ment which has proved so successful in Europe is to be given a trial by an influential and representative company in the city of New York. Some account of the City and Suburban Homes Company will be found in the current issue of the SCIENTIFIC AMERICAN SUPPLEMENT. It augurs well for the success of the scheme that Dr. Elgin R. L. Gould, who as United States commissioner spent three years in personal examination into the housing of the people in Europe, has been chosen president, and the list of officers and directors includes the names of many influential and wealthy citizens who have been distinguished for their practical philanthropy.

The first lot of city homes is to be built on a block of nineteen lots, which has been turned over to the company by the owner, Mrs. Alfred Corning Clark, on an appraised valuation in return for shares of its capital stock at par. This lady also makes a cash subscription to the capital stock of the company, which, together with the price of the land, will amount to half the value of the land and buildings when completed. We quote this case as showing that the wealthier members of the community, especially those who are owners of city real estate, have here an opportunity of investing capital at a fair return with humanitarian ends in view. In so doing they can at the same time prove to the less fortunate classes of society that they have a real sympathy with their difficulties, and a practical desire to express it, which will be a standing rebuke to those social agitators who deny that such sympathy ever exists.

THE MOTOR CAR IN ENGLAND.

The recent inaugural trip of motor cars from London to Brighton, England, in commemoration of the passing of the Light Locomotives Act, was an event in the history of transportation in that country second only in importance to the historic locomotive competition in the north of England nearly three-quarters of a century ago.

The almost complete monopoly of the development of the motor car which has hitherto been enjoyed by France was due, as far as Great Britain was concerned, to the existence of antiquated and vexatious legal restraints which prevented the use of self-propelled vehicles on highways except for heavy and slow traffic. Now that these restrictions are removed, it is reasonable to expect that a people who gave to the world the steam locomotive, and have been so largely responsible for its subsequent development, will also share largely in the future development of the motor car.

In saying that the advent of the horseless carriage, motor cycle, automobile car, or whatever it may eventually come to be named, is an event in the history of English transportation second only in importance to the birth of the locomotive, the statement is made with the knowledge that it will have its special field of operation and certain arbitrary limitations as clearly defined as those of the locomotive itself. Its sphere of usefulness will commence where that of the latter terminates. In the matter of through traffic between outlying districts that are not and are not likely to be served by any railway and the cities, its work will, of course, be strictly supplementary to that of the trunk railways themselves. But in serving as a feeder for the railways and as a means for transportation between scattered hamlets and villages, it is certain that, apart from its usefulness in city and suburban traffic, to which we refer later, the perfected motor car will become a factor in the general scheme of transportation as essential in its way as the railroads themselves.

It is probable that, apart from the artificial hindrances of legislation, the neglect into which the motor car fell was due to the invention of the iron rail, which vastly increased the hauling power of the locomotive as compared with that of the road carriage. For we must not forget that the steam carriage antedated the locomotive by fully half a century, and that it was largely the reduction of rolling friction by the use of a prepared iron track that caused the locomotive to become the recognized hauling machine of the day, and relegated the steam carriage to comparative obscurity.

The invention of the cushion and pneumatic tire, however, is now likely to do for the steam or motor carriage what the rails did for the locomotive. It has so reduced the rolling resistance on a first-class road that it compares favorably for its lighter loads with that of a steel tire on a steel rail; and now that this radical difficulty has been removed, it is reasonable to expect that a motor will eventually be produced as perfect in its way as a first-class modern locomotive.

