A MICROSCOPIC AQUARIUM.

Our engraving represents a microscopic aquarium, such as would be seen if there could be embraced, at a single view in the instrument, the majority of objects examined by the microscopist, when the wonders of the infinitely little world existing in stagnant fresh water are studied.

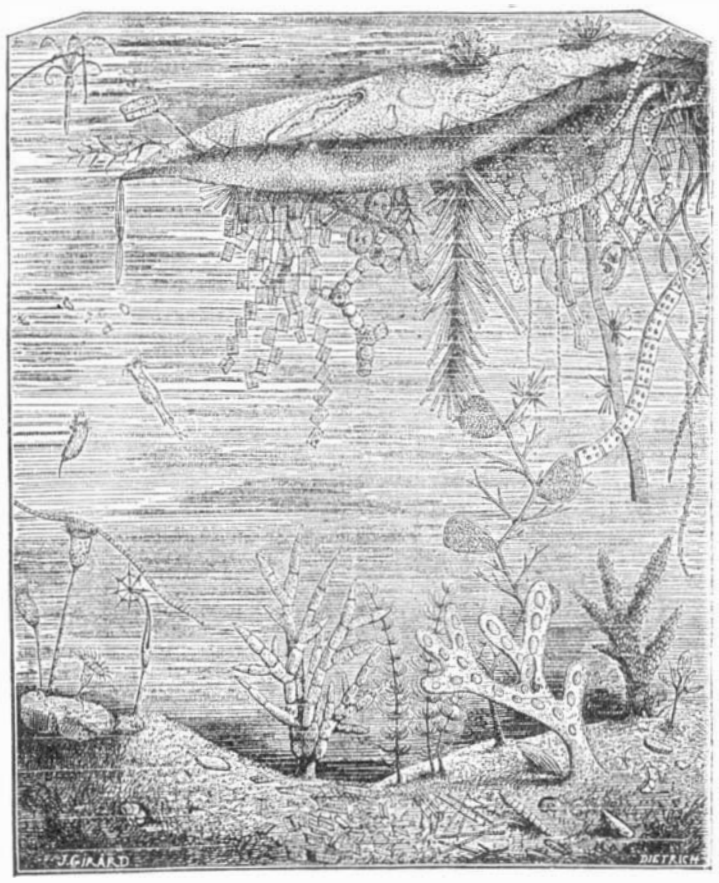
The illustration, for which we are indebted to *La Nature*, though presenting a somewhat fantastic appearance, is, nevertheless, simply a combination of separate observations. The objects were drawn from their images on the field of the microscope, and then grouped so as to show their positions during the natural state.

All have their names. At the upper portion of the picture is a scrap of reed stem, a thin branch like a stalk of straw, beneath which a crowd of *confervæ* have sought shelter against the agitations in the water. The parasite life of the latter is necessary for their existence, because of their extreme delicateness. The diatoms, which are placed beside the *confervæ*, are represented in their natural state, that is, pendent in bunches. The *diatoma vulgaris*, which is the variety shown, is found in so great abundance that hundreds of thousands are often united in a single group. They propagate themselves in indefinite clusters, united by delicate though strong membranes.

At the lower part of the aquarium are shown *confervæ* less elementary than those above. These do not become parasites, and, in fact, have some relation to aerial vegetation. Such are the *characæ*, the *batrachospermæ*, and the multitude of *algæ*, which are often taken for simple mold. In the midst of the vegetation, which appears to belong to another world, are infusoria of all sizes, from the proteus, a mere gelatinous mass, to the superior organisms furnished with exterior members.

If the infinity of forms which aquatic vegetables assume in some stagnant pool be examined, it will be found that all the floating bits of stick and the stalks of the weeds growing in the water are covered with a light brown and adherent slime. This is composed of a mass of *confervæ*. If one of these stalks be removed and placed in a flask of clean water, it may be transported and submitted to scrutiny under the microscope, when nearly all the species represented in our engraving will be recognized. Sometimes the observer will see a *spirogyra* with its heliocoidal shape of a brilliant green, sometimes scattered diatoms. Frequently hideous infusoria suddenly appear, a mass of gelatinous substance, in the midst of which something resembling viscera may be traced.

