Scientific American.

ESTABLISHED 1845.

MUNN & CO., - - - EDITORS AND PROPRIETORS.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, = = NEW YORK.

TERMS FOR THE SCIENTIFIC AMERICAN. (Established 1845,)

The Scientific American Supplement (Established 1876)

(Established 1576) is a distinct paper from the SCIENT FIGAMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTFIC AMERICAN. Turns of subscription for SUCPLEMENT, stable SCIENTFIC AMERICAN. Turns of subscription for SUCPLEMENT, to foregrit contribution below in the construction of the sents. To foregrit contribution below in the country. See prospectus, last page. Combined Rates.—The SCIENTFIC AMERICAN and SUPPLEMENT will be sent for one year, to one address in U.S., Canada or Mexico, on recept of server address. To foreign countries, eight dollars and fifty cents a year, or £1 lis. 11d., postage prepaid.

Building Edition of Scientific American. (Established 1885.)

(Established 1885.) TⁱHE BUILDING EDITION OF THE SCIENTIFIC AMERICAN is a large and splendially illustrated periodical, issued monthly, centaining floor plans and perspective views pertaining to modern architecture. Each number is illustrated with beautiful plates, showing desirable dwellings, public buildings and architectural work in great variety. To architects, builders, and all wao contemplate building this work is invaluable. Single copies 25 cents. By mail, to any part of the United States, Canada or Mexico, \$3.30 a year. To foreign countries, \$3.00 a year, or £0128.40. Combined rate for BUILDING EDITION with SCIENTIFIC AMERICAN, to one address, \$5.00 a year. To foreign countries, \$6.50 a year, or £018.50. SUPPLEMENT, \$9.00 a year. To foreign countries, \$1.40 a year, or £258.2d., postage prepaid.

Export Edition of the Scientific American (Established 1878)

(Established 1578) with which is incorporated "LA AMERICA CENTIFICA E INDUSTRIAL," or Spanish edition of the SCIENTIFIC AMERICAN, published monthly, uniform in size and typography with the SCIENTIFIC AMERICAN. Every number contains about 100 pages, profusely illustrated. It is the finest scientific industrial export paper published. It circulates throughout Cuba, the West Indies, Mexico, Central and South America, Spain and Spanish possessions—wherever the Spanish language is spoken. THE SCIENTIFIC AMERICAN EXPORT EDITION has a large guaranteed circula-tion in all commercial places throughout the world. \$3.60 a year, or 10 12. 4d, postpaid to any part of the world. Single copies, 25 cents. MUNN & CO., Publishers, 361 Broadway, New York. The The safest way to remit is by postal order, express money order, Araft or bank check. Make all remittances payale to order of MUNN & CO.

Readers are specially requested to notify the publishers in case of any failure, delay, or irregularity in receipt of papers.

NEW YORK, SATURDAY, MARCH 20, 1897.

Contents.

(Illustrated articles are marked with an asterisk.)

Andree balloon voyage 183	Map. proposed mammeth relief
Balloon voyage, Andree 183	Mediterranean culture, early
Bees' wings* 187	Monitor Terror*
Classic, the recovered 188	Newcomb, retirement of Prof
Compressed air system* 177	Notes and queries
Dovetail, a four-sided* 186	Oceanic, new White Star liner 1
Exhibition, Trans Mississippi 183	Patent attorneys appeal
Expedition, an anthropological. 186	Patent decisions
Forests, the national 185	Patents, Japanese
Gas explosion in Boston* 180	Patent statutes, amendments to
Greece, American excavations	Pencils, wetting
in	Prosperity, what produces
Guns working by compressed	Railway, trans-Siberian
air* 177	Russian penal settlements
Herrmann, Alexander* 184	Science notes
Insanity and tuberculosis among	Strength tester*
negroes 184	Terror, monitor*
Insects' wings* 187	Track, cost of
Inventions, index of 189	Trademark decisions
Inventions recently patented 188	Turrets
Japanese patents 179	Vending machine*
Tife coming commises 109	Woothor preverbs uproliable

TABLE OF CONTENTS OF

Scientific American Supplement No. 1107.

For the Week Ending March 20, 1897.

Price 10 cents. For sale by all newsdealers.

