

him from every direction. Anxious to teach his new theory to the academic students, he sought permission and was informed he could do so by writing and defending a dissertation and by paying the sum of fifty thalers. On June 28, 1812, Hahnemann gave his famous dissertation in Latin on the "Helleborism of the Ancients." It was a masterpiece of scholarship and scientific knowledge, and produced a great sensation in Leipzig. One of his hearers, a Dr. Huck, says: "To hear Hahnemann, the boldest investigator of nature, defend the masterpiece of his genius and diligence, was an enjoyment truly heavenly. As I rode home in a dream I felt the solitude about me when I had to admit that I was unworthy to loosen his shoes. He covered himself with glory. He remained victor."

At the delivery of this dissertation, Frederick Hahnemann acted as respondent. We will pause in our history to recite what is known of the life and fate of this the only son of the founder of homeopathy.

Frederick Hahnemann, born in Dresden the 30th day of November, 1786, was the pride of the family, and whose fate was so peculiar and so appealing to our sympathy as to make his life one of unusual interest to us. He was a stout, healthy little fellow as a child, and was familiarly called Fritz by his father. He had a brilliant education, spoke Latin, Greek, French, English, and Italian, and was conversant with Arabian, was a fine musician and a general favorite with all who knew him. He graduated in medicine at Leipzig, in 1812, although the year before he had entered the field as an author in defending his father against Hecker's attack upon The Organon. He purchased a drug store at Wolkenstein, in order to be freed from the law against the self dispensing of drugs, and there began the practice of his profession. His fame quickly spread, and his house was thronged with patients. He lived in pompous style and went from place to place with a coach and four. He contracted a matrimonial alliance with a widow, which gave great offense to his father, and this estrangement was never quite removed. Frederick Hahnemann's professional success soon aroused a jealousy among his allopathic confreres, and a charge was brought against him of dispensing his own remedies. Though his cause was a good one and he could have undoubtedly won his case if he had remained for trial, he would not give his enemies the satisfaction of appearing before them, and so determined for once and all to avoid their persecutions and left home, wife, children, country, and practice to take up his life in a foreign land. He went to England and sent letters home at irregular intervals. These letters were so odd, the arrangement of the written matter on the page was so eccentric, and the mode of expression was so peculiar that his family were firmly convinced of his insanity. A letter written from London, in the spring of 1819, was so filled with this recklessness, so unusual to the careful student, that his father exclaimed in the most vehement grief: "My poor son is becoming insane!" The last line was written by Frederick from London, June 25, 1820, and he was forever afterward lost to the knowledge of his family. The father bent under the heavy grief and several times expressed his fear that his son had died in an insane asylum. Report has it that in 1830 a traveler calling himself Frederick Hahnemann had visited the interior of Pennsylvania, and had cured many persons by means of small powders. Nothing more definite was ever known of him.

For about nine years Hahnemann remained in Leipzig, winning many laurels, practicing continually, and constantly working to perfect homeopathy. He had many distinguished friends and illustrious patients. But envy and malice were at work against him. The apothecaries made a government complaint against him for dispensing his own medicines. In a rescript in December, 1820, the authorities admitted the justness of the apothecaries' complaint, and deprived Hahnemann of the right to dispense his own remedies. This, of course, destroyed the effectiveness of his labors, although it did not absolutely prohibit his practicing his profession. But crippled in his professional privileges, he was forced to say farewell to his native country.

Hahnemann's words regarding his new system were a veritable prophecy. He said: "Our art needs no political lever, no ribbons of worldly orders to develop it into something. Gradually it grows through the many weeds, sprouting high around it, from the unostentatious acorn into the vigorous sapling." The reigning Duke, Ferdinand, of Anhalt-Cöthen, offered him a home in his city and appointed him hofrath, or court physician. Hahnemann removed to Cöthen early in the summer of 1821. He felt the restraint of his smaller field, and was so embittered against the world as, for a long time, to seldom pass the threshold of his own door. He devoted himself with even greater assiduity to perfecting his system and recording his researches. His fame followed him and his practice was very large. People from all over Europe, from the United States, and even South America came to him for treatment, and many physicians made Cöthen their Mecca to study the new school of medicine. Hahnemann was soon so crowded with business that he had to take an assistant in order to accomplish the work that was daily thrust upon him.

