How to Find Variation and Attraction of the Mariner's Compass.

MESSRS. EDITORS:—You will much oblige your humble servant by giving the following a place in your useful columns, for the benefit of mariners at large:—

A New Mode for Finding the Variation and Local Attraction of the Mariner's Compass.—Take an ordinary compass-card and erect upon its center a fine copper wire, from four to six or eight inches in hight, and perpendicular to its plane, at the moment of the sun's meridian passage, as indicated by the noon observation for latitude, note the direction of the shadow cast by the wire on the compass-card. The angle contained between this direction and that of the north and south line of the card, will give the variation and local attraction combined. Small errors are involved in this method, but the approximation is close enough for the purpose for which it is intended. MARINER.

Naval Academy, Annapolis, Md., July 3, 1866.

[The above communication was sent to us by a well-known commander in the navy, and the information given is no doubt correct.—EDS.

NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees:—

ROW-LOCK.—CAPT. J. W. NORCROSS, Middletown Conn.—This invention relates to a row-lock which is mounted on a wooden bed plate and composed of metal sockets with wooden thole-pins, in such a manner that the row-lock can be sold ready mounted, and all the boat-builder has to do is to fasten the bed plate down to the gun wale of the boat, the metal portion of the row-lock with the thole-pins being secured to the bed plate so that it can be easily fastened or unfastened, thus enabling the owner of a boat to take off his row-lock when the boat is laid up ashore, and to attach the same at a moment's notice if the boat is needed for use.

CORN CULTIVATOR.—C. W. TALIAFERRO, Keittsburg, Ill.—This invention relates to a corn cultivator plow, and it consists in a novel construction of the same, whereby the plows may, with the greatest facility, be adjusted both vertically and laterally, as may be required, and a strong and durable implement obtained.

BRUSH.—R. P. GILLETT, Sparta, Wis.—This invention consists in arranging within a suitable frame, a series of parallel layers of bristles, broom-corn, or any other material ordinarily sed for brushes, with a cross block or piece between each layer, which layers and cross blocks are secured together by bolts and nuts in a novel and peculiar manner.

QUARTZ CRUSHER.—JOHN T. BONNELL, Columbia, Cal.—This invention relates to that class of quartz crushers which are provided with rising and falling weights, pounders, or stamps, and it consists in a novel and improved means for operating the weights, pounders or stamps, whereby the machine may be worked by hand with a very moderate expenditure of power.

BRIDGE.—DAVID HAMMOND AND W. R. REEVES, Canton, Ohio.—This invention relates to a novel construction and arrangement of cast-iron arches, king and queen posts, and wrought-iron string pieces, etc., in such a manner as to insure a light, strong and durable bridge.

WINDOW SASH FASTENING.—H. DE BAUN, Paterson, N. J.—This invention consists of a latch attached to one side of the window sash, in combination with a rack attached to the window frame, in such a relative position with the latch that the latter may catch into the rack, and thereby support the sash.

SHEEP-FEEDING RACK.—M. S. EVERY, Bridgewater, Mich.—The object of this invention is to so construct a sheep-feeding rack that the same may be used for feeding out either hay or grain.

STEAM TRAP.—T. M. FORCE, Norwich, Conn.—This invention relates to a novel construction and arrangement of the trap whereby efficiency and reliability of operation and simplicity are secured.

POCKET-BOOK PROTECTOR.—CHAS. H. BAGLEY, Elgin, Ill.—This invention relates to a mode of securing a pocket-book, memorandum book, bill holder, or the like, in a person's pocket, in such a manner as to frustrate any felonious attempt to abstract the same but, at the same time, which will not hinder the owner of the pocket-book from withdrawing it whenever occasion requires.

BEE PASSAGE AND PROTECTOR.—JAMES WASH, Mount Sterling, Ill.—This invention is designed to protect bees from the moth by preventing their entrance into the hive, and to this end the invention consists in the employment or use of a tube applied to the hive in such a manner that the entrance will be at some distance from the hive, and having the latter provided with decoys composed of openings covered with wire gauze, these openings being directly over vats or receptacles supplied with grease or any substance which destroy the millers as they drop into it.

