

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year, postage included.....\$3 20
One copy, six months, postage included..... 1 60

Clubs.—One extra copy of THE SCIENTIFIC AMERICAN will be supplied gratis for every club of five subscribers at \$3.20 each; additional copies at same proportionate rate. Postage prepaid.
Remit by postal order. Address

MUNN & CO., 361 Broadway, corner of Franklin Street, New York.

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, postage paid, to subscribers. Single copies, 10 cents. Sold by all newsdealers throughout the country.

Combined Rates.—The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year, postage free, on receipt of seven dollars. Both papers to one address or different addresses as desired.

The safest way to remit is by draft, postal order, or registered letter. Address MUNN & CO., 361 Broadway, corner of Franklin Street, New York.

Scientific American Export Edition.

The SCIENTIFIC AMERICAN Export Edition is a large and splendid periodical, issued once a month. Each number contains about one hundred large quarto pages, profusely illustrated, embracing: (1) Most of the plates and pages of the four preceding weekly issues of the SCIENTIFIC AMERICAN, with its splendid engravings and valuable information; (2) Commercial, trade, and manufacturing announcements of leading houses. Terms for Export Edition, \$5.00 a year, sent prepaid to any part of the world. Single copies, 50 cents. Manufacturers and others who desire to secure foreign trade may have large and handsomely displayed announcements published in this edition at a very moderate cost.

The SCIENTIFIC AMERICAN Export Edition has a large guaranteed circulation in all commercial places throughout the world. Address MUNN & CO., 361 Broadway, corner of Franklin Street, New York.

NEW YORK, SATURDAY, AUGUST 8, 1885.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Analgesia, Atomizer, Barometers, Bolt, door improved, British ship Rodney, Burial place of General Grant, Business and personal, Charts for great circle sailing, Cocoon, cellulose, Corks, Engineering as a profession, Engine, horizontal, 50 horse, Exposition, new, at New Orleans, Fever, hay, and its cure, Firearms, accelerating, Fish and oyster hatchery, Frames, bronze, Gulf Stream, the, Invention, progress of, Inventions, agricultural, Inventions, engineering, Inventions, miscellaneous, Iron business, the, Italians, why they sing, Ladder, improved, Lamp, safety, an early, Lantern, magic, Light and heat, New experiments, Light house construction, Metals, oxidation and bronzing, Museum, locomotive, New books and publications, Notes and queries, Optical illusion, a curious, Oyster pest, a new, Patents, decisions relating to, Perfumes, homeopathic, Planets, aspects of for August, Riverside Park, New York, Roofs, tin, repairing, Samuel Ireneus Prime, D.D., Siren, electric, Weber's, Stamps, device for handling, Sunstroke, or thermic fever, Surgery for pianoforte players, White, right, of the North Atlantic.

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 501,

For the Week Ending August 8, 1885.

Price 10 cents. For sale by all newsdealers.

Table listing sections: I. CHEMISTRY AND METALLURGY.—A New Chlorimeter, Electrolytic Refining of Copper, Essential Oils.—Distillation of same from flowers. II. ENGINEERING AND MECHANICS.—Improvements in Velocipedes.—Engraving, An Agricultural Mitrailleuse.—1 figure, Range of Guns, The Empress Bridge over the Sutlej.—7 figures, The Dawson Gas Apparatus.—2 figures. III. NAVIGATION, ETC.—Charts for Great Circle Sailing.—Showing at once the great circle track, the compass bearing at each point, and the distance; also the "composite" course touching any given latitude.—By R. A. PROCTOR.—6 illustrations. IV. TECHNOLOGY.—Reins for Three Horses Abreast.—1 figure, Japanese Technical Apparatus, Direct Photo-typography and Photo-lithography by the Chromo Albumen Process.—4 figures, A New Singer's Sewing Machine Factory near Glasgow.—With engraving, Care and Use of the Microscope Lenses.—By WM. WALES. V. ELECTRICITY, HEAT, ETC.—A New System of Telephonic Communication.—Numerous figures, Kendall's Electric Generator.—1 figure, On the Conversion of Heat into Useful Work.—Lecture delivered by WM. ANDERSON before the Society of Arts, London.—With table giving properties of fuels, and several figures illustrating different burners, furnaces, etc. VI. ART, ETC.—The Unveiling of the Darwin Statue, South Kensington. VII. BOTANY, ETC.—How to Form a Herbarium.—3 figures, The Coloring Matter of Flowers and Fruits. VIII. HYGIENE, ETC.—Sanatory Precautions in the Dwelling.—By E. DWIGHT KENDALL.

