

# Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

At No. 37 Park-row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

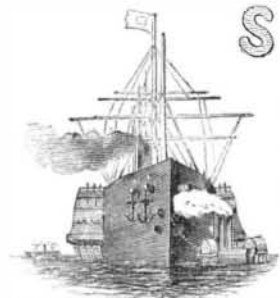
Single copies of the paper are on sale at the office of publication, and at all the periodical stores in the United States and Canada. Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

See Prospectus on last page. No Traveling Agents employed.

VOL. I., No. 19.....[NEW SERIES.].....Fifteenth Year.

NEW YORK, SATURDAY, NOVEMBER 5, 1859.

## OCEAN STEAM NAVIGATION.



STEAM navigation, as connected with our foreign commerce, is now attracting some attention from our cotemporaries. The *New York Times*, of the 20th Sept., contained a leader on this subject, and a correspondent ("Nauticus") of that paper, in the issue

of the 20th ult. has also expressed some opinions on this question. In a recent issue of the *Philadelphia Evening Journal* there is a long communication from Captain Cram, U. S. Topographical Engineers, who takes for his text the important inquiry—"Shall Americans acquire supremacy in ocean steamship traffic?" It affords us pleasure to witness this drifting of the public opinion towards one of the greatest national questions of the age. From the progress of foreign steam navigation during the past ten years, the question at issue seems rather to be—shall Americans be wiped out from ocean navigation altogether? On page 285, Vol. XII, SCIENTIFIC AMERICAN, we directed the attention of our merchants to the great increase of foreign steamships in Atlantic navigation, and clearly pointed out the fact that within a few years they had driven one third of the trade once carried on in American vessels from the ocean. We exhorted them to make an effort to redeem their lost and decreasing business, warning them that, unless they did so speedily, they would become "weaker and less able for the struggle, while their rivals would be growing stronger, increasing in wealth, power and influence." Our warning passed unheeded at the time, but now it is fully appreciated. Our steamers have been nearly driven from the ocean, and were our coasting trade open to foreign competition, in all likelihood, we would lose that also.

What shall be done, either to maintain our present position or retrieve our lost commerce? We cannot stand still; to remain effortless is to go backward. Some fears seem to have been engendered in regard to a new era in steam navigation being about to be introduced by the *Great Eastern*; and notions are entertained by many that we must commence to build steamers of mammoth size to prevent our entire commercial immolation. Such fears are groundless; we have already lost our trade, but not by competition with mammoth foreign vessels. Captain Cram considers that an improvement in the construction of ocean steamers "is absolutely essential to secure a paying traffic;" while, on the other hand, "Nauticus," in the *Times*, asserts that the Collins steamers are superior in comfort, beauty and speed to the *Persia*, and that "in every department of art or mechanism we have improved upon our foreign rivals." Here is an evident contradiction of opinions. We believe that our foreign rivals have improved upon us, or they assuredly would not have driven our steamers from the ocean. This is not the time for boasting of what we have done, or what we can do, but of speaking by deeds. We have lost and are still losing our ocean carrying-trade, principally from the competition of a class of steamers the efficiency and economy of which our people do not yet appreciate; we mean iron screw-propellers. Nearly the whole German, much of the English, and the entire Scotch trade is now carried on with our country by such steamers. They are built on the river Clyde, and cost much less than wooden

vessels, and are very economical of the steam power. On page 242, of the present volume of the SCIENTIFIC AMERICAN, we gave an illustration of the method of constructing iron ships, by Mr. Sneed, of Greenpoint, near this city; and we were happy to chronicle the sagacity of Commodore Vanderbilt being turned in this direction. As this is the quarter to which we must look for success, we recur to the subject at the present time, because, since we published the article referred to, some of our cotemporaries have touched upon the subject, and they seem to be at sea in the matter, without chart or compass to guide them. It was stated in one of our Buffalo (N. Y.) cotemporaries, last week, that R. Germain, of that city, had made a discovery in the construction of vessels, whereby steamers could be run at the rate of 100 miles per hour, and at one half the present cost for navigating them. We have an intense admiration for great deeds, but a profound contempt for great words merely. If Mr. Germain can only build a steamer that will obtain an average speed on the ocean of but 20 miles per hour, without any decrease of cost in navigating it, he is the very person who will eclipse our foreign rivals completely. At such a speed he can make a voyage from New York to Liverpool in six days and six hours, just about one half the average time of common steamships. Let him first do this before he attempts his 100 miles per hour trip; and if he succeeds, he will certainly deserve, and no doubt secure, both fame and fortune. We are far from doubting that great improvements will yet be achieved in the construction of steamships, but at present we have most confidence in iron hulls and screw propellers for regaining our lost commerce.

