## Scientific American.

ESTABLISHED 1845

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

PUBLISHED WEEKLY AT

No. 361 BROADWAY, = - NEW YORK. \_\_\_\_\_

#### TERMS FOR THE SCIENTIFIC AMERICAN. (Established 1845.)

.....\$3.00 One copy, one year, for the U.S., Canada or Mexico. One copy, six months, for the U.S., Canada or Mexico...... 1.50 One copy. one year.to any foreign country, postage prepaid, £0 1%.54. 4.00 Remit by postal or express money order, or by bank draft or check. MUNN & CO., 361 Broadway, corner Franklin Street, New York.

The Scientific American Supplement

### (Established 1876)

(ESTRUBISHED 15/0) is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains is octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year for the U.S., Canada or Mexico. & KoU a year, or £1 4s. St., to foreign countries belonging to the Postal Union. Single copies 16 cents. Sold by all newsdealers throughout the country. See prospecties, last page. Combined Rates.—The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year, to one address in U.S., Canada or Mexico. on receipt of seven soldars. To foreign countries, eight sollars and fifty cents a year, or £1 18. 11d., postage prepaid.

#### Building Edition of Scientific American.

#### (Established 1885.)

(Established 1885.) THE BUILDING EDITION OF THE SCIENTIFIC AMERICAN is a large and splendidly illustrated periodical, issued monthly, containing floor plans and perspective views pertaining to modern architecture. Each number is illustrated with beautiful plates, showing desirable dwellings, public buildings and architectural work ingreat 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, \$2.56 a year. To foreign countries, \$3.60 a year, or £0 128. 4d. Combined rate for BUILDING EDITION with SCIENTIFIC AMERICAN, to one address, \$a.00 a year. To foreign countries, \$5.50 a year, or £2 58. 2d., Combined rate for BUILDING EDITION, SCIENTIFIC AMERICAN, and SUPPLEMENT, \$8.00 a year. To foreign countries, \$11.00 a year, or £2 58. 2d., postage prepaid.

#### Export Edition of the Scientific American (Established 1878)

with which is incorporated "LA AMERICA CIENTIFICA E INDUSTRIAL," or Spanish edition of the SCIENTIFIC AMERICAN, published monthly, uniform in size and typography with the SCIENTIFIC AMERICAN. Every number contains about 10 pages, profusely illustrated. It is the finesi 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. \$3.00 a year, on \$9 12s. 4d., postpaid to any part of the world. Single copies, 25 cents. MUINN & CO., Publishers 3d Broadwar, New York. vear, or MUNN & CO., Publishers, 361 Broadway, New York.

The safest way to remit is by postal order, express money order, traft or bank check. Make all remittances payable to order of MUNN **137** Readers are specially requested to notify the publishers in case of any failure, delay, or irregularity in receipt of papers.

NEW YORK, SATURDAY, FEBRUARY 19, 1898.

#### Contents.

| (Illustrated articles are n   | narked with an asterisk.)                          |
|---|--|
| Advertising, fraudulent 118<br>Animals, accidents to 123                  | Lizard and pheasant*<br>Locks, great canal*        |
| Boat launching device, McKin-<br>non* 122                                 | Locomotive, the largest*<br>Model for statue*      |
| Boiler, steam, Innes'* 116<br>Canals, Sault Ste. Marie* 113               | New York City population.<br>Notes and queries     |
| Change making device, Smith's* 116<br>Color process, perfected, Jolv, 119 | Notice to subscribers<br>Patent Commissioner Duell |
| Current Supplement  | Patent Office needs<br>Patents. extensions of      |
| Duluth, view of*  | Patents, foreign<br>Patents granted, weekly r      |
| Electrical discharges, personal   | of   |
| Engineers' strike, the English 114  | Rome, ancient, safe depos                          |
| Garbage receptacle a  | Seeds, the vitality of                             |
| Grain elevators at Duluth* 113  | Statue Gattamelata, Padua                          |
| Indigo 118  | Telescope, a reading (7352).                       |
| Ink for labeling bottles  | Visual acuteness, loss of                          |
| Library, forgotten colonial 116   | Theobald's*  |
| LITE SOVING ASVIT ( $evice^{\mp}$ 122)                                    |  |

PAGE

#### TABLE OF CONTENTS OF

## Scientific American Supplement

### No. 1155.

#### For the Week Ending February 10, 1808.

Price 10 cents. For sale by all newsdealers.