RIVERSIDE PARK.—THE BURIAL PLACE OF GEN. GRANT.

In preparing for General Grant's obsequies, the first question was naturally where he should be buried. A diversity of opinion prevailed, many preferring that national ground should be chosen for his last resting place, as he belonged in a peculiar manner to the nation at large; but his family thought fitting that New York, as the city which had been his home during the last few years, and had witnessed the heroic struggle of the past winter and spring, would be the most suitable place for his burial. The choice, indeed, was sanctioned by General Grant himself, who stated, but a short time before his death, that he selected New York as his burial place, "because the people of that city befriended me in my need."

The city authorities were prompt in offering the use of any of the city parks which the family might select, and for several days Central Park was uppermost in mind, and seemed likely to be the spot honored by their choice. Colonel Grant, upon whom devolves the principal arrangements for the funeral, was several times in consultation with Mayor Grace, and in company with several gentlemen of the city corporation visited the park, and examined various sites which had been proposed. A number of objections, however, conspired to make Central Park seem undesirable, and Mayor Grace suggested that Riverside Park should be selected, as it possessed many advantages, and would in all respects be a suitable site. The final decision rested with Mrs. Grant, and as her acquiescence was early telegraphed to Mayor Grace, Riverside Park was announced as the spot selected for the resting place of the hero.

The park thus chosen for so distinguished a trust is little known outside of New York, and indeed in the city itself there are many who are entirely unacquainted with its beauties. From 72d Street to 129th a high bluff extends along the Hudson River, its sides sometimes precipitous, and again falling in gentle slopes toward the river. It is but a narrow strip of ground, and as yet, with the exception of the broad macadamized drive and the heavy stone parapet toward the river, it is almost entirely unimproved, but it possesses the elements of great beauty, and is destined in time to become one of the loveliest spots on the whole island. Three miles of river frontage gives to the park a living feature, whose charm and naturalness can be disturbed by no future growth of the metropolis, and fully entitles it to the name of Riverside.

Just now it is in a state of transition; the old order of things is passing away, and the new has not yet taken its place. Three generations of homesteads are built side by side, facing the winding stream, and bringing the memories of the past into contact with modern progress. Here and there stands an old Dutch farmhouse, square and comfortable, and surrounded with its gardens and orchards, while a little further along and one comes upon the mansion of a less remote period, with its prim colonnade and heavy, dignified aspect. Several lovely spots have been selected as the site of modern villas, which tell of what is coming, and hint unmistakably that their neighbors are decidedly old-fashioned, and will soon be seen no more.

The park is fortunate in possessing together with its charming location many noble old trees, whose heavy foliage is very graceful and attractive. These, too, speak of the past. Occasionally one sees a few old apple or pear trees mixed with the other timber, and recalling pictures of former homesteads; or the remnants of an avenue of Lombardy poplars or aged elms tell of more pretentious country seats. It is a great advantage in choosing this quiet, unadorned spot, which must forever remain inviolate, that its development will shape itself to be a fitting environment for the sacred dust which it receives. It cannot fail to be dominated by the memory of the hero who is to rest there, and to become consecrated to him in a manner that could never have been the case with Central Park.

Following the road to the north, the ground gradually rises until at 124th Street it has an elevation of one hundred and thirty-five feet above the river. This is the most charming spot in the whole park, and has been chosen as the site of the monument. At the base of the hill, the river spreads out into the beautiful sheet of water known as the Tappan Zee. Its surface is always alive with all kinds of river craft, and its surrounding shores abound with associations of the Revolution. The past and the present are both here; it is a fitting place to lay a hero. On the opposite shore, the trap rock of the Palisades rises from the river and makes a graceful outline against the horizon.

But a short distance above the park are Fort Lee and Fort Washington. Just beyond the commanding knoll stands the Claremont House, which was the home of the eccentric Lord Courtney in the days before the Revolution. The wooden figure-head of George III. is still one of the curiosities of the neighborhood; but the house is near enough the site of the monument to be an obstruction, and is therefore to be removed. To the east the view is also commanding, and on clear days the boats on Long Island Sound

can be distinctly seen. Twenty acres of land are to be devoted to the monument.

