Scientific American

NEW-YORK, NOVEMBER 22, 1851.

Opinions about New Inventions.

We have frequently expressed our decided opinions respecting the inutility and worthlessness of some inventions, and have proved others to be old, when alleged to be new. We are conservatives in regard to what is old and good, and reformers in respect to what is new and good. As the advocates of inventors' rights, we like to say a good word in favor of new and useful improvements, and this very duty compels us to speak as freely against that which is worthless and calculated to deceive the public. There never was a sham invention yet that was not claimed by its advocates, and those interested in it, as "one of the greatest inventions of the age." There are many inventors who make signal failures in the very inventions about which they are most enthusiastic. All inventors make some mistakes—but they are sincere and honest about them, and we know how to speak about and how to feel for them. But we have no sympathy for those speculators on the public, who deal in sham inventions; nay, instead of having any feeling for them, we have always denounced such schemes, and we always will denounce them. It is well known that whenever any one of those speculators is opposed, and the utility of his alleged discovery condemned, he always flies for relief to some great inventor or discoverer. He will say, "oh, Galileo was persecuted, Robert Fulton was laughed at, and Professor Morse was ridiculed;" he at once claims a martyr relationship to the "mighty dead and living;" and be his invention ever so worthless, he never fails to make an impression, and sometimes a very strong one, in his favor, by such an appeal. We heard such an appeal made in favor of the celebrated "new invention" now before our citizens to prevent fires. The object of the invention is a very laudable one, and an invention to accomplish such an object is certainly a very desirable one. It is true that many excellent inventions have been sneered at, and their inventors looked upon as crazy enthusiasts, and there is, perhaps a kind of general tendency in the public mind to look with suspicion upon every new invention. There are reasons for this feeling; if all the inventions which have been brought before the public, and alleged to be new and good, had proved to be exactly as they were represented, there would be no want of public confidence in the success of a new invention. Great discoveries and inventions are desirable, they are welcomed by all intelligent men, as boons to humanity; but the public must be greatly excused for general incredulity about their utility, because so many worthless things have been, and are being continually thrust into public notice, for the mere purposes of gain. There are but few among the great mass who can judge correctly respecting even the apparent worth of an invention, and there are fewer still who are versed in the long history of inventions, so as to judge correctly about the novelty or age of an invention alleged to be new. It is because so many have been deceived by worthless inventions, and by things said to have been new, which have turned out to be old, that many really good inventions have been, for a long time, lightly esteemed, and have had hard battles with inferior but older inventions. Every sham invention, therefore, is a curse to the honest inventor; it is a fortress the shot from whose batteries tells deadliest against his interests and the progress of useful discovery, while, at the same time his banner is waving over its walls.

It is absurd to suppose that the public has any natural feeling against new inventions; it is not so; We have seen the Tabernacle in this city crowded to see the model of a balloon sail slowly through its lofty arch, and hear a lecture upon its qualities, in which it was asserted that it was capable of carrying forty passengers, in three days, from New York to California. Passages were taken out for San Francisco, and when an ex-Governor of Liberia attempted to give some reasons against its practibility, he was hissed down by the united assembly. All believed in the possibility of the project. Safe aerial navigation is a desirable art, and every one would be glad to see it successfully accomplished, and it is unreasonable to suppose that there is any natural opposition to any other desirable and good invention; but is it not reasonable to suppose that those who are once deceived by an alleged invention, are made skeptics in a great measure respecting others. It is so; and in view of this fact, we have a duty to perform to true and honest inventors and to the public, in expressing our opinions about inventions brought before the community; our object is to do good, and whatever our opinions may have been, this honest conviction has dictated them all, and ever will.

There are but few great and prominent inventions—inventions, we mean, which stand as the head of a class, such as the "Steam Engine," and "The Telegraph." The very great majority of inventions are improvements, and these are innumerable. From week to week they are going on, and improvement is added to improvement. We notice these improvements, for well we know that some things, supposed to be small, and appearing to be small improvements, involve great and important results. The great improvements in steam engines made by James Watt, were simply making the vacuum chamber a separate one from the cylinder, and working the steam on both sides of the piston. It has been the same with other inventions and improvements, and it always will be so. It is wrong to express a wanton opinion about any invention, and it is equally wrong, when able, not to express any opinion at all.

Coffee---Its Nature, Consumption, and Uses.