INSECT PROTECTOR.—SAMUEL CLARK, New York City.—This is a device for protecting bedsteads from bedbugs and other crawling insects. It consists in placing a thin band or annular pendent projection within an united cup-shaped base, one being provided for each leg or foot of the bedstead to rest upon, so that the bugs cannot pass from the floor up the legs of the bedstead.

BLACKSMITHS' FORGE.—JAMES PATTERSON, New York City.—This invention consists in having the bed of the forge upon a hollow base provided with a perforated valve, and having the nozzle of the bellows entering it, whereby the hollow base is made to perform the double function of a wind chamber and an axle receptacle, and two important results attain—an uniform or even blast supplied to the fire—sudden gusts or puffs, being avoided—and ashes, dross, etc., very readily abstracted from the fire whenever necessary.

CARRIAGE DOOR HINGE.—GEORGE W. BEERS, Bridgeport, Conn.—By means of this hinge the carriage door may be securely attached to the side of the door way, and yet be readily removable when desired. The invention consists in the combination of plates and a catch with the swinging arm of an ordinary concealed carriage door hinge, and with the edge of the door.

BROOM HEAD.—JOHN H. LIGHTNER, Shirleysburg, Pa.—This invention consists principally in attaching toothed bars to the inner sides of the cap; in hinging a portion of the sides of the cap to its upper part; and in securing the parts of the broom head to each other and to the corn by a band slipped down over the broom head for that purpose.

NAILS AND TACKS.—RACHEL SPEER, Passaic, N. J.—This invention relates to that class of fastening by which two or more articles or pieces of any material are secured to each other by driving the fastening through them.

LOCK FOR MAIL BAGS, CARPET SACKS, ETC.—JOHN B. LOGAN, Thornton, Ind.—This invention consists in a peculiar arrangement of bolts and catches, whereby a rapid opening and closing of the bag or sack is insured, which, when locked, will be secure and reliable.

OILER.—GEORGE J. CAPEWELL, West Cheshire, Conn.—This invention consists in providing an ordinary spring-bottom oiler with a tube extending from the nozzle to near the bottom of the oiler, where it has attached to it, by a swivel joint, another tube nearly at right angles with it and turning by its own weight in a plane parallel to the bottom, so that the end of it is always near the side of the can which is lowest.

WATER ELEVATOR.—J. C. BARRETT, Stamford, Conn.—This invention consists in a novel application of the "lazy tongs" system of levers for elevating water for domestic use, and it consists in the means employed for actuating the system of levers and in the means for tilting the bucket.

SCREW WRENCH.—A. M. OLDS, New York City.—This invention consists in the arrangement of a spring tooth bearing at one end against a shoulder of the movable jaw of a screw wrench, and at the opposite end against the shank of the wrench in such a manner that if an attempt is made to slide the movable jaw down, the spring tooth catches firmly between its bearing points and the jaw is locked; but in moving the jaw toward the stationary jaw the spring tooth is released and permits this motion without obstruction.

CHURN.—EDWIN HOYT, Stamford, Conn.—This invention consists in a novel device for holding the dasher rod while being operated, whereby it can be quickly released for removing the dasher from the churn; and it also consists in a novel construction of the dasher whereby a better effective power is obtained for agitating the cream.

CANE-JUICE EVAPORATOR.—JOHN F. RIGGS, St. Joseph, Mo.—In this invention the evaporator pan is made of cast iron and arranged with ledges or flanges protruding from the sides alternating so as to form a transverse channel.

STAMP MILL.—ALEX. HERDLEIN, Egan Canon, Nev.—This invention consists in the arrangement of double-armed levers, the long arms of which are about ten times longer than their short arms, in combination with the stamper and with suitable cranks or eccentrics on the driving shaft, in such a manner that, by the assistance of the double-armed levers, the operation of raising the stamper is facilitated and the number of blows of each stamper can be increased almost to any desired number per minute without danger of having the wipers come in contact with the descending tappets.

TOOL FOR FINISHING AUGER HEADS.—RUSSELL JENNINGS, Deep River, Conn.—This invention consists of a rotary wheel of a peculiar shape, whereby the workman is enabled to apply the auger to the wheel and manipulate the former in such a manner that all parts of its cutting portions, necessary to be operated upon, may be brought in contact with the tool and the work performed in an expeditious and perfect manner.