Though Riverside Park is so comparatively unknown, it is by no means inaccessible. The Boulevard, a broad, shady avenue, which promises in time to become one of the most fashionable in the city, leads from the Circle on 59th Street, at the southwest corner of Central Park, almost directly to the monument site, where numerous other pleasant drives connect the locality with the surrounding parks. Our illustrations show some of the features of Riverside. The lower portion of the picture is a view from the bluff at 90th Street looking toward the north. The central and upper cuts represent different views in the park as one approaches Claremont. Various boat houses occupy the water's edge along the park domain, as represented in the cut at the left. The small engraving on the right gives a glimpse of Claremont taken a few steps in front of the spot chosen for the tomb.

It is admitted that Riverside is the most suitable place in the city, and though its selection has not given general satisfaction, we believe that time will justify the choice. It would be difficult to find a more beautiful spot, and almost impossible to select one which would become more thoroughly consecrated to the memory of General Grant.

CHARTS FOR GREAT CIRCLE SAILING.

We publish in this week's issue of the SUPPLEMENT an illustrated article by Prof. Richard A. Proctor, on charts for great circle sailing, which is a very interesting development of the law of least force. The chart brought forward by Prof. Proctor is a stereographic projection—one in which each point on the sphere is projected on a tangent plane by a line joining the point and the outer end of the tangential diameter; and since it gives the entire globe, except a small area within the Antarctic Circle, on one sheet, it is well adapted for plotting a great circle course. By the method given in connection with the chart, a seaman may lay down without any difficulty the shortest track between two ports, that is, the arc of a great circle joining those ports, or the shortest distance between any point reached during the journey and any desired haven, and can calculate the distance. Ordinarily, vessels follow what is called the rhumb course, or that in which the same compass bearing, apart from magnetic variation, is maintained throughout the journey, but a great saving of distance is effected by sailing on the arc of a great circle; thus the distance from Melbourne to Cape Town is 6,154 miles on the rhumb course, but is 587 miles shorter on a great circle. It is the purpose of Prof. Proctor's article to make this more advantageous course practically attainable.

The advantages of great circle sailing have been known for many years, but hitherto the difficulties of calculating and plotting the course have been so great that it never came into more than exceptional use. The gnomonic projection suggested by Mr. Hugh Godfray, for charts to be used in great circle and composite sailing, was some advance, but the area represented on one chart being of necessity limited, it was impossible to lay down a ship's course of any extent on one chart, and the process of calculation was too complicated. The chart and methods suggested by Prof. Proctor are very simple, and may be readily grasped by navigators of even small mathematical knowledge. They promise to bring great circle sailing into general use, and by the notable saving of time effected, to be a valuable contribution to the progress of an age which is prone to rank speed among its greatest attainments.

BRONZE FRAMES.

Many productions of artistic articles are made under personal or trade secrets, and the methods are not made patent. Even where the methods are not guarded and controlled by legal act they may be confined in practice to a limited number of expert workmen. There is no exclusive right to the employment of bronze as a means of ornamentation, but in its uses as a decorative material few are experts.

Ever since the Exhibition at Philadelphia in 1876, there has been manifested great interest in the possibilities of bronze as a means of ornamentation. It was shown there that the appearance of hard steel and crude iron could be produced by treatments of bronze; in short, that bronze powders might be so managed by acids and heat as to assume all the metallic tints that could be possible in the solid metal. Of course, any mechanic can understand that such a disintegrated material as iron could not be spread into layering leaves like gold or like nearly pure silver; it was not capable of the extreme tenuity of fiber that could make it plastic in thin foils. So steel, although capable of greater tenuity, could not be beaten or rolled into films so requisitely thin as to make a tenuous sheet capable of being spread over even a plane surface. But much of this imitation of the hard metals must, by the present demands of fashion, be made on alto rilievo work, projections that would seem to require very flexible material to meet the requirement. This material is in the form of a very fine powder or dust, but being actual metal is capable of being bur-

