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FAMOUS ENGINEERING LANDMARK TO BE REMOVED. hardness, however, is always present in greater depossible to dispense with the distributing reservoir at proof against fracture. Forty-second Street, and this famous engineering work which is to form the home of the New York Public Library. The reservoir was built over half a century age to provide a terminal for the Croton Aqueduct, in new battleships. common with which it forms the most monumental engineering work of the first half of the century in America. The cost of this water supply was more than \$12,000,000, and the enterprise with which the city of only a quarter of a million souls faced so great a financial burden was only equaled by the skill and good taste with which the engineers of that day, Jervis, Allen and Davis, carried out the engineering and architectural features of the work.

The reservoir, which crowns the summit of Murray Hill, stood well out in the country at the date of its erection. Fault has been found with its architectural is singularly adapted to express the purpose of the inclosing walls of the structure. The reservoir covers four acres and is built entirely above ground. The lion dollars. walls are carried up high enough to give a maximum depth of 36 feet of water and a total capacity of 24,000.-000 gallons. The walls are double, with a space between them, varying from 9 feet 9 inches to 14 feet in fifteen million dollars to the farmers. width, and they are tied together at intervals with cross batter of 1 in 6. The inner wall varies from 6 to 4 feet in thickness and is vertical. A puddled embankthe bottom is covered with 2 feet of puddled earth, above which is 12 inches of concrete.

oughness of the contractors of an earlier day.

-++++ THE POSSIBILITIES OF HIGH SPEED ELECTRIC TRACTION.

In view of the many impossible schemes for air-line There is a good story told in a Philadelphia paper of basis of a road on the third rail system, with trains stone which he had noticed in the shops. running at three-minute intervals. Three-phase 10,000 vated and suburban roads, is put down at 187,040 passengers both ways per day. This is more than four cities. It is considered, however, that the reduced time than technical considerations.

- · - · · PROBABLE SOLUTION OF THE ARMOR PLATE QUESTION.

The laying of the new 48 inch water mains on Fifth gree than the toughness in Harvey plates. The new Avenue, New York, has reached a point where it is Krupp process seems to render the plate absolutely

If the two experimental plates show all the good will now be torn down to make way for the noble pile qualities expected of them, the obvious course for the government would be to fix a fair price and close a contract for the supply of the much needed armor for the

A YEAR OF PLENTY IN KANSAS.

It is a commonplace truth that the source of the prosperity of this country lies in the soil-that good crops mean good times; but it is only when we have before us such astonishing figures as are furnished this year by the Kansas State Board of Agriculture that we appreciate the supreme importance of agriculture. \bullet mitting the \bullet dd thousands, we find that the yield \bullet f winter wheat in that State is fifty million bushels. worth thirty-four million dollars, or 160 per cent more than last year. The corn crop totals one hundred and design; though it has always seemed to us that the fifty-two million bushels, and the yield of oats is simple and massive Egyptian style in which it is built 'twenty-three million bushels, the two together bringing in thirty-two million dollars. The total value of winter and spring wheat, corn and oats is sixty-six mil-

> This is the record of a year of plenty. Compare it with the crops of the previous year, when the combined winter and spring wheat, corn and oats brought only

The table of the yields and values of the crops and walls. The outer wall, 4 feet thick throughout, has a products of all kinds, including, in addition to the cereals already mentioned, potatoes, flax, sorghum, dairy products, etc., is one hundred and thirty-six milmeut is laid against the inside of the inner wall and lion dollars. The total value of crops and live stock is two hundred and thirty million dollars, and the total net increase of all agricultural products is over forty The work was carried out with that conscientious million dollars. In the presence of such figures one is care which marks the whole of the Croton water scheme, prepared to believe there may be more truth than jest and testifies to the skill of the engineers and the thor- in the statement that Kansas will "forward a car load of canceled mortgages" to the forthcoming exposition at Omaha as a token of her returning prosperity.

