

Scientific American.

ESTABLISHED 1845.

MUNN & CO. Editors and Proprietors PUBLISHED WEEKLY AT No. 361 BROADWAY, NEW YORK.

O. B. MUNN. A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year, for the U. S., Canada or Mexico... \$3 00 One copy, six months, for the U. S., Canada or Mexico... 1 50 One copy, one year, to any foreign country belonging to Postal Union... 4 00

The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year, for the U. S., Canada or Mexico, \$6.00 a year to foreign countries belonging to the Postal Union. Single copies, 10 cents.

Building Edition.

THE ARCHITECTS AND BUILDERS EDITION OF THE SCIENTIFIC AMERICAN is a large and splendid illustrated periodical, issued monthly, containing floor plans, perspective views, and sheets of constructive details, pertaining to modern architecture.

Spanish Edition of the Scientific American.

LA AMERICA CIENTIFICA E INDUSTRIAL (Spanish trade edition of the SCIENTIFIC AMERICAN) is published monthly, uniform in size and typography with the SCIENTIFIC AMERICAN.

MUNN & CO., Publishers, 361 Broadway, New York.

The safest way to remit is by postal order, express money order, draft or bank check. Make all remittances payable to order of MUNN & CO.

NEW YORK, SATURDAY, DECEMBER 17, 1892.

Contents.

(Illustrated articles are marked with an asterisk.) Agricultural improvements, re-cent. 392 Astronomical work at Harvard 393 Barley 395 Bicycle, the lever in the 392 Boilers, sugar in 392 Books and publications, new 393 Boro-borax 390 Boston and vicinity sewers* 391 Breast cancer, Cain's* 396 Cholera streets, Hamburg* 397 Coinage, eye-opener 391 Dynamo, the Henrich* 395 Engineering inventions, recent 392 Engineers in the navy 392 Frosts, protection against 395 Hydrophone, the 395 Inventions recently patented 392 Lead, black, purifying 395 Leather industry, the 395 Liquid glue, new 398 Locomotive exhaust nozzle, Umholtz's* 396 Lox-hauling apparatus 396 London fog 398 Lubricating composition 395 Mars, canals on 399 Matches 399 Mechanical appliances, some new 392 Meteors, the November 394 Military force, Europe 391 Mineralogical exhibition, Brooklyn 394 Myrabolams 394 Nails, cut wire 395 Notes and queries 393 Over 97 miles per hour 399 Patents granted, weekly record 395 People who fall safely 399 Planets, light of 399 Pneumatic tubes for mail service 394 Power transmission plant 398 Pressure gauge, Bristol's record-ing 398 Railway, elevated, Liverpool 399 Rod and ring experiment* 397 Sewerage system around Boston 393, 396, 391 Soap, iodine 395 Treadmill, the hygienic 397 Voyage, aerial, lengthy 399 Well, Galveston, deep 399

TABLE OF CONTENTS OF SCIENTIFIC AMERICAN SUPPLEMENT No. 885.

For the Week Ending December 17, 1892.

Price 10 cents. For sale by all newsdealers

I. AERONAUTICS.—History of the Parachute.—An interesting article, illustrated by 5 engravings. 14135 II. CHEMISTRY.—Nitrate Silk.—By L. VIGNON and P. SISLEY. 14148 Oleomargarin.—An article by Prof. G. C. CALDWELL, Cornell University, Ithaca, N. Y. 14148 III. ENGINEERING.—A Famous Locomotive.—An illustrated description of "The Cornwall," built 45 years ago, with the largest driving wheels in the world.—1 engraving. 14137 Steam Fire Engine for Bombay.—1 engraving. 14137 Improved Nut Tapping Machine.—1 engraving. 14137 IV. MEDICINE AND HYGIENE.—The Influence of Alcohol upon the Living Human System.—By N. S. DAVIS, M.D., LL.D. 14147 V. METALLURGY.—Improvements in Linings for Steel Furnaces and Melting Vessels.—A description of an invention made by Mr. Alexander D. Elbers. 14136 VI. MISCELLANY.—Pier in Milwaukee on the Milwaukee River.—1 illustration. 14146 Plaster Busts from the Great Oasis.—4 engravings. 14145 The Manufacture of Liquors and Preserves.—An article by J. DE BREVANS, Chief Chemist of the Municipal Laboratory of Paris.—Continued from page 14127, SUPPLEMENT No. 884.—11 engravings. 14142 VII. NAVAL ENGINEERING.—On the Transmission and Distribution of Power in Modern Ships.—An extended article by NABOR SOLIANI, of the Italian Admiralty. 14137 English Cruisers Pique, Rainbow, and Retribution.—A full description, with one illustration of the war ship Retribution. 14140 VIII. OPTICS.—Optical Projection.—By Sir DAVID SALOMONS. 14146 IX. PHOTOGRAPHY.—The Untrustworthiness of Certain Photographs for Scientific Purposes.—6 engravings. 14144

PNEUMATIC TUBES FOR MAIL SERVICE.

