SIEMENS ON PATENTS.

Mr. Siemens, in his address before the Mechanical Science Section of the British Association, took occasion to make some remarks on the patent laws of England, of which the following is an extract:

"Closely allied to the question of education is that of the system of letters patent. A patent is, according to modern views, a contract between the commonwealth and an individual who has discovered a method, peculiar to himself, of accomplishing a result of general utility. The State, being interested to secure the information and to induce the inventor to put his invention into practice, grants him the exclusive right of practicing it, or of authorizing others to do so, for a for a limited number of years, in consideration or his making a full and sufficient description of the same. Unfortunately, this simple and equitable theory of the patent system is very imperfectly carried out, and is beset with various objectionable practices, which render a patent sometimes an impediment to, rather than a furtherance of applied science, and sometimes involve the author of an invention in endless legal contentions and disaster, instead of procuring for him the intended reward. These evils are so great and palpable, that many persons, including men of undoubted sincerity and sound judgment on most subjects, advocate the entire abolition of the patent laws. They argue that the desire to publish the results of our mental labor suffices to insure to the commonwealth the possession of all new discoveries or inventions, and that justice might be done to meritorious inventors by giving them national rewards.

"This argument may hold good as regards a scientific discovery, where the labor bestowed is purely mental, and carries with it the pleasurable excitement peculiar to the exercise and advancement of science on the part of the devotee; but a practical invention has to be regarded as the result of a first conception, elaborated by experiments and their application to existing processes in the face of practical difficulties, of prejudice, and of various discouragements, involving also great expenditure of time and money, which no man can well afford to give away, nor can men of merit be expected to advocate their cause before the national tribunal of rewards, where, at present, only very narrow and imperfect views of the ultimate importance of a new invention would be taken, not to speak of the favoritism to which the doors would be thrown open. Practical men would undoubtedly prefer either to exercise their inventions in secret, where that is possible, or to desist from following up their ideas to the point of their practical realization. If we review the progress of the technical arts of our time, we may trace important practical inventions almost without exception to the patent office. In cases where the inventor of a machine or process happened to belong to a nation without an efficient patent law, we find that he readily transferred the scene of his activity to the country offering him the greatest encouragement, there to swell the ranks of intelligent workers. Whether we look upon the powerful appliances that fashion shapeless masses of iron and steel into railway wheels or axles, or into the more delicate parts of machinery; whether we look upon the complex machinery in our cotton factories, our dye works, and paper mills, or into a Birmingham manufactory, where steel pens, buttons, pens, buckles, screws, pencil cases, and other objects of general utility are produced by carefully elaborated machinery at an extremely low cost; or whether we look upon our agricultural machinery by which England is enabled to compete, without protection, against the Russian or Danubian agriculturist, with cheap labor and cheap land to back him, in nearly all cases we find that the machinery has been designed and elaborated in its details by a patentee who did not rest satisfied till he had persuaded the manufacturers to adopt the same, and removed all their real or imaginary objections to the innovation. We also find that the knowledge of its construction reaches the public directly or indirectly through the patent office, thus enlarging the basis for further inventive progress.

"The greatest illustration of the beneficial working of the patent laws was supplied, in my opinion, by James Watt, when just about 100 years ago, he patented his invention of a hot working cylinder and separate steam engine condenser. After years of contest against those adverse circumstances that beset every important innovation, James Watt, with failing health and scanty means was only upheld in his struggle by the deep conviction of the ultimate triumph of his cause. This conviction gave him confidence to enlist the coöperation of a second capitalist, after the first had failed him, and of asking for an extension of his declining patent.

"Without this opportune help Watt could not have succeeded in maturing his invention; he would, in all probability, have relapsed into the mere instrument-maker, with broken health and broken heart, and the invention of the steam engine would not only have been retarded for a generation or two, but its final progress would have been based probably upon the coarser conceptions of Papin, Savory, and Newcomen.

