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Contents.

(Illustrated articles are marked with an asterisk.)

Ability, standard of.....	324	Inventions, miscellaneous.....	330
Air, respired, poisonous.....	325	Inventions, index of.....	331
Aluminum, alloying and plating with.....	321	Kilns, brick, drying attachment for, Gurnee's.....	323
Apparatus, railway.....	321	Licenses, marine engineer's.....	326
Apprentices.....	321	Morton, vortex.....	329
Barnard, Frederick A. P.*.....	327	Notes and queries.....	330
Boat, torpedo, new.....	324	Patents, foreign, securing.....	321
Books and publications, new.....	331	Phthisis from house sweepings.....	329
Bishop, W. Irving.....	330	Plant life, curiosity in.....	329
Business and personal.....	330	Pottery, red.....	323
Carrier, bundle, Heckman's.....	323	Pot, transplanting, Cooke's.....	323
Clock, electric, Jansen's.....	322	Reinholder, Adams's.....	323
Coupling, hose, Burnett's.....	324	Rice, Allen Thorndike.....	321
Cover, barrel, Lindsey's.....	323	Rig, double topsail.....	325
Curtain, buggy, Thomas's.....	324	Rivet holding device, Weidemeier's.....	322
De la Rue, Warren.....	328	Screen, gravel, Loughran's.....	324
Detector, lead, Brown's.....	323	Ship, war, Amiral Baudin's.....	326
Dredging in Glorietta Bay, Cal.*.....	319	Speed, naval, limit in.....	326
Engineers, good advice to.....	329	Steamer, Channel, new.....	326
Explosives.....	321	Summers, Thomas.....	328
Floriculture.....	328	Support, hammock, Collins's.....	323
Grisolite.....	319	Tails, rats.....	327
Guns, 8-inch, at close range.....	327	Tapping by electricity.....	327
Matchway closing device, Kitteringham's.....	321	Think, learning to.....	322
Headache.....	325	Tower, Eiffel, scientific uses.....	326
Heat and light.....	329	Truss, Dallas's.....	324
Hose, air, brake.....	325	Valkyrie, the.....	329
Induction, electrical, lines of.....	325	Vessels, glass, testing.....	321
Inventions, electrical.....	330	Watch making, profitable.....	325
Inventions, mechanical.....	330	Weather, northwestern.....	325

TABLE OF CONTENTS OF SCIENTIFIC AMERICAN SUPPLEMENT No. 699.

For the Week Ending May 25, 1889.

Price 10 cents. For sale by all newsdealers.