HEAD BLOCK.—C. LEFFINGWELL, Clarksburgh, Ohio.—This invention consists in the construction and arrangement of the pawl blocks, and the combination of the rods, levers, and racks, by means of which the knees of the head blocks are worked with each other, and with the movable pawls.

TABLE-LEAF SUPPORT.—L. R. CAVENDER, Eureka, Ill.—The object of this invention is to furnish a simple, convenient, and safe support for a table-leaf. It consists in the combination of a pivoted arm, a spring, and a cord, with each other, and with the frame of the table.

SHIP'S WINDLASS.—JOHN S. GETCHELL, Machias, Me.—In this improvement the ship's windlass may be worked with increased power, or increased speed, as desired, and it consists in the combination of two sets of single or double pawls and bent-lever stops with each other, with the ratchet wheels of the windlass, and with the operating levers.

CULTIVATOR.—A. M. BLACK, Auburn, Ill.—The object of this invention is to provide a frame-work and operating movements which have the qualities of great simplicity, cheapness, and efficiency.

HEATER.—NATHANIEL A. BOYNTON, New York City.—This invention relates to that class of stoves which are commonly called heaters, and it consists in providing a novel course for the products of combustion on their way to the exit flue.

GATE.—CHAS. DIXON AND S. H. CLOSE, Port Byron, N. Y.—This invention consists especially in the construction and combination of the spur wheel, shaft, and bevel gear wheel, so that the first effect, upon operating the levers, is to unlatch the gate, and the second effect is to swing it open or shut.

MILK RACK.—ALBERT JACKSON, Clifton Springs, N. Y.—This milk rack is so constructed as to afford a sure support for the milk pans, and to guard against their slipping off when the rack is revolved; and it consists, principally, in the combination of ring guards with the supporting arms and wires

PLOW.—T. E. C. BRINLY, Louisville, Ky.—This invention consistsin constructing the mold-board with a point having a hook or shoulder at its under side to fit over the front end of the land side, whereby a smooth, unbroken surface is obtained at the upper side of the mold-board, and no opportunity allowed for weeds and trash to catch and collect on the point. The construction of the plow is also much simplified.

Notes and Queries

C. C. H., of Mass.—The velocity of water in falling is the same as that of other falling bodies. One pound of water in falling one foot would do one foot-pound of work if all its power could be utilized, and no lever or other device can make it do any more. Practically the best turbine will utilize 91 per cent of the power, good breast and over shot-wheels, between 70 and 80 per cent. It is always best to take the power o a breast wheel from the circumference. With gears, pulleys, and other mechanical devices, it is an invariable law that what is gained in power is lost in speed.

A. J. T., of Ohio.—Breast wheels are generally run with a velocity at the periphery of six to seven feet in a second

W. P., of N. Y.—The lateral pressure of water is a little more than half a pound per square inch for each foot in depth, being 15 pounds at the depth of 34 feet. We should make a dam like yours 13 feet thick at the bottom, and lay the upper side in cement to a thickness of 2 feet.

G. W. P., of Conn.—By turpentine varnish in the laquer receipes is understood copal varnish diluted with spirits of turpentine.

F. M. L., of Pa.—It would seem to be a simple matter to regulate the rise and fall of the weight by a governor but from the incomplete description you give it is hard to form a proper opinion.

J. E. B., of Mass.—You understood us precisely—we did not mean to ridicule the question. In regard to the question, "Which is the mother of the chicken, the one that lays, or the one that hatches the egg?" we refer you to Ralph Waldo Emerson.

S. W. W., of S. C.—Rosin is bleached by melting in a suitable vessel at a temperature of not more than 600 deg and passing steam through the fluid mass. The steam and rosin are then condensed in a receiver and the product dried. Carbonic acid, or a mixture of carbonic acid and nitrogen or hydrogen gas, are introduced sometimes, to perfect decolorization. Rosin oil is one of the products of destructive distillation of rosin, the residuum being tar.

J. M. M., of Conn.—We are not aware that Arago's plan for proving the theory of light, has been tested. The undulatory theory is becoming recognized and accepted. The calcium light is not polarized. We cannot tell whether laying a razor aside for some months will restore its quality of holding an edge or not. The experiment can be tried.

