

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW, 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.

Single copies of any desired number of the SUPPLEMENT sent to one address on receipt of 10 cents.

Remit by postal order. Address

MUNN & CO., 37 Park Row, 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, with handsome cover, 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 news dealers 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., 37 Park Row, N. Y.

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., 37 Park Row, New York.

VOL. XXXIX, No. 26. [NEW SERIES.] *Thirty-third Year.*

NEW YORK, SATURDAY, DECEMBER 28, 1878.

Contents.

(Illustrated articles are marked with an asterisk.)

Adhesive material, good.....	407	Lard oil, to scent (3).....	409
Alum in baking powders.....	404	Matter, basis of.....	402
Anvil, Eagle.....	402	Mechanics, animal.....	403
Astronomical notes.....	403	Men and machinery.....	407
Back pressure (19).....	409	Millboard, to prepare (5).....	409
Banks, protection to.....	401	Observatory, National, the.....	401
Blindness, color, remedy for.....	408	Oil, kerosene, to deodorize (29).....	409
Bolt cutter, improved.....	405	Pads in P. O., comp. for (37).....	409
Bottle stopper, new.....	404	Patent suits.....	400
Caps for toy pistols (27).....	409	Phosphor bronze (30).....	403
Car heating apparatus.....	406	Photographs, remarkable.....	399
Cement, insoluble.....	399	Plaster of Paris.....	402
Concentrate your effort.....	405	Press, cutting and stamping.....	406
Cottons, English, trouble with.....	399	Rainfall in N. Y., average (33).....	409
Dials, illuminated.....	402	Reamers, to temper (8).....	409
Education, technical.....	408	Salt deposits, remarkable.....	402
Eggs, serpents', how made (26).....	409	Saw tooth, inserted, new.....	406
End of 1878.....	401	Science, Am an educator.....	400
Experience, curious.....	406	Surveys, national, our.....	405
Factories, Southern.....	404	Tobacco smoke.....	402
Furnace for zinc.....	402	Trade mark decision.....	401
Furnace, revolving, Manes'.....	401	Training, mechanical.....	403
Fusel oil, to remove.....	408	Tunneling, accurate.....	406
Grape vines, big.....	401	Tunnel under British channel.....	401
Hog cholera commission.....	401	Turtle, taking, mode of.....	399
Industrial development.....	405	Vault, new, the.....	402
Improvements, iron working.....	406	Velocipede, best time (1).....	409
Invention, amend. to discourage.....	407	Wells, driven.....	408
Inventions, new.....	407	Windmills.....	405
Inventions, new agricultural.....	402	Wine cask, Hungarian, great.....	406
Inventions, new mechanical.....	404		

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 156,

For the Week ending December 28, 1878.

I. ENGINEERING AND MECHANICS.—Institution of Civil Engineers. The Avonmouth dock. The River Lagan and Harbor of Belfast. The Whitehaven Harbor and Dock works.
II. TECHNOLOGY.—Improvement in Sugar cane Mills, 3 engravings.—Artificial Decortication of Trees by heat, 2 engravings.—Artesian Wells. The Artesian wells of San Francisco. Their depth, strata passed through, quantity and quality of water, etc., with map and two diagrams. Singular abundance of water.—The Niagara Falls Mill. Description of a monster flouring mill, and a site of unlimited and economical power, with 1 illustration. Photography in Natural Colors.—Condensed Milk.
III. FRENCH INTERNATIONAL EXHIBITION OF 1878.—New Rotary Printing Press for Illustrated Papers, 1 engraving.—A Californian Jewel Casket.—Fowler's Hauling Engine, 1 engraving.—English Fanning Mill, Elevator, and Weighing Machine, 1 engraving.
IV. CHEMISTRY AND METALLURGY.—Chas. Adolphe Wurtz. Biographical sketch, with enumeration of his services to chemistry. The Constitution of Matter in the Gaseous State. Lecture delivered before the Fellows of the Chemical Society, London, by CHAS. ADOLPHE WURTZ, Member de l'Institut, Doyen Honoraire de la Faculte de Medecine de Paris. Explanation of the kinetic theory of gases. Why it is impossible to liquefy certain gases by pressure alone. The apparatus and processes of MM. Cailliet and Raoul Pictet in liquefying oxygen and hydrogen. The law of Avogadro.
V. ELECTRICITY, LIGHT, HEAT, ETC.—Telephone Improvements. 2 figures.—Trouve's Micro-Telephone. 3 figures.
VI. NATURAL HISTORY, GEOLOGY, ETC.—Professor Harkness, F. R. S. Biographical sketch, with portrait.—Air Temperature.—The Crater of Vesuvius. The recent eruption, with 1 illustration.
VII. MISCELLANEOUS.—Remarkable Automata. 1 illustration.—Jardiniere in Silver. 1 engraving.