I. ASTRONOMY.-The Progress of Astronomy in 1897.-An interest-ing review of the progress of astronomy during the past year.... 1845 III. BOTANY AND HORTICULTURE.—Trees and Change of Tem-parature 18456 18456

Renanthera Imschootiana.—1 illustration .....

18464 Scientific American.

#### ECONOMIC ASPECT OF THE ENGLISH ENGINEERS' STRIKE.

dent that in the recent struggle between employers and men in the English engineering trades, the employers have been fighting for the interests of labor fully as at which the Amalgamated Society of Engineers was extensions of United States patents stands on a very men to forty-eight hours a week, or eight hours a day, England are examined by a committee of the Privy work, the right of the society to determine the proper law officers, and other officials, who may always be examount of labor. In other words, the fight has not ble alike to the public and the patentee; while here an principles of shop management which have made in getting through any special legislation in that body productive that ever stood at a vise or ran a shop good ground to apply for extensions of their patents. tool.

The theory that the introduction of labor-saving patent in the last twenty years. machinery is prejudicial to the interests of labor is one that has long ago been exploded in this country. Our machinery in its manufacture, increases its sale and demand to such an extent that for one skilled artisan who is displaced five others are employed to meet the demand so produced.

fluence of American competition upon the British enclosely observed by English manufacturers, and the methods by which we have been enabled to undersell of the men rather than to any conservatism and lack of enterprise on the part of the employers. The strike. the race for commercial supremacy.

Now that the employers are at liberty to run their the public as to yield the inventors no return. establishments with a free hand, we may look for a speedy assimilation to American methods and an extended use of American tools—a change which, while it may render the English keener competitors, is certain to open an ever increasing market for the special which the British manufacturer refuses to build for less than \$10,000.

However, it is certain that in spite of the temporary loss to both capital and labor, the late struggle will considerably higher than the average monthly figures prove to be a positive benefit to the engineering trades of Great Britian. Unless we are mistaken, the \$15,000,000 in wages and the \$200,000,000 in trade which conditions. The value of the December exports was the six months' struggle has cost will ultimately prove \$124,474,435, and of the imports \$51,514,733, an increase to have been no extravagant price to pay for the vin- of the exports of \$7,200,000 and a decrease of the imdication of the fundamental economic principle which 18458 has now been established.

## EXTENSIONS OF PATENTS.

ask a similar boon oftener than has been customary," as "many other inventors of equal merit find them-Looked at from the American standpoint, it is evi- selves at the end of the period covered by an original patent in a worse plight than his."

Whatever encouragement, however, may be afforded by this precedent to those seeking extensions of Engmuch as for their own. While the ostensible object lish patents, it is evident that the matter of obtaining aiming was the reduction of the working time of the different footing. Applications for such extensions in the actual object was the control of the output of Council, composed of eminent noblemen, the leading amount of finished product to be turned out by a given pected to expedite hearings and make a decision equitabeen so much one of labor against capital as of labor extension is only to be had by act of Congress, and the against labor-saving machinery and those modern great difficulty and inevitable delay always experienced American shops the most economical in the world and are too well understood to encourage hope of success American machinists at once the best paid and most on the part of inventors who might think they had There has been but one extension of a United States

But this has not always been the case in regard to United States patents. By the act of 1836, the Comartisan classes have come to understand that the missioner of Patents was empowered to grant extencheapening of a product, due to the use of improved sions of patents, the Secretary of State and the Solicitor of the Treasury, in conjunction with the Commissioner of Patents, being then constituted a board to hear evidence in support of applications for such extensions.

By the act of 1848 the power to grant extensions was Indirectly the late strike may be traced to the in- conferred on the Commissioner of Patents solely, but by the act of 1861, by which the term of a patent was gineering trades. The wonderful strides which we made seventeen years, instead of fourteen years, as have made, especially in the past decade, have been had previously been the case, all extensions for patents granted thereafter were prohibited.

