Yonkers, Hastings and Dobbs Ferry to the Ardsley Country Club, the return being made over the same road. The ride through the city was very exciting. The carriages dodged back and forth in front of and around cable cars and wagons, and demonstrated beyond argument that the horseless carriage is much more capable of control than the ordinary horse and carriage. They passed through the most crowded portions of the city, which was in holiday attire in honor of the day. The crowd at Madison Square was particularly dense, but the carriages had no difficulty in making their way through the crowd without accident. When the Boulevard was reached, speed was increased and the wheelmen had difficulty in keeping up with some of the carriages. The only serious accident of the day occurred on the Boulevard, where a wheelman was run into and seriously hurt by one of the horseless carriages. The operator was arrested.

From the Boulevard to Kingsbridge there are a number of hills, and in places the road is very bad. The carriages had no difficulty whatever in climbing these hills at a good pace, and demonstrated that they were all excellent in coasting down a hill. The noise made by the carriages was not particularly noticeable, and they did not appear to scare horses along the route. Occasionally they stopped to make minor repairs. Kingsbridge was reached at 1:10 P. M. Here the water tanks were filled, and the carriages awaited the arrival of the judges, who came on a special train. The judges were Gen. Nelson A. Miles, U. S. A.; Gen. William G. Craighill, Mr. John Jacob Astor, and Mr. Chauncey M. Depew.

The judges examined the carriages, and then took the train to Irvington. The speed race really began at this point. Four of the carriages made the turn at the Cosmopolitan building, at Irvington, and passed the judges' stand at the new Ardsley Casino, where a stop was made to get water. Carriage No. 1, in charge of Frank Duryea, arrived at the Casino at 3:15 P. M., the time from Kingsbridge, a distance of 13 miles, being made in one hour, five minutes, forty-two and two-fifths seconds. Carriage No. 2, a Duryea vehicle, arrived at 3:30 P. M., and No. 5, the Roger carriage, in charge of T. W. Brander, arrived at the Casino porch at 3:44 P. M. The judges stood on the Casino veranda and gave the official time as each carriage arrived. The award was based upon the following points, the maximum being 100: speed, 35; simplicity of construction and durability, 30; ease in operating and safety, 25; cost, 10. Several exhibition tests were given on the Ardsley Park ground. The first of the horseless carriages returned to the Post Office, New York City, at 7:13 P. M. It was one of the Duryea wagons, managed by Mr. F. Duryea. There was a large crowd in waiting as the vehicle came down Broadway and turned into Mail Street, north of the Post Office. The greatest speed was attempted between Kingsbridge and the Ardsley Country Club. In Yonkers arose an obstacle which filled the racers with gloom. Peabody Hill reared its lofty head above them and resisted every effort of the motor. So the driver and umpire descended and pushed it over the crest of the hill. Several of the carriages met with misfortune.

The trial proved beyond question that the American horseless carriage of the day is a success and is well adapted for use in our city, as it appears that it can be turned and stopped more easily than ordinary vehicles. We present illustrations of two of the carriages taken by the special photographer of the SCIENTIFIC AMERICAN just at the start. We have already illustrated the victorious Duryea carriage in the SCIENTIFIC AMERICAN for November 9, 1895.

The Roger vehicle was made in Paris and weighs 1,730 pounds; the guiding is done with the wheels, which turn inside of a narrow space, the inside wheels turning more than the outer. It is guided with extreme ease, and was stopped and started on the day of the race in good time. The five horse power Benz motor is actuated by gasoline. The ignition is produced by an electric spark; the cylinder is cooled by a water jacket; the power is transmitted to the rear wheels by means of belts, sprockets and chains. Two belt shifters permit different speeds, and differential gear allows the back wheels to turn with ease. The wheels are provided with solid rubber tires. The race demonstrated that the pneumatic tires were better adapted for the motor carriages than the solid tires. The other carriage, which we illustrate, is the Booth-Crouch carriage, made at Youngstown, Ohio. The motor was made by W. Lee Crouch, of New Brighton, Pa. The fuel used is gasoline. The carriage was driven by Dr. Booth, of Youngstown, Ohio, and it would undoubtedly have made a very successful showing if it had not met with the misfortune of the breaking down of the spark apparatus.

THE first woman who has received the permission of the minister of public instruction to attend lectures in the University of Munich, Bavaria, is Miss Ethel Gertrude Skeat, daughter of the well known editor of Chaucer's works.

EDISON'S NEW ELECTRIC LIGHT.

A notable example of the stimulation of invention by new discoveries is found in the latest work of Edison, which follows the discovery of Roentgen and the flouroscope of his own invention. This latest invention is a fluorescing lamp in which is found the promise of the artificial light of the future. The lamp appears to have all the qualities requisite for perfect illumination; the light is mild but effective; it is diffusive like daylight. It gives off no perceptible heat, which latter quality goes to show that its economy has no parallel in other kinds of artificial illumination.

One form of the lamp consists of a highly exhausted oblong glass bulb having wires sealed in the ends, each wire being provided with a small plate inside the bulb, one of these plates being inclined to cause a distribution of the rays over the side of the lamp. The inner surface of the lamp is covered with a granular mineral substance which is fused on the glass and is highly fluorescent. When the lamp is excited by connection with an induction coil, the fluorescent material becomes luminous.

Originally Edison used calcium tungstate for his fluorescing material; but by trial he found that the vacuum soon deteriorated, and after a long series of experiments has discovered a fluorescing material which does not affect the vacuum, while it has a higher efficiency than the calcium tungstate.