Microscopy is one of the most beautiful studies in the world; and to those of our readers whose coming summer will be passed in the country, we would recommend the purchase of a moderate priced instrument. To one not familiar with its revelations, the microscope opens a new world, and, in the drop of stagnant water, in the grain of earth, and in the leaf, shows wonders which are a constant source of surprise and admiration.



A MICROSCOPIC AQUARIUM.

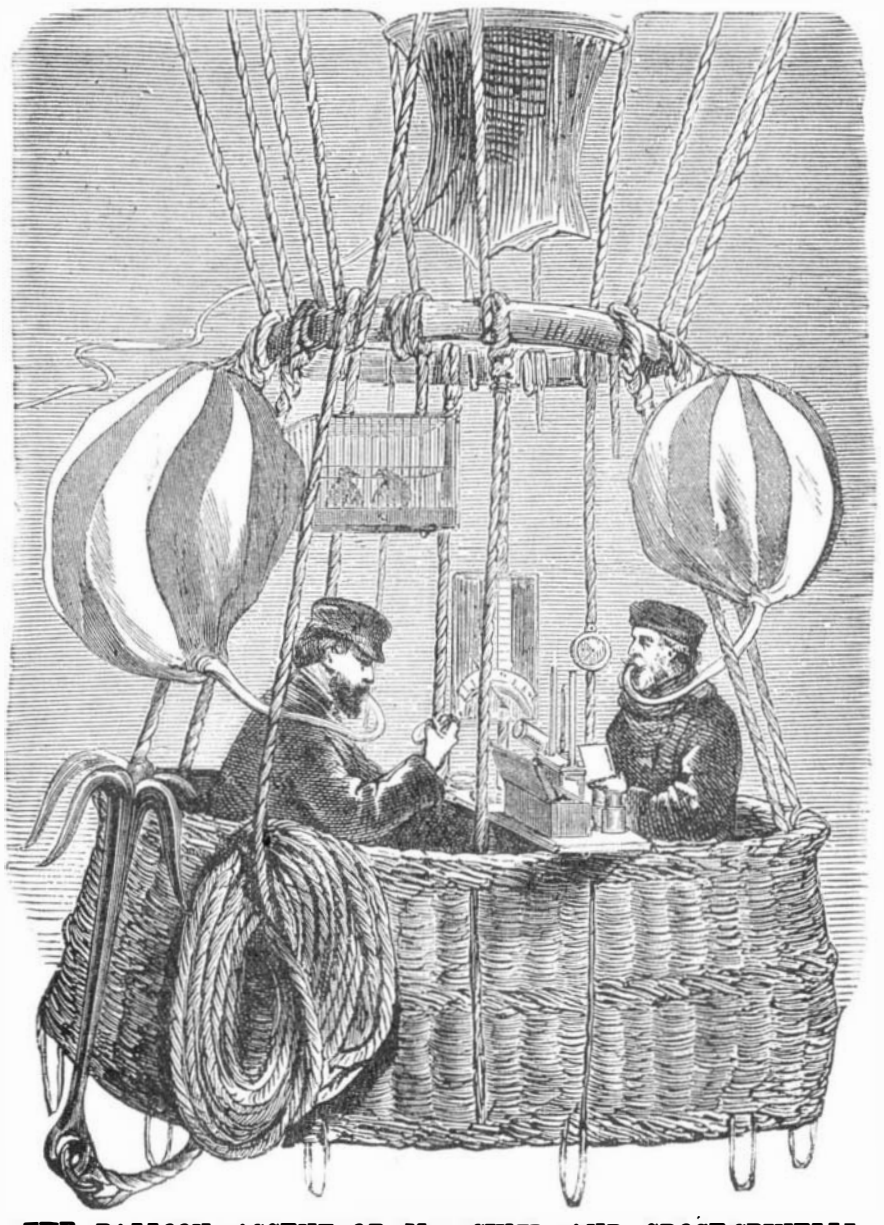
REMARKABLE BALLOON ASCENT.