"A scheme that will revolutionize the mail service," is the caption of a recent dispatch from Washington referring to transmission by pneumatic tubes. "Proposals," so the dispatch reads, "are now in the hands of Postmaster-General Wanamaker for the establishment of a line between New York and Brooklyn, and in Philadelphia, from the general post office to sub-stations." Systems of small pneumatic tubes have for years been in use in Paris, London, Berlin, Vienna, New York, and other places.

There are other means of securing frequent delivery which may be had for a tithe of the tube expense, if only the already established means of conveyance, such, for example, as is afforded by the street railways, is intelligently utilized. As illustrative we may say that messengers dispatched from the New York general post office to the Brooklyn general office at intervals of fifteen minutes would get the mail to Brooklyn faster than it probably could be distributed throughout that city by the carriers and yet would not cost, so it has been computed, as much as the interest would amount to on a pneumatic service between the two post offices.

THE METEORS OF NOVEMBER, 1892.

BY PROF. DANIEL KIRKWOOD, OF RIVERSIDE.

Within the memory of persons now living the meteors called shooting stars were regarded as gaseous matter generated in the atmosphere. Their true nature was wholly unknown, and works on astronomy made no attempt to account for their origin.

Persons who happened to be in the open air on Wednesday evening, November 23, had the privilege of witnessing a phenomenon of more than ordinary interest. A brilliant display of celestial fireworks commenced about six o'clock, and lasted several hours. Meteors at the rate of several hundred per hour were watched and counted by numerous spectators.

How are the phenomena to be accounted for? How frequently do they occur? and When may they be again expected? were questions asked by many observers during the display in Southern California. Aged persons remember Biela's comet—a telescopic body having a period of six years and eight months, or three periods in twenty years.

DR. ERNST WERNER SIEMENS.

This well known electrician and engineer died December 6, at Berlin, Germany, 76 years of age, having been born at Lenthe, near Hanover, December 13, 1816. He was the elder of the three brothers, Ernst W., Karl Wilhelm, and Friedrich, all of whom have made brilliant records in science.

1837. While still holding this appointment in the army he applied himself with great zeal to the study of practical chemistry and the physical sciences, and became the inventor of the process of electro-gilding, of the differential governor, and of the electric automatic recording telegraph.

As member of a commission of the Prussian General Staff for the introduction of the electric telegraph system in place of the optical telegraphs, he proposed, in 1847, the application of subterranean conductors, insulated by gutta percha, by means of a press invented by him for that purpose, which is still being used in the manufacture of cables.

Dr. Siemens left the government service in 1850, and devoted himself afterward entirely to scientific studies and to private enterprises. In 1847 he had already laid the foundation of the telegraph works afterward carried on by him under the firm name of Siemens & Halske in Berlin, the celebrated establishment which was destined to become, and at present is, one of the chief centers for the application of electricity to the industrial arts.

The late Emperor Frederick III., of Germany, conferred upon him the patent of nobility. He was also the recipient of many other distinctions and honors.

Dr. Siemens' lectures and papers have been published in the transactions of different learned and scientific societies and in various periodicals.

Dr. Siemens' was an honorary member of the British Institute of Electrical Engineers. At the time of his death he was engaged in building an electric railroad in Berlin.

The Third Annual Mineralogical Exhibition of the Brooklyn Institute.

The mineralogical section of the Brooklyn Institute has had the good fortune to attract a group of collectors who have combined scientific precision with the more popular enthusiasm for beautiful specimens. It has, therefore, been able to make a public exhibit at once instructive and entertaining, and the exhibition given last week by its members of selections from their cabinets was unquestionably one of great merit.

Among the first cases to attract the visitor was that of Mr. Charles L. Hatch, of Brooklyn, where a very excellent suite of Paterson minerals were exhibited, taken from the classic Hoxie's quarry, which has contributed almost a new chapter in the study of secondary minerals.

Near Mr. Hatch were some striking objects in the exhibit of Mr. J. W. Freckleton, the industrious and painstaking treasurer of the association. Here were interesting sections of stalactites, horizontal and longitudinal, showing their wave-like accretion; lamellar copper-red zincites from New Jersey; large pectalite spheres from Paterson; a handsome calcite, with cleavage seams over its surface; and handsome apophyllites.

Dr. R. W. Raymond showed a wood-copper with reticulated surface, apparently resulting from replacement of ligneous fiber; bright yellow gold most captivatingly inclosed in white quartz, from Mariposa, Cal., and many other admirable specimens. Dr. S. E. Stiles exhibited a pseudomorph of serpentine after actinolite, scattered in green blades over foliated talc, from Tompkinsville, S. I.; and a curious hydrodolomite, from Mott Haven, with pipe-like pustulose projections.