

Recent Progress in Microscopy.

At the second annual reception of the New York Microscopical Society, February 7, the retiring president, Mr. J. D. Hyatt, gave a brief account of the present condition, prospects, and recent progress of microscopy. After referring to the success of the Continental makers of objectives years ago in attaining a certain mediocrity in the manufacture of lenses, Mr. Hyatt said that of late they have been altogether distanced in optical science by English and American opticians. The principal feature of advance during the past year was the celebrated Zeiss oil-immersion objective.

The formula for the Zeiss lens was worked out by Prof. Abbe, of the University of Jena, whose brilliant discovery, in the hands of the expert optician whose name it bears (Karl Zeiss), has startled the microscopical world with results not hitherto obtained, even with Powell & Laland's famous one-fiftieth. According to reliable accounts, said Mr. Hyatt, the performances of this lens are marvelous. It is claimed that the *Amphipleura pellucida* is a coarse test of its remarkable resolving powers, and that it copes without difficulty not only with such tests as Nobe's nineteenth band (113 000 striæ to the inch), but also with 125,000 striæ to the inch, mounted in balsam, in the ordinary manner. This result is obtained mainly by the interposition of a film of oil of cedar wood or some other medium of high refracting index, between the front and the thin covering glass, beneath which the object lies. The film thus interposed is made a factor in the formula upon which the lens is constructed, the great loss of light occasioned by media of low refracting power being thus obviated, and the utmost obliquity of the ray turned to practical advantage. The oil also acts as an elastic front, permits ample space for focusing, and thus renders the collar adjustment unnecessary. Again, the front combination is made active, up to 6° beyond the equator of the sphere, a surface exceeding the hemisphere by about one-twentieth of the sphere's diameter being thus applied as a clear lens. This last feature is rather a curiosity than a novelty, Tolles and others having made use of hyperhemispherical lenses in the construction of high-power objectives.

The greatest success in micrometer manufacture of recent years was accredited to Prof. Rogers, of Cambridge, who, by means of a complicated instrument constructed by himself, has been enabled to lay off lines upon a glass slide at distances apart of one one-hundredth and one one-thousandth of an inch with such accuracy that the deviation is less than one one-millionth of an inch.

SCIENTIFIC TOYS.

The toy shown in Fig. 1 was invented by Mr. J. Pfeiffer, and is amusing and at the same time instructive, as it shows all the principal phenomena of statical electricity. It consists of a plate of vulcanite, about one third of an inch

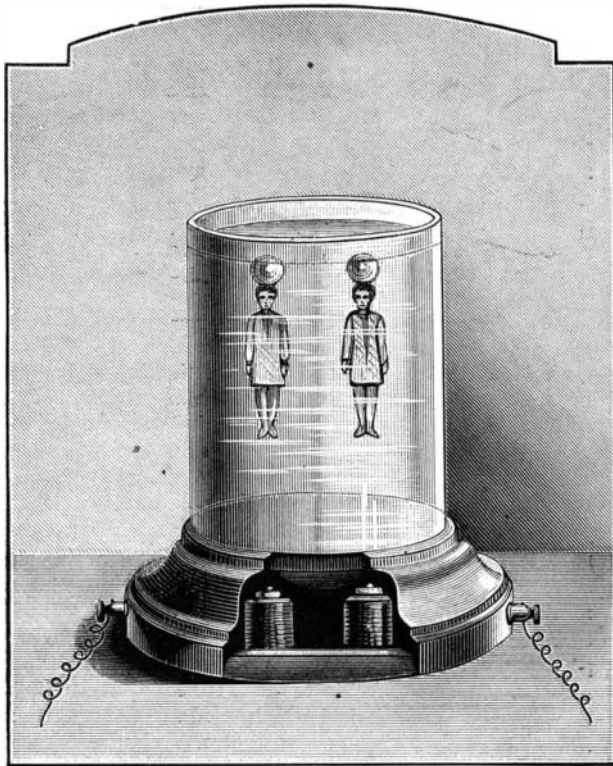


Fig. 2.—ELECTRIC BOTTLE IMPS.

thick, and about half the size of a page of the SCIENTIFIC AMERICAN. One or more small pieces of tin foil about the size of a playing card are pasted on one side of this plate. The vulcanite electrophorus produces electricity with remarkable facility. It is placed on a table, and the surfaces are successively rubbed with the palm of the hand. If the plate is raised from the table and the tin foil is approached by the other hand, a spark from one third to four fifths of an inch long is produced. A number of figures of elder pith complete the toy, and show the phenomena of electrical attraction and repulsion in the most comical manner. The plate being excited, the small elder pith figures are placed on the tin foil, and the plate is lifted from the

table. One of the figures will raise its arms, the hair of another will stand out like the bristles of a porcupine, and the third, which is to be lighter than the rest, will perform very laughable movements, and will seem to play with the two pith balls.