While in Cöthen a reunion was held which had a great significance for Hahnemann and homeopathy. It was on the 10th of August, 1829, the fiftieth anniversary of Hahnemann's graduating in medicine. It was his Doctor's Jubilee. Friends from far and near gathered to do honor to the great man. In a beautifully decorated room he was presented with a finely written programme of the occasion, a beautiful medal engraved by Kruger, of Dresden, with the portrait of Hahnemann, the date of his birth and graduation on one side, and his homeopathic axiom, *Similia Similibus*, on the other; a large oil portrait of Hahnemann well executed by Schoppe, of Berlin; the congratulatory diploma from the faculty at Erlangen, and many other tokens and expressions of regard. The venerable jubilant, with heartfelt emotion, gave thanks to his Almighty Father that he had been permitted to make so important a discovery. Congratulatory letters were received from the Duke and Duchess of Anhalt-Cöthen, accompanied by the present of an antique cup and a golden casket ornamented with the initials of the Duke in brilliants. At this meeting was organized the first homeopathic medical society, the "Central Society of German Homeopaths," which

was henceforth to meet annually on the 10th of August.

In 1831, when the cholera broke out in Europe, Hahnemann carefully studied the symptoms of the disease through the reports sent him, and decided upon camphor as the indicated remedy. Reports poured in from physicians, priests, and laymen in regard to the wonderful efficacy of camphor, and the consensus of opinions showed that hardly a death occurred where the remedy was used according to instructions. Hahnemann did not see a case of cholera during the epidemic. A finer illustration of the workings of our law of cure cannot be found. To prescribe for a malady without seeing it, to cover the picture of the disease with a remedy whose pathogenetic symptoms show it to be the simillimum, and to effectually stamp out the epidemic was a victory such as the medical world had never witnessed.

Hahnemann remained in Cöthen fourteen years, one of the busiest and most honored scientific men in all Europe. We find him at the close of 1834 an old man of seventy-nine years, active, strong, and full of the faith in his new school. His wife had been in her grave for five years. A lady patient had come from Paris to consult the great Hahnemann in regard to a serious affection of the heart and lungs. Her name was Melanie d'Hervilly Gohier, an adopted daughter of Louis Gerome Gohier, who was Minister of Justice and President of the Executive Directory of the French Republic in 1799. This lady was an enthusiast in all that interested her. She was a daring rider and swimmer, possessed all kinds of rifles, had obtained permission to hunt, had been in the academy of painting, in some way had clandestinely been admitted to the dissecting room, and had taken a course of lectures on anatomy. A mutual admiration sprang up between this young Frenchwoman and the learned doctor, and it is facetiously stated that Hahnemann cured her of her lung trouble, but changed the heart affection into another one of a more chronic nature. They were married on the 28th of January, 1835.

The young wife, with her usual enthusiasm, was anxious to have her husband locate in Paris, and so fascinated the old man with her alluring representations of the fame and honor he would reap in France that he resolved to leave his fatherland and follow his wife to Paris. A farewell trip was taken to Leipzig, where Hahnemann gave a dinner to his pupils, and a reception to the great man was held. Early on the morning of the first Whitsunday, 1835, they left Cöthen for Paris, and Germany never again saw the beloved founder of homeopathy.