With the development of the motor car there will be a simultaneous improvement in the condition of the roads. As the locomotive grew in weight and power there was a steady improvement in the condition of the track, for it was found that the capital which was put into the roadway was returned twice over in the hauling and earning power of the locomotive. The same causes will work out similar results on the common roads, and the policy will be carried out even to the extent of reducing grades, cutting out corners, improving the drainage and bringing up the surface of the highways to the highest possible perfection. The car and the roadway will thus react upon one another, the ever improving surface and level of the one increasing the hauling power and speed of the other. If our prediction is correct (and it is founded upon a reasonable analogy), the main highways of the country will be so modified as to conform to a ruling grade. Wherever this is at present exceeded the road will be graded down or swung around the hill until it comes within the maximum grade of that particular stretch of highway. By such a policy the effectiveness of the motor car will be vastly increased, whether for the farmer with his heavy loads of farm products or for the express, postal or private car with its higher speeds. The small cost per unit of the perfected motor car and its superior mobility will give it especial fitness for rural transportation, as compared with any system which involves the first cost and maintenance of a steel track, and this economy will be increasingly seen in proportion to the scarcity of the population or the poverty of the country.

When we turn from the country to the city the conditions are somewhat different, especially in the matter of competition. Here there is no unoccupied field, and the new method of transportation will be brought into active rivalry with the elevated and underground systems and the various cable, electric and horsecar lines. And yet the conditions are not so changed but what the greater mobility of the motor car will tell in its favor. Like the ordinary cab, it can pick up its passengers and land them in any desired locality. And even when it is placed on a regular route through the main thoroughfares of the city, its mobility will give it an advantage over railway cars, electric, cable, or otherwise, which will render it specially suited to such work. A motor car of the same length as the ordinary cable car would carry the same number of passengers, but would carry them at a considerably greater speed. This will be evident to any one who watches the course of traffic on a crowded thoroughfare like Broadway, New York, through which a double-track surface line is laid. The existence of a double line of cars moving on a fixed track and claiming the right of way over other vehicles is a hindrance to the even flow of traffic, for it both delays the traffic and is itself delayed. Let us suppose, by way of illustration, that the rails on Broadway have been removed, the street asphalted from curb to curb, and the cable cars transformed into motor cars, having the run of the full width of the street, and free to overtake and pass each other at will. It is certain that the whole volume of traffic would move with less interruption than at present, and that the cars themselves would make considerably faster time.

Of the incidental benefits to a city from the reign of the motor car (if it should ever come) it is scarcely necessary to speak. From a hygienic standpoint they would be many and valuable. The deafening rattle of hard tires over Belgian blocks would give place to the silence of the pneumatic or cushion tired wheel; and its streets would be largely rid of the ever present filth which the thousands of horses now upon its streets involve.

The various motor car races which have taken place in this country and in France, and the recent inaugural trip from London to Brighton, have served to show both the powers and the limitations of the new motor. It is evident that any desirable speed can be gained if the strength and carrying power, and, therefore, the utility of the machines be sacrificed. The delays and breakdowns show that the average motor car is far from a perfect machine; and doubtless the car of the future will be as great an advance upon those which are now on the road as the bicycle of to-day is over that of a dozen years ago. There will have to be a large expenditure of brains and capital before a swift weight-carrying machine, which can do its work day in, day out, in city or country, is put upon the market; and we say this without any disparagement of certain lighter machines which are doing good work both in this country and Europe to-day.

The most promising feature of the situation is that the two greatest mechanical nations on earth, the American and the English, are only now taking hold of the problem in serious earnestness; and we doubt not that when they have once earnestly bent their energies to the task, the two races which have given to the world the railroad and the steamship will soon develop all the "Promise and Potentiality" of the motor car.

Examination of Cathode and Roentgen X Rays Through Colored Screens.

Mr. John Carbutt, of Philadelphia, says on this interesting subject, first: The cathode rays in an excited Crookes tube viewed through a pale yellow screen show increased brightness of the yellow rays; second, viewed through a dark violet screen, the cathode rays present a phosphorescent glow, similar to that in a low volt lamp when held in the field of an induction coil; third, viewed through a green screen, the cathode rays present to the eye a light emerald green; fourth, viewed through a dark red screen, the cathode rays present a pale red, on the carmine tint.