Price 10 cents. For sale by all newsdealers.

THE END OF 1878.

With this number we close the thirty-ninth volume of the SCIENTIFIC AMERICAN, and with it the record of the year's events.

Does that record contain anything that will make 1878 a notable year in the calendar of the century? What are the claims of the year to the respect and memory of the future?

That a war in Europe has ended, and one in Asia begun; that Europe is still suffering financial and industrial depression, while our more favored land is well advanced toward a solid prosperity greater than we have known before; that the much talked of socialistic uprising in America has ended in talk, while in Europe that conspiracy against civilization remains a source of national peril; that we have enjoyed harvests of unrivaled bountifulness, while other regions—in South America, North Africa, India, and China—have been smitten with drought and famine. These occurrences, however big with importance to the present dwellers upon earth, will but faintly interest humanity in 1978, and have but small effect probably upon the world's welfare in future ages. Possibly some obscure inventor, perhaps so poor that he is troubled to raise money enough to pay his patent fees, may have developed some thought or discovered some principle that will influence the future more than all these great events together, which will do more to signalize the year just ending than the achievements of all other men combined. It may be that discoveries, now well known but little esteemed, contain the germs of scientific, social, and industrial revolutions. It is quite possible too that those recent discoveries and inventions, to which the world is looking for the grandest results, will quickly fade into comparative insignificance. Every age is blind to the elements of its own greatness; and, as a rule, the unheralded achievement is the one that after-ages chiefly magnify.

But, to drop philosophy for fact, what, that is specially noteworthy from the standpoint of the present, has been done during the past year? It has been a year of great activity in almost every region of effort. The outposts of every science have been more or less advanced, and the main army of occupation, pressing into regions of the unknown and the obscurely known, has moved forward perhaps as steadily as during any year of the past; yet few events stand out with special prominence, very few promise to open up new lines of research, new fields of industrial enterprise, or new interpretations of the phenomena of nature.

No striking geographical or geological discoveries have been made—unless we admit the caverns of Luray—and no extraordinary engineering enterprises have been begun or finished, with the single exception, perhaps, of the transference of Cleopatra's Needle from the bank of the Nile to that of the Thames. In mechanics, inventions and improvements have been many and valuable; yet we fail to recall one that is radically novel. If the magnetic motor people dispute the assertion, we shall be happy to retract it on the submission of proof of their claims. In physics, the microphone has made much noise out of little; but that interesting toy cannot justly be accredited to 1878. Mr. Edison's microtasmeter promises to rank among the most powerful and valuable of scientific instruments for exploring the secrets of nature; but with the exception of its use in measuring the heat of stars and that of the sun's corona, its revelations are prospective. The solar eclipse of July 29, which was made notable by the first public employment of the tasimeter, is notable also for the opportunity it afforded for demonstrating the existence of one or more intra-Mercurial planets, first seen by American astronomers. The discovery of an active crater in the moon by Dr. Hermann Klein seems to prove that volcanic energy is still at work on our satellite; an inference very strongly corroborated by the later observations of Mr. Hammes, described in the SCIENTIFIC AMERICAN last week.

During the latter part of the year the excitement in regard to the progress of the electric light presents a notable feature of the year's record. Apparently this is at present the field of greatest speculative and practical activity. The use of electric illumination is spreading rapidly, and there are on all sides promises of the speedy practical solution of the great problem. As yet, however, with the exception of the Sawyer-Man lamp, no device which seriously threatens the supremacy of illuminating gas has been made public.

The fairly successful Exhibition at Paris, however important in its time, presented no feature or achievement to give it lasting fame. The duplexing of the Atlantic cable marks but a step, though an important one, in a familiar path of progress. The same may be said of the discovery of one or two new metals in chemistry, and the successful synthesis of indigo. The recent claim of Mr. Lockyer that he is convinced of the essential oneness of the elements, and is able to demonstrate that all matter is fundamentally the same, is much more likely to mark an era in the history of science—if it turns out to be true; and a century hence it may be the best known achievement of 1878.

PATENT SUITS.