I. AGRICULTURE.—The Relation of Fertilizers to Fruits.—By Prof. PETER T. AUSTEN.—A recent paper read before the New Jersey State Horticultural Society, giving a scientific view of the possibility of the future in the development of scientific fruit fertilizers.....	11171
II. BIOGRAPHY.—Zenobe Gramme.—The inventor of the Gramme dynamo-electric machine, a wonderful instance of the development of scientific genius at a late age, his portrait.—1 illustration.....	11167
III. CHEMISTRY.—Gymnemic Acid.—By DAVID HOOPER.—A very interesting investigation of the curious substance that possesses the property of destroying the taste of bitter or sweet substances, with analysis.....	11170
Yorkshire Grease.—By GEORGE H. HURST.—A very interesting investigation of the fatty products from the washing of wool, with numerous tables of analyses and the composition and properties of products derived from the grease.....	11170
IV. CIVIL ENGINEERING.—Improved Steam Inspection Car.—The Ionia steam inspection car, for use of the inspectors and others interested in the condition of the permanent way of railroads.—Details of its use and characteristic features of its construction.—2 illustrations.....	11163
Plant and Material of the Panama Canal.—By WILLIAM PLUMB WILLIAMS, Jr.—The commencement of an elaborate paper on the machinery used in the great engineering operations on the isthmus, with illustrations of the dredges devised by engineers of different nationalities.—5 illustrations.....	11159
Rapid Transit for Chicago.—A review of the future necessities of the great Western metropolis, with suggestions for an improved construction of rapid transit line adapted for the probable developments of the next century.—2 illustrations.....	11163
V. ELECTRICITY.—Electric Wiring of Buildings.—By J. D. F. ANDREWS.—A very excellent and practical paper on this subject, giving details of the method of correctly preparing buildings for electric light installations.—5 illustrations.....	11167
Electric Light at the Paris Exhibition.—Note of a paper by M. Hippolyte Fontaine on the titular subject, accompanied by tables of the lights to be employed, the contractors therefor, and the plan and elevation of machinery hall, showing the disposition of lamps.—2 illustrations.....	11169
VI. EXPLORATION.—Opening of a Pyramid.—The account of an interesting Egyptian find.—A subterranean entrance to a pyramid recently discovered.—Its nearly monolithic chamber and contents.....	11174
The Subterranean Water of the Oued Rir.—A full account of the artesian wells of the Saharan Oasis, with details of the fishes and crustaceans found there, and map of the Ourlana region.—5 illustrations.....	11172
VII. METALLURGY.—A Miniature Steel Works.—A Hindostanee steel works, with full details of the method of working.—A curious instance of native skill and industry.....	11167
VIII. PHOTOGRAPHY.—The Development of Gelatino-Bromide Lantern Plates.—A recent communication to the Manchester Photographic Society, giving numerous formulae of different developers.....	11166
IX. PHYSICS.—A New Photometer.—An efficient and simple substitute for the Bunsen photometer disk, involving a combination of two prisms.—2 illustrations.....	11169
X. TECHNOLOGY.—Improved Sectional Warming Machine.—Description and illustration of a new machine recently constructed in England.—1 illustration.....	11165
Improved Wood Pulp Digester.—Description and illustration of a digester of the latest design, with lead lining for sulphite liquor treatment of timber.—1 illustration.....	11166
New Apparatus for the Concentration of Extracts in Vacuo.—By L. A. ADRIAN.—A recent improvement in pharmaceutical technology for the preparation of extracts on the large scale.—2 illustrations.....	11165
Ramie or Rhea Fiber Cleaning Machinery.—An attempt at solving the problem of preparing these fibers.—A recent machine invented by Mr. Wallace, of Belfast, originally intended for flax, and its proposed application to the new fibers.—2 illustrations.....	11164
The Wells Light.—A new reservoir oil burning lamp for use in out-of-door operations for light-giving purposes and for the production of heat.—2 illustrations.....	11166
XI. ZOOLOGY.—The Cape Buffalo.—Note and illustration of this animal, one of the most dangerous of the Bos tribe.—1 illustration.....	11172

THE VALKYRIE.

The acceptance by Lord Dunraven of the somewhat modified conditions that are to govern future contests for the America's cup virtually assures an international yacht race in the autumn. To be sure, it is within the range of possibilities that the Royal Yacht Club will not agree to the conditions imposed upon those who may hereafter be the trustees of the cup, in which case all negotiations looking to the race would likely enough cease. But this is improbable. So far both sides have shown a disposition toward accommodation; a sportsman-like spirit seems to have animated the discussion, now happily closed, and even to the most uninterested observer the cup committee of the New York Yacht Club would seem to have conceded all that was prudent, all that was fair, and considering the terms under which the cup was originally entered for and won, far more than could have been fairly demanded. The America sailed against the fleet at Cowes, and two decades later, when the Cambria came over to sail for the lost cup, she, in like manner, sailed against a fleet. In the following year her owner brought over the Livonia, and the New York Yacht Club, to guard against the chances of mishap where so many sail on the same course, selected several schooners to sail against her, reserving the right to select a particular one on the morning of the race. A little reflection will show that this was not, what it has often been called, and what, indeed, at the first blush it seemed, an unfair advantage. For it is conceded that the entire fleet was fairly entitled to sail against the stranger, and these selected schooners, being part of it, would have been in the lists together against her where now, to save sea room, they were pitted singly.

Later on, the better to encourage such contests, a single yacht was selected, thus generously giving up an obvious advantage, for the best boat often has to give way to an inferior because of phenomenal weather, collision, or other mishap.

In the present case there has been a contention that we should bring to the post a yacht of the same dimensions as the challenger, the Valkyrie. If, it was urged, we were bent only upon keeping the cup, with no desire to encourage international yacht racing, this was the safest policy; but that the requirements of manly sport necessitated our giving the stranger a chance to win. If this were so, and yachtsmen of means could yearly be found to build smaller or larger boats, as the variously sized craft from abroad were beaten, a time would perhaps arrive, this theory being carried out to its conclusion, when on the one hand it might be demanded of us to compete against a cockleshell, or upon the other against a four-master schooner of 2,000 tons. It is the history of all racing that the fastest holds the field till beaten. The old American Black Ball clippers to Liverpool, the Indians, even the whalers bound to polar seas, crowded on all sail when a stranger came up—stun's'les broadening out and skysails topping royals. No racing skipper ever turned a reef to accommodate a lagging stranger. If he was not long enough or fast enough to keep up, he was expected to lengthen himself out in a ship yard or build anew. He could not expect the champion of the seas to clip his wings. In the present case, should the Volunteer be chosen in the trial race, and this, of course, is likely, she would, even with the handicap, have a great advantage, there can be no doubt of that. The extra length of the Valkyrie, which brings her up to 98 feet, is all overhang. She belongs to the 70 foot class, for a yacht gets her power from her hold on the water, her draught, her beam, and the ballast that gives the power of holding sail.