"It can easily be shown that the perfect conception of the physical nature of steam which dwelt like a heaven-born inspiration in Watt's mind was neither understood by his cotemporaries nor by his followers up to very recent times, nor can it be gathered from Watt's very imperfect specification. James Watt was not satisfied to exclude the condensing water from his working cylinder, and to surround the same by by non-conducting substances, but he placed between the cylinder and the non-conducting envelope a source of heat in the form of a steam jacket, filled with steam at a pressure somewhat superior to that of the working steam. His successors have not only discarded the steam jacket, and even condemned it, on the superficial plea that the jacket presented a larger and hotter surface for loss by radiation than the cylinder, but expansive working was actually rejected by some of them on the ground that no practical advantage could be obtained by it. The modern engine, notwithstanding our perfected means of construction, had in fact degenerated in many instances into a simple steam meter, constructed apparently with a view of emptying the boiler in the shortest possible space of time.

"It is only during the last twenty years that the subtile action of saturated steam in condensing upon the sides of the cylinder when under pressure, and of evaporating when the pressure is relieved toward the end of each stroke, has been again recognized and insisted upon by Lechatelier and others who have shown the necessity of a slightly super-heated cylinder in order to realize the expansive force of steam. The result has been a reduction in the consumption of fuel in our best marine engines from six or eight to below three lbs. per gross, indicated horse-power.

"Would it be safe, in view of such facts as these, to discard the patent laws, which, as I have endeavored to show, lay at the very foundation of our modern progress, without making at all events a serious effort to remedy those evils, which, it admitted on all hands, now adhere to them? These evils need, for the most part, no special legislation, but can be traced to the imperfect manner in which the existing patent laws are carried into effect. It is a hopeful circumstance that, during the next session of Parliament, the whole question of the patent laws is likely to be inquired into by a special committee, who, it is hoped, will act decidedly in the general interest without being influenced by special or professional claims. They will have it in their power to render the patent office an educational institution of the highest order."

MACK'S IMPROVED FEED-WATER HEATER.

The great advantages of storing up heat in steam, from which it can be transmitted to water by condensing the steam in the water, have long been recognized in large establishments devoted to dyeing, soapmaking, and other industries necessitating the use of large quantities of hot water. The large amount of latent heat in steam is thus converted into sensible heat in water, and so much greater is the latent heat of steam at 212° than of water at the same temperature, that one pound of steam at 212°, condensed in five and a half pounds of water at 32°, will give a result of six and one half pounds of water at 212°. Thus one pound of steam will cause five and a half pounds of water to boil, and, as the transfer of the heat to the steam is extremely rapid, this method is employed with economy and great convenience to heat water held in wooden tanks, etc., at a distance from the furnace, which may be so constructed as to conduct the heat to the boiler and retain it therein more effectively than could be possible were the heat applied to the bottom of an open vessel.

Fig. 1.

