ferro manganese will become quite in large demand, and hence give ample employ to any company undertaking the special manufacture and application of it. The following is what this French company proposes to undertake:

1. The sale and manufacture of alloys of iron and manganese. 2. The application of those alloys to the production of metal with all the properties of mild steel. 3. The application of these alloys to the production of steel more or less phosphoric, either by the Bessemer or the Martin-Siemens process. 4. The fixing and making of all plant suitable for these productions and applications.

SCIENTIFIC AND PRACTICAL INFORMATION.

THE NEWLY DISCOVERED CRATER OF MAUI.

Mr. T. M. Alexander, in a letter to the *Hawaiian Gazette*, gives an interesting account of his discovery of very remarkable volcanic phenomena on West Maui, one of the Sandwich Islands. He found a crater in which were nearly a score of volcanic pits, not cones, from fifteen to fifty feet broad, and ten to twenty feet deep, with shrubbery within concealing the chasms below. From six of the pits columns of steam or smoke were rising, which were destitute of sulphurous fumes and had very little warmth. It is believed that these pits are connected with subterranean chambers heated by volcanic action, and that the air arising from the warm depths on a cold morning becomes changed to fumes of steam. No similar instance is found on any of the islands except Hawaii.

PROGRESS OF THE EAST RIVER BRIDGE.

Work upon the great suspension bridge between Brooklyn and New York, which has been temporarily suspended, is now resumed. The Brooklyn tower has reached an elevation of 222 feet above high water mark, leaving 40 feet of masonry yet to be laid. The workmen are engaged upon the arches, several courses of which are in position. The keystones will weigh ten tuns each, and constitute the heaviest blocks in the structure, the ordinary stones weighing some three tuns. It is expected that before winter the "saddles" or castings over which the cables will pass will be in position.

The New York tower is now 123 feet high, and will probably reach 200 feet during the present season. The anchorage on the Brooklyn side is 6 feet high, and contains 8,334 cubic feet of masonry. Its total elevation will be 66 feet. On the New York anchorage, or on the approaches, work has not yet been begun.

THE GERM THEORY OF DISEASE.

That hay fever, a disease quite prevalent during the present month, is traceable to vegetable organisms, is a curious discovery, tending toward the confirmation of the theory that disease is originated and propagated by independent organic germs, recently made by Professor Binz, of Bonn. The investigator has been himself subject to the malady, and has pursued his researches over a number of years.

On examining the nasal secretions with a powerful immersion lens, he found the organisms to be absent except when the disease attacked him during spring. Then the parasitical bodies were clearly seen in motion, vibrating on the slide and increasing in size after several days. By using a neutral solution of sulphate of quinine, applied by the nasal douche, Professor Binz found that the animalcuæ were completely destroyed, and that subsequent examination failed to show their existence in the secretions.

A SIMPLE ANALYSIS OF ARABLE EARTH.

M. Schlösing gives the following simple process for separating the clay in soils from other constituents, and consequently for determining the quantity of the former present.

The earth is thrown in water and the calcareous matter is eliminated by means of hydrochloric or other suitable acid. The carbonate of lime and humic acid, found in nearly all vegetable earth, hinders the clay from remaining in suspension in the water, and it is hence precipitated. By treating the liquor with ammonia, the humic acid is removed. The residue is composed of sandy matter and clay; but the former falls to the bottom, leaving the clay in suspension in the liquid, from which it may be separated by decantation. This method, though almost mechanical, it is said, will prove of much value to agriculturists. M. Schlösing has found that earths, considered argillaceous, in some cases contained little over 2 or 3 per cent of clay, while others, supposed to be composed almost entirely of that substance, contained but 30 per cent.

CORROSION OF TIN.

Tin is generally regarded as the least liable to change of all our common metals; but a case, recently reported to the American Academy of Arts and Sciences by Mr. S. R. Sharples, State Assayer of Massachusetts, cites a circumstance which appears to be wholly contradictory to such a theory. A tank, belonging to an hotel in Collinsville, Conn., was lined with block tin containing less than 2 per cent of impurities. Some time after the construction of the receptacle, white deposits were noticed upon the lining, and the owners, fearing that the water might be rendered deleterious, sent specimens of the powder and of the water to Mr. Sharples for analysis. The white powder proved to be oxide of tin with a mere trace of iron, and the water, which was led to the tank through 100 feet of lead pipe, was entirely free from the latter metal.

During the month of March last, an interval of nearly two years having elapsed since the above examination and the tank lining being some five years old, the proprietors called Mr. Sharples' attention to the fact that the lining had become perfectly riddled by corrosion, and this although there had been a free and constant circulation of fresh water, an analysis of which showed even better results than before. There were 4·20 parts of inorganic matter and 0·80 parts of organic matter in 100,000, and no nitrates were present.