### ROBERT STEPHENSON.

The ink had scarcely become dry in noticing the decease of Brunel, when news arrived that Robert Stephenson, another great English engineer of world-wide celebrity, had also been carried to "the narrow home appointed for all living." In regard to mental qualifications, and the magnitude of the engineering works which he projected and successfully carried out, no engineer of ancient or modern days was his equal. He was the son of the renowned George Stephenson, justly called "The Father of the Railway System," and was born on Dec. 16, 1803, at Wilmington Quay, on the banks of the river Tyne; consequently, at his death, which took place on the 12th ult., in London, he was only 55 years of age. He was therefore a comparatively young man in years, but old in great deeds, as he has left behind him many mighty and enduring monuments, which will carry his name down to distant generations. When the subject of this memoir was born, his father was in very humble circumstances, being but a brakesman or engine-tender of a coal mine. He was an only son, and lost his mother when but a year old. His father, "old George," devoted earnest and affectionate attention to train him up in habits of industry and morality, and was eminently rewarded for his efforts. Robert received a good practical education, and served an apprenticeship as "under-viewer" in a colliery at Killingworth, where he became distinguished for his mechanical genius and devotion to study during his evening hours. He lost no opportunity of attending mechanical and chemical lectures in mechanics' institutes; and he faithfully sought every opportunity to improve his mind. When his father's circumstances in life became improved, Robert was sent to the University of Edinburgh for one session, where he took the first prize in mathematics, and otherwise distinguished himself. After this, he became an apprentice in a locomotive-shop; and as his father increased in fame and wealth, the son also rose to distinction, with the railway system, as the greatest and best practical civil engineer in the country. His projects were grand and vast; and in this respect he was the equal, if not the superior, of Brunel. In one important feature, he was by far his superior. Being a practical mechanic, as well as an educated civil engineer, he was perfectly familiar with all the *minutiae* of his undertakings; hence, he was always successful—he never failed in anything he undertook to perform. He was engineer of the great viaduct over the river Tweed, at Berwick, and the tubular bridge—the first in the world—over the Menai Straits, which was opened in 1850. He projected this kind of bridge; but William Fairbairn made the experiments which determined the form, and he also wrought out the details of its construction. Robert

Stephenson was also engineer of lines of railway in Belgium, Norway, Italy, Switzerland and Egypt, and it is not long since he completed the 140 miles of railway between Cairo and Alexandria, with two tubular bridges. Besides these labors, he has been a member of Parliament since 1847. In 1855, he paid off a debt of \$15,000 for the Newcastle Literary and Philosophical Society. He was an honorary but active member of the London Sanitary and Sewerage Commissions, a Fellow of the Royal Society, a member of the Institution of Civil Engineers since 1830, and president during the years 1856 and 1857. He received a great gold medal of honor from the French Exposition d'Industrie of 1855, and is said to have declined an order of knighthood in Great Britain. He was also the author of a work "On the Locomotive Steam-engine," and another "On the Atmospheric Railway System." He designed the Victoria tubular bridge, now in the course of construction over the St. Lawrence at Montreal, which, when completed, will be the greatest work of the kind on the globe. He was a man of noble impulses, and was the only person in England owning a yacht who had the courage to try a race with the *America*, in which contest he was honorably defeated. We have devoted this much space as a brief memoir of this truly great man. His public life was a grand march from a poor boy to the highest position in the world as a civil engineer. As an example to young men, his whole life, professional and private, is worthy of imitation. The *London Times* passes a high eulogium upon him, as follows:—

"If his loss will be felt severely in his profession, it will be still more poignantly felt in his large circle of friends and acquaintances, for he was as good as he was great, and the man was even more to be admired than the engineer. His benevolence was unbounded, and every year he expended thousands in doing good unseen. His chief care in this way was for the children of old friends who had been kind to him in early life, sending them to the best schools, and providing for them with characteristic generosity. His own pupils regarded him with a sort of worship. A man of the soundest judgment and the strictest probity, with a noble heart and most genial manner, he won the confidence of all who knew him. Without a spark of professional jealousy in his composition, he was liked by all his fellow engineers. He has passed away, if not very full of years, yet very full of honors—the creator of public works, a benefactor of his race, the idol of his friends."

### LIGHTNING-CONDUCTORS.

Our attention has been solicited by an intelligent correspondent, well-versed in electrical science, to an article on the above subject which appeared in the *New York Tribune* of the 22d ult. A correspondent—Joseph Tait, of Lee county, Iowa—had communicated with our cotemporary, asking whether "lightning-rods were of any use?" Mr. Tait states that he had a lightning-rod on his house, and yet it was struck by lightning on the 18th of September, killing a dog, and sending himself and "six little Taits sprawling over the floor." The lightning is stated to have "come down the rod, punched a hole in the cellar wall, and, after doing sundry damages, went out of the cellar window." This escapade of the lightning having rather knocked the faith out of him about lightning-rods, he wrote to the *Tribune* for light on the subject, and was answered as follows:—

"A hundred, at least, of just such cases have come to our knowledge, and we do not believe that one lightning-rod in a thousand is of any more use, as a protector of the building, than the nails which hold on the shingles. Did it never occur to the minds of advocates of lightning-rods, that the heads of all nails, while new and bright, are just as likely as the points of their rods to attract electricity? It is barely possible that a rod well made, well insulated, and well set in the ground, may serve to conduct a portion of the electricity above the house to the ground, should there be no great excess of it in the atmosphere; but whenever there is enough to produce an explosion, it will probably produce just such results as Mr. Tait describes—the dog will be killed, and 'things knocked about promiscuously.' If the readers of the *Tribune* think we are mistaken, they will continue to invest the cost of 'a protector' with the first lightning-rod pedlar that comes along, 'working upon the fears of the women folks.'"

This is an important question. The press, which assumes the office of teaching the public in science, will do great injury if it is not capable and reliable. If lightning-rods are protectors from the injurious effects of disruptive discharges of atmospheric electricity, then the