

# The 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 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. VII NO. 6. . . . [NEW SERIES.] . . . Eighteenth Year.

NEW YORK, SATURDAY, AUGUST 9, 1862.

## THE INDUSTRIAL CONDITION OF THE UNITED STATES IN 1860.

The eighth census of the United States was taken in 1860. The inquiries embraced not merely the number of persons, but also the number of domestic animals and a great mass of statistics in relation to the industry of the people. Since the returns of the marshals were made at the Census Office in Washington, the Superintendent, C. G. Kennedy, Esq., has been busily at work arranging them for publication, and the preliminary chapters of his report have just been issued. They contain statistics from which we have prepared a general view of the condition of the country when the census was taken, that will be found on another page.

In 1607 the first permanent English settlement on this continent was made at Jamestown, in Virginia, and during the 255 years that have since elapsed a steady stream of immigration has poured across the Atlantic, while the descendants of the earlier settlers have been constantly multiplying, producing an aggregate population in 1860 of 31,749,281.

The continent at the time of its settlement was principally covered with a dense forest and most of the settlers were poor, but they were eager to improve their condition by industry and economy, and they had the sagacity and resolution to found and maintain a republican government which secured the most perfect protection of life and property at the smallest cost, while it left the citizen untrammelled by restraining enactments to pursue his own well-being, under the stimulus of free competition and the natural laws of trade. At the same time the founders of the Northern States most wisely made provision for the general education of the people. The combined industry of the nation, thus guided by intelligence, protected by law, unburdened by taxation and left free in its development, produced results which are accurately shown by the census statistics, and which have never been equaled in the same length of time and from the same beginnings. The continent has been cleared of its forest, made into cultivated farms, covered with comfortable dwellings, articulated with roads, canals and railroads, and dotted all over with opulent cities. The mass of the people are supplied with food, clothing, dwellings, and other means of comfort and enjoyment immeasurably superior to those of any other people that ever existed.

Unfortunately a few negro slaves were imported into the country from Africa and their descendants now number 4,441,765, of whom 3,953,760 are still slaves, the others being free. In the Northern States the slavery system was soon abandoned, but in the Southern States it has been cherished, and as the controlling sentiment in those States was opposed to popular education, the two evils together—the aversion of the blacks and the ignorance of the whites—have generated a state of society which seems to be incompatible with the free institutions that have caused our prosperity, and which has resulted in a desperate effort to overthrow them. If this effort succeeds, no future census will exhibit so satisfactory results as those of 1860, for our wealth will decline, like that of the Grecian, Italian, and all other republics, as their institutions were overthrown; and even if the effort does not succeed, it will inflict a very serious check on the prosperity of the coun-

try. The lessons of the war will cause a great augmentation of the naval and military force, which, with the interest on the public debt, will multiply the taxes; burdening the industry of the people with a load that will powerfully tend to repress the growth of our wealth. For a generation to come the censuses will probably exhibit a much less rapid advancement than that which is shown by the eight that have been taken.

Each year, however, from the increase in machinery and improvements in the modes of operation, we are able to produce a larger amount of wealth than during the previous year, and if the rebellion is pretty quickly subdued, we shall soon pay off the national debt and resume the multiplication of our means, probably with greater rapidity than ever before.

## THE LONDON EXHIBITION—AWARDS TO AMERICAN EXHIBITORS.

The communication of our London correspondent, Mr. Holmes, on another page, contains a very full and interesting account of the awards of first and second-class prizes to American exhibitors at the World's Fair. We feel highly gratified with the success which has attended the efforts of our inventors. In proportion to their numbers their productions excelled those of all other countries under similar classes, and particularly so in mechanism. It is an unquestionable fact that in labor-saving machinery more progress has been made in America during the past quarter of a century, than in any other country, and this has been felt and acknowledged by British mechanics, and to an unlooked-for extent by the English press. It is also gratifying to learn, as stated by our correspondent, that a number of our exhibitors have been successful in a pecuniary sense in disposing of their patented inventions to good advantage. They have thus opened up new avenues of trade in Europe to other American inventors who may profit by their example.