W. IRVING BISHOP, "MIND READER."

W. Irving Bishop, whose feats in what is called "mind reading" have made him widely known in this country and in Europe, died at a New York City club house in the early morning of May 13, under extraordinary circumstances. There were present many men of some prominence in New York society, and the evening had been passed until a late hour in the social intercourse usual among club men, when Bishop, who was an invited guest, was asked to give an exhibition of his powers. He commenced with what he called an ordinary trick. On his leaving the room, one of the club members took a small dagger and made the motion of stabbing another member, after which the dagger was hidden. Bishop was brought in blindfolded, and, with the hand of the man who had hidden the dagger upon his own hand, quickly searched out the dagger, and made a similar motion of stabbing the same man in the way it had been done when he was out of the room.

Bishop then made light of the difficulty of this trick, and proposed to do something more astonishing. He asked the secretary of the club to think of some word in the club's books of account or record. The secretary, with Dr. J. A. Irwin, of this city, who was an acquaintance of Bishop, went down stairs where the books are kept, and selected the name of Margaret Townsend, found in some records, both fixing the word "Townsend" in their mind, and noting just where it appeared; they hid the book and went back

up stairs. Bishop, blindfolded, had the secretary's hand placed upon his own, and then led the party down stairs. He found the book without difficulty, turned over the pages rapidly till he came to the page where the name appeared, then, skimming his fingers over it, gradually settled upon the word itself, although he was not then told what the word was. All this had been done while he was blindfolded, and Bishop had been getting into a very excited state.

On being led back up stairs, he proposed to tell what the word was in a manner which would demonstrate that "muscle reading," as it is called, had nothing to do with the performance. He asked all to stand back, and, insisting that the secretary should think intently of the word, stood apparently in a state of half consciousness, the bandage covering his eyes and other parts of his face. Soon he said, "I think it is a name." After further apparently intense mental effort, he exclaimed nervously, "Give me something to write with." Being handed pencil and paper, without an instant's hesitation he wrote, "Townsend," not in natural form, but as the word would appear written on paper and reflected in a mirror. "That is it," he exclaimed, and, as the persons about burst into applause, Bishop stiffened out and sank back unconscious.

Dr. Irwin assured the others that it was only one of the cataleptic fits to which Bishop was frequently subject, and was not dangerous. Bishop was stretched on the floor, and soon, under the care of the doctor, began to show signs of returning consciousness. When he was able to sit up, though apparently only half conscious, the doctor was explaining something of the physical features of the case to those present, stating that the peculiar backward fashion in which the name was written might be accounted for by the fact that the original reflection of everything seen by the eye is inverted as in a mirror, and is reversed by the optic lens on the way to the brain. Bishop, who had apparently heard everything, interrupted the doctor and asked him to make it clear that what was written on the scrap of paper was the exact copy of what appeared in his eye, and was written by him without conscious intervention of the brain.

Bishop was now so excited that the doctor ordered him to be taken to an upstairs room. His pulse was frightfully high, but he so strenuously insisted on doing the trick over again that the doctor finally consented, as affording the best means of quieting him. The book was brought, and Bishop, blindfolded, set out to find the word again. He wandered over the book with great difficulty, but finally hit the right page, found the word, and indicated it by a savage stroke of the pencil across it.

The "mind reader" was now more exhausted and excited than ever, and Dr. Irwin, fearing a nervous collapse, sent for Dr. C. C. Lee to help him. Bishop had frequent spasms, and it was with difficulty that he could be held still. About 4 o'clock in the morning he had another violent cataleptic fit, and went from it into a state of coma, from which he had only moments of half consciousness for two hours, but not a clearly conscious moment from 6 o'clock in the morning until a few minutes past noon, when his pulse and breathing ceased, and he was apparently dead. For fear that it might be only a cataleptic trance, powerful electric currents were applied, and for half an hour some semblance of life was maintained, but at last the current ceased to have any effect, and the doctor said Bishop was unmistakably dead. The body was removed to an undertaking establishment, where, in the afternoon, an autopsy was made by Dr. Irwin and Dr. Ferguson, the pathologist of the New York Hospital.