It may well be questioned whether this legislation them are better understood upon the other side of the was altogether wise, and whether the mere lengthenwater than is generally supposed. There is every ing by three years of the terms of all patents should reason to believe in the light of recent events that the operate as a bar to any extension of a patent, no matsurvival of what Americans would term antiquated ter how meritorious the case, or what might be the tools and out-of-date methods in some of the first-class | equities involved-for this is practically what it establishments of that country is due to the opposition amounts to when the sole power to make extensions is reserved by Congress to itself. Even were congressmen always willing to entertain probably meritorious looked at in this light, was a conflict between the old cases, there are too many members to permit the House order of things and the new, and luckily for both to make any practical examination of the questions masters and men it is the new that has triumphed, which might thus arise, but which would be quickly Had the labor unions prevailed, subsequent history disposed of by a small board of disinterested officials, would have shown that the victory was a hollow one in conjunction with a representative of the Patent and altogether delusive. The right of the unions to Office. Such a board, including possibly a justice of determine the output of labor would have proved a the Supreme Court, might be depended upon to safedrag upon the wheels of British industry which in a guard the interests of the public in all cases, and still, very few years would have left it hopelessly behind in in many instances, grant extensions on meritorious patents which had so tardily come to be appreciated by

## OUR INCREASING FOREIGN TRADE.

The statistics of foreign trade, recently issued by the Treasury, show a truly remarkable increase over the preceding year. The exports reached the great total machine tools for which this country is famous. It is of \$1,099,129,519, an increase of some \$93,200,000 over an interesting question how far the adoption of our those of the year before. The imports were valued at methods will enable England to compete successfully \$742,630,855, an increase of some \$61,000,000 over those with us in those lines on which we are at present able of the year 1896. The excess of the exports over the imto undersell her. Unless the British manufacturers ports was \$356,498,664, an increase of \$32,200,000 over have been making exceptional profits, it is difficult to the excess of the previous year. The figures of the see how in certain lines they can ever come down to exports and imports of gold coin and bullion show a American prices; as, for instance, in the locomotive decrease, the exports being \$34,174,182, a decrease of export trade, where we can deliver an engine for \$7,000 some \$23,800.000 over the year 1896, and the imports being valued at \$29,079,540, a decrease of no less than \$73,600,000 for the year.

It is noteworthy that the figures for December are for the year, showing that the growth of the foreign trade is steady and likely to continue under existing ports of \$7,400,000, compared with the figures for December of 1896. The excess of the exports over the imports for the month was \$73,900,000, as against an excess of \$58,200,000 in a comparison of December of last ear with the same month in 1895.

| Cream   | 18450                          |
|---|--------------------------------|
| VI. ELECTRICITY. — Electrical Industry in France during 1897. —<br>By Prof. J. BLONDIN  | 18467<br>18468                 |
| VII. FISHERIES.—Our Fur Seals.—An interesting account of the<br>seal fasheries in the Bering Sea, detailing the cause of the<br>trouble with England concerning them and the legislation which<br>has been adopted.—5 illustrations | 18453                          |
| VIII. MARINE ENGINEERINGBaron Nathaniel v. Rothschild's<br>Steam Yacht "Veglia."-1 illustration   | 18465                          |
| IX. MEDICINE AND HYGIENEA Case of JealousyBy WIL-<br>LIAM O'NEILL, M.D  | 8457                           |
| the microphonograph, designed for awakening and educating the sense of hearing in the deaf3 illustrations   | 18457                          |
| A. MISCELLANEOUS:<br>Engineering Notes.<br>Misceilaneous Notes.<br>Selected Formule.  | 18462<br>18462<br>18462        |
| <ul> <li>XI. PHOTOGRAPHYA New Basis for Photo-Mechanical ProcessesBy R. ED. LIESEGANG</li></ul>   | <b>18466</b><br>18463<br>18463 |
| XII. SCIENCEVisits to Scientific Institutions in Europe A paper<br>by EDWARD W. MORLEY, Ph. D., LL. D., describing visits to some<br>of the most important institutions in Europe connected with<br>weights and measures            | 18459                          |
| XIII. STEAM ENGINEERINGThe Yarrow-Schlick-Tweedy Sys-<br>tem of Balancing Engines1 illustration   | 18464                          |
| XIV. TECHNOLOGY.—The Size and Water Marks on Paper 1<br>Paints and Their Vagaries   | 18466<br>18466                 |
| XV. TRAVEL AND EXPLORATIONHaytiThis article de-<br>tails some of the interesting particulars concerning the history<br>of the island of Hayti, with views which give an idea of the coun-   |                                |
| try   | 18461                          |

