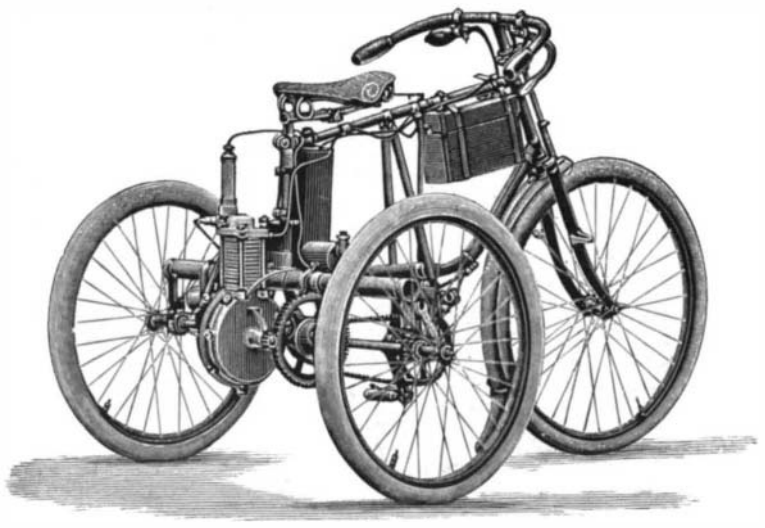
A PETROLEUM TRICYCLE.

The petroleum tricycle, which we illustrate, was designed by MM. De Dion and Bouton, the well-known builders of automobile carriages, and weighs, when fully equipped, 88 pounds. The general appearance of the vehicle is like that of the ordinary tricycle. In addition to the motor, there are pedals for actuating the machine through the medium of sprocket wheels and a chain. The tricycle is started, after mounting, by giving the pedals a few turns until the motor begins to operate, the pedals then cease to be used, and the rider need only steer the machine. In climbing hills, the pedals are sometimes used as an auxiliary force. This combination of mechanical and human power permits of the rider enjoying the pleasures of locomotion without the aid of the motor or to economize the combustible when necessary. The motor is not complicated. It is actuated by the explosion of a mixture of air and the vapor of the petroleum. The explosion is effected by means of electricity. The motor is one-third of a horse power, the shaft making 800 turns per minute. With the aid of the motor and pedals it is possible to attain a speed of eighteen miles an hour. The carbureter has been dispensed with, its place being taken by a small pump, which is actuated slowly by the motor and thus utilizes the petroleum drop by drop. The clumsy and heavy water jacket has also been eliminated, the cylinder being cooled by contact with the air.

A small satchel resembling a photographic camera is fixed to the frame in front. This satchel carries a dry battery which will run the exploder for one hundred hours. It is connected with a spark coil by means of insulated cord. The rider can stop the motor instantly by cutting off the current with a switch.

MM. De Dion and Bouton propose to apply their system to the propulsion of a bicycle and hope to realize the greatest possible speed of individual locomotion from it. For our engravings and the foregoing particulars we are indebted to L'Illustration.



A PETROLEUM TRICYCLE.

THE NEW ATLANTIC STEAMER ST. LOUIS.

The new steamer St. Louis, of the American Line, has had her sea trial, which proved highly successful, and is now doubtless speeding on her first voyage across the Atlantic, her day of sailing from New York being June 5. On her recent trial at sea she is reported to have reached a maximum speed of 22·75 knots, which gives promise of satisfactory performance for her business trips.

The St. Louis is the first of a number of vessels authorized to be built under the special act of Congress of 1892, designed to encourage the building of American steam vessels, and also to provide cruisers for the government in the event of the sudden outbreak of hostilities. A sister ship, the St. Paul, was recently launched from the yards of Cramp & Company, Philadelphia, and will soon take her place with the St. Louis, on the line between New York and Southampton. Four magnificent boats, the Paris, New York, St. Louis, and St. Paul, will then be in service, and four better ships it would be difficult to find.