In Paris, homeopathy was struggling for a foothold. There were a few representatives, but little was known of the new system. "Elle est morte!" or "On n'en parle plus!" were the common expressions regarding it. The coming of Hahnemann was to raise the banner on high and establish the cause on a sure foundation. By a royal decree, obtained through the kindness of M. Guizot, Hahnemann received permission to practice. One newspaper after another took up the cause and rallied to the support of Hahnemann and homeopathy. The following year a medal in likeness of Hahnemann was cast, and a deputation waited upon him to present him with it as a token of their honor for him and to thank him for locating in their country.

Patients flocked to see the great man and to secure his services. It is said that Hahnemann valued his advice very highly, as it required ten Louis d'or, or about \$48, to consult him. Be this as it may, he also devoted a great deal of time to treating charity cases. He occupied a large hotel, and patients came to see him in veritable processions. Helen Berkeley, an American lady who visited Hahnemann professionally, gives her experience as follows: "In 1839, Dr. Hahnemann was residing in Paris, near the garden of the Luxembourg. During the winter of that year, desiring to consult him in behalf of an invalid friend, I made him my first visit. That I might obtain an audience as early as possible, I entered the carriage which was to transport me to his residence at a quarter past nine o'clock in the morning. After about half an hour's ride, finding that the coachman stopped his horses without dismounting, I inquired if we had reached our destination. 'No, madam, it is not our turn yet. We must wait a little while. See! there is Dr. Hahnemann's house,' he replied, pointing to a palace-like mansion at some distance. This mansion was surrounded by a mossy stone wall, with an iron gate in the center. Impatient at the delay, I leaned out of the window and beheld a long line of carriages in front of us, driving through the gate, and out again, as fast as their occupants alighted. This was vexatious; I had taken such especial pains to be early—and all to no purpose. But if there was any consolation to be found in the knowledge that others were even worse off than ourselves, I might have comforted myself by looking in the opposite direction. Behind us stretched a file of coaches, lengthening every minute, and already quite as formidable as the one in front. I had unconsciously taken my station in the midst of a procession slowly advancing to pay homage to the modern Æsculapius. I already knew something of Hahnemann's celebrity, but my opinion of his skill was marvelously fortified as I stared behind me and before me, and then at the empty carriages driving away around me.

"In about twenty minutes the carriage in which I was wondering and waiting, during that time having moved forward a few paces every minute, at last drove briskly through the iron gate, around the spacious court, and deposited us, to my great satisfaction, at the front entrance of Hahnemann's magnificent dwelling. Three or four livered domestics, assembled in a large hall, received the visitors as they alighted, and conducted them to the foot of the side staircase. At the head of the first flight they were received by a couple more of these bedizened gentlemen, who ushered them into an elegant saloon sumptuously furnished, and opening into a number of less spacious apartments."

Farther on, Mrs. Berkeley states that she waited three hours in the parlors before her turn came to visit Dr. Hahnemann.

Such was the ability of our great leader in his new home. His private life was filled with those events which go to make pleasant the life of one who has won fame through his own endeavors. Birthday celebra-

tions, visits from admiring followers and indefatigable attention to perfecting his great work, filled his time to the fullest. His earnings were said to be 200,000 francs or about \$40,000 annually, and that for a man well past four-score years of age.

Hahnemann's life was now nearing its end, and he was awaiting the Master's call, content to give up the struggle and be at rest with Him in whom he had so long trusted. July 28, 1839, he had written of himself: "Non inutilis vixi"—I have not lived in vain. Later on he wrote to a friend: "It is perhaps time that I quit this life, but I leave all and always in the hands of my God." On another occasion he wrote: "My conscience is clear; it bears me witness that I have ever sought the welfare of suffering humanity; that I have always done and taught what seemed to me best, and that I have never had recourse to any allopathic procedures to comply with the wishes of my patients, and to prevent them leaving me. I love my fellow-creatures and the repose of my conscience too much to act in that manner. Those who follow my example will be able, as I am, on the verge of the grave, to wait with tranquillity and confidence till the time comes when they must lay down their heads in the bosom of the earth and render up their soul to a God whose omnipotence must strike terror into the heart of the wicked."