A. B., of Mass.—Your transfer ink, judging from your description, is probably a lithographic ink, composed of tallow, wax, and soap, each 4 oz., shellac 3 oz., gum mastic, 2½ oz., black pitch 1½ oz., and lampblack. To your inquiry: "does a piece of cloth colored with an aniline dye fade on exposure to sunlight?" we reply, that much depends on the nature of the fabric. Silk or woolen will retain an aniline dye very well, but cotton, being a vegetable, must be albumenized or animalized to receive the aniline. Sunlight affects these dyes more than madder and some other dyes.

J. S. R., of Pa., asks if there is such a thing as a suction fire engine, how far it will supply itself, and where it can be got, and the price? There was a time when the tank of fire engines were filled with buckets by hand, but they have gone the way of the hand-card and old fashioned spinning wheel. All fire engines, hand and steam, are now built to elevate their own water by what is commonly called suction that is the elevation of water by atmospheric pressure in a vacuum. The supply keeps pace with the delivery through the forcing pipe.

R. N., of Nebraska.—The only receipe we know of for restoring burnt steel is to work it repeatedly at a low heat and even that won't do sometimes.

K. R. P. of Ind.—When the furrows are laid off in a mill stone, the miller strikes a circle near the eye and another near the verge of the stone, he then draws lines from the circumference of the small circle to points on the large one, the angle, or, more properly, the lead of these lines, constitutes the draft of the furrows.

T. G., of Canada.—Your proposition in hydraulics is not of sufficient general interest to warrant its publication It would better suit the columns of *Silliman's Journal*.

I. C. T., of Del.—Refer to Vol. XI., pp. 295 and 373 for rule to find gears for lathe screw cutting. We have published this rule so many times we dislike to produce it again. You will find a hint also in our reply to T. R., Sing Sing in No. 26, Vol. XIV., page 429.

SPECIAL NOTICES.

L. C. Q. Wishart, of Philadelphia, Pa., has applied for the extension of his patent for ornamenting bottles. The petition is to be heard on the 8th of October next.

Lorenzo L. Langstroth, of Oxford, Ohio, has petitioned for the extension of a patent granted to him on the 5th day of October 1852, and reissued on the 26th of May, 1863, for an improvement in Bee Hives. The petition will be heard on Monday the 17th day of September, 1866.

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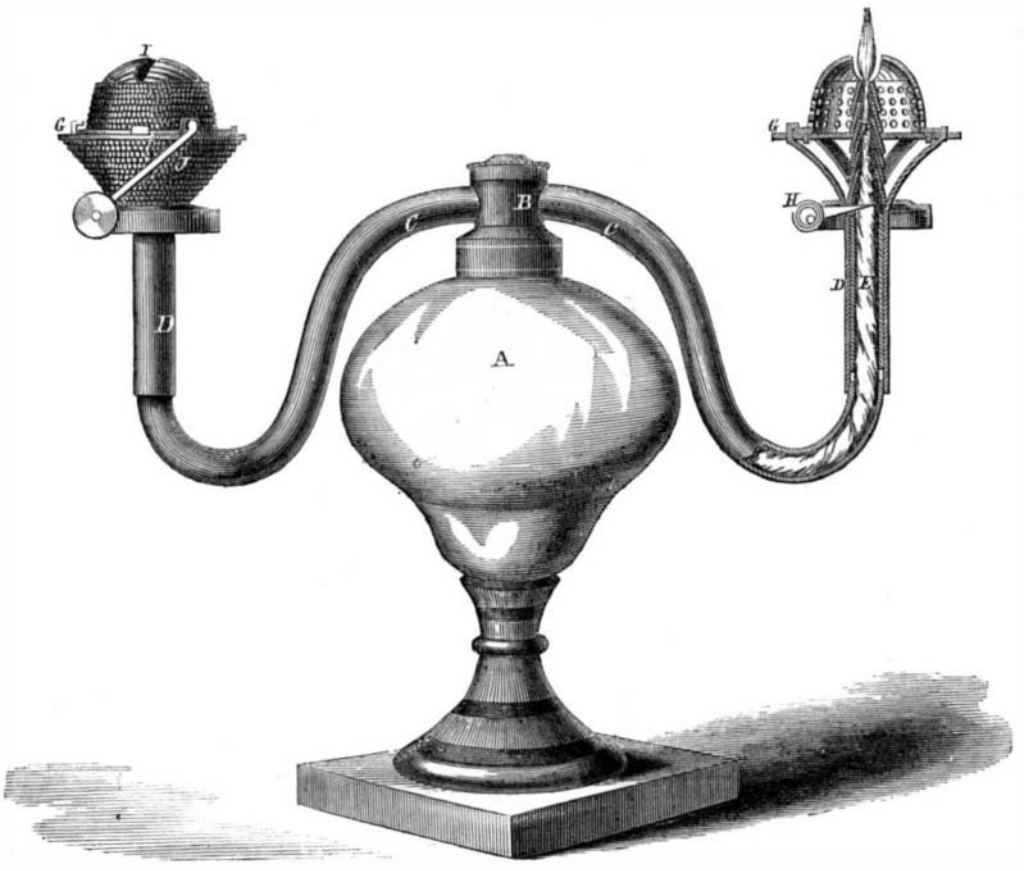
Lamp Chandelier for Burning Kerosene.

