

ASTRONOMICAL NOTES.

OBSERVATORY OF VASSAR COLLEGE.

For the computations of the following notes (which are approximate only) and for most of the observations, I am indebted to students. M.M.

Positions of Planets for January, 1875.

Mercury.

On the 1st of January, Mercury rises at 7h. 4m. A.M., and sets at 3h. 53m. P.M. On the 31st, Mercury rises at 7h. 57m. A.M., and sets at 6h. 4m. P.M.

Mercury and Saturn will be in conjunction on the morning of the 27th, and must be nearly together in the evening; but they are so far south in declination, and set so early, that it will not be easy to see them.

Venus.

Venus should be looked for in the morning, being west of the sun after the transit.

It rises at 4h. 56m. A.M. on the 1st, and sets at 2h. 46m. P.M. On the 31st, Venus rises at 4h. 13m. A.M., and sets at 1h. 51m. P.M.

Venus attains its greatest brilliancy on the 12th, at which time it passes the meridian a little after 9 A.M., at the low altitude of 31°.

Mars.

On the 1st, Mars rises at 2h. 18m. A.M., and sets at 0h. 47m. P.M. On the 31st, Mars rises at 1h. 50m. A.M., and sets at 11h. 38m. P.M.

The apparent diameter of Mars is now very small, and its southern declination is large; of course it is not a good time for making observations on the planet.

Jupiter.

Although Jupiter's relative position is becoming better, it is yet not very favorable to observers. Jupiter rises on the 1st at 1h. 41m. A.M., and sets at 0h. 29m. P.M. On the 31st, Jupiter rises at 11h. 53m. P.M., and sets at 10h. 35m. the next morning. It can be beautifully seen at early morning.

Saturn.

Saturn, also, is far south in declination, rises in the morning, and sets early in the evening. On the 1st, it rises at 9h. 24m. A.M., and sets at 7h. 10m. P.M. On the 31st, it rises at 7h. 36m. A.M., and sets at 5h. 30m. P.M.

Saturn and Mercury are nearly in the same position near the last of January.

Uranus.

Uranus is in northern declination among the small stars of *Cancer*. On the 1st, it rises at 7h. 18m. P.M., comes to meridian at 2h. 22m. in the morning, and sets at 9h. 26m. On the 31st, its position is very good. It rises at 5h. 15m. P.M., comes to meridian about midnight, at an altitude of 66°, and sets at 7h. 25m. the next morning.

Neptune.

Neptune is too far off to be seen without the aid of good telescopes. It rises at 0h. 29m. P.M. on the 1st, and sets at 1h. 35m. the next morning. On the 31st, it rises at 10h. 31m. A.M., and sets at 11h. 37m. P.M.

Meteors.

Very bright meteors were seen on the evenings of December 11, 12, and 15. One which passed from the zenith to the southwest, at 8h. 27m. P.M. on the 11th, was so large as to attract the attention of persons who occupied a brilliantly lighted room.

Sun Spots.

The record is from November 16 to December 16 inclusive. The photographic picture of the 16th shows the group of spots seen on the 14th, consisting of several very small spots. The next picture was taken on the 19th, when one large spot appears near the place where we should look for the group. Clouds prevented photographing again until the 25th, when a large spot was seen near the center of the disk, preceded by a smaller one. On the 26th, no change took place, except that caused by the sun's axial motion. From this time until December 10, on account of clouds and wind, but three pictures were taken, and no spots were observed except a very small group on December 4. December 10, a group of good size appeared, of which five photographs have been taken, showing marked changes during its passage across the disk. The picture of the 10th shows three spots of moderate size just within the eastern limb. On the 12th, the most westerly of these was surrounded by small spots arranged so as to form nearly a complete circle. On the 15th, the group consisted of five distinct spots of good size. On the 16th, no change.

GLUE.

"During the progress of a recent investigation, I observed," says S. Dana Hayes, in the *American Chemist*, "some chemical characters of commercial glue, that I believe have not been previously described.