Aerial navigation, since Science has utilized the balloon for the purpose of observation and investigation, has received a fresh impetus. Though Biot and Gay Lussac, as early as the year 1804, gave the first impulse to the employment of balloons for scientific research, it was not until the British Association for the Advancement of Science laid down (in Leeds, in 1858) the first systematized plan that regular balloon ascents were undertaken. Among a number of very valuable results ascertained thereby, the existence of a warm current of air, which sweeps (at an altitude of about 18,000 feet, and with a vertical magnitude of 2,000 feet) from the southwest to the northeast, in about the same direction as the Gulf Stream, has been discovered.

The French have hitherto undoubtedly held the foremost rank in aerial navigation. They showed, during the siege of Paris, the practical value of the balloon. The French papers are now seriously discussing a proposition for transferring the work of the surveyor to the aeronaut. It has been found necessary to revise the real estate maps throughout France, and it is proposed that an aeronaut should take a photograph of each tract or section, which would, after being suitably enlarged, exactly indicate the contour and features of the district. This may be practically accomplished, as such photographs have already been made from a balloon; but the expense of carrying such a plan into execution, being estimated at about three and a half million dollars for the whole country, is so large that the work may at present be done at less cost by a surveyor.

MM. Croce-Spinelli and Sivel made, on March 22, a balloon ascent under the auspices of the Society for Aerial Navigation, to which we alluded on pp. 280 and 337 of our current volume. We give an illustration showing the aeronauts in the car. They carried with them, as we have stated, a considerable quantity of oxygen, inclosed in suitable vessels, and inhaled by means of a tube. By similar means life can be supported at an altitude where the rarity of the atmosphere is such as to make breathing impossible. This latter was the main obstacle to higher ascents, and it has now been successfully overcome, and it is possible to remain at altitudes of 30,000 feet as long as the oxygen lasts.

Of the many observations which were made by these aeronauts at hights up to 21,000 feet, we will mention only two. At 12,500 feet above the earth, they passed a cloud of suspended ice crystals, which glittered in the sun, but were so perfectly translucent that a clear view of the panorama below the balloon was seen, and it was not in the least blurred. The second point is one of great importance. The lines indicating water in the solar spectrum have created much discussion; and Father Secchi argued that they were watery evaporations from the sun, while others assert that they are moist vapors in our atmosphere. The latter view is now known to be the correct one, as the solar spectrum showed, in the dry air of the upper altitudes, no water at all.



THE BALLOON ASCENT OF MM. SIVEL AND CROCE-SPINELLI.

Stalactites from Masonry.

The North Bridge, which spans the deep valley lying between the Old and New Towns of Edinburgh, Scotland, was built upwards of a hundred years ago. Between the arches of the bridge and the roadway above are a number of chambers or vaults which have not been opened, till recently, since the bridge was built. One of them has been visited by Professor Geikie, who says:

"From the vaulted ceiling, and especially from the joints of the masonry, hung hundreds of stalactites—delicate spar icicles of snowy whiteness. In many cases they reached to the floor, forming slender thread like pillars. Usually they were slim stalks, somewhat like thick and not very well made tobacco pipes; but towards the sides of the vaults they became thicker and stronger, one which we carried off measuring about four feet in length, and as stout as an ordinary walking stick. The same material as that forming the stalactites spread in ribbed sheets down the sides of the vault. The floor, too, was dotted all over with little monticules of the same snow-white crystaline spar.

"A more illustrative example of a stalactitic cavern could not be found. The whole process was laid open before us in all its stages. Along the joints of the masonry overhead could be seen here and there a drop of clear water ready to fall. At other places the drop hung by the end of a tiny white stone icicle, to which it was adding its own minute contribution as it evaporated. From the mere rudimentary stumps, the stalactites could be traced of all lengths until they were found firmly united to the spar hillocks on the floor. Every one of these hillocks, too, lay directly beneath the drip, catching the remainder of the stone dissolved in the dropping and evaporating water. In every case the stalactites were tubes; even the thickest of them, though it had undergone great changes from deposit on its outer surface, retained, nevertheless, its bore. Usually there hung a clear water drop from the end of the stalk, ready to descend upon its white stony mound beneath.