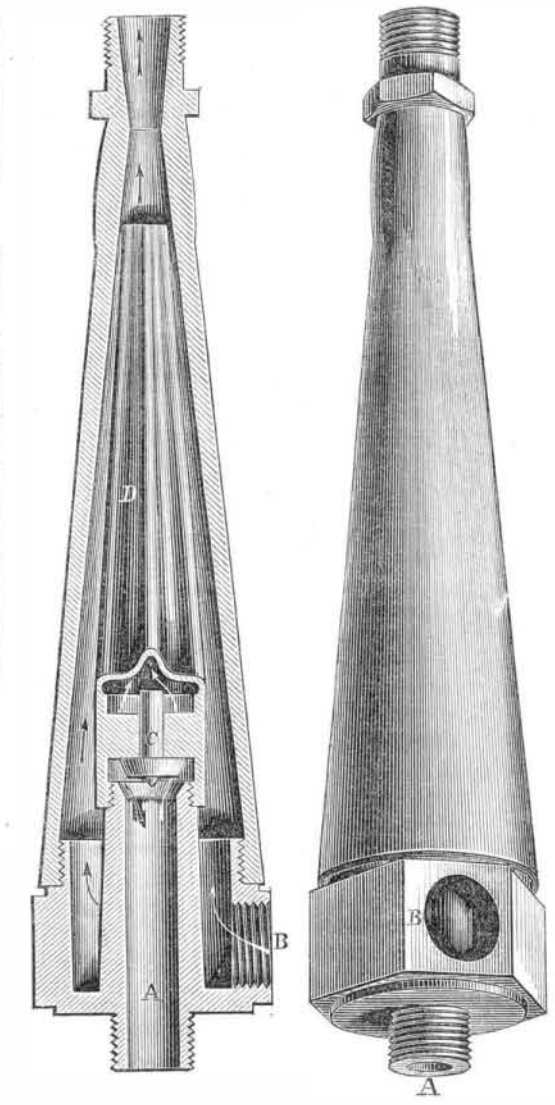


Fig. 2.

There are, however, some drawbacks to this method as hitherto practiced, which, among other things secured, the invention herewith illustrated is designed to obviate. During the admission of the steam into water at any ordinary temperature, the steam being discharged directly into the water, there is a constant succession of loud reports, very disagreeable to listen to; and when the temperature rises towards the boiling point, steam will begin to escape from the surface of the fluid undergoing the process of heating, and thus more or less heat will be lost unless care is taken to constantly adjust the flow of steam to the rate at which condensation takes place.

The apparatus under consideration obviates both these difficulties by mixing steam and water together in constant streams, which can be proportioned so as to deliver the water into a tank or locomotive boiler at any temperature required between 32° and 212°

Its external shell is of the conical form, shown in Fig. 2, while its internal construction is shown in section in Fig. 1. A is the water induction port, and B the steam induction port. The water entering at A is forced on, by the pressure of its head, or by a force pump, through a corrugated pipe, D, and discharged through it at a short distance from and within the apex of the external conical case. This pipe is formed so as to present four corrugations, leaving very thin spaces between their inclosing walls, through which the water flows in very thin strata. This pipe is also formed of thin sheet copper, and therefore transmits heat with great rapidity to the water from the steam, which flows all around, within the space in closed between this water-induction pipe and the outer cone.

The steam thus imparts its heat gradually to the water, and whatever residuum there may be left, on its reaching the end of the water-induction pipe, is condensed there in the current of water, with which it mingles, both then flowing out together, in the form of water heated to a temperature regulated by the proportional flow of the water and steam.

A check valve, C, prevents any return flow which might ensue upon too great an increase of steam pressure in proportion to the water pressure inadvertently applied.

Those acquainted with the theory and applications of heat and steam will recognize in this instrument perfect compliance with scientific principles, and its convenience, in large laundries, dye houses, breweries, etc., etc., will be apparent.

The temperature obtainable in the water heated, of course, depends upon dimensions and capacity of boiler, velocity of induction of both steam and water, and the temperatures of the steam and water; but as all these things can be adjusted and are susceptible of mathematical determination, any temperature between 32° and 212°, for any quantity of water required is attainable, and even the time required to heat it may be computed. There is, therefore, no element of uncertainty in the operation.

The instrument has been used in the soap and candle works of the inventor, hose being employed to deliver heated water to any part of the building to increase the temperature of fluids flowing from one vat to another, etc. It has also received warm commendations from prominent steam engineers in the West, and has been adopted after trial in the House of Correction, at Detroit, for heating the baths in that institution, etc. It is well adapted for cooking and laundry purposes in penitentiaries, prisons, almshouses, hospitals, hotels, etc., and, the inventor informs us, is being adopted by the Michigan Central Railroad for washing cars. Many other applications of this invention will suggest themselves to practical men, one of which is likely to be its application to heating water for locomotive boilers after they are blown off. It now takes about three hours to blow off, clean out, refill, and get up steam in an ordinary locomotive boiler. By the employment of this heater taking steam from a stationary boiler, the boiler might be washed out with hot water, and immediately filled with water at 212°, thus enabling it to start in one third the time now occupied for this purpose.

These heaters are made to deliver streams varying from one half an inch to two inches in diameter.