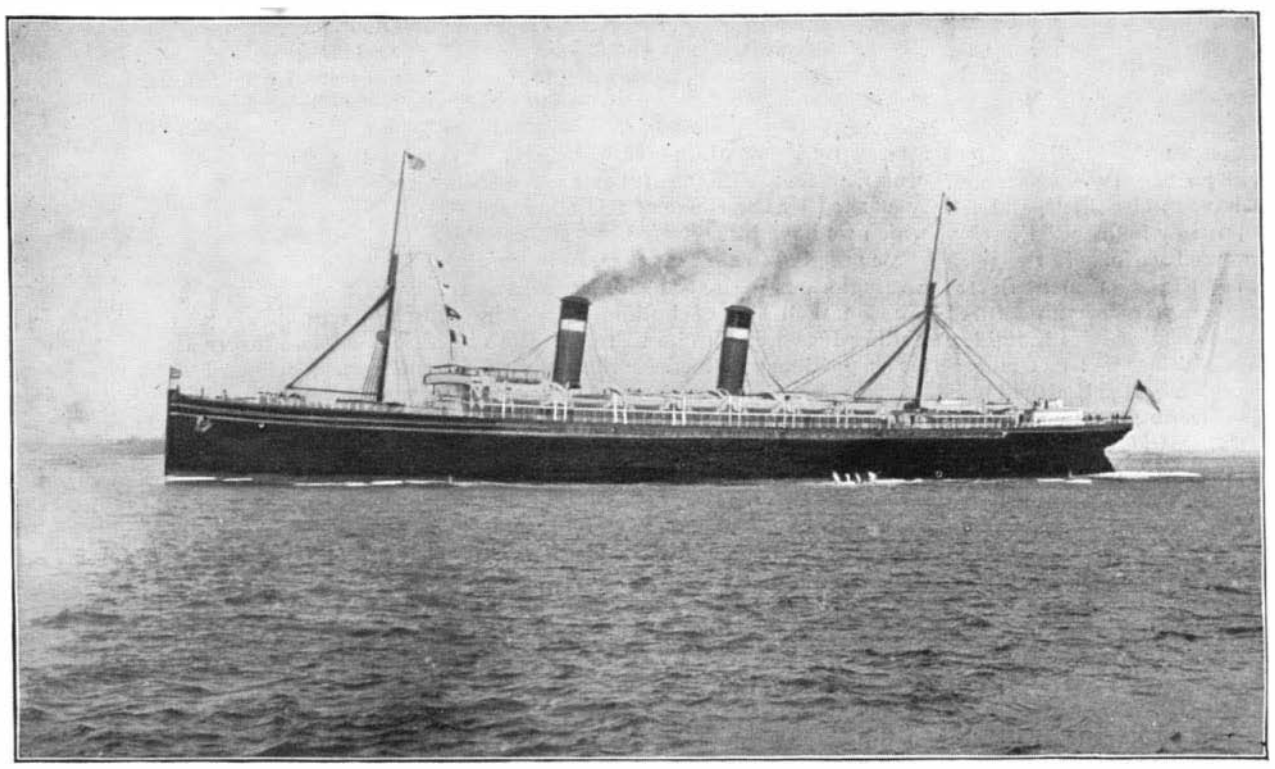
The St. Louis is 554 feet long over all and 536 feet on the load water line, with an extreme beam of 63 feet, and draws 26 feet of water, her gross register being 11,000 tons. She has six decks and nine water-tight compartments, without any openings or doors in the intervening bulkheads. Her hull is of steel, the plating being three-quarters of an inch thick, and the frames and beams channel-shaped. The engines are quadruple expansion, designed to afford 20,000 horse power, the four cylinders being 36, 50, 71, and 100 inches in diameter respectively, and the stroke being 60 inches. There are six steel double-end boilers, each 20 feet long and 15 feet 7½ inches in diameter, and designed to furnish steam at 200 pounds pressure. The vessel has twin screws and the hull is built out to support the shaft bearings.

Of her building and equipment, Mr. Charles H. Cramp says: "No foreign materials entered into the construction of the hull. It is of American model and design, of American material, and has been built by American skill and muscle. The existing tariff law gave us the privilege of importing, free of duty, all plates, tees, beams, angles, wire rope and composition metal that might be needed in her construction. But we did not take advantage of the law. On the contrary, we placed every order with American rolling mills, forges and foundries."