For a hundred years this delicate tapestry has been hanging and growing, and breaking and growing again, quietly in darkness, beneath the grind of our carriage wheels, and yet high in air, with the stream of human life flowing underneath it too.

"As the bridge is built of sandstone, wholly or almost wholly free from lime, it is evident that the material which has converted these vaults into such picturesque caverns has been derived from the mortar. All rain water, as is well known, takes up a little carbonic acid from the air, and of that acid there is in the air of a town usually more than the normal proportion. Filtering through the masonry, it dissolves the lime, carrying it downward in solution, and, if made to halt and evaporate, depositing it again in the form of the white crystaline substance which we call spar. It would be a curious question for the architect how long his masonry could resist this action. Certainly, in spite of what these vaults in the North Bridge reveal, the masonry of that structure is, to all appearance, as solid and firm as ever. It is evidently impossible, however, that the mortar, if necessary at all, can be piecemeal removed without in the end causing the destruction of a building."

Oyster Culture in America.

Frank Buckland, in *Land and Water*, says:—"As regards the cultivation of the New York oysters themselves, I must again hold up a warning hand to American proprietors. If they go on with the present system, the oysters will shortly run short. I protested, some months back, against burning the culch old shells for lime, instead of putting it back to catch spat; and now I find they are selling their broods attached to the parent shell. I have picked out specimens from the tub at Scott's, at the top of the Haymarket. On the two shells of one edible oyster there were no less than twenty-three spats. In another case I counted a "clump." Two edible oysters only were in this clump, but it was covered all over with spat; so that for the sum of 4 cents, between thirty and forty oysters were sold all at once, only two being edible. The tub at Scott's was piled with examples of this "economy." I trust the American oyster dealers will not take it amiss if I warn them that, if they sell their young stock in this wasteful manner, they will soon be suffering from an oyster famine."

Butterine---Artificial Butter.

J. Campbell Brown, D. Sc., says that a chemist, seeing the word butterine, would be apt to suppose that it is a misprint for butyrin, but it is not so; it is the registered name under which substitute for butter is introduced in this country from New York. [Known in New York as artificial or suet butter]. Its general appearance, taste, and consistence are very similar to those of ordinary butter; but notwithstanding that its solidfying point is lower than that of some butters, it retains much of the peculiar crumbly texture and fracture of dripping.

Examined, it gives the following results: It softens at 78° Fah., and melts at 86°; when heated and slowly cooled, it obscures the thermometer at 62°, and solidifies at 60°: It contains:

Water	11·25 to 8·5
Salt	1·03 to 5·5
Curd	0·57 to 0·6
Fat	87·15 to 0·6
Coloring matter	— —
	100·00

The fat consists of olein, palmitin, margarin (?), a trace of stearin, and about 5 or 6 per cent of butter. When dissolved in about four times its weight of ether, and allowed to evaporate spontaneously, it does not deposit any fat until more than half of the ether has passed off, and, if the temperature is not below 60°, the deposit is not solid. The first deposit, when dried, fuses at 108°; the second deposit fuses at 88°, and solidifies at 64°.

Under the microscope, butterine does not appear to consists of acicular crystals of fat, but of irregular masses containing a few butter globules, particles of curd, and crystals of salt. With polarized light, the irregular crystaline structure is beautifully seen, and is clearly distinguishable from butter which has been melted and recongealed. When old and rancid, it acquires the odor and taste of dripping, but it keeps longer undecomposed than butter. When fresh, it is a wholesome substitute for real butter; and if not brought into the market as butter, no one can reasonably take exception to its sale.

Butterine may be selected by the following characters:

1. Its crumbly fracture.
2. Its loss of color when kept melted for a short time at 212°.
3. The behavior of its etheeral solution.
4. Its action on polarized light.

Wheelerite, a new Fossil Resin.