Analyses of two samples of white glue, of the best grade, yielded the following results:

	No. 1 extra C. glue.	Frozen glue.
Moisture (loss of weight at 212° Fah.)...	16.70	16.28
Gelatin, with a little animal fiber and fats.....	79.85	80.42
Carbonate of lime.....	1.42	1.33
Sulphate of lime.....	0.41	0.34
Phosphate of magnesia.....	0.35	0.31
Alkaline salts.....	0.17	0.12
Silica, oxide of iron, etc.....	0.09	0.08
Oxide of zinc.....	1.01	1.12
Total.....	100.00	100.00

Analyses of ten more samples of frozen and sheet glue, of common grades, and from different makers, showed the proportion of water contained in them to vary from fourteen to eighteen per cent, averaging seventeen per cent. And the proportion of ash or mineral matter varied from three to six

per cent, averaging rather less than four per cent. Two of these samples contained about one per cent of white zinc, and two of them contained sulphate of lime.

"Analyses of two samples of commercial gelatin averaged sixteen and a half per cent of water, and 2.56 and 3.11 per cent of ash, respectively. There was no oxide of zinc or sulphate of lime in these gelatins.

The presence of so much water was quite unexpected; and as the quantity is nearly the same in fresh and in seasoned specimens, it is not a make-weight, although steam is very freely used in the rooms where glue is packed by the manufacturers. The carbonate of lime comes from the quick lime used for cleaning and preserving the animal matter, or glue stock, while the sulphate of lime is formed by the addition of small quantities of sulphuric acid during the process of manufacture, to neutralize the lime that is carried forward by the solutions of glue. The oxide of zinc is said to be added to prevent souring, or the acidity caused by decomposition, and it also improves the color of the glue; but it is not very generally used, as these analyses indicate. I have heard of the use of sulphate of zinc, alum, magnesia, etc., by glue-makers, but I did not find any other substance than those named above in these specimens, which represented the article commonly sold and used.

The impure glues, or those containing the most mineral matter, became almost insoluble after they had been broken into small pieces and heated in a hot air bath (copper oven) at 212° Fah., for two or three hours, until they ceased to lose weight; they then soften and become dough-like, but do not dissolve when boiled in water for some time. The purer gelatins were not so much injured, and one specimen, containing only 2.56 per cent of ash, was not materially affected by this thorough drying. The solid sheet glue, while drying in this way, tumefied, and became very porous: the frozen glue did not alter in structure.

The conclusions drawn from these experiments was that the excess of lime combines with the gelatin and, perhaps, with the extraneous animal matters of the glue, at the high temperature, forming a compound like lime soap, as the whole quantity of lime is retained in the insoluble portion left after boiling the dried glue in water. Such an explanation accounts for the difference noticed in the effect of drying upon gelatin and common glue."

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From November 2 to November 26, 1874, inclusive.