The sun of his life set in glowing colors. Each spring time for some years past Hahnemann had been subject to an attack of bronchial catarrh. The 15th of April, 1843, he was taken so seriously ill with his old trouble that his wife admitted no one. Several times he was reported as dead, and the statements as many times disproved. This condition ran on through the rest of the months of April, May and June, with variations from better to worse. Hahnemann's mental faculties were retained to the last, and he gave advice regarding the choice of remedies for his affection that showed the wonderful memory, knowledge and judgment of the man. He was treated by his wife and Dr. Chatran. He suffered more from attacks of dyspnea toward the end. It was during one of these attacks that his wife said to him: "Providence should really owe to you an exemption from your sufferings, because you have alleviated those of so many others and have borne so many hardships in your laborious life." He replied: "To me? Why to me? Every one in this world works according to the talents and powers which he has received from Providence, and more or less are words used only before the judgment-seat of man, not before the throne of Providence. Providence owes me nothing, but I owe it much. Yes, everything!"

"He retained his mental faculties to the last moment, and though his voice grew more and more indistinct, his broken words showed the continued clearness of his mind and the calmness with which he saw his end approaching. At the very beginning of his illness he had told his people that this would be his last, as his frame was worn out."

Samuel Hahnemann died at five o'clock on the morning of July 2, 1843, aged eighty-eight years two months and twenty-two days. A mistake as to this date was probably caused by a typographical error. The only two works published in the German language relative to the date of his death, Hahnemann's Life and Works, by Albrecht, and History of Homeopathy, by Ameke, give the date as June 4. But the cuts of the monument erected to his memory in Leipzig, as well as other authorities, give it as July 2. To settle the question, I wrote to Dr. R. E. Dudgeon, of London, who should know more of Hahnemann than any English-speaking homeopath. He replied: "I thought the best way to answer your question was to ask his grandson, Dr. L. S. Hahnemann. He tells me that the true date of his grandfather's death is July 2, 1843, and he should know, as he was at the old man's funeral, if not exactly 'in at the death.'"

At this time, Jahr writes: "I had repeatedly resolved to call there when I received a note from Mrs. Hahnemann asking me to call on her that day. I went immediately, and was admitted at once to Hahnemann's bedroom. But imagine my horror, instead of there finding Hahnemann, the dear, friendly old man, greeting me with his smile, I found his wife stretched out on his bed in tears, and next to her him lying cold and stiff, having passed five hours before into that life where there is no strife, no sickness, no death. Yes, dear friends, our venerable father has finished his course. Paralysis of the lungs has freed his spirit from its tired frame after an illness of six weeks."

Hahnemann had no public funeral. His remains were embalmed by Ganai, taken to the cemetery of Montmartre on the rainy morning of July 11, 1843, and buried near the left of the entrance. Only his wife, one daughter and her son, and the servants followed the body to the grave.

One month after Hahnemann's death, the Central Society of German Homeopaths met in Dresden and resolved to erect a monument to the beloved leader. The statue of Hahnemann was executed by the sculptor Steinhauser and then cast in bronze in Rome. With appropriate ceremonies the corner stone was laid in Leipzig and the completed monument unveiled and dedicated on August 10, 1851. Hahnemann, living in Leipzig, was persecuted and driven from the city. Dead, his memory was cherished in the hearts of his followers and his fame emphasized in marble and bronze. His was a life well spent, a benefactor to suffering mankind, a physician, and a true minister of God. He lives with us to-night, and thousands of orisons ascend heavenward to bless the memory of the greatest physician of past or modern times—Samuel Hahnemann, the sage of Cöthen, the founder of homeopathy.

PUTTING IN PLACE AND ADJUSTING THE OBJECT GLASSES OF REFRACTING TELESCOPES.*

By J. A. BRASHEAR.