The coffee plant is a native of Yemen, in Arabia; the time of its introduction into Europe is unknown; it is mentioned in a work, published in 1573, by a German physician named L. Rauwolff. The Turks have Coffee Houses, in which they meet to sip their brown liquid, and chat together, like Englishmen in their ale houses. Coffee houses are common in Germany, and were, at one time, more common in England than at the present moment. The first Coffee House opened in London was by a merchant of Turkey, named Edwards; this was in 1652. Coffee was in public use before that time in France.

When coffee was first introduced into Britain it met with the most furious opposition from old and young, grave and gay, men and women fair. In 1674 the women of England petitioned Parliament against allowing the use of coffee, in which petition it was stated "that men, by its use, became like the desert of Arabia, and that if its use was persisted in, the offspring of mighty Anglo Saxon ancestors would dwindle into a succession of apes and pigmies; and on a domestic message, a husband would stop by the way to drink a couple of cups of coffee." Here we see the fair sex were jealous for the honor of good old English ale; and the question is, were they not right. Coffee, however, had and still has its advocates; it has been stated by them, that wherever it has been introduced, drunkenness has become less frequent, and the people more sober. We have no statistics to prove or disprove this statement, but it may justly be assumed to be true.

In the reign of Charles II., Coffee Houses were shut up in London by proclamation, in which it was stated, "the retailing of coffee nourished sedition, spread lies, scandalized great men, and might be considered a common nuisance." This arbitrary act occasioned violent discontent, and permission was given to open the Coffee Houses again, but the landlords were forbid to keep seditious papers on their premises. The Coffee Houses had become political club houses.

Four different kinds of coffee are used,—Mocha, which is the best, comes down the Persian Gulf, from Arabia; its berries are of a middling size, clean and plump, and of a greenish light olive hue; it sells dearer than any other. The next best is Java, which is grown in the Island of that name, and is cultivated by the Dutch. The other two kinds are the Brazilian and West India coffee, which are very similar. A field of coffee in full bloom is a sight worth going to Jamaica to see.

The quality and effects of coffee differ according to the manner in which it is roasted. It must be roasted with great care, and not over-done. The Turks roast it in an iron spoon, and roast it just before they are going to use it. This is the best plan, as coffee loses its flavor if exposed after being roasted. The reason of this is evident; the roasting brings out the essential oil to the surface, this is volatile, and is the fine aromatic quality of the bean; it therefore soon evaporates when exposed to the atmosphere. To roast coffee aright it should be done by an invention patented a few years ago in England, it consists in using a copper drum silverized inside, into which are placed the beans, and the drum made to revolve above the fire, until the beans are done. It is best not to over-roast them.

The peculiar principle of coffee is the *caffein*, which was discovered by Robiquet in 1821; it is a very active principle, and affects the urinary organs. Water saturated with coffee was first used by Grindal, in the Russian Hospital of Dorpat, in the treatment of intermittent fevers; it was also given as a powder, raw. In eighty cases, not one resisted its effects. Homopathic practitioners also use it with success.

As an article of diet, and as a beverage, coffee has become quite a favorite, if we may judge from the quantity consumed. No less than 144,986,895 pounds were imported into the United States in 1850; the value of this was $11,215,099. No country in the world consumes so much coffee in proportion to its inhabitants, as ours. Thus, last year, the average amount of coffee consumed by each man woman, and child, was over seven pounds. The consumption of coffee has greatly increased in England, and it does not appear that the fears of the old English matrons, about their sons becoming monkeys by its use, are yet realized.

Coffee is now very generally used by all Europeans as well as the old Turks, and in almost all American families, for a breakfast beverage. Its effects upon the human system may be peculiar, but general use has not yet developed anything extraordinary produced by it, except it may be the healthy appearance and rugged strength of some French miners, who use it in large quantities; this fact was brought before the Academy of Sciences in Paris last year. In some armies and navies, coffee has wisely been substituted for grog; it would be well if this were the case in every single instance. In cold weather coffee is an agreeable and safe stimulant. It was noticed that those French soldiers who had saved some coffee and sugar during the terrible retreat from Moscow, stood the cold much better than those who had none. Coffee affects the nerves of some people in a most singular manner, by making them trembling and feverish. No person so affected should use it. As a general thing, for almost every person, we believe it is a healthy and pleasant beverage. In England all the coffee is adulterated with yellow dock-root, ground up along with the beans; the law allows of this adulteration, and yet, for all this, the coffee there sells for about double the price it does in the United States.