The suddenness with which this autopsy was made, in the absence of authority from the friends or relatives of the deceased or from the coroner, has caused great feeling in the community. This is heightened by the fact that Bishop, his wife, and his mother, were opposed to any autopsy, and especially desired that in the event of his supposed death at any time the body should be kept as long as possible, for he had frequently been in a state of almost seeming death for a good many hours, as a consequence of these cataleptic fits, as had also his mother.

The autopsy is said to have shown nothing to indicate any cause of death, except the result of the great nervous strain to which Bishop had subjected himself. The brain was a little larger than usual for a man of his size, weighing 40 ounces. The gray matter was unusually dark in color, but there was no malformation or other physical indication that the brain was other than that of an ordinary man. The case is one, however, that is sure to attract wide attention in the medical fraternity, and the controversies about it commenced on the very day the "mind reader" died.

Bishop was born in Boston in 1836, and early obtained a reputation as a "mind reader." Some ten years ago, in England, he attracted much attention by what he did to expose the alleged tricks of Slade and other spiritualists, and did some surprising feats in telling the numbers upon bank notes which he had not seen. About three years ago, in Boston, he successfully discovered a hidden article, to get at which it was

necessary for him, blindfolded, to drive a team of horses to a carriage a considerable distance through crowded streets—a trick he afterward duplicated in New York City.

To accomplish these feats he always had to be in physical touch of some sort with the person whose mind he pretended to read. Others have pretended to be able to perform the same feats, but it is not known that any feat similar to the one herein described has ever before been performed. Dr. Irwin says he thinks the feat cannot be accounted for upon any theory of known science or medicine.

The Late Allen Thorndike Rice.

Early in the morning of May 16, Allen Thorndike Rice, the editor and proprietor of the *North American Review* and recently appointed Minister to Russia, died. As *litterateur*, editor and politician, he won more than ordinary reputation, and was just entering a new career, that of diplomacy, when he was suddenly called away.

He was born in Boston, January 13, 1853. Five years of his early youth were spent on the continent of Europe with his mother, where he acquired a knowledge of French and German; at the age of fourteen he returned to America, and at eighteen years of age he went to England and entered Christ's College, Oxford. He graduated in four years, and at the age of twenty-two returned to America. His father had meanwhile died, leaving him in possession of a competence. In his college career he had been noted for industry, and the same indefatigable spirit still possessed him. He began writing anonymously for the press, magazines and journals receiving the benefit of his work. In 1877 he purchased the *North American Review*, then in the hands of Osgood & Co. Under their management it had been conducted, it is said, at a considerable loss annually. Mr. Rice at once reorganized it and began editing it on new lines. He designed making it of contemporary interest. The contributions were signed—an important departure from the style of the *Edinburgh Review* and its contemporaries, which in other respects was abandoned.

Authors were selected who were already men of reputation and whose names would operate to sell the *Review*. The success of the new move was immediately perceptible, and it soon began to occupy a new level, and is now said to be earning a profit of considerable amount. These methods, so revolutionary in their relation to the old time reviews, made their impress on the world, and in England the *Nineteenth Century* among others has followed in the new paths of personal journalism. The names of Mr. Rice's contributors cover an astonishingly wide field of literature, science, and professional life of all kinds. His work on the *Review* was very active, and his personal energy was unstintingly given to it. In Paris he had also journalistic interests, owning a controlling share of *Le Matin*. His writings include the introduction to "Reminiscences of Abraham Lincoln," 1886, who died when Mr. Rice was but twelve years old, and contributions to "Ancient Cities of the New World," 1887. He organized the Charnay expedition to Central America and Mexico in 1877. In politics he was a Republican, and ran for Congress in 1886 to be defeated. The funeral was held in Grace Church of this city, the interment in Auburn cemetery, Cambridge, Mass.

The Testing of Glass Vessels.

Those who are in the habit of handling glass vessels will have frequently noticed that colored organic solutions, when long kept in them, alter their color. In this way red litmus becomes in time blue, and solutions of phenolphthalein or hæmatoxylin purplered. These changes are due to the separation of alkali from the glass by the action of water, and in many other cases apparently accidental alteration of the color of chemical preparations may be caused in the same manner. In a paper recently read before the Berlin Chemical Society this subject has been discussed in regard to the determination of the characters of glass for certain technical purposes, and in the first instance it was attempted to effect that object by the use of iodine and starch. As previously shown by the author, F. Mylius, the formation of iodide of starch requires the presence of hydriodic acid or an iodide. Hence the coloration of iodine and starch will take place on the addition of a substance capable of converting iodine into hydriodic acid, and the same effect is produced by the addition of a trace of alkali. Thus, when to a mixture of clear starch solution and iodine solution some very dilute solution of silver acetate is added until the mixture is rendered colorless, or only yellowish, and then some powdered glass is added, there is an immediate blue coloration.