# SCIENTIFIC AMERICAN

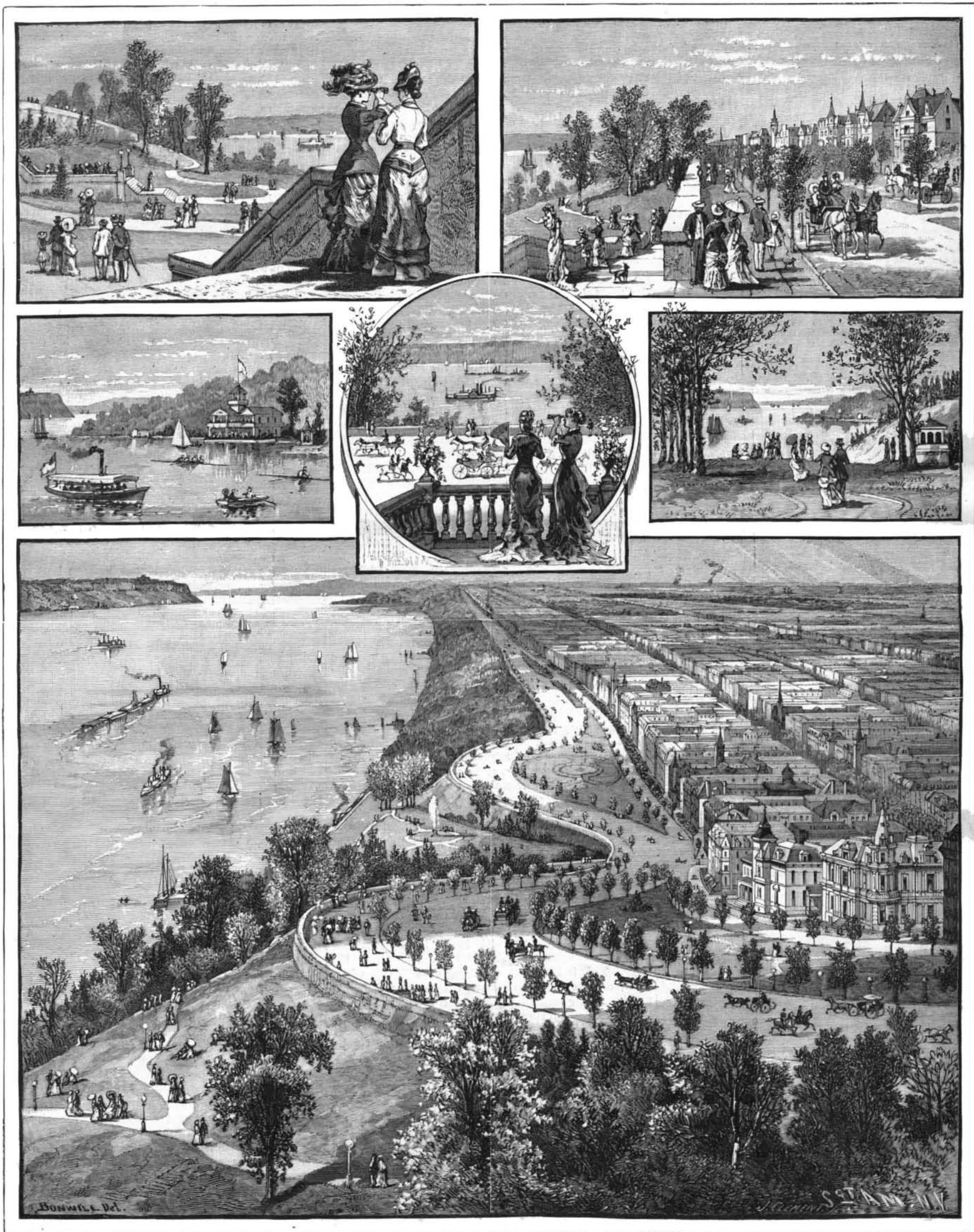
[Entered at the Post Office of New York, N. Y., as Second Class Matter.]

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. LIII.—No. 6.  
[NEW SERIES.]

NEW YORK, AUGUST 8, 1885.

[\$3.20 per Annum.  
[POSTAGE PREPAID.]



RIVERSIDE PARK, NEW YORK.—THE BURIAL PLACE OF GENERAL GRANT.—[See page 80.]