AFTER the lenses of an objective are thoroughly cleaned by the method given in Popular Astronomy for last month, the next thing to do is to put on the three pieces of tinfoil usually placed on the inner concave curve for the purpose of separating the lenses

* From Popular Astronomy.

slightly so as to prevent them from touching one another.

Mark three places equidistant on the edge of the lens on which the tinfoil is to be placed. For a 4 in. lens cut a strip of tinfoil $\frac{5}{8}$ in. wide and long enough to handle well. Place a drop of mucilage—good quality—on a piece of letter paper and with the finger take up a very small quantity and spread it on the end of the strip of tinfoil, taking care not to cover much more than is to be pasted on the edge of the glass; quickly lay the foil in place, letting it lap over about $\frac{1}{8}$ in. for a 4 in., proportionately more for larger glasses. Lay a piece of clean letter paper over the foil and press down by rubbing with the thumb nail. Let it remain a little while to dry, then slice it off with a sharp knife as our mothers used to slice off the extra dough from the edge of a pie pan. Be sure to trim off the part of the tinfoil that you have pasted over, as that paste or extra mucilage will form an extra thickness which may do an injury. Then put on the second and third pieces in the same way. If neatly done, no cleaning is necessary around the foil.

Some of our German friends use strips of a postage stamp, and I believe they would come in first rate if we are willing to break through the conventional tinfoil. I have measured quite a good number of stamps with the gum on them and find the thickness does not vary greatly from twenty-five ten-thousandths of an inch, about one-fortieth of a millimeter. This is rather thicker than the tinfoil the writer is in the habit of using for objectives whose inner curves are equal, but with such a slight difference as there would be between the stamps and the tinfoil with its adhesive gum I think it perfectly safe to use the strips of a postage stamp in place of the foil. With all the writer's experience he is never sure that the amount of gum is always the same on the three strips of tinfoil, whereas a careful measurement of a number of stamps did not show a variation of three ten-thousandths of an inch. Columbian or other forms of the longer stamps could be used for larger glasses.

Some objectives I have met with, particularly those of the Fraunhofer Herschel curves, have enough difference in the inner curves to touch in the center. In the absence of a spherometer to measure the curves, this may always be known by looking through one of the lenses at a rather low angle, when Newton's rings will at once be seen at the point of contact of the two lenses. In this case the lenses must be separated by a greater thickness of tinfoil or doubling up of the stamp strips.

The lenses should be placed together carefully. Small lenses may be readily placed together while lying horizontally. Large lenses should always be set on edge and placed together in a vertical position, then firmly grasped with the hands and laid on a cushion, the same as used in taking objective out of its cell. The block or book on which the cushion of cheese cloth is laid should be somewhat smaller than the glass, then the cell will readily slip over it. In some forms of cell, each of the lenses is mounted separately, indeed all our later forms of cells for larger objectives are made this way, so that it is much easier to place the lenses together, but what is written here holds good for any form of mounting.

If the objective is marked to go together in a certain way, which is usually the case if it has been corrected locally for irregular density, etc., the lenses should always be replaced in the same manner. At any rate, it is safe to place the lenses together as the maker placed them.

In nearly all objectives made up to ten years ago the crown lens was placed in front. In objectives made by Steinheil and the writer the flint lens is placed in front, and it is of course essential that the proper lens should always be placed in the position designed by the maker. If there is a suspicion that the objective is not doing good work because of being wrongly placed (and this has happened more than once), it is an easy matter to reverse it and test it. The story it tells will be quickly understood by the observer if he have only "half an eye."

And now a word about adjusting an objective. Wallaston's method of holding a candle at the center of the eyetube near the focus has been given in a number of excellent works, but I consider it not at all suited to the purpose, and the method of using a sort of spherometer with a telescope attached to set on the objective at the equidistant points and observe the image at center of eyepiece is well enough perhaps for experimental purposes.