This extensive corrosion can hardly be accounted for, as the weight of present authority points strongly to the unalterability of tin under similar circumstances.

Sir Charles Fox.

Sir Charles Fox, the distinguished civil engineer, died recently in England, aged 64 years. He was an assistant to the celebrated Robert Stephenson, by whom he was appointed assistant engineer of the London and Birmingham railway when that work was begun. Mr. Fox's greatest engineering work was the construction of the building for the Great Exhibition in Hyde Park, London, in 1851. He received the honor of knighthood in recognition of the genius and skill exhibited in this magnificent structure. He also re-constructed the same building for the Crystal Palace at Sydenham, and executed many extensive railway and other engineering works. He was the senior partner in the firm of Sir Charles Fox & Sons, civil engineers.

Hospital Hygiene.

Dr. Alphonse Guérin, an eminent surgeon of the Hotel Dieu in Paris, has recently presented to the French Academy of Sciences a remarkable memoir on the influence of atmospheric germs on surgical maladies, in which he strongly advocates tow dressings for wounds. He states that, when this material is packed upon the injured part, the pus is completely preserved from putrid fermentation. He uses the tow in brief as a filter for the air, which circulates freely through it, and in fact produces an arrangement precisely analogous to the cotton wool respirator mentioned by Professor Tyndall in his paper on haze and dust.

DECISIONS OF THE COURTS.

United States Circuit Court---Southern District of New York.

PATENT HAIR NET.—JOSEPH DALTON *vs.* ABRAHAM G. JENNINGS.

[In equity.—Before Blatchford, Judge.—Decided May 21, 1874.]

Blatchford, *Judge:*

This suit is brought on letters patent granted to the plaintiff March 5 1872, for an "Improvement in Ladies' Hair Nets." The specification says: The claim is a head or hair net, composed of a main set of meshes fabricated of coarse thread, combined with an auxiliary set or sets of meshes fabricated of fine thread, substantially as described.

The tenor of the specification and claim show that the intention was to have the claim cover broadly a head or hair net composed of a main set of meshes fabricated of coarse thread, combined with an auxiliary set or sets of meshes fabricated of fine thread, without reference to the degree of fineness of the finer threads, and without reference to the manner of tying the finer threads to the coarse threads. The history of the steps which led to the making, by the inventor, of the net described in the patent shows that he started with a net of large squares made by large threads and filled up partially the large squares by crossings of finer threads But the net thus arrived at was not a different net from what would have resulted if he had taken a net of small squares, sufficiently small to keep short hairs from protruding, such small squares being formed by fine threads, and all the threads of the net being of uniform size, and had substituted for each alternate fine thread, in both directions, a coarse thread, so as to arrive at a net like the patented net. Now, such a head or hair net, of small squares sufficiently small to keep short hairs from protruding such small squares being formed by threads which were so small as to be entitled to be called fine threads, and were at a certain and reasonable distance away invisible, all the threads of the net being of uniform size, existed prior to the plaintiff's invention. It is defendant's exhibit No. 10. In such a net, to substitute for each alternate fine thread, in both directions, a coarse thread, cannot be the production of a new article of manufacture. Such substitution produces the patented net. It may be new as a design, and may be entitled to be patented as a design; but it is not a new article of manufacture. The specification sets forth, as the advantages of the patented net, only the preventing of the protruding of short hairs and the invisibility of the fine threads. But any person has a right to make defendant's exhibit No. 10 of as fine threads as should be desirable, and to make it of uniform finer threads or of uniform coarser threads would involve no invention. As it stands, it will prevent short hairs from protruding. The substitution of alternate coarse threads in it for the fine threads has no effect one way or the other on the protruding of short hairs or on the invisibility of the fine threads. No point of advantage as between the patented net and defendant's exhibit No. 10 is or can be suggested, except as to mere ornament or taste or outline in pleasing the eye. The fabrics, as to utility, structure, inherent qualities, and mode of operation in use, are the same. The patented net, in view of the former net, has no patentability, if the claim of the patent is to be construed in the broad manner before suggested

If the claim, to sustain it in view of the former net, is to be limited to a claim to the combination of two sets of threads when they are so connected with each other that either set can be entirely broken away without destroying the other, then the defendant has not infringed. The defendant's net although it has a series of finer threads crossing each other between the coarse threads, so as to prevent short hairs from protruding, does not have its threads so connected that either set can be entirely broken away without destroying the other.

The bill must be dismissed with costs.

[*J. Van Santvoord* for the plaintiff.
A. V. Briesen for the defendant.]