During the past season's field work of the explorations and surveys west of the 100th meridian, under the command of Lieutenant George M. Wheeler, to which expedition I was attached as chemist, many interesting chemical facts were observed. Among these may be mentioned the occurrence of a new fossil resin, whose name heads this article. This resin, which is yellowish in color, was frequently found in the cretaceous lignite beds of northern New Mexico, filling the fissures of the lignite, and even interstratified in thin layers with the same. More of this substance was seen in the vicinity of Nacimiento than in any other locality. The strata of lignite, slate and clay, in the numerous sandstone mesas of this region, are plainly to be seen in passing by. The behavior of this resin with reagents and the analysis made proves this to be a new compound, heretofore undescribed.

On treating the resin with alcohol, the principal portion is readily dissolved, while a small part remains insoluble. The hot alcoholic extract of the resin deposits, on cooling, a few yellow flocculi. After the separation of the solution from these flocculi, there remains, after evaporation, a yellowish resin, which is very brittle and becomes strongly electric on friction. This resin melts at 309° Fah. At a higher temperature it emits an aromatic odor, burns with a smoky flame, and leaves a voluminous coal behind.

It is soluble in ether, less so in bisulphide of carbon. It dissolves readily in concentrated sulphuric acid, producing a dark brown solution. From this solution water precipitates it. It forms a compound with potassa in aqueous solution, and is precipitated by acids unchanged. Strong nitric acid readily oxidizes it, with the evolution of nitrous fumes.

0·106 grm. gave 0·284 carbonic acid and 0 076 water.
0·101 grm. gave 0·270 carbonic acid and 0·071 water.

The data give the formula C_5H_6O.

	Theory.	Experiment. I.	Experiment. II.
Carbon,	73·11	73 07	72·87
Hydrogen,	7·31	7 95	7·88
Oxygen,	19 58		

The true molecule of the resin is probably 5–6 times larger than the above formula expresses. Many fossil resins have been investigated; but none identical with the above, so far as known, has been described.

The retinic acid of Johnson, which he obtained by extracting the retinasphalt of Bovey with alcohol, is the only combination that bears a resemblance to the substance under discussion. This has the formula $C_{40}H_{45}O_6$, is slightly soluble in alcohol, readily so in ether, and melts at 248° Fah.

I have taken the liberty of naming this new mineral after Lieutenant George M. Wheeler, Corps of Engineers, U. S. Army, the honored and energetic leader of the expedition to which I am attached.—*O. Loew.—American Journal of Science and Arts.*

GILDING ON ZINC.—C. D. Braun dissolves sulphide of gold in sulphide of ammonium, and deposits a layer of gold upon pieces of clean zinc plunged into it, the air being excluded as far as possible.

Acoustics in Public Buildings.

A. W. C. states the inability to hear distinctly in our public buildings is due to the architects, and that those gentlemen should remember that an ounce of prevention is worth more than a tun of cure. "Please advise any of your friends who contemplate building a church, hall, lecture room, or other public building, to observe the following rule, and they will find the principles thereof to be true:

"Let the whole structure be held in entire subserviency to the auditorium, regardless of needless ornamentation, and let the clear inside lines thereof be as follows: Make or take the whole length as one sum in feet, make the whole width one half that sum, and the whole hight, to the center of the ceiling, one half of the latter sum."

Interesting Legal Decision.

A St. Louis court, says *The Trade Bureau*, recently made the following decision as to how far an employer is answerable for injuries received by an employee in his service. The court said: While an employer is an insurer of the safety of his employee, as far as the apparatus and machinery are concerned, and for injuries received when the employee is unconscious of the defects in the apparatus, yet if the employee knows of the defects, and continues to work and incur the risk, he must take the consequence of his own negligence. This view is sustained by recent decisions of the Supreme Court, and by the General Term of the Circuit Court. In a case where a laborer was injured by the breaking of a worn out rope, it was decided that he could not recover, as he knew the condition of the rope, and continued to use it at his peril.

A MADEIRA correspondent of *Nature* writes concerning the damage caused to objects of natural history from cedar wood cases. A naturalist in Madeira, to do his collection of the remarkable land shells of the island more honor, had made for them a case of this wood. Unobserved for a month, the shells were found drenched with the turpentiny resin exhaling from the wood. Shells covered with a rough epidermis seemed to have attracted the oil less. *Craspedopoma* and the smooth fresh water shells had especially suffered; semi-fossils full of sand had escaped; all others, whether recent or semi-fossil, had suffered to such an extent that the cardboard to which they were attached was in many cases soaked. This occurred, however, only when the affixed shells offered the needful point of attraction and condensation.