The simplest and best way is to put the cell in place on the tube, and observe the image of a bright star, either an artificial one, say that produced by the sun shining on the glass insulator of a telegraph line at a sufficient distance to enable it to be brought to a focus, or a first or second magnitude star in the sky. The image of the stars should be circular, and with a sufficiently high power, say 40 to the inch of aperture, the diffraction rings around it should be true circles and these circles should be concentric with, i. e., equidistant from, the central image. If this is not the case, the treatment is simple where there are the ordinary three adjusting screws. If the objective has the flint glass front, as in the Steinheil and our own form of objective, the correcting screws should be so operated that that part of the objective toward which the image seems to flare should be pushed away from the eye end. If the objective has the crown lens front, the reverse treatment is necessary, i. e., that part of the objective toward which the flare extends should be drawn toward the eye end, and the observer should spare no pains until the image is clear and symmetrical. To give the reader an idea how a perfect star image should look, the following simple experiment will be useful. Lay a spectacle or any convex lens on a place where the sun will shine on it. Punch a hole through a visiting or similar card, look through the hole in the card at the image produced by the sun shining on the convex surface—punctured two or three feet away from it. If the hole is situated with the point of the pin, the image of both star and its diffraction rings will be quite similar to their ideal appearance in a $2\frac{1}{2}$ in. or 3 in. telescope. A large hole reduces the diffraction rings as in larger glasses and gives one a most excellent idea of how a star ought to appear in a well corrected telescope. I think it is not necessary to consider the colors shown on opposite sides of the stellar image when the adjustments are not perfect, as

the diffraction rings are an all-sufficient guide, nor is it necessary now to speak of irregular images which are not a function of bad adjustment, though they may be of compression of the objective in its cell.

In many of the smaller telescopes the cells are screwed into place. These the maker should always adjust before sending them from the workshop. I have seen it advised to "gently tap the ring holding the cell on the proper side, to adjust the objective," but this is bad advice. If you cannot send it to the maker, send it to a first class mechanic, get the tube mounted on a carefully centered mandrel in the lathe, and have the objective end refaced until your image is perfect, for without it you cannot expect to do the best work with your glass.

AMUSING TOYS.

THE SURPRISE COFFEE MILL.

The coffee mill that we illustrate herewith would assuredly not be looked upon favorably by prudent housewives who are desirous of never losing a minute of their time. As an offset, however, it will delight children and those who fancy ingenious knickknacks. In its external form this mill resembles the ordinary

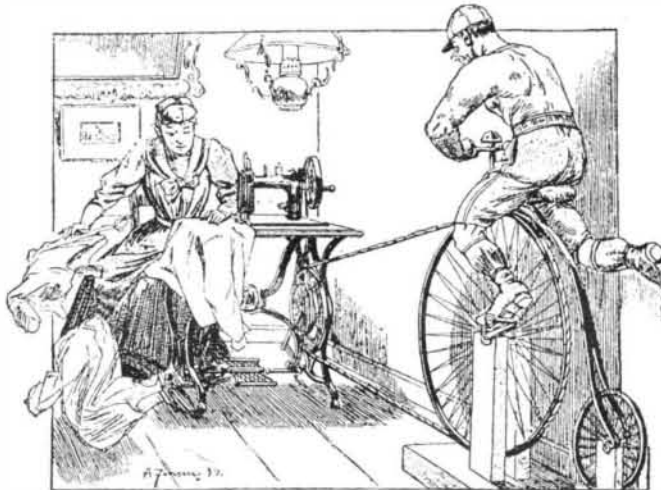


THE SURPRISE COFFEE MILL.

apparatus daily used for grinding coffee, but in its interior, instead of a grinding arrangement, it contains a small clockwork movement that actuates a music box and, simultaneously, a system of jointed levers that set in motion a small automaton. After the clockwork movement has been wound up and the catch that stops it has been freed, the cover of the mill is seen suddenly to rise, while at the same time there appears a figure of a handsomely dressed dandy, who holds in his hand a cup of coffee that he carries to his lips in turning his head with the marks of the liveliest satisfaction. Then, having tasted the beverage, always to the sound of music, the dandy re-enters the interior of the mill, whose cover shuts down and then rises again an instant afterward and permits the tireless coffee drinker to devote himself to his passion.