ATTACHING TEAPOT HANDLES, ETC.—Tiffany & Co., New York city.
BALE TIE.—W. Cooper, Tyler, Texas.
BARREL.—A. Mason, New York city.
BOOTS AND BOOT MAKING MACHINERY.—F. D. Ballou et al., Boston, Mass.
CARBURETTING AIR.—T. B. Fogarty, Warren, Mass.
CARTRIDGE SHELL.—W. F. Parker, Meriden, Conn.
CHEMICAL TELEGRAPH, ETC.—W. E. Sawyer, Washington, D. C.
DISTILLED WATER.—W. A. Lighthall, Brooklyn, N. Y.
DRAIN PIPES, ETC.—H. Hirsch, New York city.
DRESS PROTECTOR.—C. Murphy, Camden, Me.
FASTENING BUTTONS, ETC.—Z. K. Young, Philadelphia, Pa.
FILE CUTTING MACHINE.—C. Vogel, Fort Lee, N. J.
FISH JOINT.—J. Hampson, Newburgh, N. Y.
GRINDING AND POLISHING MACHINERY.—J. H. Volk, Chicago, Ill.
IRONING MACHINE.—T. S. Wiles, New York city.
LIGHTING GAS.—H. B. Stockwell et al., Brooklyn, N. Y.
LOOM WEFT STOP.—J. J. Switzer, Boston, Mass.
MECHANICAL TOY.—W. A. P. La Grove (of N. Y. city), London, England.
NOISING DEVICE FOR ANIMALS.—W. Crighton, Fall River, Mass.
PIANOFORTE.—A. Steinway, New York city.
PREPARING TEXTILE FIBERS.—H. B. Meech (of N. Y. city), London, Eng.
RATCHET BRACE.—J. W. Evans, New York city.
REAPING AND BUNDLING GRAIN.—E. Horton, Hartford, Conn.
REFRIGERATOR.—J. J. Bate, Brooklyn, N. Y.
ROTARY MOTOR AND PUMP.—J. H. Field, Edgely, Tenn.
SEWING MACHINE.—Singer Manufacturing Company, New York city.
SHIELD FOR STOVES, ETC.—W. M. Conger, Newark, N. J.
SPINNING MACHINERY.—G. Chatterton, Providence, R. I.
STEAM ENGINE.—T. L. Jones, Natchez, Miss.
STOCKING DARNER.—O. S. Hosmer, Boston, Mass.
STOPPER.—N. Thompson (of Brooklyn, N. Y.), London, England.
STREET LAMP.—E. Parkman (of Madison county, Tenn.), London, England.
TELEGRAPH.—W. E. Sawyer, Washington, D. C.
TRIMMING WALL PAPERS.—H. L. Todd, Corning, N. Y., et al.
TYRES ON WHEELS.—E. Mellon, Scranton, Pa.
WATER MEYER.—F. W. Brooks, New York city.

NEW BOOKS AND PUBLICATIONS.

JOURNAL OF THE CHEMICAL SOCIETY OF LONDON. Price £1. 1s. (\$5, gold) a year. London: J. Van Voorst, 1 Paternoster Row.

During the past three or four years, the Chemical Society of London has been engaged in an undertaking which deserves the support and recognition of all who are interested in the progress of physical, and especially chemical, science. For the past few years of its existence, the society published quarterly a report of its proceedings, including the papers on chemical subjects which had been read at the meetings. Afterwards it was found desirable to issue the Journal monthly; and this format retained till the year 1871, when, with the aid of funds, partly derived from voluntary subscriptions by the Fellows of the Society, partly from a subsidy received from the British Association for the Advancement of Science, the society undertook the task of printing, not only papers read at the meetings in London, but abstracts giving the results of every memoir on chemical or allied physical subjects published either at home or abroad. The monthly Journal of the Chemical Society thus becomes a complete chronicle of the progress of chemistry all over the world. Taking the last number of the Journal, we find that the 100 pages of which it consists contain about 150 abstracts of papers taken from seventeen different Journals, including the *Annales de Chimie et de Physique*, the *Comptes Rendus* of the French Academy, the *Berichte der Berlin Chemical Society*, Poggendorff's *Annalen*, and the *Journal für praktische Chemie*. The student of theoretical chemistry or the manufacturer, the mineralogist, the physiologist, or the scientific agriculturist, may here find a complete and yet concise record of all that has been lately done in the department in which he is specially interested. We trust that such an important undertaking will not be allowed to fall to the ground for want of support.

THE POLARIZATION OF LIGHT. By William Spottiswoode, F.R.S., etc. Price \$1. New York: Macmillan & Co., 21 Astor Place.

Mr. William Spottiswoode is the Vice-President of the Royal Society; and, although an amateur, is widely known as a profound and accomplished chemist. The book before us (No. 6 of Messrs. Macmillan's excellent NATURE SERIES) contains the substance of lectures delivered to the work people in the employ of Messrs. Spottiswoode & Co., printers, etc. The branch of optical science herein treated is clearly elucidated, and its great importance in technology and its beauty as a study of natural phenomena demonstrated in forcible and pleasing language.