The difficulty of utilizing all the light from the common kerosene lamp is well known. If the light is required to be concentrated upon one spot, a shade is necessary, and then the shadow of the lamp interferes with the projection of the light. The usual lamp top also prevents a thorough combustion of the oil, from the inability to supply the flame with sufficient oxygen, thus requiring the use of a chimney to create a draught. The object of the improvements here illustrated, is to remedy these defects in the ordinary lamp, and to derive the maximum amount of light from the minimum of oil.



ADAIR'S KEROSENE CHANDELIER.

A represents an ordinary lamp, receiving in the top, in lieu of the usual cone, a cap, B, sustaining two branches, C, which are provided with larger tubes, D, at their extremities. These branches contain a wick, E, which can be met by that from a common burner, or extended, as at E, to the top of the tube. This branch shows a burner requiring no chimney. The tapering tube, F, is made of a sheet of metal, wound spirally, the edges overlapping, and the aperture at the top compressed to flatten the wick, thus presenting a large surface to the action of the atmosphere. The lower portion of the burner is formed by splitting the tube, D, longitudinally, and spreading the parts, which are secured in their expanded form by a circular plate, G. The spur, H, works eccentrically, entering the wick and, by a sliding motion, raising or depressing it, and then leaving it when the operation is performed. The cone, I, is corrugated at the top by lines running obliquely toward the opening, by which means the air traverses across the flame, spreading it over a larger area, and increasing the amount of light. As an addition to the brilliancy of the light, the cone is covered with an open jacket of glass beads, shown at J. The advantage of the spiral tube, F, is that the heat from the flame cannot pass directly down toward the oil, thereby rapidly volatilizing it, but is compelled to follow the spirals.

These are among the principal advantages claimed for this improvement, but there are other and different applications of the improvement which can be advantageously employed in many forms. Patented Oct. 13, 1863, by James Adair, Pittsburgh, Pa., to whom apply for rights and for further particulars, care of Hussey, Wells & Co.

Trial of One of the New Frigates.

The *Chattanooga*, one of the new steam frigates built to attain great speed, has had a trial trip at sea, and has performed well. She attained a speed of 15¾ statute miles per hour under steam alone. The amount of coal burned was 12,000 pounds per hour, and the engines, which were built by Merrick & Sons, of Philadelphia, averaged 44½ revolutions per minute, the highest number being 52. The diameter of the cylinders is 84 inches by 48 inches stroke.

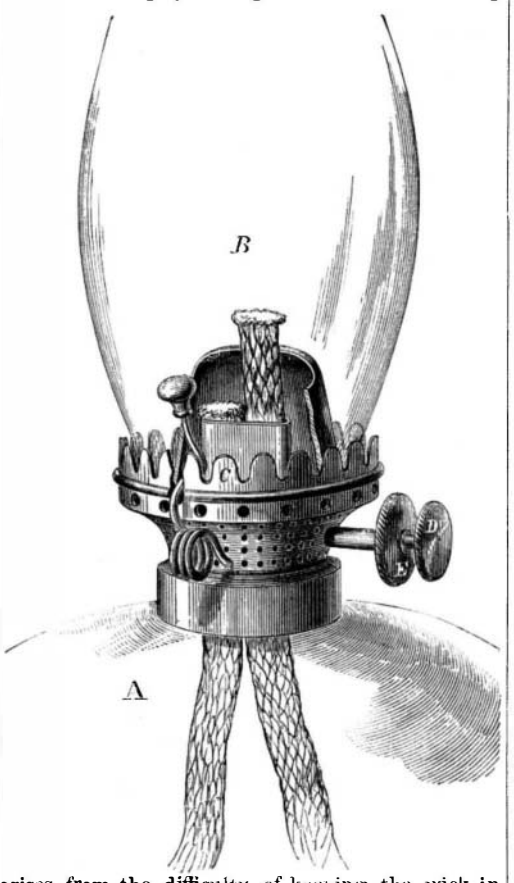
We hope soon to be able to give full details of the *Madawaska's* engines designed by Capt. Ericsson. They are expected to achieve great results.