The screens are of thin polished plate glass 1½ mm. thick, coated with gelatine, colored with aniline dyes such as are used in preparing chromic screens for the camera.

Examination of Roentgen rays through plain glass and the previously mentioned screens shows that both cut off or absorb fully 50 per cent of the Roentgen rays from reaching the screen of the fluoroscope. Screens of the following colors were placed side by side with the clear glass, viz., dark violet, green, light yellow and dark red, and, when in juxtaposition, it was impossible to recognize which was clear glass and which was colored, and the eye was unable to detect any color sensation when looking through the fluoroscope with the colored screens in close contact. These experiments confirm the opinion he has held since his first dealing with the Roentgen X rays, that they are of the ultra violet, because he noticed they absorbed the entire spectrum, while a deep violet screen absorbs all but the red.

It was early determined by Prof. Roentgen that the X rays could neither be deflected nor refracted, but he is not aware of any experiments having been made to determine the absorptive powers by the X rays of the colors of the spectrum.

Benjamin Apthorp Gould.

Benjamin Apthorp Gould, the astronomer, died on November 27 at his home in Cambridge, Mass., from the effects of a fall received a few hours before. He was born in Boston on September 27, 1824. His father was Benjamin Apthorp Gould, famous as an educator. The son prepared for college at the Boston Latin School and graduated from Harvard in 1844. For a year he taught at the Roxbury Latin School, and then resigned to continue his studies in Europe. Astronomy was his favorite study. He followed this under Carl F. Gauss, in Goettingen, and in 1848 he got the degree of Ph.S. Later he studied under François Arago, in Paris, and he formed the acquaintance of the most noted scientists of the day. When he returned to the United States he started an astronomical journal. He continued the publication of this for twelve years, when he married Mary Apthorp Quincy. While he was an editor Mr. Gould did his first work for the government. In 1851 he took charge of the longitudinal operations of the coast survey. He was one of the first to use the telegraph in determining differences in longitude. In 1855 he organized the Dudley Observatory at Albany, and then it was that the normal clock, protected from atmospheric variations and furnished with barometric compensation, was first used.

In 1866 he established in Valentia, Ireland, the station from which the difference in longitude between Europe and America was ascertained, and he connected the two continents by precise observations. These were the first determinations of transatlantic longitude by telegraph, and were the means of establishing a connected series of longitude measurements from the Ural Mountains to New Orleans. In 1868 he organized the National Observatory of the Argentine Republic in Cordoba. His work there included the mapping of a large portion of the southern heavens. His work, "Uranometry of the Southern Heavens," is accepted to-day as the final authority for the southern hemisphere. In 1885, when he returned to the United States, Prof. Gould re-established his astronomical paper. In addition to his astronomical work Prof. Gould wrote for the government a work containing the result of his observations on 30,000 men from the point of view of statistical anthropology. He was a member of the Royal Astronomical Society of London, of the French Academy of Science, of the Academy of St. Petersburg, of the American Academy of Science, and other similar societies.

The Universal Postal Congress.

The next universal postal congress will assemble in Washington in May, 1897. Invitations will be sent to all countries having mail arrangements. The sessions will last two months, and the debates will be conducted in French. China and the Orange Free State are the only countries of importance that do not belong to the Universal Postal Union; they will however probably send delegates. The vital question before the congress will be that of payment by one country for the transportation of its mails across the domains of every other. Every grain of weight of mail matter sent by one country across the land or water of another is now scrupulously paid for to its destination. The settlement of the rate of payment causes a vast deal of vexatious work. The payment is made on the basis of statistics taken once in three years, covering a period of four weeks. Every country then weighs all mails it dispatches to every point outside its limits, and the countries to which the mails are respectively addressed verify the figures. But the system gives rise to so many complications and annoyances that it is proposed to do away with it altogether. Some countries, among them the United States, seek the total abolishment of these transit rates and the substitution of an arrangement by which each country carries the mails of all others free.