It is a notable fact that the instances in which exten-

In this connection the figures of British foreign trade sions of United States patents are granted are now. and have been since 1861, extremely rare, and such for 1897 will be of interest. The total value of exports also seems to be the case in England, although, accordwas \$1.150.000.000. a decrease of \$28.500.000 on the preing to The London Times, the judicial committee of ceding year, and the imports reached the enormous total of \$2,020,000,000, an increase of \$46,50,000. The dethe Privy Council did, on December 9, extend the ducreased exports are attributed to foreign tariff restricration of a patent beyond the usual term of fourteen tions, particularly those of this country, and to the enyears. This was the Timmis patent, taken out in gineering dispute referred to in another column. 1883, for a new method of working and interlocking

railway signals by means of electricity. The patentee "laid stress on the dislike of the companies to make use of a novel and untried method, and on the circumstances that he was out of pocket, and had so far earned no profits." The Times very justly remarks find, at the close of the period covered by their patents, the so-called protectorate of Great Britain. that they have made little way. Prejudice has to be overcome, interested opposition to a novelty may be

### THE INDUSTRIAL OUTLOOK IN EGYPT.

The former United States consul at Cairo, Mr. F. C. Penfield, has contributed to the February number of The Forum a valuable paper regarding the agriculthat "No doubt many inventors of useful contrivances tural development of Egypt which has occurred under

The writer holds decided views as to the moral aspects of the continued occupation of Egypt, so long strong, or the need for the invention may not be great after the ostensible objects of that occupation have been until such period is nearly run out," and suggests that achieved. He is convinced that the British governthis ten-year extension "will encourage inventors to ment not only intends to remain permanently in posthat it intends to recover the whole of the eastern Sou- additional help cannot be utilized until next July, and States patent reaches the Japanese patent office. dan, and that the reconquest is preparatory to an im- by that time this office will be seriously behind in its grounds does not deter him from giving full credit for as much as six months behind. the great improvement which has taken place in the this interesting topic, is both valuable and timely.

It was pointed out many years ago by the African traveler, Sir Samuel Baker, that if the great volume of water in the Nile were controlled, it would be possible to transform the Nubian desert into a vast cotton hopelessly behind. I estimate we will receive in that field, whose harvests would go far to render England independent of the cotton supply from the United States. Already, indeed, the lower Nile valley is a productive cotton field, and under the British occupation the area under cultivation has doubled. The new irrigation works which are continually being con- paying the running expenses of the office, \$317,135.05, structed enable larger areas to be planted, and the and the books of the Treasurer of the United States yield is steadily increasing.

market, owing to the exceptional length of its fiber, penses. The inventors are protesting against the deand last year's crop of 1,100,000 bales was sold for two lay. They claim, and very properly, too, they are cents per pound more than was realized for American entitled to prompt and efficient service. The governupland cotton. The Egyptian cotton is extensively ment requires them to pay for the work in advance, used both in Europe and in this country, our importation amounting annually to about 100,000 bales. To having their applications attended to. One thing is this advantage in quality must be added the fact that certain, the efficiency of the Patent Office demands, in the Egyptian climate is particularly suitable to the the interest of its clients, a suitable force of employees raising of cotton, the average crop being about 560 to prosecute the work intrusted to it." pounds per acre. Labor, moreover, is cheap, wages averaging only about eighteen cents per day for each CHANGES IN FOREIGN PATENT LAWS AND PRACTICE. hand. With this high yield, high market price and small cost of labor, it is not surprising to learn that the patent legislation and the patent practice of several about \$55,000,000 are realized from the cotton crop countries, and it is interesting to note that while in alone. It is probable that a large increase in this some cases the securing of protection for inventions amount will result from the increased acreage which is has been facilitated, in others a spirit hostile to foreign being brought under cultivation on the Nile delta. inventors is manifested. Mr. Penfield is of the opinion that five years from now the total output from this district will be one and a half million bales—an increase of some forty per cent on upon fostering commercial and industrial development. the present yield. The revenue obtained from cotton alone suffices to pay the interest on a heavy debt and have been made to protect inventions, and the legislato carry on the government. It is stated that were it ture has lately been found to be more liberally disnot for the present military expedition up the Nile, there would be an actual surplus in the Egyptian treasury.

The writer of this interesting article points out that the conquest of the Soudan will probably result in the have extensive relations with Turkey in Europe and in cultivable districts being devoted to wheat raising, and Asia and Egypt. Inventions relating to navigation the great tracts of country will once again, after the and to mining or quarrying would seem to be particulapse of centuries, be devoted to husbandry. If this larly adapted for introduction in Greece. Turkey's should happen, the great Nile basin will once more be- industrial development is seriously hampered by varicome, as it was in the days of the Pharaohs, one of the ous ordinances, one of which prohibits the use of elecgreat granaries of the world. Furthermore, it is tricity in the empire, yet there is a party in favor of stated that, within the last two years, and more particularly since the disastrous war in Cuba, the cultivation of the sugar cane has been taken up in several parts of the Nile valley. The sugar is stated to be of in Turkey for improvements in arms or ammunition, excellent quality, and there was a sufficient amount of or for any machine in which electricity is to be used as it raised last year to increase the wealth of Egypt by the main motive agent. about \$8,000,000. The writer states that the area devoted to the sugar cane is likely to be doubled within to foreign patentees when legalized copies of the fora short time. It is possible that the Egyptian sugar eign patent have been deposited in Egypt, according crop will cut a not inconsiderable figure before long in the statistics of the world's supply.