THE BICYCLE PUT TO PRACTICAL USE.

An ancient proverb very wisely recommends us to combine the useful with the agreeable. The invention of indoor training machines for cyclists permits of putting this proposition in practice in the happiest manner. As well known, for some time now, cyclists who



THE BICYCLE PUT TO PRACTICAL USE.

have made a record and who are condemned to remain at home have found a means of replacing their visits to the velodrome by a course of indoor training, by means of which they keep their muscles in good condition.

Nothing is more simple than the arrangement devised. The bicycle is firmly mounted upon a special support that leaves its wheels free to revolve.

The cyclist seats himself upon the saddle, and pedals with the whole force of his legs. Meanwhile, in thus causing the wheels of his machine to revolve to no effect, the rider puts forth, as pure loss, an important sum of energy.

Why should a utilizable force be thus lost without

benefit to anybody? This is evidently what was asked by the author of the device shown in our engraving, and who, with much intelligence, and very appositely, has discovered a practical process of preventing a very appreciable source of energy from remaining unemployed.

In his system, the driving wheel, instead of revolving idly, is connected by an endless cord with the flywheel of a sewing machine or any other small apparatus that requires a moderate force to set it in motion. Owing to this arrangement, each kick of the pedal is utilized, and the cyclist experiences the sweet satisfaction of knowing that, while training himself in view of a coming race, he is also doing something useful. As may be seen, nothing could be better. But who would ever have expected to see the bicycle thus converted into an apparatus of domestic and practical utility?

A TOY BICYCLE.

We have already described several small mechanical toys characterized by their real ingenuity and in which the motion was assured by means of a heavy flywheel to which a rapid revolution was given either through a cord or by means of a spring.

The little toy bicycle here figured is the latest application of this particularly simple system. When the spring that is designed, upon unwinding, to actuate the flywheel is wound up and then left to itself, we at once see the apparatus begin to run and the little riders move their legs just as if they were really racing



A TOY BICYCLE.

over the track of a velodrome in order to establish a record.

The motion of the legs, which is exceedingly true to nature, is obtained in the most simple manner imaginable. The feet of the racers are attached to the pedals, which carry them along in their rotary motion and thus cause them to ascend and descend alternately. —Revue Universelle.

THE CHEMISTRY OF CLEANING.*

By Prof. VIVIAN LEWES.

As a great city grows, and the agglomeration of struggling humanity increases, such questions as the disposal of sewage and other waste matter rise from comparative insignificance into problems of almost insurmountable difficulty; and while we are able to put the burden of cleansing our towns upon the urban authorities, the responsibility of keeping our homes and bodies in a condition of at least sanitary cleanliness devolves upon the individual, and a knowledge of the causes of dirt and the methods by which it can be removed cannot be regarded as devoid of interest, or at any rate of utility.

Observation shows that in our town houses only a very short interval of time is needed to cause a considerable deposit of dust upon any horizontal surface, while vertical surfaces and draperies, especially if their surface be rough, also accumulate a perceptible

quantity, although of a lighter and more finely divided kind. We also find that this dust is borne to its resting place by the air which penetrates from the outer atmosphere, and that its deposition is caused by the comparative condition of rest insured to it by the absence of wind or violent currents.

The presence of these air-borne particles of solid matter can be made visible in any town by allowing a beam of sunlight or a ray from an electric lantern to pass through the air of a darkened room. If the room be filled with air previously filtered by passing it through cotton wool, the beam of light is invisible

* From a lecture delivered at the London Institution.