A patent suit is now in progress between the "Tubular Lantern" and the "Buckeye Lantern" Companies, in which some interesting questions come up for consideration. The Tubular Lantern Company own a patent in which air is received into an annular chamber surrounding the chimney above the globe, from whence it passes through two pipes extending downward to another air chamber beneath the burner, and from thence to the flame to keep up combustion.

The products of combustion as they rise through the chimney draw in air from the lower air chamber, which is supplied mainly as indicated above, and by this means a constant supply of pure air is kept up to the burner. On top of the chimney are "deflecting plates," arranged to act as an ejector when a current of air strikes the lamp, and on the air chamber are similar deflecting plates, which act as an injector, by which means the equilibrium of the air pressure is kept up, and the flame is thus prevented from being extinguished under an ordinary wind.

In the Buckeye lantern, manufactured at Bellaire, O., there is no chamber around the chimney, and no pipes to carry the air downward; but there are two globes, one within the other, so combined with the framework of the lamp that the air for the support of combustion is taken from the space between the globes, which is open at top to admit fresh air, except for a plate (similar to the reflector in ordinary lanterns) which is set a little above the opening, and which is stated by the counsel for the complainants (Mr. Thacher, of Chicago) to act as an injector to force air into the space between the globes, and in this he is borne out by the testimony of the complainant's expert. The defendant's counsel (Col. Dyer, of Washington, D. C.), takes the contrary ground that the plate referred to is nothing more than an ordinary reflector, and that even if the space between the globes is the equivalent of the annular air chamber in the complainant's patent, the reflector is in no sense an injector, in which he is supported by the testimony of the defendant's experts, who testify unqualifiedly that the reflector acts rather as an ejector than as an injector, and claim that they can prove this by actual tests.

It will be seen from the above that there is a great difference in the construction of the lanterns, and that this difference causes considerable variation in the mode of operation of the two, inasmuch as in the "Tubular" lantern the equilibrium of pressure is kept up by two columns of air traveling at fast speed through small pipes, while in the "Buckeye" the air is taken from the chamber between the globes, which is of such capacity as to form a column of air counterbalancing that in the flame chamber, by which means an equilibrium is kept up, which, from the large source of supply, is not so easily affected by extraneous currents, and hence needs no injector to regulate or increase the influx. From this difference of construction and operation it is argued that the annular air chamber in one and the air reservoir in the other cannot be considered an equivalent for each other even if the same end is served by both, and that as the reflector does not force air into the reservoir, it cannot be the equivalent for the "deflecting plates" of the "Tubular" lantern, which is the main point in controversy, as lanterns having air chambers and tubes, substantially like those in the "Tubular," were known long before the invention of complainant's lantern.

The introduction of the lantern in controversy in this suit—the "Buckeye"—shows what can be done with a good invention, even if times are bad and money scarce. The company owning this patent have only been in operation a short time, and yet their sales of this lantern have of late averaged about 2,500 dozen per month, giving employment to about 150 hands, and distributing a large amount of money among a class of people sadly in want of it.

A number of suits, upwards of thirty, we believe, have been commenced against different manufacturers and dealers in "barbed wire fences," by Messrs. Coburn & Thacher, acting for the Washburn & Moen Manufacturing Company, and I. L. Ellwood, who claim to hold patents covering the manufacture of barbed wire fence of any form. The defense set up is previous use, the defendants alleging that a barbed wire fence had been used some twenty years ago in Texas and Missouri. It would appear, however, that this point is doubted by the complainants, who bring a large number of witnesses to prove that such a fence had never been used in the places specified, and that no one except the witnesses for the defense, of which, however there are many, ever knew of such a fence having been made or used, and that at the best, even if it is admitted that such a fence was made, it could only be considered as an abandoned experiment, or as a "lost art," like the Connor safe, in the Fitzgerald case.

THE SCIENTIFIC AMERICAN AS AN EDUCATOR.

It is becoming more and more the custom of manufacturers to express their approval of the SCIENTIFIC AMERICAN, and their desire to benefit their employes by presenting the latter with annual subscriptions to this paper. We are assured that the practice is directly profitable to the givers in increasing the kindness of the relations between the employer and the employed, and also—more materially—in augmenting the skill and intelligence of the recipients of the gift.

We are indeed very frequently in receipt of letters from readers of the SCIENTIFIC AMERICAN—both employers and employed—expressing their indebtedness to it for very much of their skill, intelligence, and success in life. Not unfrequently men write saying, "I am foreman of So & So's shop," or "I am proprietor of such or such an establishment," or "I am the patentee of this, that, or the other successful invention, and I owe everything to the suggestions, information, and practical habits of mind acquired in the diligent perusal of the SCIENTIFIC AMERICAN." We need not say that such letters are extremely gratifying to us, while they intensify our desire to make the paper more and more worthy of its readers' approval.