Her interior furnishings are said to exceed in cost and beauty anything of the sort afloat. There are accommodations for 350 passengers in the first cabin, 250 in the second cabin, and 900 in the steerage. The arrangements of berths and saloons and the fittings and decorations embody American ideas of comfort, and differ from the prevailing styles in European-built steamships.

In recognition of the courtesy of the American Line in the bestowal of the name St. Louis on the first transatlantic steamship of American material and workmanship, the citizens of St. Louis have presented to the beautiful steamship finely bound libraries for the first and second cabins. The citizens of St. Louis have also given ten ornamental glass windows for the first cabin library room, and a full set of flags, including the American ensign and the house flag in silk, and a burgee bearing the name St. Louis.

Our engraving is from a photograph of the St. Louis taken specially for the SCIENTIFIC AMERICAN, and shows the vessel steaming up the bay of New York on her way to her pier at Fulton Street.



THE NEW ATLANTIC STEAMER ST. LOUIS.

Diarrhea and Earth Temperatures.

The close relationship between rise of diarrheal mortality and rise of earth temperature is strikingly shown by Dr. Priestley in his report for the past year for the borough of Leicester. Dr. Priestley studied carefully the death roll from diarrhea in those weeks wherein the temperature at 4 feet below the surface reached or exceeded 56 degrees Fah. with the view of ascertaining whether the height of the thermometer had any causal relationship with the disease. By a comparison of data at one and another portion of the year he has found fresh prima facie evidence that a very close relationship of the sort in question does exist. Thus, allowing a period of fourteen days to elapse between the date of attack and death, seven days for average duration of fatal cases, and seven days for notification from the registrar of deaths, Dr. Priestley shows that the 4 foot thermometer having reached and passed 56 degrees Fah., on July 2, the deaths began to rise considerably a fortnight later, and continued high so long as the thermometer registered above that temperature, but that immediately the thermometer dropped below the figure so, too, the deaths from diarrhea fell and continued to fall until the disease ceased to appear in the death records. —British Medical Journal.

Interesting Archæological Discoveries.

According to a note in the London Times, the excavations by the American School at the Heraion of Argos, under the direction of Professor Waldstein, which were resumed this spring, have been very successful. Two hundred and fifty men have been employed on the work. Besides the two temples and five other buildings previously discovered, a large and well-preserved colonnade 45 meters long has now been found, 25 feet below the surface south of the second temple. The discoveries include parts of metopes, two marble heads of the best Greek period, a hundred objects in bronze and gold, gems, vases and terra cottas of the Homeric period, as well as numerous scarabs and several Mycenean tombs with Argive inscriptions on bronze, probably of a religious character. The excavations, which are now in the fourth season, will be completed this year. They rival the French excavations at Delphi in magnitude and importance, representing all the periods of Greek life from prehistoric to Roman epochs.

The New Navy Rifle.

The new navy rifle is the invention of J. P. Lee, of Connecticut, and was recommended by the Small Arms Board after many experiments. By many the new gun is believed to be superior to the Krag-Jorgensen rifle which is now supplied to the army. The navy rifle is lighter, thus enabling the sailor to carry 50 more rounds of ammunition than the soldier, and gives a flatter trajectory. The rapidity of fire is very great, five aimed shots being fired in three seconds. The total weight of the gun with straps is 8¼ pounds, which enables the sailor to carry 200 rounds of ammunition. The barrel is 27 inches long, the trigger is at all times under control and there is no danger of accidental fire, while the magazine clip is the lightest in use. The fire is very accurate at 2,000 yards, while at 5,000 yards the bullet would pierce two or three men in a row. It would penetrate the body of a man at a distance of 6,000 yards. The barrel is made of nickel steel, which is now so largely used in armor plates. The results of the test of new Lee gun have been so satisfactory that it is expected that the national guard may adopt it in some States.

THE total output of new cars during the past five months is estimated by the Railroad Gazette to have exceeded that of the entire year 1894 by 5,000. The total number contracted for is 22,030; these figures are for freight cars only. The passenger cars ordered amount to 72, with contracts for 13 more to be given out shortly. This represents an investment of over $10,000,000. The decrease in the cost of cars to the railroad companies has been very considerable in the last few years.

THE share of land falling to each inhabitant of the globe in the event of a partition might be set down at twenty-three and a half acres.