Thread from Cotton-Plant Stalks.

An ingenious person in New Orleans has been engaged in making thread from the stalks of the cotton plant. It is very fine and strong, and looks very much like flax, being nearly as soft and pliable. He proposes to make this thread into cloth, which he says will be as strong and durable as that made from cotton itself. Forty pounds of thread can be made from one hundred and twenty pounds of stalk. A new factory will soon be established for the manufacture of cloth from this substance. The discovery is not a new one. It has been known for several years that there was a fibrous substance in the cotton stalk which very much resembles flax, but it has never before been put to practical use. Should this prove successful, it will double the value of the cotton plantations at the South. The next invention in order, for the development of the South, is a method of making paper from sugar-cane stalks. Whoever does this ought to make a fortune.

IRWIN'S LAMP TOP.

Much of the prejudice against the kerosene lamp arises from the difficulty of keeping the wick in proper trim, so that the flame shall be even and give the largest amount of light without smoke. Even the most practiced hand frequently fails to cut the wick aright, and when the lamp is lighted, a stream of flame and smoke shoots up on one side, while the other side burns dimly. The annoyance of removing the heated chimney to repair the defect, the repeated failures, and the danger of cracking the glass, make together quite a sum of vexation.



The improvement illustrated herewith is designed to remedy these difficulties. Instead of one flat wick, two of half the usual width are used and moved independently of each other. A is the lamp; B is the chimney; C is a lamp top of the usual form, but having a double instead of a single feeder. D is the head or button of one feeder, furnished with the usual spur inside the wick tube, which raises one wick, and E is another secured to a sleeve that rotates on the shaft of D. This is also furnished with a lifting spur which moves the other wick. Either of these wicks, therefore, may be raised or lowered independent of the other, or both may be moved together by grasping both disks at the same time. A third spur can be used for a treble wick, the disk or button projecting from the opposite side of the top.

Patented Feb. 14, 1865 For further particulars address Lewis Hover, 50 State street, Chicago, Ill.

The Trichiniasis.

Our attention has been called to a very able paper on this subject by James C. White, M. D. published in the Boston *Medical and Surgical Journal*, which confirms the correctness of the idea that pork, raw or partially cooked, is unfit for food. The presence of trichinæ in pork, he says, can only be recognized by its effects on those who eat it, or by microscopic examination.

The well-authenticated account of the death of several members of a family in Marion, Linn county Iowa, from trichiniasis, caused by eating raw ham, ought to be a sufficient warning against the use of pork in an uncooked state. It seems, from this account, that salting and smoking is not sufficient to destroy these parasites. The only member of the family who escaped illness was one who had not partaken of the ham. It was discovered that the hogs which furnished the bacon had been afflicted with the "hog cholera," but being supposed to have recovered, were fatted and killed. The connection between "hog cholera" and trichiniasis seems thus to be sufficiently well established to render the flesh of diseased hogs a dangerous article of food.

Locomotive Boilers.

We believe our Yankee brethren make an engine better adapted to rough, and even to ordinary lines, than our own, and, on the other side, we consider our engines simpler and stronger for their work. A Yankee boiler would burst, by hydraulic pressure, long before ours would give way, and yet they carry as high steam as we do.—*Engineering.*

VANILLA.—A successful effort, it is said, has been made to raise this plant in France. The experiment was made in the public gardens of the St. Bruno, and the quality is affirmed to be equal to the best imported from the West Indies. The seed of the vanilla is remarkable for its fragrant odor, and yields an oil which is much used as a flavor. It is also employed in medicine in place of valerian, all the virtues of which it is supposed to possess, while it is at the same time far more grateful to the taste

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