As an illustration of the advantage which may accrue not

only to the reader of the SCIENTIFIC AMERICAN, but to his employer as well, we venture to reproduce a portion of a communication just received from a neighboring city, suppressing only such parts as would betray the confidence of the writer and his unfamiliarity with the spelling book. The directness, force, and eloquent sincerity of the story could not be improved by the most skillful rhetorician. The writer says:

"A few years ago I had the fortune to be placed over the machinery department of a firm in this city. I was to fill a position until then occupied by a man of intellect and experience. I was nineteen years old, and addicted to many of the evil habits of young men of that age. I was pursuing a useless and unprofitable career, both to the disadvantage of myself and those around me. I managed to keep my position, and also to keep the work up to the mark of former years, in the matter of cost and amount manufactured. Two years passed. The machinery was getting very badly impaired. I knew I could not keep up the work if the machinery was not repaired properly. I yearned for some means by which I could find out the wanted information. I inquired of a newsdealer for some work on machinery, but having none, he sent me a copy of the SCIENTIFIC AMERICAN, which, he said, would give me the information I wanted. My joy was overshadowed when I perused its pages without understanding what I was reading about. That gives you the limit of my education at that time. I read it again, and a beam of enlightenment came over my senses. I tried it again and again. I believe I read that copy twenty-five times, jumping from one article to another, or to the one I thought I was most likely to derive some information from, each time bringing a new and encouraging result. I became a subscriber through the newsman, and have never missed a copy since.

"What is the result? I will try to tell in part, as no man living can tell all. There is an increase of 20 percent in the amount of stock turned out, and a large increase in the demand for our manufactures. . . . There is a saving of one third in the expense of articles pertaining to the manufacture that is, in belting, oil, etc. The help get better wages and steadier employment than ever before. . . . In fine, the firm are in a fair way of becoming as well known as the SCIENTIFIC AMERICAN, to which I owe all the advantages I have gained, both in relation to my private and public career. I now superintend the entire manufacture, and have charge of the whole inside business, as well as the machinery department."

Our readers will pardon the length of the citation for its real merit. It is but one of a multitude of instances which have come to our knowledge, of young men of inherent force, but untrained and ignorant, who, through a new life of thoughtfulness and study aroused and sustained by the weekly instructions and suggestions of the SCIENTIFIC AMERICAN, have developed rapidly and profitably to themselves and their employers. In every workshop will be found rough diamonds of this sort, possibly wasting their time and strength in dissipation and thoughtlessness, with whom a subscription to the SCIENTIFIC AMERICAN might work wonders. Many employers have assured us that it pays them to provide the paper for such workmen. It is not a costly experiment to try, at all events; and, in view of communications like the foregoing, we may be pardoned the suggestion that the experiment be more generally tried.

THE NATIONAL OBSERVATORY.

Notwithstanding the observations of the numerous celestial phenomena which have occurred during the year about closing have somewhat interfered with the regular work of the Observatory, yet a large amount of it has been done, and the observations of the year are now being reduced. During the year the 26 inch equatorial, under the charge of Professors Hall and Holden, has been pretty constantly employed in observing satellites, nebulae, and comets. The optical power of this instrument is very fine, and was much praised by the foreign astronomers who visited it during the past year, but they considered its mounting as too light, and the justice of this criticism is shown in slight tremors in right ascension, though observations show that during the last five years the pole of the instrument has changed but the fraction of a minute of arc. Some changes, however, will have to be made, as the heavy dome makes it difficult to revolve. The continued observations of the ring and satellites of Saturn, which were made until the planet approached too near the sun, prove that Bessel's elements of the ring are very nearly correct. Frequent observations were made of the satellites of Mars, Uranus, and Neptune, and an unsuccessful search made for a satellite to Venus.

The thirty double stars selected by Otto Struve, of Pulkowa Observatory, for the determination of personal errors, were observed by Professor Hall, each star being observed six nights on an average. The different combinations of the angles and the distances of the stars in the trapezium of Orion were measured first with bright wires in a dark field, and then with dark wires in a bright field, six times by each method, and an adjustment of the measurements effected by the method of least squares. Sirius and its companion have been carefully observed with a view of settling the question whether the companion produces the variable proper motion of Sirius.