DECISIONS OF THE COURTS.

United States Circuit Court.---District of Massachusetts.

PATENT RUBBER DENTAL PLATES.—THE GOODYEAR DENTAL VULCANITE COMPANY *et al. vs.* DANIEL H. SMITH.

[In equity.—Before Shepley, Judge.—Decided May 8, 1874.]

This is the famous patent which covers the manufacture of dental plates of rubber. It has for a long time been obstinately resisted by the dental profession, as the holders of the patent impose a high tariff upon practitioners who use it. Nearly all dentists find it necessary to employ the rubber plates, and the patent monopoly is considered burdensome and unjust. It will be seen that the Court again sustains the patent, and this decision will stand, unless reversed on appeal to the Supreme Court of the United States.

The original letters patent of the United States were issued June 7, 1864, to John A. Cummings for improvement in artificial gums and palates. The bill in equity in this case is filed against the defendant, alleging infringement of the letters patent which, upon a surrender of that patent in accordance with law, were reissued to the Dental Vulcanite Company, the assignees of the title in and to the letters patent, upon the 21st of March, 1865. This reissued patent, in the opinion of Judge Shepley, is for a new article of manufacture, consisting of a plate of hard rubber or vulcanite with teeth, or teeth and gums, secured thereto in the manner described in the patent. The patent is not for a process or art, but for the new product resulting from the manipulation by the described new process. It is one of those products, as will be seen by examination of the specifications describing the process of manufacture, in which the process so inheres that the described product can only be made by the described process. The patent is not for a dental plate of vulcanite or hard rubber alone; it is not the substitution of the old material, vulcanite, in place of the gold and other materials which have been before used in the same way; it is not, as claimed by defendant, for a dental plate of hard rubber vulcanized in molds in the manner described in the patent; but it is for a set of artificial teeth as a new article of manufacture, consisting of a plate of hard rubber or vulcanite, with teeth, or teeth and gums, secured thereto in the manner described in the patent, by imbedding the teeth and pins in the vulcanizable compound, so that it shall surround the teeth and pins while the compound is in a soft state before it is vulcanized, so that when the compound is vulcanized the teeth are firmly secured by the pins imbedded in the vulcanite, and there is a tight joint between the vulcanite and the teeth. This manufacture was a new manufacture, new as to the thing made, new as to the process of making it, considering that process as a whole. The invention is not like that of a machine, but is one in which the process by which it is made is a part of the substance of the thing made, the manufacture, and a characteristic feature of its construction. It is evident from an examination of the very brief and imperfect description of the invention given by Cummings in his caveat filed as early as May 14, 1852, that he fully appreciated the fact that the importance of his invention consisted not merely in the substitution of a material "rigid enough for the purposes of mastication, and pliable enough to yield a little to the mouth," in place of the "hard, unyielding" metals previously used, and not merely in the substitution of a material light and inexpensive in place of the expensive and heavy materials before used for the plate, but also in the additional fact, which he states, that "by the improvement the teeth can be easily baked into the gums, which form one piece with the plate." This statement at that early period sufficiently suggests that he fully appreciated the advantages of the material which he used, and which was capable of being so used in the process as to ensure that cleanliness and purity resulting from the absolutely perfect joint formed between the teeth and the plate, and the consequent absence of any crevices for the retention of food.

Upon a careful review of all the evidence in the record, I have no hesitation in coming to the conclusion that the invention of Dr. Cummings was a new and useful manufacture, that nothing appears in evidence to show that he was not the original and first inventor of the thing claimed by him, that the reissued patent in suit is a good and valid patent, and that the defendant has infringed the same, as alleged in the bill.

Decree for complainant for injunction and account, as prayed for in the bill.

NEW BOOKS AND PUBLICATIONS.

TABLES FOR QUALITATIVE CHEMICAL ANALYSIS. With an Introductory Chapter on the Course of Analysis. By Professor Heinrich Will, of Giessen, Germany. Edited by Charles F. Himes, Ph. D., Professor of Natural Science, Dickinson College, Carlisle, Pa. Price $1.50. Philadelphia: Henry Carey Baird, 406 Walnut street.