Mr. Edison thinks that the fluorescing material converts all of the X rays into light. He has a theory as to the manner in which the light is produced. The crystals are composed of light and heavy particles and the impact of the waves produces a stress in the crystals which causes the emission of light. Mr. Edison describes these waves as sound waves, because they differ in their mode of vibration from ether waves. Their motion is infinitely more rapid than that of

EDISON'S FLUORESCING VACUUM LAMP.

sound waves with which we are familiar; they are comparable as regards velocity with electric or light waves. As to efficiency, the fluorescing lamp produces light at the rate of 0 3 of a watt per candle power. When this is compared with 3 watts per candle power for incandescent lamps, and ½ watt per candle power for arc lamps, it will be seen that there must be great economy in the fluorescing lamp.

The Record-breaking Trip of the St. Paul.

Friday, June 5. 1896, will be a red letter day in the annals of the American transatlantic marine. The passengers which the St. Paul landed at the North River dock, New York, at twenty minutes past four in the afternoon of Friday, had only left Southampton at noon on the previous Saturday, so that the time of the whole trip of 3113·7 knots was only 6 days 5 hours and 32 minutes. The excellence of the performance will be better understood when it is remembered that she traveled over the long route, thereby adding fully three hours to the time she would have taken had she followed the record course of the New York, which was 3,047 knots long, and was covered in 6 days 7 hours and 14 minutes. The average speed for the whole trip was 20·82 knots. The highest hourly average speed for a whole day was made on Monday and Tuesday, when she covered 521·9 and 521·7 knots, and slightly exceeded 21 knots per hour.

The story of the St. Paul's trip, her tenth to the westward, is thus told by her log:

	Distance.	Lat.	Long.
May 30, left Southampton, 12 noon.			
May 31	487·8	49·48	14·01
June 1	521·9	48·33	27·11
June 2	521·7	45·51	39·17
June 3	513·0	42·38	50·13
June 4	508·6	41·46	61·36
June 5	518·9	40·36	72·56
	41·8	To Sandy Hook.	
	3,113·7		

This performance places the St. Paul well up in the front rank for speed, being exceeded only by the Campania and Lucania, one of which has averaged slightly over 22 knots for the whole trip and about 23 knots for a single day's run. It must be remembered however that the horse power of these ships is 30,000 against the 10,000 horse power of the American ships.

The engines and boilers were being driven at full pressure for the whole distance, and the chief engineer states that there was not a single case of heated journals or leaking tubes. This is an admirable performance when it is remembered that the boilers carry 200 pounds of steam, and the revolutions are about 90 per minute. The coal consumption is given out as 310 tons per day against a reputed consumption of over 500 tons for the Lucania and Campania.

Notice to Our Readers.

In order to obtain the opinion of the readers of the SCIENTIFIC AMERICAN as to what invention *introduced within the last fifty years* has conferred the greatest benefit upon mankind, we publish the accompanying card, which please cut out and return to the editor. Those who preserve the paper for binding and do not desire to deface their files, or who read this notice at a library, will please answer by postal card. It is desired to get as full a vote as possible. The result of the vote will be published in the *Special 50th Anniversary Number of the* SCIENTIFIC AMERICAN *on July 25.*

Editor of the SCIENTIFIC AMERICAN.

Dear Sir:

I consider that.....

.....

invented by.....

has conferred the greatest benefit upon mankind.

Name.....

Address .....

The Significance of Gesture in Disease.

When you ask a patient to locate his pain, he does so by a movement of one or both his hands. The gesture, however, not only indicates its seat, but describes its character and distribution. This is an all important point. If the pain is widely distributed over the whole chest, the patient locates it with a circular rubbing motion of the palm of the hand, indicating the diffused soreness.

The pain of a serous inflammation, on the other hand, is described by first drawing the hand away from the body and then, with the fingers close together or with the index finger extended and the others flexed, cautiously approaching the seat of the inflammation.

In appendicitis the patient does not touch the skin at all when asked to locate the pain. He simply holds the palm of his hand over the diseased area.

With very violent abdominal pains which are not inflammatory, the patient slaps himself vigorously across the abdomen on being asked to indicate the location of his trouble.

If a child refers a persistent pain to the stomach, and there is no tenderness or pressure, disease of the spine is indicated.

In hip joint disease, the pain will be referred to a point inside the knee.

With terrific diffused pain in the leg, not due to an inflammation, the patient grasps the leg firmly. If it is a darting or lancinating pain, he will indicate it with one finger.

In the pain caused by the descent of renal calculi and gall stones, he follows their course with the top of the thumb or index finger.

The pain of hepatic neuralgia or "shingles" is indicated with the thumb or finger.

In joint pains the patient approaches the seat of trouble very cautiously with the hand spread flat.

The degenerative pain of locomotor ataxia is described by grasping the affected area firmly, indicating a band-like pain. Or, if the pain is sharp and lightning-like in the leg, the pain gesture is perfectly descriptive, an energetic downward motion, at the same time twisting the hand as though manipulating a corkscrew.

A patient will indicate the seat of a severe syphilitic headache by hammering with the tips of his fingers.

A patient complained of a severe headache. "In what part of the head is it?" he was asked. "The vertex," he replied. On being asked to indicate the exact spot, he placed his finger on the parietal eminence. This he did three times in succession, though claiming to feel the pain exactly on the top. Upon examining the mouth a defective tooth was found. As soon as it was removed the pain disappeared.—Nat. Board of Health Mag.