Nearly 3,500 observations have been made by Professors Eastman and Frisby and Assistant Astronomers Skinner, Paul, and Pritchett, with the transit circle. The work of this instrument for former years has been prepared for pub-

lication, but owing to lack of funds its printing is delayed. The 221 photographs taken by the transit of Venus parties in 1874 have been measured by Professor Harkness for the corrections of minute errors, such as were due to the shrinkage of the collodion and like causes. The observations of the transit of Mercury and the total solar eclipse have been compiled in detail, and their computation and reduction are now going on. The publications of the Observatory have been freely distributed to other observatories, institutions, and astronomers, and numerous valuable additions to the library have been received in exchange.

AN AMENDMENT TO DISCOURAGE INVENTION.

It is to be hoped that before final action is taken upon Mr. Wadleigh's bill for the revision of the Patent Law (Senate Bill 300), more particular and searching inquiry will be made with regard to the probable effect of Section 11. As it stands, this section provides that, in addition to the fees collected when a patent is applied for and when it is issued, there shall be paid to the Commissioner a duty of fifty dollars at the end of the first four years, and another duty of one hundred dollars at the end of the second four years, after the patent is issued; thus increasing the cost of patents more than fivefold. The failure of either of these payments it is further provided, will make void the patent. There are two very strong reasons why this section should not be adopted as part of the patent law.

In the first place, the patent system is already more than self-sustaining, the receipts from existing fees largely exceeding the cost of maintaining the Patent Office; and there is no good reason why the United States Government should seek to increase its revenues by laying a special tax upon inventors. Besides, the patent fees are sufficiently burdensome already. If any change is made in them they should rather be reduced, as they could be materially without diminishing in any way the efficiency of the office.

In the second place, the assumption on which the proposed amendment is based is altogether fallacious. It is said that a great many patents are worthless. They are never developed. Yet they stand in the way of industrial progress, in that they prevent the use of the idea or device they cover in a more practicable way; or they are made the basis of claims for damages when other men have introduced the idea successfully. In all such cases, however, it is the man that has invaded, or that wants to invade, a patent right, not the owner of it, who is desirous of having such a patent condemned and killed. But that is apart from the point at issue. It is said that there are a great many worthless patents that ought to be put out of the way; and that it can be done most readily by levying the proposed duties. If a patent has any value at all, say the advocates of this change, it will be more than worth paying for; and four years is ample time for demonstrating the worth or worthlessness of any invention. All this is inconsistent with fact and experience. The more novel an invention is the less the likelihood of its being immediately profitable. Indeed, the speedy development of a strikingly useful invention is quite exceptional; and with the average of inventions the time that elapses before they are assuredly profitable is oftener ten years than four or eight.

But the chief fallacy involved in the proposed amendment lies in the assumption that the value of an invention is always to be measured by the ability of the inventor to pay a heavy fee: if he can pay \$185, his invention is good; if he cannot, it is bad, and should be put out of the way. Under this rule there is scarcely an invention of exceptional merit, perhaps not one of the great inventions which have done so much to hasten our progress as a nation, that would not have been summarily extinguished. Their inventors have found them anything but profitable during the first few years, sometimes during the entire life of the patent. It would be sheer cruelty, and as impolitic as cruel, to add to the discouragements of the inventor the risk of losing all through inability to meet severe and needless demands.

Indeed it is altogether too common, in the discussion of this question, to overlook the fact that the majority of inventors are poor men, and that the public, which is ready enough to laud an inventor after he has compelled recognition of his merits, is only too ready to give him the cold shoulder while he is struggling against poverty and the inertia of professional routine and popular ignorance. The assurance that a patent once granted is property, that it will insure the protection of his rights when their value has been demonstrated, spurs the inventor on to efforts which very frequently make him a benefactor to his age and country. In multitudes of cases important improvements or radical innovations of great value are delayed because of the inventor's inability to command the relatively small fees already demanded at the Patent Office. To add one hundred and fifty dollars to them, as proposed, would put the hope of securing a patent out of their thoughts entirely, and in thousands of cases would result in putting an extinguisher upon their creative labors. The country cannot afford to have its best workers so seriously hampered, so needlessly discouraged.

This is not a theoretical objection. The practical effect of heavy patent fees may be seen in the history of every nation that has tried them. In England, for example, it is an admitted fact that poor men do not invent, or if they do the public reaps small benefit from their labors. Like the senior Bessemer they carry the secrets of their discoveries to the grave: and improvements of great industrial value are frequently lost in this way, when under a more just and

liberal patent system they would remain on record part of the stock of common knowledge for the enrichment of after years.