TABLES FOR THE DETERMINATION OF MINERALS BY THEIR PHYSICAL PROPERTIES, ETC., for the Use of Students in the Field. Translated from the German of Alban Weissbach, by Persifer Frazer, Jr., A.M., etc.

We have here an exceedingly useful and compendious guide for explorers, who frequently have to pronounce on substances *in situ*, where no laboratory is at hand. The eminent author gives many new lights on classification, and his aim has been throughout to render the science of mineralogy as clear and accessible as its complicated nature will permit. The translator's work has been done faithfully and intelligently.

INSECTS OF THE GARDEN, THEIR HABITS, ETC. By A. S. Packard, Jr., Editor of "The American Naturalist," etc. Also (by the same Author) INSECTS OF THE POND AND STREAM. Price 25 cents each. Boston, Mass.: Estes and Lauriat, 143 Washington street.

Two numbers (of twelve) of a most interesting series of handbooks of natural history. We commend them especially to the notice of our young readers, as popular expositions of a most fascinating study.

THE STONE AGE, PAST AND PRESENT. By E. B. Tyler, Author of "Primitive Culture," etc. And "Theory of a Nervous Ether," by Dr. Richardson, F.R.S. Price 25 cents. Boston, Mass.: Estes and Lauriat, 143 Washington street.

The first of these essays is an interesting treatise on the use of stone implements, and it points out some forcible instances of the survival of the use of such tools to this day. The second paper is a *resumé* of the theories on a subject which has been widely and discursively treated, with some original speculation on the supposition, which has long engaged the attention of the eminent author.

REGISTER OF RURAL AFFAIRS. Price 30 cents. Albany, N. Y.: Luther Tucker & Son.

Messrs. Luther Tucker & Son, Publishers of the Albany, N. Y., CULTIVATOR, have issued their illustrated Annual for 1875 in a very attractive form. It contains a large number of engravings of interest and use to agriculturists, and is full of practical suggestions and directions of importance to horticulturists and fancy gardeners.

THE INTERNATIONAL REVIEW. \$5. Six times a year. New York: A. S. Barnes & Co.

The number for January and February contains several valuable articles. Dr. McCosh, President of Princeton College, reviews the late utterances of Professor Tyndall, about the potency of matter, and shows the weak points of his reasoning. Professor Vogel gives an article on Baron Liebig. Professor Hart discusses the proposed Centennial Exhibition and that of Vienna.

THE CHEMIST'S AND DRUGGIST'S DIARY FOR 1875.

A useful and convenient form of diary, published by the proprietors of our esteemed contemporary, the CHEMIST AND DRUGGIST, London, England.

ANNUAL REPORT OF THE TREASURER OF THE UNITED STATES TO THE SECRETARY OF THE TREASURY, for the Fiscal Year ended June 30, 1874. Washington, D. C.: Government Printing Office.

MR. JAMES VICK, one of the largest seed dealers of Rochester, N. Y. has just published the first number of his FLORAL GUIDE for 1875. This is a good sized magazine, beautifully illustrated, and containing descriptions of the best flowers and vegetables, with valuable directions for culture. It is issued quarterly in English and German, and sent to any person for the nominal price of twenty-five cents a year.

THE DOUBLE CENTURY CALENDAR AND SILICATE NOTE BOOK is the title of a pocket volume forwarded to us by Mr. C. W. Younggren of Amboy, Ill. The silicate part is useful—the balance obscures an advertisement of a well known watch concern.

DECISIONS OF THE COURTS.

United States Circuit Court.—District of Massachusetts.

PATENT EGG BEATER.—EDWIN P. MONROE vs. THE DOVER STAMPING COMPANY.

[In equity—September 3, 1874.]