#### ----COMMISSIONER DUELL SWORN IN.

of Patents on February 5. The oath was administered its former importance as an agricultural country. by Assistant Chief Clerk W. H. DeLacy, of the In- Egyptian cotton is known as one of the best upon the terior Department. After the ceremony Mr. Duell market. The modernizing of Egypt is progressing very went into conference with Assistant Commissioner<sup>†</sup> rapidly, steam and electric railways being continually Greeley, and the greater part of the day was spent in extended, and American manufacturers ought to avail discussing Patent Office affairs. The new Commissioner themselves of the opportunities thus offered. promises to be popular, as he is very approachable and

session of Egypt and the reconquered districts, but made immediately available. But, instead of that, the application should be filed before a copy of the United

"We have on hand, in round numbers, awaiting achave heretofore been the heaviest months of the year, up. So you see, when July comes around, we will be time 14,000 new cases. So it is easy to understand how important it is to have an adequate force to do the work. It is not generally understood what a large proportion of the government revenue comes from this trolled by their foreign competitors. office. Last year we covered into the Treasury, after show a total of \$5,093,614,23 paid to the general gov-The Egyptian cotton has a special value on the ernment by the Patent Office after paying all its exand then they are required to wait for months before

Political events in 1897 have apparently influenced

Peace having been concluded between Turkey and Greece, both of these countries are naturally intent Although no patent law exists in Greece, special grants posed, so that the expense of securing such grants has been reduced to a reasonable figure. Greece, owing to its commercial relations, is one of the most important nations on the eastern Mediterranean, as the Greeks to be noted, however, that no patent will be granted

The courts of Egypt have granted efficient protection to certain formalities. If the patent is for a machine, two photographs of the patented article should also be supplied, Since the British occupation, Egypt has developed very rapidly, and its natural resources will Mr. Charles H. Duell was sworn in as Commissioner undoubtedly enable it to regain, in a large measure,

The South African Republic (Transvaal) on October rage price paid by others for the same room, vault or has the faculty of making the visitor feel at ease. He 15, 1897, put into operation a new patent law which is strong box. This regulation to be enforced in case the said to the representatives of newspapers that he was extremely illiberal to foreigners. Every applicant for horrearius has not had an opportunity to rent the said acquainting himself with the situation and he did not a patent who resides abroad is required to furnish, room, vault or strong box to other people. care to discuss the question of the office until he was with the application, a bond or other approved security "III. Subletting is not allowed. The administrathoroughly acquainted with the condition of affairs, to the amount of \$500. This is for the purpose of meet tion will withdraw the watch and the guarantee from He referred the newspaper men to Assistant Commis- ing the cost of contesting any opposition that may be rooms, vaults or strong boxes which have been submade to the grant of the patent. Inasmuch as the let in violation of the existing rules.

China grants no patents, but nevertheless protects portant scheme of industrial development. The fact work. To day our examiners are from three to four foreign inventors who have obtained patents in their that Mr. Penfield condemns the occupation on moral months behind in their work, and some divisions are own country. To secure this protection, certain formalities have to be complied with, and the patentee must establish his right by filing duly certified copies of his condition of the Egyptian people, and the present arti-tion, 13,000 cases, of which number 9,600 have never patent and any other documents proving his title. cle. like all his contributions, official or otherwise, on been looked at. In the next four months our business There is no doubt that China will soon enter upon a will largely increase. March, April, May and June period of modernization similar to that which has brought Japan into such prominence, and already we and there is no reason to doubt the record will be kept hear of considerable activity in railway construction and in the starting of new factories, such as spinning mills. The competition of British, German and Japanese manufacturers upon the Chinese market is very keen, and American exporters will do well to secure protection for inventions which otherwise might be con-