Fig. 2 shows electric bottle imps, made by Mr. De Combettes. A cylindrical glass vessel is filled with water, and mounted on a hollow base containing an electro-magnet provided with battery connections. One or two small figures, surmounted by a hollow glass bulb, and having a small piece of wire attached to the feet, are placed in this vessel. The air in the hollow glass bulb will draw them up to the surface of the water, as shown in one of the accompanying

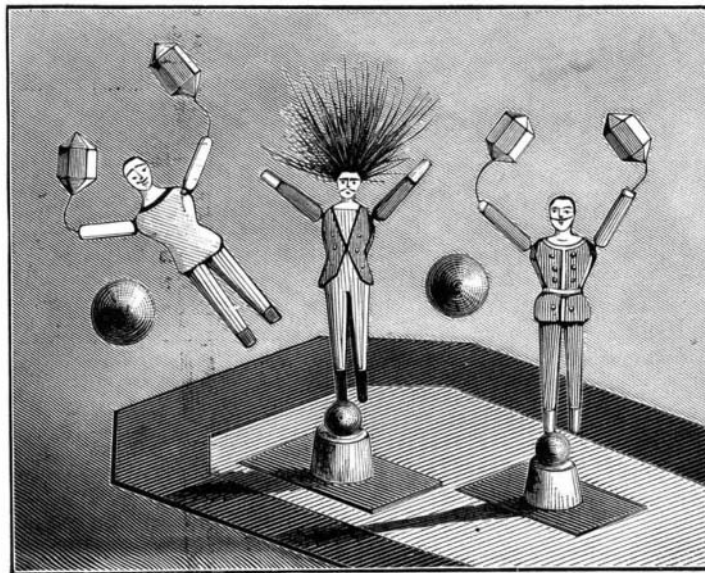


Fig. 1.—ELECTROPHORUS WITH ELDER PITH FIGURES.

engravings, but as soon as the current is passed through the electro-magnet, the figures will be drawn down to the bottom of the vessel. As soon as the current is interrupted the figures will rise rapidly.

The magic fishes, shown in Fig. 3, resemble the device just described. The electro-magnet is replaced by a small electro-motor which rotates from right to left or from left to right, and causes a corresponding movement of the fishes in the vessel.

RECENT INVENTIONS.

Mr. Hosea Willard, of Vergennes, Vt., has invented a novel scale beam, the object of which is to facilitate the weighing of articles on the same scale by different systems of weighing—as, for instance, by the ordinary avoirdupois system and metric system, by avoirdupois and troy weights, net and gross weights, etc.

Mr. Michael H. Hagerty, of Brooklyn, N. Y., has patented a glass stopper for milk bottles and other similar articles with a metal eye for the reception of the bail by which the stopper is fastened to the bottle. The stopper has a central depression in which is a metal eye, the shank of which is moulded into the glass stopper in the center of the depression.

Mr. Andrew D. Martin, of Abbeville, La., has patented an improved saddle blanket, which is light, cheap, and durable. The blanket is woven on a hand or machine loom, with strands twisted out of black Spanish moss. The warp is of sufficient length for a number of blankets, and the weft is interwoven with it, and the blankets are cut off at the desired length when completed. A strand of cloth is woven in between the weft at the ends of each blanket, and one or more strands of cloth or some similar material, are woven into the middle of the blanket. The edges of the blanket are trimmed with a binding of cloth, leather, or oil-cloth.

Mr. William H. Allen, of New York city, has invented an improved machine for weighing grain and other substances as they flow from a spout, discharging them in uniform quantities into a hopper or other receiver, and registering the weight of the substance discharged.

An improvement in washing machines, patented by Mr. George W. Dorris, of Elgin, Texas, consists in combining a lower cylinder having longitudinal spiral grooves with an upper cylinder having longitudinal straight grooves and holes.

An improved apparatus for refining camphor has been patented by Mr. William V. McKenzie, of Rahway, N. J. The method of using this apparatus consists in placing the crude camphor upon the diaphragm in a suitable covered vessel, and introducing steam of proper temperature from a boiler into the chamber below the diaphragm to cause the camphor to evaporate or sublime. The moisture or a portion of it contained in the crude material passes off as steam through an aperture in the cover, while the camphor sublimates or evaporates and collects upon the under side of the cover in a solid cake that may readily be removed by slightly heating the cover. The impurities of the camphor remain behind on the diaphragm.