I. ARCHÆOLOGY.—Ruins of the Great Zimbabye.—1 illustration... 177

- II. ATHLETICS.-Women Bicycle Racing in London.-1 illustration 1768
- III. BOTANY.-The Identification of Botanical Specimens.-An in-teresting paper valuable to all beginners in botany..... ... 17701
- IV. CHEMISTRY.-The Manufacture of Tartaric Acid...... 1769
- V. CIVIL ENGINEERING.-Measuring the Bridge Strain.-An in-strument that indicates one pedestrian's footfall.-An account of Prof. Boys' interesting arrangement of quartz fibers to measure the strain of bridges, etc. . 17688
- VI. ELECTRICITY. --Metallurgical Applications of Electric Heating. --A description of the various electrical furnaces which are used for metallurgical purposes, including the Moissan furnace.
 --Hoillustrations.
 Electricity from Carbon Without Heat.--By WILLARD E. CASE. 17690 ecture gives some very novel experiments of the highest
- 1768 VII. GEOGRAPHY.-Modelsof the United States.-ByCosmos MIN-

IMPORTANT AMENDMENTS TO THE UNITED STATES PATENT STATUTES.

A bill, H. R. 10,223, embodying important amend ments to the Patent Statutes of the United States, has on the day of the inauguration of our new President. In the past we have, on several occasions, noticed the progress of these particular amendments, which are the most serious ones which have been proposed for many years-serious in the good sense of conservatism and proper origin, not serious in the sense of subverting the rights either of the public or of the inventor. We publish elsewhere in parallel column the portions of the old patent statutes affected by the amendments, together with the same portions as amended. An interesting feature in the case is that the bill passed the Senate on March 3, and was signed early on the morning of March 4, this being one of the last official acts of President Cleveland.

The first amendment enacts that publication or patenting of an invention here or abroad, more than two years prior to the application for a patent in the United States, will prevent the obtaining of a patent here. Thus, if the matter of an invention has been published or patented, perhaps by some one who was not the first and original inventor, the original inventor will be prevented from obtaining a patent unless he applies for it within two years of such publication. The doctrine of public use is to the effect that, if an invention has been in public use or on sale in this country over two years, no patent can be obtained, abandonment being virtually construed as heretofore. Now the same obtains for patenting or publication¹ here and abroad. The inventor's resource against this restriction on his right to a patent is perfectly good and effective; namely, diligence. He has the very adequate period of two years given him within which to protect his rights in this country.

Another amendment, really subsidiary to the above, establishes a plea to the effect that such publication or patenting is a valid defense in a patent suit.

About the most radical of the amendments applies to section 4,887 of the patent statutes. Hitherto an inventor could patent abroad and then at any time within the life of his foreign patent or patents could States patent was limited by the life of the earliest expiring foreign patent. It sometimes happened that he would not apply here until some years after obtaining foreign patents and not until the invention had proved to be a success. This is all changed. After a foreign patent has been issued, the United States patent must be applied for within seven months of the date of filing of the foreign application, or no patent can be obtained. The life of the foreign patents of earlier date of expiration, however, has no longer any effect upon the term of the United States patent.

of a patent here by the term of a foreign patent to the same inventor has been much discussed. The limitation of the period, however, often worked great injustice to the patentee, and it is for his benefit that it is done away with. At the same time, by the adoption of the seven months' period, the inventor is urged to use diligence, and without such diligence forfeits his patent rights absolutely. The period of seven months was selected in order to harmonize the practice with the articles of the international convention, and in that in that respect it works a wrong; but we believe practice does not affect the interests of American in-, that this is not the case, and that it will correct many ventors.

The old system of giving to an applicant for letters patent successive periods of two years each for action on pending applications afforded an opportunity of keeping a patent application alive for years. In several when infringement has taken place. This new law does well-known cases this led to great abuses. Recently the Commissioner of Patents has, without any special legis- bill, H.R. 10,202, was also approved by the President lation, endeavored to abbreviate the period within which is intended to facilitate the bringing of infringewhich amendments should be filed to six months. It | ment suits. was at first intended to so amend the statutes as to make them harmonize with this present practice in the Patent Office, but so much pressure was brought to bear by attorneys and inventors that it was finally de-

bought it simply to use as a weapon to obtain damages as hard to disprove as to prove.

Again, accountings are too often used to frighten parties to the suit into a settlement. Such a settlement recently been enacted by Congress and became a law may barely pay the expenses of the accounting; the amount paid may be but a tithe of the damages allowed by the master, but the moral effect in inducing other alleged infringers to pay royalty is very great. Instances are too numerous where, on accountings, the most exorbitant claims were made and allowed. With a period extending through twenty or thirty years in the past, the counsel had a field for the exercise of much ingenuity in establishing damages. Now the period of an accounting covers only the six years prior to the filing of the bill of complaint or issuing of the writ in the suit or action in question. This seems an ample period. It is not policy for the law to encourage an inventor to let his rights lie in abeyance until some infringer, perhaps an innocent one, shall have accumulated enough obligation to make him a valuable object of attack. The new amendments here, as elsewhere, are in the direction of inspiring diligence.