Patented, July 13, 1869, by Wm. B. Mack, 23 St. Antoine street, Detroit, Mich., whom address for State and Territorial rights.

A New Alarm Bell for Locomotives.

A new alarm bell was tested on the Detroit and Milwaukee Railroad lately. The invention consists of an ordinary bell, weighing about 100 lbs., placed on the platform of the locomotive, immediately over the cow-catcher. A rod attached to the eccentric shaft causes a clapper to strike the bell each turn of the driving wheel. The bell is suspended loosely, and revolves from the force of the stroke it receives, so that all parts of the surface are equally exposed to wear. The advantages of this arrangement are a continuous sound, slow or rapid in proportion to the speed of the engine, each 15 ft. producing a stroke of the bell. In case of an accident, the railroad company can always prove that their bell was ringing according to law; and owing to the position in which this bell is placed, the sound can be distinctly heard about three miles in day-time, and by night four miles or more, the ground and the continuous rail, both excellent conductors of sound, assisting in carrying the vibrations. The Detroit and Milwaukee Railroad have twenty-four of these alarms already in use, and intend to provide all their passenger engines with them. Mr. Ben. Briscoe, the inventor, went to Detroit in 1837, and in 1842 took charge of the Detroit and Pontiac, then a strap railroad, with pony engine and one little car, and performed the duties of master mechanic, engineer, fireman, and sometimes of conductor. In those days signal bells were unnecessary, because the train did not run fast enough to hurt cattle.

GEORGIA STATE FAIR.—The State Agricultural Society of Georgia will hold a Fair at Macon, Ga., beginning on Tuesday, Nov. 16, 1869, and offer an extensive premium list, only a portion of which is limited to the State of Georgia, most of the premiums being open for competition to exhibitors from any part of the United States. Information may, we presume, be obtained on application to the Secretary, D. W Lewis, Esq., Sparta, Ga.

Improved Cotton and Hay Press.

A notice of this press was given in an article on the Exhibition of the American Institute, published on page 217, current volume of this journal. It may now be seen at the fair exhibited by Mr. Champman, the patentee. It was there stated to have been manufactured and exhibited by Whitney & Co., instead of which the name should have been Campbell, Whittier & Co. We herewith give an illustration and brief description of this press, which will give a general idea of its form and operation.

By the engraving it will be seen that the bale is made at the bottom, and that the side and end doors are easily removed, thus giving free access to the bale from all sides.

The follower block, shown as at the top, may be swung over to one side when the press is to be filled, leaving the top of the press perfectly open to receive the material to be pressed. When full the follower is returned to its place, shown by the dotted lines, and worked down. The levers are compound, and also adjustable, so that the fulcrum may be altered to make a short stroke, when the article is loose and little power is needed, or a long stroke, as it becomes more compressed and great force is obtained.