A safe, easily-operated, and strong device for fastening the ends of the traces to the single-tree, has been patented by Mr. Millard M. Bowlus, of Bowlusville, O. The device consists of a flat metal spring attached to the back edge of

the single-tree, and provided with a notch which receives the edge of the end of the trace, and, together with an adjacent notch in the single-tree, holds the end of said trace on the single-tree.

Mr. Dennis Harrington, of New York city, has patented a device for transporting or moving live stock on foot through the streets of a city. It consists of a pen without a floor, mounted on wheels, and arranged to be drawn forward by animals. By this arrangement stock can be moved through the streets of a city with perfect safety to the inhabitants, as it is impossible for the animals to escape from the moving pen.

Messrs. Samuel Mart, of Sutton-at-Hone, County of Kent, and Charles W. Bradley, of York Street, County of Surrey, England, have patented apparatus for heating or cooling water and other liquids wherein the water is circulated in tubes within a heating or cooling space and drawn through a pipe as desired for use. In heating water the inventors make use of gas burners to which the gas is turned on when required by a cock, which also supplies gas to a pilot burner that burns continuously to maintain the heat and keep up a circulation. The gas cock is combined with the water supply pipe in such a manner that a single handle is made use of for regulating the gas supply, the supply of water to the boilers, and the delivery of the hot water. The hot water is delivered by a rising pipe above the heater, into which the hot water is forced by the pressure when the water inlet to the heater is opened. In cooling water, ice is substituted for the burners.

An animal poke, patented by Mr. James T. Camp, of La Fayette, O., consists of a bow to place over the animal's neck, in which are pivoted the ends of two bars, one above the other. The pivoted ends of the bars are provided with cams, so arranged that by pressure on the lower bar the poke is spread open. The free end of the lower bar, when it is drawn down, throws the free end of the upper bar up against the head of the animal.

Mr. George W. Ebright, of Waynesville, O., has patented a new, simple, and amusing toy, consisting of a box containing a slide provided with a rubber or other suitable spring. To this slide a goat or other animal is fastened, which, when the spring is pulled, butts against the figure of a boy on the front part of the box.

Mr. Washington Irving Marsh, of Northville, Mich., has patented a device for preventing the ends of the whiffletree from catching upon or striking against any objects. It consists of a plate of wood or metal attached to the trace of a harness just in front of the cock-eye, and extending rearward past the hook and end of the whiffletree.

Messrs. James W. Gault and William A. Forman, of Murphysville, Ky., have patented an improved elevator for hoisting tobacco plants and leaves and suspending them upon the rails in drying or curing barns. This device can easily be worked by one person, and by it the tobacco sticks can easily be hung six inches apart, or closer, if desirable, thus economizing all the hanging room in a curing barn.

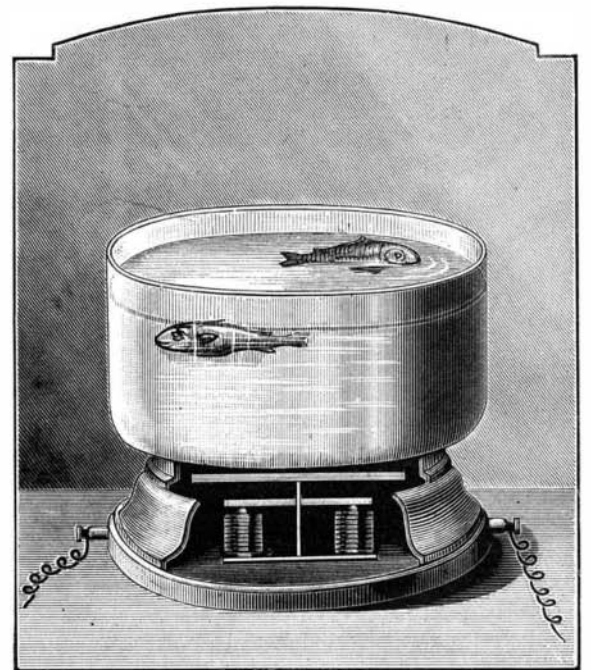


Fig. 3.—MAGIC FISHES.

Mr. John H. Yates, of Sharon, Wis., has invented an improved nasal inhaler, which is simple, convenient, and so arranged that the air can circulate very freely through it before being inhaled. The invention is an improvement on the inhaler for which letters patent No. 167,209 were granted to Mr. Yates and Mr. Charles R. Treat, dated August 31, 1875.

Mr. John Toler, of Newark, N. J. has patented an improved furniture caster. The object of the invention is to provide a solid bearing in a two part caster socket for the conical head of the caster spindle, and to secure the spindle in said two part socket without the use of screws or rivets.