NEW BOOKS AND PUBLICATIONS.

THE TUNNELS AND WATER SYSTEM OF CHICAGO—Under the Lake and Under the River. Illustrated. Chicago: J. M. Wing & Co.

This handsome volume gives a complete and interesting account of the extensive system of tunnels in Chicago, by which water supply and subaqueous communication is obtained in that enterprising city. It is written throughout in a loquacious, humorous style, and contains several engravings that are even more comic than the literature.

KINDERGARTEN TOYS, AND HOW TO USE THEM. A Practical Explanation of the First Six Gifts of Fröbel's Kindergarten. By Heinrich Hoffmann. New York: E. Steiger, 22 & 24 Frankfort street.

This book contains full explanations of the *kindergarten* apparatus, which, on account of its simplicity, gradual progressiveness, and accuracy, is the most effectual method of imparting instruction to very young children, and has the especial merit of being thoroughly amusing to the little pupil. The child's eye is taught to distinguish form, color and number, by playing with such toys as are usually given to the merest infant.

THE AMERICAN YACHT LIST FOR 1874, containing a Complete Register of the Yacht Clubs of the United States and Canada. Compiled by Niels Olsen, Steward of the New York Yacht Club. Price $1. New York: L. H. Biglow & Co., 13 William street.

In addition to the information specified in the above title, this well arranged volume contains illustrations of all the ensigns and signals of the various yacht clubs.

THE PRINCIPLES OF SCIENCE—A Treatise on Logic and Scientific Method. By W. Stanley Jevons, M.A., F.R.S., etc. Special American Edition. New York: Macmillan & Co.

In his "Scientific Use of the Imagination," Professor Tyndall has, in popular language, conveyed a clear idea of the mental processes by which the investigator is enabled to proceed from the known to the unknown He briefly touches upon the course of reasoning which detects analogies leading to a great discovery, or upsetting, in the end, pre-existing and accepted theories; but he necessarily does not conduct us into the details, or trace, step by step, the general logical and systematic operation of the mind by which certain and absolute results are alone reached. This lacking need in our scientific knowledge, Professor Jevons has supplied in the work before us—a volume which should command the careful study of those whose object is that cardinal aspiration of the modern scientist—original research and discovery. The author describes his book as "a simple and general description of the devices by which exact measurement is effected, errors eliminated, a probable mean result attained, and the probable error of that mean ascertained." He illustrates the conditions and precautions requisite for accurate observation, for successful experiment, and for the sure detection of the quantitative laws of Nature. In a word, he tells us how to question Nature in order to obtain those responses which of all things are alone infallible.

A UNIVERSAL TABLE FOR EXCAVATIONS AND EMBANKMENTS, applicable to any Base or Slope Whatever; and the Calculations of All Solids to which the Prismoidal Formula is Applicable. By William Zimmerman, C. E.

This is a very elaborately calculated table of the measurement of earthwork, applicable to every possible configuration of cross section of cuttings and embankments. It is well illustrated with diagrams, showing its universal use for the work for which it is intended, and for which engineers and contractors will find it especially valuable.

The sixth volume of the new edition of the AMERICAN CYCLOPÆDIA, published by Messrs. D. Appleton & Co., of this city, has recently appeared. We know of no work in which there is a more copious supply of information, brought down to the latest dates, or in which the possessor can be more truly said to have placed at his disposal a digest of everything that has been written upon almost every conceivable subject. The volume before us is particularly rich in its scientific department. There are four astronomical papers by Professor Proctor, and a number of exhaustive chemical articles by Professor Joy; while the treatises on physical and medical topics are from the pens of Drs. Hogeboom, Clarke, Flint, Dalton and Edes, and Professors Abbé, Hunt, Kneeland and others. Count Pourtalés, of the Coast Survey, contributes a valuable account of deep sea dredging, in which is contained a *resume* of the most recent investigations of the ocean bed and its odd inhabitants. Volume VI., like its predecessors, is copiously illustrated with excellent engravings, a feature of much value, and tending to give additional interest to the subjects treated of in the text.