THE TUNNEL UNDER THE BRITISH CHANNEL.

The reason why the Channel Tunnel Company recently ceased their operations in St. Margaret's Bay is stated to be that, when the reports as to the soundings between Sangatte and St. Margaret's Bay were handed in by the surveyors, it was found that to cut a tunnel between those points would entail an enormous amount of work in sinking. The site in question has, therefore, been finally abandoned. The scheme now before the company provides for the sinking of a new shaft at or close to Dover.

The site on the French side at Sangatte, near Boulogne, is still looked upon as the best that could be chosen for the commencement of the tunnel. The shaft sunk there is already 70 meters in depth, with a diameter of 2 meters, and the engineers consider that when they have got 10 meters further down the horizontal cutting may be commenced.

The engineers of both countries agree that the French opening of the tunnel is the most difficult part of the undertaking, as a clayey soil has to be dealt with instead of chalk, and the incursion of water causes much trouble.

PROTECTION TO BANKS.

A correspondent suggests that an insurance society could be organized, which, for a moderate premium, could insure bank premises against burglary. It would then be the duty of trained inspectors to examine into the security of the safes and locks, and to order the adoption of the latest and strongest safeguards; and should these be broken through, the reserve fund of the insurance company would make good the loss, which would thus be equally distributed over the community.

Possibly an organization of this sort might be useful. It would have to be very careful in its agents, however, lest it be converted into a source of danger through the collusion of inspectors and burglars. In this, as in other cases, prevention is better than cure; it would be better, as well as cheaper, for the banks to forestall the burglars with scientific safeguards. There is no fear of time-locks and electric alarms betraying combinations.

THE HOG CHOLERA COMMISSION.

Congress having appropriated at the previous session \$10,000 to pay the expenses of investigating the nature and cause of the diseases prevalent among swine, the Commissioner of Agriculture appointed a number of competent gentlemen in the States of Indiana, Illinois, Iowa, Nebraska, Kansas, Missouri, North Carolina, Virginia, and the Western part of New York, who have been engaged in prosecuting their investigations, and have nearly all submitted extended reports, which have been carefully collated and the results embodied in a report that will shortly be presented to Congress. From these papers it appears that the identity of the disease in all portions of the country is pretty thoroughly established, that the term "hog cholera" appears to be a misnomer, and that in all cases of the disease the lungs appear to be affected. Among the gentlemen engaged in the investigation are Dr. H. J. Detmos, the veterinary writer for the Chicago *Tribune*; Professor Law, of the Cornell University; Dr. D. W. Voyles, of New Albany, Ind., and Dr. Salmon, of North Carolina, from whose knowledge it is supposed that the results of the investigation will prove of the highest importance in throwing light on a subject which has never been fully understood, and in checking a disease whose ravages yearly destroy a large portion of the revenue of our stock raisers and farmers.

Another Adverse Trade Mark Decision.

Some time ago a bill in equity was filed by Day & Frick, soap manufacturers, of Philadelphia, against P. Walls, another extensive soap manufacturer, in which an injunction was asked to restrain the employment of certain labels and wrappers used by Walls in his soaps. These labels, it was alleged, contained language similar to that registered as a trade mark at Washington by Day & Frick. The description secured by them in designating the soaps were the words "bleacher," "bleaching," together with a device of a pair of scales and other signs, and it was claimed that the use of this trade mark by Walls was an infringement.

In behalf of Walls, his counsel, Pierce Archer, subsequently filed a demurrer to the bill, claiming that the act of Congress was *ultra vires*—beyond the constitutional powers which authorize Congress "to promote the progress of science and the useful arts by securing for a limited time to authors and inventors the exclusive right to their respective writings and discoveries." A trade mark, Mr. Archer held, was neither an invention nor a writing, but simply an advertisement, and as such was not within the pale of the section.

Judge Cadwalader has sustained Mr. Archer's objections, on the ground that the court has no jurisdiction to entertain conflicts over trade marks. It is probable that this case will be taken to the Supreme Court of the United States.

Manes' Revolving Furnace.

The revolving furnace recently patented by Mr. James Manes, of 1844 Fulton Avenue, Brooklyn, N. Y. (formerly of New Haven, Conn.), has been applied to the extraction of quicksilver from cinnabar, to desulphurizing ores, drying fertilizers, and animal and vegetable matters, also for making gas. We are informed that it is economical and effective, and accomplishes its work without allowing injurious fumes to escape.