#### ----TWO INTERESTING DISCOVERIES IN ITALY.

Two discoveries have just been made in Italy, one in Rome and one in Florence, which are of the utmost importance. Signor Marucci, the archæologist, has discovered an imposing wall painting in the Palace of 'Fiberius on the Palatine Hill. It is considered that this picture will prove an important addition to Christian history. The painting evidently represents the prepara tion for the crucifixion. Around the cross are soldiers bearing ladders and under each soldier is written his name. Among them will be found Pontius Pilate. The figures are  $5\frac{9}{10}$  inches high. The inscription consists of fifteen lines, of which five have been deciphered. It contains the name "Christus." The Pope was immediately informed of the discovery, and Signor Marucci will shortly publish a monograph on his discovery. When all of the mediæval and modern buildings have been cleared off from the Palatine, it is probable that other important discoveries will be made.

A fresco by Ghirlandajoin the Orgnissanti Church, at Florence, has been discovered in the ancient Vespucci Chapel, which contains a portrait of Amerigo Vespucci. Students of art history have for a long time believed that the fresco was lost when the chapel was whitewashed in 1616, though it was perfectly well known that it had existed at one time. It is mentioned by Vasari, who says, "Domenico (Ghirlandajo) has portrayed the likeness of Amerigo Vespucci, who sailed to the Indies." A contemporaneous portrait of this important personage in the history of the discovery of the new world promises to be another one of the artistic sensations of Florence like that of Botticelli's "Pallas" two years ago.

# THE SAFE DEPOSIT BUSINESS IN ANCIENT ROME.

We are inclined to consider that safe deposit vaults are entirely an invention of the nineteenth century, modern improvements, and even the government is but this is not the case. In 1885, during the building now making strenuous efforts to stimulate trade. It is of the quarter of Testaccio, in Rome, which was the region of the public granaries, an official advertisement was found for leasing a "horrea," or public granary, under the empire of Hadrian. The advertisement is given in Prof. Lanciani's interesting work, "Pagan and Christian Rome," as follows:

"To be let from to-day, and hereafter annually (beginning on December 13): These warehouses, belonging to the Emperor Hadrian, together with their granaries, wine cellars, strong boxes and repositories.

"The care and protection of the official watchmen is included in the lease.

"Regulations: 1. Any one who rents rooms, vaults or strong boxes in this establishment is expected to pay the rent and vacate the place before December 13.

"II. Whoever disobeys regulation No. I, and omits to arrange with the horrearius (or keeper-in-chief) for the renewal of his lease, shall be considered as liable for another year, the rent to be determined by the ave-

sioner Greeley, who said:

priation for the support of the Patent Office during the he is successful, the expense of contesting an opposition coming fiscal year. The appropriation bill, as reported, may be very considerable. Of course, in case the provides for a slight increase in the working force of patent issues without opposition, or if the opponent the office, but it is so slight as not to materially affect has to pay the costs, the security will be refunded. the conditions, which even now are becoming of mon- Efforts are being made to secure a reduction of these strous proportions. The new bill, I believe, gives us a prohibitive rates. new principal examiner, nine assistant examiners and three messengers. We originally estimated for four secure protection by patents, American manufacturers principal examiners, thirty-six assistant examiners, i and inventors have largely availed themselves of the thirty-five clerks and ten messengers. The Secretary cut this estimate to two principal examiners, eighteen assistants, eleven clerks and fourteen messengers. This matter of additional help is a most serious problem, more important to-day than ever before, and be- substantially identical with those made in accordcoming more so every twenty-four hours.

"Even with the small increase allowed by Congress,

"We are deeply interested in the pending appro- government may award costs to the opponent in case "IV. Merchandise or valuables stored in these warehouses are held by the administration as security for payment of rental.

"V. The tenant will not be reimbursed by the administration for improvements, additions and other such work which he has undertaken on his own account.

Japan having in 1897 enabled foreign inventors to "VI. The tenant must give an assignment of his goods to the keeper-in-chief, who shall not be held responsible for the safe keeping of merchandise or valuopportunity of strengthening their position in this ables which have not been duly declared. The tenant promising field. The practice of the Japanese patent must claim a receipt for the said assignment and for office in regard to applications made by foreigners has the payment of his rental."

been settled, and the requirements as to novelty are Many of the temples were also used for the keeping of money, jewels, plate, etc. Of course, the temples ance with British patent practice, that is, the applicawere constantly watched, and on this account were safe tion must be filed before the invention becomes pubfrom thieves. Official weights and measures were also we would be better off, if only the appropriation were licly known or used in Japan. More particularly, the kept in the temples.