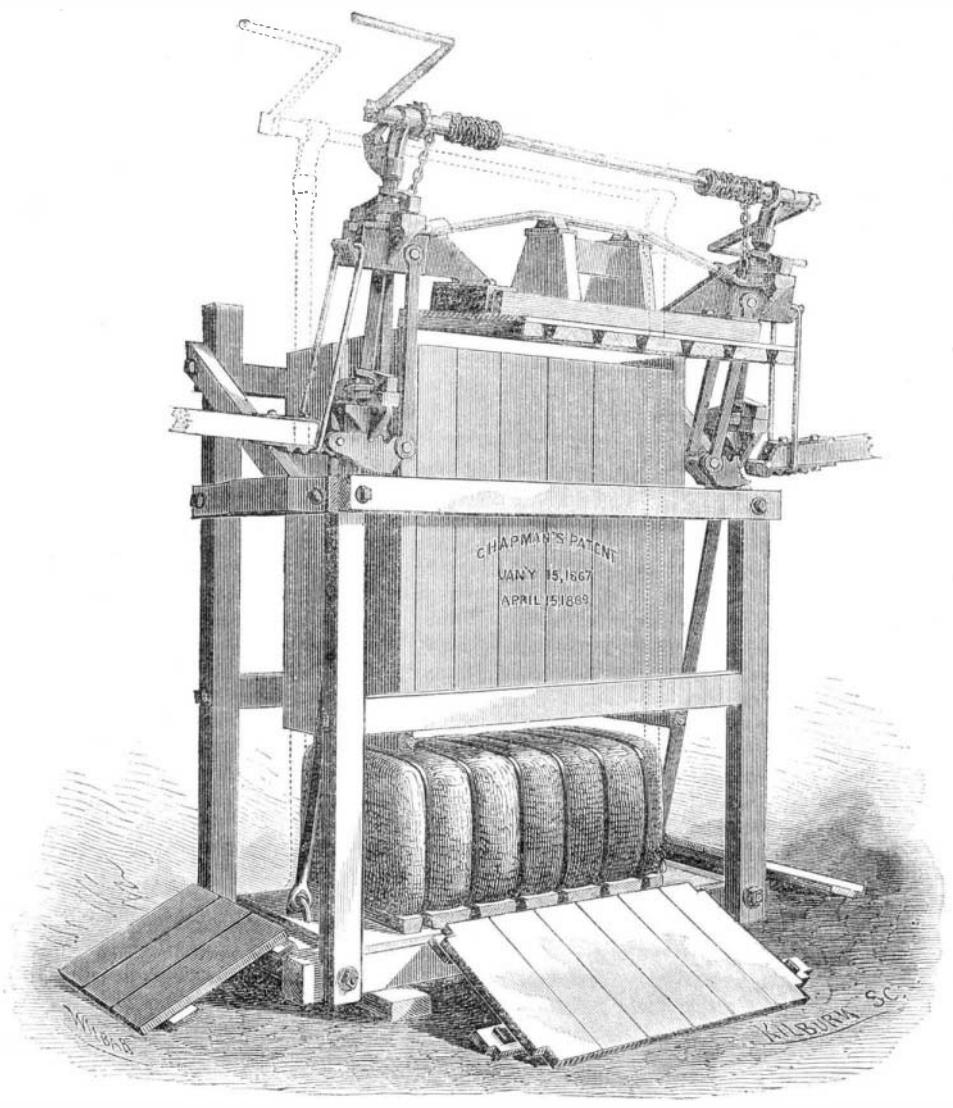
By the peculiar arrangement of the levers and clutches, the follower may be raised very quickly and independently of the levers. In most other presses it requires as much, or nearly as much time to raise the follower block as it does to compress the cotton.

In this the follower is run up quickly and swung over to one side, thus being entirely out of the way for refilling.

These presses are sold cheap, and are durable and substantially made, and from the construction we judge them to be very effective.

Patented January 15, 1867.

For further particulars address Campbell, Whittier & Co., Manufacturers, Boston, Mass.



CHAPMAN'S COTTON AND HAY PRESS.

Nervous Dyspepsia.

Those persons who use their brains much, and who have but little tone or power to their stomachs, should above all things avoid purgatives. So says the *The Herald of Health*, and adds that very much of the natural distress which this class of dyspeptics feel, is caused by the large intestine becoming weakened, dislocated, and filled up with offending matters which there is not strength to remove. In such cases, it is important that the patient do less work with his head, and more with his muscles. If there is strength enough, the daily use of ax or hoe for three or four hours will prove highly beneficial. Riding on horseback is an excellent exercise, providing the saddle is a comfortable one and the horse an easy goer. Hard-trotting horses are not good ones for invalids to ride. A galloping horse is the best for such a person. Those who live in the country can easily take either of these forms of exercise, but they are not always available in the city. In such cases the gymnasium or movement cure are valuable means of treatment. Half an hour daily for a nervous dyspeptic in a movement cure will work wonders.

