

wrapped seven times around the iron core, having their termini soldered to bars on diametrically opposite sides of the commutator cylinder.

The application of mechanical generators of electricity to telegraphy must be regarded as a great stride in the march of improvement, as it not only economizes space and means, but it supplies a known quantity in place of an unknown quantity.

THE WORLD'S FAIR OF 1883.

A meeting to further the movement for a world's fair in this city in 1883, was held in Chickering Hall, January 14. A considerable number of capitalists and other influential gentlemen were present, and letters and telegrams of approval from many prominent statesmen, business men, and others, were read.

In the course of his remarks Gen'l Hawley said of our patent laws: 'They may not be perfect, but they have done more than anything else perhaps to stimulate the ingenuity of the nation. In all the manufactories, a mechanic knows that if he invents something to save time and labor he can get a patent for it and be protected.

ELECTRIC MACHINES IN TELEGRAPHY.

The new and remarkable departure in the art of telegraphy, which we this week chronicle, to wit, the substitution of dynamo machines in place of galvanic cells for generating the electric current, is due to the genius and perseverance of Mr. Stephen D. Field, of San Francisco, Cal.

Various efforts have been made during past years to do away with the cells and their concomitant troubles and expense. Many of the most eminent electricians have turned their attention to the problem, but one and all have heretofore failed to attain the coveted success.

Good Times for Mechanics.

The Baldwin Locomotive Works are now employing over a thousand more workmen than a year ago, though the last year's work showed the largest production of any year except 1873, when 423 locomotives were built.

Manganese Bronze.

In Prussia there has recently been introduced a new alloy of manganese and copper, which promises to be of considerable importance. 'Mangankupfer,' as the new bronze is called, consists of 70 per cent of copper and 30 of manganese.

The late Leonard Case, of Cleveland, left property valued at \$1,500,000 for a school of Applied Science in that city.

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT NO. 37 PARK ROW, NEW YORK.

O. D. MUNN. A. E. BEACH.

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NEW YORK, SATURDAY, JANUARY 31, 1880.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as 'Agate converted into onyx', 'Animal tar', 'Brass to blacken', etc., with corresponding page numbers.

TABLE OF CONTENTS OF THE SCIENTIFIC AMERICAN SUPPLEMENT No. 218.

For the Week ending January 31, 1880.

Price 10 cents. For sale by all newsdealers.

Table listing sections I through VIII, including 'ENGINEERING AND MECHANICS', 'ELECTRICITY, ETC.', 'METALLURGY', 'TECHNOLOGY AND CHEMISTRY', 'MEDICINE AND HYGIENE', 'ART', 'BIOGRAPHICAL', and 'GEOLOGY, ASTRONOMY, ETC.' with page numbers.

THE FUTURE OF ELECTRICITY.

Marvelous as have been the applications of electricity during recent years as a message bearer, light giver, health restorer, and otherwise, it requires no prophetic vision other than that which knowledge gives to foresee an extension of the uses of electricity in the immediate future infinitely beyond anything that the multitude now anticipate.

The best proof of this truth is seen in the varied lines of electric investigation and invention developed during the years just past, each with infinite possibilities, and all marked by surprising discoveries and practical utilizations at almost every step in advance.

Men of middle age have witnessed the more remarkable of the stages of social revolution which the utilization of steam has brought about during the past fifty years. Ten years ago it did not seem possible that any power could ever again enable men to repeat the giant strides of progress which steam, in our factories and on the highways of commerce, by sea and by land, had made possible.

A few weeks ago we had occasion to speak of the great changes in social and business affairs already effected, and the greater in immediate prospect, through the development of the telephonic exchanges. In every important town such exchanges are in process of development, bringing into vocal communication not only the separate members of widely-extended communities, but also still more widely-separated communities.

Since then a novel and important improvement in a special field of telephonic use has been reported from London. Our readers are familiar with the principle of Mr. Edison's electromotograph or loud-speaking telephone. By employing his small electric motor to turn the chalk cylinder the telephone is made automatic. Instruments of this sort have been placed in, and a large number more are in preparation for, the London Times newspaper office; and the reporters of the paper, say in Parliament, instead of reading their shorthand notes to copyists, and transmitting the longhand copy to the printer, as heretofore, now read them directly to the telephone, thus saving the time of copying and carrying the report.

In this issue of the SCIENTIFIC AMERICAN an account is given of an invention which, in quite a different direction, promises to work great changes in telegraphy. By substituting dynamo machines for batteries in developing the currents used in telegraphing, not only is a great economy effected in the working of the wires, but the larger part of the valuable space now occupied by the batteries is wholly saved.

The magnitude of the interests affected by an invention like this will be appreciated when we call to mind the fact that the Western Union Company alone requires something near 200,000 miles of wire for its connections in this country. The telegraph lines of all Europe will aggregate something like half a million miles. It must not be forgotten that for every mile of real wire employed in telegraphing the introduction of the quadruplex system gives three miles of 'phantom' wire.

The future of electricity in the sphere of light giving is daily becoming more apparent. The impossibilities of last year are the achievements of this year; and even if we were compelled to say that hitherto the electric light has not passed beyond the experimental stage, the positive gains made during the past few months are a guarantee that in several directions practical success is assured.

Our readers are already familiar with what Mr. Edison has accomplished. Many other more or less successful inventors are at work upon one or other of the various and very promising systems of electric lighting, both in this country and in Europe. In London a steady and remarkable progress is reported in the working of the Jablockhoff