A concise statement of the characteristic results of all the tests in ordinary use for the purpose of qualitative analysis, which deserves, both on account of its authorship and the reputation of its editor, a place in every scientific library. It will be found useful to students as a manual, as well as for constant reference by experts in the laboratory.

AMERICAN NEWSPAPER DIRECTORY, containing Accurate Lists of all the Newspapers and Periodicals published in the United States and Territories, and in the Dominion of Canada and British Colonies of North America. New York: George P. Rowell & Co., Publishers, 41 Park Row.

The value of this elaborate volume is well known to the whole newspaper press and the advertisers of the country; and the new issue is the most complete manual of the subject yet published. It appears that there are published in the United States 654 daily and 5,626 semi-weekly, triweekly, and weekly journals; making, together with 1,577 monthly and quarterly publications, 7,203 issues open to advertisers. In the British Possessions, there are 46 daily, 848 weekly, etc., and 51 monthly, papers and magazines issued, being a total for the English-speaking portions of North America of 7,784. Most of this large number are separately described in detail; so that advertisers can find, in the pages of the *Directory*, the fullest information as to the circulation, politics, etc., of the various claimants for the title of "the best means of publicity."

THEORY OF ARCHES. By Professor W. Allan, formerly of Washington and Lee University, Lexington, Va. No. 11 of Science Series. Price 50 cents. New York: D. Van Nostrand, 22 Murray and 27 Warren streets.

These handbooks are uniformly excellent and valuable.

THE CONSTRUCTION OF MILL DAMS, comprising also the Building of Race and Reservoir Embankments and Head Gates, the Measurement of Streams, etc. Illustrated. Springfield, Ohio: James Leffel & Co., Authors and Publishers.

This thoroughly practical treatise will be accepted as an authority by all persons using water power or occupied in constructing apparatus for that purpose. The authors have dealt with all the difficult circumstances amid which dams have to be built, and the information, derived from practical experience, has been gathered from all parts of the country, its compilation having taken more than three years. Messrs. Leffel are the manufacturers of the well known Leffel turbine, and are also editors of the *Leffel Mechanical News*, a journal devoted to the flour mill and water power interests.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]
From May 8 to May 21, 1874, inclusive.

BALE TIE.—S. Parmly *et al.*, New Orleans, La.
BURNING PETROLEUM.—O. Sweeney (of Philadelphia, Pa.), Liverpool, Eng
BUTTONS, ETC.—R. H. Isbell, New Milford, Conn.
CENTRIFUGAL MACHINE.—S. S. Hepworth, New York city, *et al.*
COOLING DRINKS.—C. L. Ridgway, Boston, Mass.
DOG COLLAR.—W. T. Mersereau, Orange, N. J.
ELECTROMAGNETIC ANNUNCIATOR.—L. Finger, Boston, Mass.
FURNACE.—J. M. Ayer, Chicago, Ill.
GAME CARDS.—M. H. Cowell, Buffalo, N. Y.
IRONING MACHINE.—G. W. Cottingham, St. Mary's, Texas.
MAKING MAGNESIA HYDRATE.—C. H. Phillips, New York city.
PAPER PULP BOX.—S. Wheeler *et al.*, Albany, N. Y.
PLANE.—J. F. Baldwin, Boston, Mass.
PORTABLE FORGE.—D. W. C. Baxter, Philadelphia, Pa.
ROCK DRILL.—J. B. Waring, New York city.
ROTARY ENGINE.—A. C. Gallahue, Morrisania, N. Y.
SEWING AND MACHINE.—F. Curtis, Boston, Mass.
SEWING MACHINE FEED.—D. M. Smith, Lynn, Mass.
SHIP, ETC.—J. T. Parlour (of Brooklyn, N. Y.), London, England.
STEAM AND OTHER ENGINES.—W. Wallace, Brooklyn, N. Y.
STEAM INJECTOR.—Tube Works Company, Boston, Mass.
STOPPER FOR DRAWING LIQUIDS.—E. R. Wilbur, New York city.
SUSPENDING CROCKERY IN KILNS.—B. Jackson, Geddes, N. Y.
TELEGRAPH SIGNAL.—W. A. Camp (of New York city), London, England.
TICKET PUNCH.—Canceling Punch Company, Buffalo, N. Y.
TORPEDO BOAT.—J. L. Lay, Buffalo, N. Y.
TOY PISTOL.—C. B. Stephens, Plainfield, Conn., *et al.*
WIRE TUBING AND MACHINE.—H. O. Lothrop, Milford, Mass.