ECONOMY IN DETAILS.

electric roads with speeds of from 100 to 200 miles an a French officer of engineers who, during a visit to one hour which from time to time find their way into the of the large machine shops in that city, regarded with press, it is a relief to find the subject taken up and dis-i comparative indifference the massive tools and "show" cussed in a scientific way by professional men who have features of the establishment but paid close attention no other object than to place the actual possibilities to a little tool-sharpening machine—a type of those and limitations of high speed electric travel before the numerousingenious labor-saving appliances with which reader. In a recent series of articles in the Engineering | an American shop abounds. At the close of his inspec-Magazine the authors discuss the engineering and tion he stated that he had visited all the most notable enfinancial features \bullet f an electric road between New gineering undertakings and establishments in America, York and Philadelphia which would carry passengers and that he should report to his government that the between the two cities in thirty-six minutes, or at the biggest things in America are the little things. He rate of one hundred and fifty miles per hour. It is the was struck with the fact that in some establishments •pinion of the authors that the scheme would present which he had visited the profits were mainly realized no civil or electrical engineering difficulties which could in the saving of materials and labor by close attention not be overcome. The cost, however, as figured out, to details which in Europe are unconsidered trifles, would be \$190,000,000. The estimate is made on the and as an instance of this he quoted the little grind-

The criticism of the French engineer went direct to volt current would be used for transmission lines, and the mark, for while we have engineering works as 1,000 volt direct current on feeders. Each station would great as any in the world, it is in our genius for invenhave an economical capacity of 30,000 horse power and tion of labor-saving appliances that we lead the world, each substation a capacity of 20,000 horse power. The and herein, too, lies the secret of the extraordinary retravel, estimated on the basis of several existing ele- ductions which we have been able to make in the cost ●f manufacture.

Scientific American Supplement sengers beth ways per day. This is more than rout with the ever-growing magnitude of industrial sengers beth ways per day. With the ever-growing magnitude of industrial the race will be won by the people who have a genius and the low fare, assumed at twenty cents, would for economy in details, who are untiring in their efforts greatly increase the travel. It is evident that, in the to save time and labor in the most insignificant trifles opinion of the authors, Messrs. C. H. Davis and F. S. of shop and factory management. The rapidity with Williamson, the difficulties would be rather of a financial which the new inventions of one country are patented than electrical nature, and their study of the question and bought up in other countries has an equalizing of high speed travel shows once more that the limits to effect which prevents any one nation from enjoying a engineering performance are set by financial rather monopoly of the fruits of its ingenuity, at least in the more important and costly inventions; but as long as the American mechanic continues to devise more rapid and less laborious ways of doing even the most insignificant work, it will continue as easy for us to under-

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There is some prospect of a settlement of the armor sell the European producer as it is puzzling to him to \bullet plate controversy between the government and the firms understand how we can do it.

engaged in armor plate manufacture, by the latter offer-THE LIMITS OF HUMAN SPEED AND ENDURANCE. ing to supply a much superior plate at the price fixed upon by the Secretary of the Navy. It is well under-The many forms of use and abuse to which the bicysteed in naval circles that the great Krupp factory is cle has been put have served to demonstrate that man turning out nickel plates treated with its new gas pro- is capable of feats of speed and endurance the mere cess which have shown better ballistic results than suggestion of which would have been deemed absurd the nickel-steel Harvey plates which have won such and impossible a generation ago. While it has long world-wide celebrity. It now appears that the Carbeen known that the human frame was capable of exnegie and Bethlehem Companies have acquired the ertion far beyond the powers of the brute creation, it rights to the Krupp process in this country, and two was reserved for the bicycle to show just what the experimental plates are being made which will shortly measure of its endurance was. While we consider be tested at the naval proving station at Indian Head. that six day races, such as have lately been concluded The Krupp plates have shown all the hardness of the in New York, are to be condemned on obvious grounds Harvey plates, with a remarkable toughness which ren- of humanity and common sense, it is undeniable that ders it practically impossible to break them. Extreme they possess an interest as showing the amazing feats to ughness and extreme hardness seemed to be incom- of strength and endurance of which a well trained athpatible in the same plate, until Harvey combined the lete is capable.

18334 two by the use of nickel and face hardening. The past year has been fruitful in record-breaking