Shepley, J.: Complainant alleges that defendants infringe the invention secured to him by letters patent, reissue No. 1,062, dated October 16, 1860, for a new and improved egg beater. Defendants, under license from the patentees, were manufacturing and selling egg beaters under and in conformity to letters patent of the United States granted to Turner Williams and E. D. Goodrich, assignees of Turner Williams, dated May 31, 1870, and numbered 108,811. The beater described in complainant's patent consists of a frame, to be clamped to a table or other support, with two concentric beaters, which are, by suitable gearing, revolved in opposite directions. The vessel containing the eggs to be beaten is held up to the beaters, which project downward from the frame, so that the beaters will be immersed in the matters to be beaten. By turning the crank the beaters are revolved concentrically in opposite directions. In the Monroe patent the first claim is for, "in combination with a rotary egg beater, an arm having at one end bearings for the journals to rotate in, and at the other a clamping device for the purpose of securing the beater to the table with its shaft or bearing in a vertical line, as set forth." It is not contended that defendants infringe this claim. The second claim is for "the beaters revolved in opposite directions by suitable mechanism, substantially as set forth." The Monroe beaters revolve in opposite directions, and the beaters in the Turner Williams patent also revolve in opposite directions. Here their resemblance begins and ends. The Monroe beaters revolve concentrically. The axes of the beaters in the Williams machine are at some distance apart, and the orbits described by the revolution of the blades of the beaters intersect each other. The currents produced in the matter to be beaten are entirely different. In the Monroe beater the fluid material tends to arrange itself mainly in two concentric layers, which are carried around in opposite directions by the beaters, the centrifugal force tending to accumulate the material around the circumference of the vessel. In defendant's beater this action takes place, for the reason that the orbits of the blades intersect at two points in their circumference. After the blade of one beater has passed through the material, another beater, moving in an opposite direction, passes through the same material, obliterating the track made by the other, and so on alternately. There are other obvious and important differences in the mode of operation of the beaters, which render it too clear to admit of any doubt that the invention described in the Turner Williams patent is not an infringement of the patent to Monroe.

Bill dismissed.

Held by the court:

Making and selling egg beaters having two beaters rotating on axes separate and apart from each other, is no infringement of a patent for such an implement having two beaters rotating on the same axis, although in both cases the beaters revolve in opposite directions.
(James B. Robb, counsel for complainant.
Thomas W. Clarke, counsel for defendants.)

United States Circuit Court.—District of New Jersey.

PATENT MITER MACHINE.—GEORGE W. LA BAW et al., COMPLAINANTS, AND WILLIAM HAWKINS et al., DEFENDANTS.

[In equity.—Before Nixon, Judge.]

This is a suit for alleged infringement of letters patent No. 3,445, for "Improvement in miter machines," reissued to George W. La Baw, May 18, 1869, and extended by the Commissioner of Patents for seven years from May 20, 1869.

The defendants filed a joint and several answer, alleging, among other things, that the surrender made by the complainant of his original patent was not for a good and sufficient cause, and that the reissue was for a different invention, denying the infringement and setting up prior public use. They admit that they have constructed and sold miter machines containing knives or cutters in combination with mechanism for operating the same for cutting miters, under the authority of letters patent granted to one Stephen W. Hall, August 17, 1858, but deny that the said Hall machine infringes upon the invention described in the bill of complaint.

It is the judgment of the court that the defendants have infringed the second claim of complainant's reissue, and there must be a decree for an injunction and an account.

Held that:

Whenever a patent is reissued or extended, the presumption is that it is for the same invention, and the action of the Commissioner is conclusive against a charge of fraud in obtaining the extension or the reissue, as well as in other objections, unless it appears upon the face of the papers that the new patent is not for the same invention as the original.

The testimony of witnesses of whose names no notice was given to the complainants is admissible to show the state of the art; but will receive no consideration upon the question whether there had been a prior knowledge and use of the invention.

It will require strong evidence to overcome the presumption that a patented machine is substantially different from one patented before, which arises from the Commissioner's having not only issued the second patent with the knowledge of the other, but having afterward reissued it and extended it.

The experts produced by the parties having disagreed whether the machine covered by the patent in suit was anticipated by one previously patented, the court examined the question itself, and held that it was not.

A patent will not be set aside upon the mere testimony of a single witness that many years ago he saw a machine like the one described; it must be regarded at most as an abandoned experiment, no second machine having been known.