The July number of that admirable children's magazine, ST. NICHOLAS, is superlatively good. The literature for the youth of this country is, as a general rule, so much of the morbidly mawkish order—we know of no better term to express its nature—treats so much of those intensely well behaved children who are always doing such exasperatingly charitable and aggravatingly good actions—that we feel a genuine satisfaction in turning over the pages of a work that tells the youngsters stories which we know they will read and reread until the very paper becomes worn and limp with innumerable fingermarks. While none believe in making piety and upright living more attractive to the children than ourselves, we have no patience with the trash which aims to convert a healthy, rosy-cheeked, earthly imp into an incipient theologian or a pocket model of sanctity whose joys are not of this world, and whose existence is mainly spent in "getting licked" and thereupon tearfully forgiving his aggressor. The issue of ST. NICHOLAS before us has an excellent story, by Bret Harte, about a juvenile bear, which will provoke many a hearty laugh, and to which Beard, the artist, contributes a sketch of the hero, drawn as only he can draw bears. Then there is a table of contents and a lot of pictures, which we cannot pretend to describe, but which are sure to delight the young ones, and the old ones for that matter, too. Besides, as if all this were not enough, ST. NICHOLAS proudly announces that, not content with swallowing "Our Young Folks" some time since, he has exercised his cannibalistic propensities on the "Children's Hour," and, in the future, will have a three-fold claim upon the notice of his juvenile readers. If we were a youngster, we think we should tease hard for the necessary three dollars for a year's subscription, and lose not a moment in forwarding the money to Messrs. Scribner & Co., at 654 Broadway, New York.

SCRIBNER'S MONTHLY, for July, opens with a continuation of Edgar King's Papers on the Great South, in which the history, resources, and enterprise of Missouri are described with considerable detail. Professor Hartt contributes a valuable article on "The Shakspeare Death Mask," which is copiously illustrated, and which gives many interesting facts regarding the existing and much disputed likeness of the great poet. More instalments of the serial stories, including Jules Verne's fanciful account of the Mysterious Island, a few choice poems, and other interesting matter, besides the usual Editorial Miscellany, complete a varied and excellent table of contents. Subscription $4 a year. Published by Scribner & Co., 654 Broadway, New York.

SCRIBNER'S MAGAZINE for July contains an excellent variety of contents, among them illustrations of the Heart of the Republic, which refer especially to the City of St. Louis, and include a view of the new bridge at that place.

GODEY'S MAGAZINE for July is as attractive as ever. This number is the first of the forty-fifth year of the work.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From May 22 to May 28, 1874, inclusive.

CARBURETTING AIR, ETC.—J. M. Cayce, Franklin, Tenn.
CAR COUPLING.—W. Todd, Portland, Me.
IRON AND STEEL MANUFACTURE.—E. Peckham, Antwerp, N. Y.
MOWER AND REAPER.—W. A. Wood, Albany, N. Y.
REDUCING IRON ORES, ETC.—N. W. Wheeler, New York city.
SPINNING AND WINDING FIBERS, ETC.—G. Draper *et al.*, Hopedale, Mass
STEEL SHOVELS, ETC.—T. J. Blake, Pittsburgh, Pa.
STRAW FABRICS, ETC.—N. A. Baldwin, Milford, Conn.
TOY.—W. W. Rose, New York city.
YEAST POWDER, ETC.—E. P. Eastwick, New York city.
WOOL CARD EVENER.—F. F. Burlock, Birmingham, Conn.

Recent American and Foreign Patents.

Improved Building Block.

Thomas B. Rhodes, Leetonia, O.—This invention relates to an improved building block formed of concrete or other material, which in its plastic condition may be molded into the required form, and will become sufficiently hard and durable for making permanent fireproof walls or structures. Hollow spaces extend through the blocks from bottom to top, to make hollow walls. The parts by which the two sides of the blocks are connected are arranged sufficiently distant from the ends to form grooves therein, in which tongues on other blocks will fit to lock the blocks firmly together. A groove may be formed in one end of a block and a tongue in the other. These grooves and tongues may be in dovetail form. Long binders of wood or iron, extending from end to end of a wall at the top, or from bottom to top, are used. The openings in the top blocks may be arranged so that hot air admitted to them may circulate throughout the spaces in all outside walls, and in partitions, if preferred, for heating the rooms. In laying up a wall, it is proposed to enclose each layer temporarily in a casing of wood, and pour in hot cement to flow into the interstices and fill them up and unite the blocks.

Improved Electrical Condenser.

Charles A. Browne and Isaac S. Browne, North Adams, Mass.—This invention relates to the construction of Leyden jars or condensers, composed of indiarubber plates with embedded tin foil sheets; and it consists in so constructing the condenser in sections that, in case a rubber plate is ruptured by a spark, the damage can be repaired by simply readjusting the sections, or, at most, by the loss of a section only instead of the whole jar, as when all the plates are vulcanized together.

Improved Trunk.

William J. Large, South Brooklyn, N. Y.—To the till of the trunk are attached bars, which slide up and down in ways in the trunk body. By suitable mechanism, by raising the lid to open the trunk, the till will also be raised, giving convenient access to the interior. When the lid is raised, a slotted bar drops over a screw to support the said lid and the till. Arrangements are connected with the till to adapt the same for use as a writing desk.

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