Recent American and Foreign Patents.

Improved Car Coupling.

John E. Stevenson, Wilton, Iowa.—A block is pivoted to the upper part of the drawhead, from which pivot it is suspended and swings in the cavity. A spring is attached to the pivot of the block, which serves to force the block downward. The pin is supported on the shoulder of the block, and the end of the link strikes the block and allows the pin to drop. The inner surface of the lower part of the drawhead is provided with stops, which receive the end of the link where it is supported by the block when the cars differ in hight. The drawhead is so constructed that the coupling pin may be supported when in the upper part by inclining it forward, the pin mortise allowing sufficient play for that purpose, while the end rests on a shoulder.

Improved Cotton Press.

William B. Hollowell, Nashville, Tenn.—This is a powerful hand press, adapted to be constructed and used on plantations without very skilled labor. The essential features of this invention are a lever and windlass for forcing the follower down by a vertically moving follower stem. The operation is accomplished by several movements of the lever, each one forcing it a certain distance, thus dividing the labor and increasing the power, so that the bales may be made as small and dense as by the ordinary power presses.

Improved Press.

John Gramelspacher, Jasper, Indiana.—This invention consists of a brake lever pivoted at the middle in the top of the follower stem, and having a fulcrum on each side of it on a rod working up and down through a guiding and supporting beam. The rod also works through a griping pawl, which allows it to descend freely, but gripes and holds it against rising, so that the fulcrum of one side descends while the other is holding the lever for pressing the follower down. This causes the follower to be forced down quickly by the vibrations of the levers.

Improved Sewing Machine Table.

Michael W. Murphy, Louisville, Ky.—This invention consists in supporting the hinged portion of the table by a section of the subjacent case. It is believed to be cheaper than the ordinary folding enclosing top.

Improved Composition for Cleaning and Polishing Metals.

Hosea Burrill, Lynn, Mass.—This is a composition for cleaning and polishing knives, forks, and all articles of cutlery, as well as all other articles for which it may be adapted, as surgical instruments, arms, and military equipments. It consists of emery, pulverized coal ashes, sawdust, and soap, molded into cakes, which become hard by exposure.

Improved Door Alarm.

Abraham Nevling, Glen Hope, Pa.—This is an improved door alarm, which in addition to striking a bell when the door is opened, as an ordinary ordday alarm, may be set to sound a continuous alarm when the door is opened, and thus serve as a night alarm.

Improved Hay Knife.

Harrison R. Brown, Rochelle, Ill.—This invention is a hay knife having a triangular blade with smooth cutting edges, standing at an angle to the handle, and having a reversible stirrup attached by means of a tube surrounding the handle.

Improved Sash Balance.

William D. Goodnow, Rutland, Vt.—This invention consists in a case let into the top bar of the lower sash, flush with its surface, and provided with a pivoted bar, inclined block, and knob, whereby the cord that enters the weight grooves may be cramped, so as to connect and balance the sashes.

Improved Cattle Poke.

Warren L. Battle, of Geneva, Ga.—This cattle poke consists of a wood or metal bow, fitting and secured close to the head by a face and nose strap around the neck of the animal. The lower ends of the bow are connected together by a couple of pins, from the lower of which hangs a long curved rod of wood, whose upper end rises above and behind the upper pin. This causes the lower end, which is curved forward to some extent, to project still farther forward, so as to catch in the fence when the animal tries to jump. The pivot allows the rod to lie on the ground while the animal feeds, and said rod rises high enough above the ground when the animal holds his head up to clear it, so that he can walk about freely.