The Superintendent of Machinery, D. K. Clark, C. E., an inventor and author of the well-known work "Clark's Railway Machinery," paid the American exhibitors extraordinary attention. It appears to us that the troubles of our country led the authorities connected with the Exhibition to treat our exhibitors with more favor than they would have done under other circumstances, for it was distinctly stated, at the outset, that no awards would be made to any country which refused to appoint a Commissioner. This rule was waived in favor of American exhibitors, and no distinction has been made between them and the English themselves. Undoubtedly this courtesy and kindness were due chiefly to the efforts and influence of our correspondent, Mr. Holmes, who has ardently devoted his time and energies to the cause. He stated to the Royal Commissioners that the American exhibitors who had forwarded articles to the World's Fair did so in good faith that their Government would appoint a Commissioner, and upon this candid statement a department was allotted for their products, and every proper consideration extended to them, although no Commissioner was appointed by our Government. Thus, out of ninety-eight actual exhibitors, no less than eighty received awards; but out of thirty-two exhibitors of "machinery in general," no less than twenty-eight secured prizes. Never before have so many laurels been won in any industrial contest by a proportional number of candidates. It was perhaps fortunate that the majority of these inventions had been illustrated and described in the columns of the SCIENTIFIC AMERICAN, and that a knowledge of their merits had thus been previously disseminated among European mechanics and manufacturers.

It affords us much pleasure to state that the British Commissioners and the Juries have treated our exhibitors with marked kindness.

### AN OPENING FOR A GREAT DISCOVERY.

It is well known that iron deposited by the electric current is generally destitute of solidity or strength. We are informed, however, by Mr. L. L. Smith, of College Point, Long Island, an experienced electroplater, that he has seen iron deposited by the battery solid, tough and fine grained. Mr. Adams, of Brooklyn, showed him a piece of this character an eighth of an inch in thickness.

Now, the forces of nature are invariable in their

operation, and if the same conditions which produced that piece of iron can be again combined, they will inevitably produce the same result. It is certain that good iron can be deposited by the battery, all that remains is to learn the method by which it can be done.

If this art can be found the discovery will be one of the most valuable that has ever been made. There are a great many places in which it is desirable to have pieces of wrought iron of such size and form that they are exceedingly difficult to forge, but which could be fashioned with the greatest ease if iron of the desired quality could be deposited by the battery. It is conceivable, even, that the model of a vessel might be built up in a light framework of thin boards, and placed in a great dock or basin which could be filled with the iron solution, and that thus an iron ship of any desired capacity, with its sides, beams, decks, and armor plates, could be formed in a single piece! As tide wheels might be used to drive magneto-electric machines, the process would perhaps be cheap even if it required months or years to complete the deposit.

Should not this magnificent idea be realized, there are innumerable more modest applications in which the art of depositing iron by the battery would be of incalculable value, and as it is certain that the result is possible, we know of no more inviting field for exploration by our men of science.

## THE PHOTOGRAPHIC ART A BLESSING TO THE WORLD—CARTES DE VISITES.

Of all the arts the one that seems most miraculous is photography. That the rays of the sun, darting through space with a velocity of a hundred and ninety-two thousand miles in a second, should, after bounding and rebounding from the walls of a room millions of times, till they cross each other in every conceivable direction, be directed upon a bit of paper and made to print a likeness accurate in all its microscopic details, would certainly have been deemed impossible before it was done, and yet there are large numbers of persons who by the daily performance of this miracle obtain bread and meat for themselves and little shoes and bibs for their children.

The most valuable feature in this wonderful art is the cheapness and facility with which it is performed. Heretofore, a few individuals in the community have been able to have their portraits painted by artists who, after devoting years to study and training, have been able to produce a picture bearing some resemblance to the person for whom it was designed, but the pictures of the photographer, though possessing a fidelity unapproachable by any painter that ever lived, are produced with a rapidity and ease that places them literally within reach of all classes in the community. This art contributes a thousand fold more to the sum of human happiness than the art of painting.

The ease with which photographs are taken, and the cheapness at which they are sold, has reached its highest development in the carte de visite. A man can now have his likeness taken for a dime, and for three cents more he can send it across plains, mountains, and rivers, over thousands of miles to his distant friends.

One of the most interesting results of the ease and cheapness with which photographs are produced is the prompting which it will give many persons to have their likenesses taken frequently during their lives. What would a man value more highly late in life than this accurate record of the gradual change in his features from childhood to old age? What a splendid illustration would such a series of photographs make in every household. First, the new-born babe in his mother's arms; then the infant creeping on the floor; next the child tottering by the mother's apron; then the various phases of boyhood, till the sprouting beard tells of the time when the plans and hopes of life began to take form and purpose; another portrait with softer locks and eyes is now coupled with the series, and the stern warfare with the world begins; the features henceforward grow harder and more severe; lines slowly come into the forehead and grey hairs mingle with the locks; the lines grow deeper and the head whiter, till the babe is changed into the wrinkled and grey old man, so different but still the same! Even when life is closed the power of the photographer has not ceased. The fixed fea-