In this way comparisons may be made with different kinds of glass in regard to their susceptibility to decomposition, but the difficulties attending the application of this method are too great for most purposes. Weber's method of exposing glass to the action of hydrochloric acid gas is also uncertain, except in the hands of very experienced operators. In place of these methods it is proposed to take advantage of the fact that glass is

hygroscopic in regard to hydrated ether, and to make the absorption of water, as well as the simultaneous liberation of alkali, perceptible by the use of a material that is colored by alkali. For that purpose eosin has been employed. The alkaline compound of eosin is insoluble in ether, but eosin is soluble; and as the coloration produced by the liberated alkali is equivalent to the quantity liberated, a means is thus afforded of measuring the quality of glass.

In carrying out the operation, the glass vessel to be tested is filled with hydrated ether and some weak eosin solution added. It is then left for twenty-four hours, and at the end of that time washed with ether, when there will be found on the surface of the glass a colored layer of intensity proportionate to the decomposition that has taken place. In all cases the glass vessels must be carefully cleansed beforehand by rinsing with water, alcohol, and ether, and they must while still moist with ether be brought into contact at once with the eosin solution. Some kinds of glass are acted upon by water so rapidly that they are colored immediately by the eosin solution, but with glass of better quality the coloration does not take place until after several hours. The eosin solution for this purpose is to be prepared by dissolving iodoeosin in one thousand parts of water. The application of this method of testing glass has been found very useful in regard to glass instruments of various kinds, and it is considered by the author that in many instances it may prove useful in chemical and physical laboratories, where the quality of glass tubes and vessels is frequently a matter of importance.—*Pharmaceutical Journal*.

Explosives.

Chlorate of potash is the most explosive substance with which chemists and druggists have to deal. By itself it seldom gives rise to serious accidents, but the violence of its character is occasionally shown, and that most frequently and disastrously in the case of colored fireworks. We learn from the report of her Majesty's inspectors of explosives that Dr. Dupré, the chemist to this department, last year had to investigate an accident in Pain's firework factory, arising from the explosion of colored stars. The results are of interest as corroborating previous observations regarding the highly sensitive nature to percussion and friction of chlorate mixtures, particularly at slightly elevated temperatures. The chemicals employed in the manufacture of the stars were found to be chlorates of barium and potassium, nitrate of strontium, shellac, coal, and lampblack. Lampblack is liable to contain an appreciable quantity of free sulphuric acid, but there was none in this case. It was found, however, that one of the ingredients (Chertier's copper) of one of the stars was distinctly acid, and was the cause of the explosion. Chertier's copper is a mixture of chlorate of potassium and sulphate of copper, which has been moistened with ammonia and dried. When freshly made it is alkaline, but in time it loses ammonia, becomes acid, and evolves chlorine compounds, owing to the decomposition of the chlorate of potassium by the sulphate of copper. In other words, Chertier's copper is liable to spontaneous decomposition, and the presence of such a substance in a combustible or explosive mixture cannot but be highly dangerous. It is marvelous how little is required to induce "spontaneous" decomposition in these explosives. Thus the paste used for making pill boxes becomes acid, owing to a change in the alum of the paste, and as no chlorate mixture should ever be brought into contact with materials that are either acid in themselves or are liable to become acid in the course of keeping, it is obvious that the spontaneous ignition of such mixtures kept in these boxes becomes merely a question of time and circumstances. These remarks apply more particularly to fireworks, but pharmacists will do well to keep the facts in mind when they are handling powders or other preparations containing chlorates.—*Chem. and Druggist*.

Alloying and Plating Iron and Other Metals with Aluminum.

The plate or piece of metal to be coated with aluminum is placed in a muffle furnace, which can be heated to 1,000°–1,500° C., and covered with a flux formed of clay or other earth rich in alumina, mixed with sodium chloride, fluorspar, and borax. In the muffle itself, or preferably in another vessel, aluminiferous vapors are produced by heating aluminum chloride or a mixture producing the chloride, and, in the latter case, passed into the muffle furnace. The vapors are mixed with a strongly heated inert gas to prevent condensation and deposition of the aluminum chloride before reaching the muffle; nitrogen obtained by passing air over incandescent coke answers well for the purpose. The aluminum formed permeates the other metal to a greater or lesser extent according to the temperature and time employed. If the outer layer of aluminum be removed, it is found that the mass is still so impregnated with aluminum as to possess practically all the properties of an alloy of that metal.