The diet should be plain and nutritious. It will not do to overload the stomach, yet as much food as can be digested well should be taken. Mastication should be slow and thorough. Such invalids are apt to eat too fast. The remedy for that is to talk a great deal at the table; to get if possible into a good humor before taking a mouthful, and keep in it to the end of the meal. It is generally best to omit the dessert. Fruit is often condemned by the nervous dyspeptic. We are sure, however, that it is not always the fruit which is at fault, but the way of using it. Let it be taken in the morning, and before anything else is eaten, if possible; at first, take small quantities to accustom the stomach to it, Avoid fine bread, vegetables, and pastry; also tea, coffee, and tobacco. Omit the supper, or at least, let conversation at the table be much and eating little.

It is often advisable to cover the abdomen with the wet compress in this disease for an hour or two daily. The compress should be covered with a dry one. A sitz bath at bed time is very serviceable if there is a disposition to sleeplessness, as sleep is very necessary. Patients can not have too much sleep. If mental labor is performed, let it be done between 9 in the morning and 1 P. M. After this, dine and recreate, or perform light physical labor. The after-dinner nap may be useful, providing it does not not interfere with sleep at night, in which case an hour of quiet and rest is better.

The habit of drugging for this disease with all sorts of quack nostrums is very absurd. Hygiene medications will do all that can be done much better. The grand rule should be to live naturally and happily, and throw medicines to the dogs, and nine cases out of ten the sufferer will get well.

Impaired Taste.

Of all the senses, that of taste is the worst treated, the most perverted. The delicate little nervous fibers which are distributed to the minute papillæ that cover the surface of the tongue, soft palate, and fauces, and which constitute the organ of taste, are boiled by hot tea and coffee, burned by hot food, and irritated and inflamed by salt, pepper, spices, vinegar, liquors, etc., until it is a wonder that they can distinguish a peach from a potato. That these things *do* blunt and injure the finer susceptibilities of the nerves of taste, there is not a shadow of doubt. The only wonder is that they do not destroy the sense of taste entirely. Persons accustomed to using these things freely can not distinguish the delicate natural flavors of food, and therefore lose a large share of that gustatory enjoyment which they should experience, and which those who still possess a healthy taste do experience. To an unperverted taste water is the sweetest and most agreeable of drinks, while to many it is scarcely endurable, unless it has mingled with it some sharp, strong-flavored substance. Many persons can not relish the delicious peach even, without peppering and spicing it highly, and then it is not the peach that they taste but the condiments used with it. To such persons, plain, simply-prepared food tastes insipid, while those whose organs of tastes are unperverted such food is filled with delicious flavors. Those who have impaired their sense of taste can, to a certain extent, have it restored, by carefully avoiding the use of the substances which caused the injury. The increase of gustatory enjoyment which they will experience from such a change, will only be believed after thorough trial. There is scarcely one in a thousand whose taste is not more or less perverted and blunted by the use of highly seasoned food or drinks. Simple, healthful food is the exception, while rich, strongly-flavored, and complicated dishes are the rule, because demanded by the perverted tastes of the people.—*Herald of Health.*

THE AUGUST METEORS.

From the Spectator.

A very ancient tradition prevails in the mountain districts which surround Mount Pelion, that during the night of the Feast of the Transfiguration (August 6) the heavens open, and lights, such as those which surround the altar during the solemn festivals of the Greek Church, appear in the midst of the opening. It has been thought by Quetelet, and Humboldt considered the opinion probable, that this tradition had its origin in the successive apparition of several well-marked displays of the August meteors. If this be so, the date of the shower has slowly shifted—as that of the November shower is known to have done—until now another holiday is associated with it, and the simple peasants of Southern Europe recognize in the falling stars of August the "fiery tears of good St. Lawrence the Martyr."