> A brief résumé of the amendments may be thus put : The inventor, if he finds that his invention has been published or patented, must apply for his patent within two years of the date of such publication or patenting. The foreign patentee must seek to protect his rights here within the seven months of filing his application in the country of origin. The applicant in the Patent Office has a year only allowed him, except by special allowance from the Commissioner, within which to take action on his application. The patentee can only establish damages for infringement within a definite period, whose extent was determined by the general sense of State statutes of limitation. A United States patent is good for the period fixed by its date. The expiration of a prior foreign patent does not limit as heretofore the life of the United States patent.

These amendments are the results of the work of the American Bar Association, and carry with them a weight of authoritative backing that is seldom found in parallel cases. They were formulated by a special committee under the chairmanship of Edmund Wetmore, one of the leaders of the American Patent Bar, and the roll of the committee included such names obtain a patent here. But the life of his United as Wilmarth H. Thurston, ex-Patent Commissioner Charles G. Mitchell, Paul Bakewell and many other leading patent lawyers. Extensive correspondence was had with solicitors and others concerned in the amendments. They were finally presented to Congress and have passed with but little change.

At the end of the amendments thus far considered, and which may be grouped together, comes an entirely new statute. It provides that whenever the head of any department of the government shall request the Commissioner of Patents to expedite the forwarding of an application for a patent, such head of a department The theory of the old provision for limiting the life must be represented before the Commissioner in order to prevent the improper issue of a patent.

The bill, when first presented to Congress, received a good deal of criticism from attorneys and others, but rarely has a bill ever received such a strong backing, and the fact that it was the production of the committee of the Bar Association appointed to formulate and present the bill brought it at once to the favorable consideration of Congress. Many believe that the rights of the inventor have been curtailed thereby, and abuses that have arisen in the past, and that it is for the interest of the community that due diligence should be used, not only in filing and prosecuting applications for patents, but in seeking damages for infringements not go into operation until January 1, 1898. Another

THE PROPOSED MAMMOTH RELIEF MAP OF THE UNITED STATES.

A resolution was recently passed by the Senate and tee, which

183 179 182 181 181 181 182 182 182 182 186 183 177

which is now before Congress which provides for an impossible relief map of the United States.—3 illustrations	cided to make the term within which action must be	favorably reported by the library committee, which
VIIIHEATDeterminations of High Temperatures 17702	taken one year, and the bill was so amended.	provided for the appointment of a commission of five
IX. MECHANICAL ENGINEERING Coal Handling for Large	A somewhat more technical amendment provides	to investigate the practicability of building a mam-
large scale6 illustrations	that a properly acknowledged assignment, grant or con-	moth ground map of the United States. In the word-
Note	veyance of a patent shall be prima facie evidence of its	ing of the resolution the commission was to "examine
X. MEDICINE.—The Confessions of a Cocainist	execution. This prevents the necessity for sending a	into and report to Congress upon the practicability,
XI, METALLURGYBoron BronzeBy H. N. WARREN 17691	commission to distant parts of the world or for arrang-	advisability and cost of establishing at or near the city
Making Clean Castings 17694	ing for such with local counsel simply to get statutory	of Washington a ground map of the United States of
XII. MISCELLANEOUS.— Engineering Notes	evidence of such transactions upon the record in a pat-	America, on a scale of one square yard of map surface
Electrical Notes	ent suit.	for each square mile of actual area, said ground map to
Selected Formulæ	Another amendment fixes the period over which an	be as nearly as may be our country in miniature, re-
XIII. MINERAL INDUSTRYNote on Gem Production in 1895 17702	accounting for damages may extend. Hitherto this has	producing in earth and other materials, on scale, the
XIV. MUNICIPAL ENGINEERINGA Hygienic View of Wood Paving	been a very variable quantity. Sometimes it was fixed	boundaries and the topography, all the natural and
XV. PHOTOGRAPHYHow to Retouch. Improve and Treat Nega-	by the laws of the State within which the action was	artificial features of the surface, showing geographical
hints are from German sources hitherto unpublished in English.	brought. In the absence of such laws, the accounting	divisions, also mountains, hills and valleys, forests,
-2 illustrations 17653	might go back for many years. Thus it has happened	lakes and streams, cities and villages, and that said
XVI. TECHNOLOGY.—Portable Automatic Oxygen Generators.—A description of a new form of generator using four retorts.—1 illus-	that a patent had expired a number of years, yet dam-	commission is to serve without compensation." The
tration	ages were asked for infringements committed during	matter did not meet with favorable consideration in
in Them.—Formulas for papers for preserving butter and silver-	the life of the natent Most of the witnesses would in	the House and failed to pass. For certain very obvious
moisture	such a case be either dead or impossible to find. The	reasons, it is not likely that in its present form it will
Transmutation in Minerals.—Gems manufactured from the na-	Instant might be in the hands of sneeulators who had	ever become a law
tural constituents	parent inght be in the names of speculators who have	