Iron, steel, or other metal can be alloyed with aluminum which has been reduced directly from its ore in the following manner. The metal is coated over with

a mixture of clay or ore rich in aluminum, chloride of sodium, borax, and fluorspar, and then placed in a blast furnace with alternate layers of fuel. The aluminum is readily reduced and combines with the other metal or metals. The alloy formed in the case of iron and aluminum has a low melting point, and can be also produced in an ordinary reverberatory furnace without the use of a blast. The gases issuing from the throat of the furnace are passed through water to retain any products carried off by them.—*L. Q. Brin, Paris, France*.

Securing Foreign Patents.

The *Journal of Useful Invention* contains the following:

The American patent law contains a special provision in favor of the inventor who desires to secure patents in other countries, namely: It provides that after a home patent is allowed, the application may remain in the secret archives of the Patent Office for a period not exceeding six months, thus enabling the inventor to arrange for his foreign patents in advance of all other patents. But if the inventor permits the American patent to issue before he has applied for foreign patents, he loses the opportunity of obtaining them; for in most countries the patent is invalid if previously patented elsewhere. The inventor is thus deprived of the credit and emoluments that he might easily have secured. Many valuable patents have thus been lost to their inventors in European countries. Such is the prestige and fame for ingenuity which Americans enjoy in Europe, that good American inventions are in demand, and if proper steps are taken may be quickly introduced and rendered profitable. The expenses of procuring patents in Europe having been greatly reduced, the obstacle of cost no longer stands seriously in the way of the American patentee. The following schedule shows the best countries in which to take patents:

Countries.	Patent applications (including agents' fees).	Population.
Great Britain and Ireland*	\$100	40,000,000
Germany	100	45,000,000
France and its colonies	100	78,000,000
Belgium	100	6,500,000
Spain and its colonies	100	26,000,000
Austria-Hungary	100	38,000,000
Italy	100	30,000,000
Russia and Poland	250	108,000,000
Sweden	100	4,700,000
Norway	100	1,700,000
Portugal and its colonies	400	4,700,000

* Each of the British colonies has its own patent law.

—Bradstreet's.

Apprentices.

The *St. Paul Pioneer Press* thinks the apprentice question will not wait much longer for a hearing. The right to earn a living by honest labor is as fundamental as any right can be. But when the trades are hedged about with rules which limit the number of apprentices when the lists are complete, and when the ranks of unskilled labor are full, then the surplus boys are ordered off the earth. There is no place for them, and their only possible chance for existence is in begging or crime. When the trades unions set up their rules limiting the number of apprentices to be taught their trades in any shop, they did it for the purpose of preventing the market being overstocked with skilled labor, and the consequent reduction of wages from an over-supply. But the rule has had no such effects. It has not lessened a whit the number of skilled workmen. What it has done and all it has done has been to prevent the sons of Americans, both native and adopted, from learning their fathers' trades. It has had the inevitable result of forcing our men, who might be earning from \$15 to \$30 per week as skilled artisans, to accept salaries of from \$5 to \$10 as clerks or salesmen or bookkeepers, or, worse than that, to compel them to live a hand-to-mouth sort of a life, doing anything or nothing, as their lack of training to any sort of work rendered imperative. Our workshops have not fewer mechanics in them than if there had never been a rule against apprentices. There was the demand for skilled workmen, and there being not a sufficient supply here, our employers readily got it from abroad. They are constantly getting skilled workmen from over the sea, who come here and take the places which the sons of our workmen should be permitted to take, should, indeed, be welcomed to. That our streets are so full of idle, vicious young and middle-aged men is chiefly due to the extinction of the apprentices in our workshops.

Rats' Tails.

M. Bert sewed the tip of the tail into the back of the rat. After it had taken root in its new position, he cut it off close to its original point of insertion. The rat now wore a tail reversed in position, the former tip being the root. After some time it was found that the new tail was sensitive. Conclusion, the nerves of sensation can carry impulses each way. Dr. Koch has recently performed this experiment on forty rats. In thirty cases the tails united satisfactorily, but never, even eight months later, was any sensation present in the new appendage.