, who resided on the south-west corner of Liberty and First streets, exactly opposite to where the holy temple of St John now stands, and who was an apprentice to one of the best machinists that ever lived in or carried on the business in Troy, by the name of John Rogers (father of our fellow-townsman Alexander Rogers), and whose business was then located on the south-west corner of Division and First streets, which shop is now a dwelling, and was lately occupied by Justice Neary; and he, in connection with said John Rogers, constructed three of these wonderful vehicles called velocipedes, and introduced them upon the streets of Troy, for the use and benefit of all who were disposed to pay the then considerable sum of twenty-five cents an hour for their use. The first one, if I remember correctly, was brought out for exhibition and trial on a magnificent moonlight night in the month of June. No public announcement heralded its coming. It appeared, nevertheless, in front of the hotel of the late William Pierce, located on River street between Congress and Ferry streets, between 8 and 9 o'clock in the evening, and although the mansions of our city in those days were as far apart, on the average, as village lamp posts, and our population could hardly be counted for the paucity of its numbers compared to what it can be now, a respectable crowd soon gathered, and a disposition to try the untamed and wonderfully curious steed was soon manifested by many of the young men who had there gathered. The first man to mount and give an exhibition of its operation was Davis himself. He handled it with perfect ease and drove it with tremendous velocity from Congress street to Washington street and back. All were astonished and delighted. The velocipede was declared to be one of the world's greatest wonders—bound to supersede horse flesh for traveling purposes. Livery men began to look blue and almost made up their minds that their occupation was in danger of simmering down to such small ends that they might as well abandon the business at once, and substitute, on dry and pleasant weather at least, velocipedes for saddle horses. The next person to mount the prodigy was Benjamin Bayeux. He was the fortunate possessor of a 'quarter,' and could use the thing for an hour. After one or two capsizes he got under full headway, and made excellent work of it, driving the machine at a 2:40 gait down River to Division, up Division to Third, up Third to River, up River to Mount Olympus, and back to the hotel, in an incredible short space of time, when he surrendered it to Moses V. Yevnett, who was equally successful in its operation, and the velocipede was pronounced a success. They were used after that about the embryo city for a year or two by the young bloods of the town, and then finally disappeared, to re-appear again at the expiration of almost a half century, to make a sensation and excite the greater admiration and astonishment of their beholders." This velocipede was probably one of the old style propelled by contact of the feet with the ground.

Captain Du Buisson, Commander of Prince Napoleon's yacht, the *Jerome Napoleon*, has an invention whereby he proposes to run a velocipede upon the water with almost the same facility that Burnham and Hanlon run theirs upon the land. It is composed of two parallel tubes of cast iron, cigar-shaped, connected by iron cross-pieces. In the center is a propelling wheel, covered by a house or drum, on the top of which the person using the vessel sits comfortably in a sort of saddle, with stirrups. By means of these stirrups and a hand crank upon each side, he gives the wheel its motion, precisely as it is given to a velocipede on shore. The novel craft is easily propelled at the rate of six miles an hour.

A correspondent of an English paper announces that he has invented, and will shortly exhibit, a one-wheeled velocipede, and says that it is safer and in every way superior to the two-wheeled machine. A steam velocipede has also been invented in England, an engraving of which, with description, will be shortly given to our readers.

A gentleman residing in Twenty-second street, in this city, comes down to his business in Church street, on a velocipede, every morning, in twelve minutes.

A lady residing in Brooklyn, writes to us that, for her part, she objects to the double side-saddle plan, suggested by our fair correspondent from Georgia, noticed last week. She sees no objection to ladies donning a proper dress and using the velocipede pure and simple. She argues that the exercise would be much more thorough and healthful, than it could be on any such mongrel machine as the one suggested by our Georgia correspondent, while one of the principal charms of velocipede sport, its delightful independence, would be entirely lost in such a machine. She is willing to grant that the company of an agreeable gentleman would go far to reconcile her to the disadvantages of such a machine, but if two ladies were to be paired thus she thinks it would be simply intolerable. One thing is certain, the ladies can not be left out in the consideration of this subject by manufacturers.

Speaking of manufacturers, we understand that establishments devoted to velocipede making, have their hands more than full to meet the present demand.

The "Kenosha" Steam Frigate.

We have received the following account of a splendid ship just finished at the Brooklyn yard, built under the supervision of B. F. Delano, constructor at this station: "The U. S. S. *Kenosha*, built at the navy yard, Brooklyn, N. Y., is of the same class as the *Alaska*, built at Boston, the *Algoma*, at Portsmouth, N. H., and the *Omaha*, building at Philadelphia. They are all from one design by John Lenthall, Chief of Bureau of Construction and Repair. The machinery was designed by B. F. Isherwood, Chief of Bureau, Steam Engineering.

"The first frame of this ship was raised on the 27th of June, 1867, and she was launched on the 8th of August, 1868. Her principal dimensions are: Length, extreme, 268 feet 9 inches; length on load line, 250 feet 6 inches; extreme breadth, 38 feet; depth of hold, 19 feet 7 inches; tunnage (new), 1119·68 tuns. She has two decks beside the poop and forecastle, with 6 feet head room in clear of beams. The ward room is arranged with ten comfortable state-rooms, five on each side, and a good sized "country" between. In the after end is a large ward room pantry and two store rooms. Forward of the ward room is the steerage, which contains three good state-rooms, beside a room for assistant engineers, 12 feet long, and the midshipmen's room, 18 feet long. The necessary store and mess rooms are forward of the steerage. Below decks are the magazines, shell rooms, store rooms, etc., forward and abaft the machinery. The rig of the vessel is barque. The armament is one 11-inch pivot, six 8-inch guns on iron carriages, one 60-pounder on forecastle deck, and two 24-pounders on poop, beside two 12-pounder boat howitzers.

Her engines are double piston rod, back acting, having two cylinders, 50 inches diameter by 42-inch stroke, Sewell's condenser; 4 main boilers, 5 furnaces in each, superheater in uptake; grate surface 390 square feet; total heating surface 7,260 square feet; two smoke pipes 64 feet above grates, 72 inches diameter; two bladed, hoisting screw, 16 feet 4 inches diameter.

The ship will soon be in commission, the work on her being nearly completed. The machinery was all built at the Brooklyn navy yard, except the screw shaft which was forged at the Washington yard.