It is wonderful to contemplate the change which in a few short years has come over all our views respecting these meteors. Ten years ago it was considered sufficiently daring to regard the August system as part of a zone of cosmical bodies traveling in an orbit as large perhaps as that of our own earth. Now, the distance even of Neptune seems small in comparison with that from which those bodies have come to us, which flash athwart our skies in momentary splendor, and then vanish forever, dissipated into thinnest dust by the seemingly feeble resistance of our atmosphere. Accustomed to associate only such giant orbs as Saturn and Jupiter, Uranus and Neptune, with orbits which must be measured by hundreds of millions of miles, the astronomer sees with wonder these tiny and fragile bodies traversing paths yet vaster than those of the outer planets. And even more remarkable, perhaps, is the immensity of the period which the August shooting star has occupied in circling around the central orb of our system. Each one of these bodies has been in the neighborhood of the earth's orbit many times; yet the last visit made by them took place years before the birth of any person now living, since the period of meteoric revolution has been proved to be upwards of 118 years.

Another strange feature of the August meteor system is the enormous volume of the space through which, even in our neighborhood, the meteor stratum extends. The famous November system is puny by comparison. Striking that system at a sharp angle, the earth traverses it in a few hours, so that if the earth went squarely through it the passage would occupy, it has been estimated, less than a hundred minutes. Thus the depth of the November meteor bed has been calculated to be but a hundred thousand miles or so. But the earth takes nearly three days in passing through the August meteor system, although the passage is much more direct. For the August meteors come pouring down upon our earth almost from above, insomuch that the radiant point on the heavens whence the shower seems to proceed is not very far from the North Pole; whereas the November meteors meet the earth almost full front, as a rain storm blown by a head wind drifts in the face of the traveler. Thus the depth of the August system has been estimated at three millions of miles; and this depth seems tolerably uniform, so that along the whole of that enormous range (to be counted, as we have said, by hundreds of millions of miles), through which the August ring extends, the system has a depth exceeding some four hundred times the diameter of the earth on which we live.

Yet it is probable that the whole weight of the August system, vast as are its dimensions, is infinitely less than that of many a hill upon the earth's surface. For the weight of the separate falling stars of the system has been determined (by one of the wondrously subtile applications of modern scientific processes) to be but a few ounces at the outside; and even during the most splendid exhibition of falling stars the bodies which seemed to crowd our skies are many miles apart, while under ordinary circumstances thousands of miles separate the successively-appearing meteors. Indeed, it is well remarked by an eminent member of the Greenwich corps of astronomers, that the planets tell us by the steadiness of their motions that they are swayed by no such attractions as heavily-loaded meteor systems would exert. "The weight of meteor systems must be estimated by pounds and ounces, not by tuns," he remarked.

The spectroscope has taught us something of the constitution of these bodies, though they never reach the earth's surface. Professor Herschel, third in that line of astronomers which has done so much for science, has employed an August night or two in trying to find out what the August meteors are made of. With a spectroscope of ingenious device, constructed by Mr. Browning, F.R.A.S., for the special purpose of seizing the light of these swiftly-moving bodies, Professor Herschel was successful in analyzing seventeen meteors. The most interesting of his results is his discovery that the yellow light of the August meteors is due to the presence of metal sodium in combustion. This metal has a very striking and characteristic spectrum, consisting of two bright orange yellow lines very close together; and this double line was unmistakably recognized in the spectrum of the August meteors. To use the words of the observer, "their condition (when rendered visible to us by their combustion) is exactly that of a flame of gas in a Bunsen's burner, freely charged with the vapor of burning sodium; or of the flame of a spirit lamp newly trimmed, and largely dosed with a supply of moistened salt.

It is strange to consider what becomes of all the sodium thus dispersed throughout the upper regions of the air. There can be no doubt that in some form or other—mixed or in combination—it reaches the earth. The very air we breathe must at all times contain, in however minute a proportion, the cosmical dust thus brought to us from out the interplanetary spaces. Nay, for aught we know, purposes of the utmost importance in the economy of our earth, and affecting largely the welfare of the creatures which subsist upon its surface, may be subserved by this continual downpour of meteoric matter. We know already that the different meteor systems are differently constituted. For instance, the white November stars are much less rich in sodium than the yellow August ones. Each system, doubtless, has its special constitution, and thus the air we breathe is continually being dosed with different forms of metallic dust—now one metal, now another, being added, with results in which did we but know it, we are doubtless largely interested. Nor is it certain that delecterious results do not occasionally flow