Every family should buy their own beans and roast and grind them, for much of our ground coffee is also adulterated with roasted corn and peas. These adulterations are not the least unhealthy, but there is no earthly use of anybody paying for corn instead of coffee, and if anybody wishes to adulterate their own coffee, why they can do it to suit themselves.

When we reflect upon the great quantity of coffee now consumed by us every year, how that the consumption has increased from a little over four million of pounds, in 1790, to over one hundred and forty-four million of pounds, in 1850, we cannot shut our eyes to the seeming necessity of growing coffee for ourselves.

Our Southern States can surely raise good coffee; they beat the world for cotton and rice, both of which were introduced from foreign countries, and coffee, we think, can be as successfully cultivated as these have been.

Long Island Cotton.

Some cotton equal to Sea Island has been raised on Long Island, by Mr. A. P. Ricker, of Newtown, and it is believed that it can be made a profitable crop by a little attention. Tobacco has also been raised on the island with satisfactory results. Mr. R. intends in another season, we understand, to make quite a crop of cotton and tobacco.

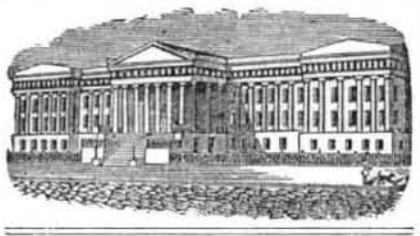
American Pins.

There is a very pleasing article in the last number of "Hunt's Merchants' Magazine," respecting the manufacture of pins in the United States. To America belongs the credit of having invented the first pin machine; it was invented by Moses L. Morse, of Boston, during the war of 1812, but it never was used in manufacturing, as it was too delicate. Mr. Lemuel Wright, of Massachusetts, was the first person who invented a machine to make solid-headed pins. All the old pins were made with heads separate from the shanks; and, indeed, they were in general use in America—all imported—until a few years ago. As pins were so dear during the last war, some pin manufacturers came out from England and set up the business in this city, but after the war they failed in business, as pins could be imported much cheaper than they could make them. Mr. Samuel Slocum, of Rhode Island, commenced the manufacture of solid-headed pins at Poughkeepsie, N. Y., in 1838. He took out a patent in England, but none in America; he used his machine secretly. In 1840 Mr. John J. Howe took out a patent (United States) for making solid-headed pins, and it is now in use by the Howe and American Pin Company. There are three American patents in existence for improvements on machines for making solid-headed pins: one is Slocum's, the other Fowler's, the next Howe's; they are all owned by one company in Waterbury, Conn. The pins made are much cheaper than the imported kind, which were in common use a few years ago. Some pins are still made at Poughkeepsie, but the Company at Waterbury make nearly all the pins used in our country. Both companies make their own wire. We have heard Englishmen say that our American pins are well formed and finished, but they are not tempered like the wire of the English pins, hence they [illegible] more easily twisted. The general run of our pins, in common use, we think inferior to the kind we sometimes see here, named "London Mixed," but then our pins are much cheaper.

Danger of Factories by Fire.

On Wednesday evening last week, an extensive Cotton Factory, on Nixon and Hamilton streets, near Fairmont, Philadelphia, was destroyed by fire. The hands were at work in the upper stories when the fire broke out below, and several lives have been lost—mostly females. Six bodies are reported to have been already found—so charred that they cannot be recognized. One man jumped from the fourth story window and was killed. The loss is about $40,000, partly covered by insurance.

This great loss of life was owing, no doubt, to the bad arrangement of the stairs, which lead from one story to another. We have known of quite a number of such accidents from the reprehensible arrangement of the outlets from the different flats in factories. There should always be an outside flight of stone or iron stairs, at each end of a large factory, from top to bottom. None but one flight may be used daily, but for emergencies of fire, two should be built when the factory is put up. The poor beings who perished amid the flames, in this factory, were cut off by the flames below, from finding their way out. Isolated stairs walled up from the rooms would allow free exit in all cases of fire. The great majority of our stairs in cotton factories are made of wood and not walled up between the carding, spinning, or weaving rooms. In the course of time, owing to the great quantity of oil used in factories, the stairs become as combustible as pitch pine. In the course of five minutes, if a fire broke out in the lower flat, the stairs would be burned down, and all escape from the upper stories cut off. This, by all accounts, appears to have been the case with the factory in Philadelphia. About 21 years ago, a similar scene was enacted at Johnstone, Scotland. Two years ago, a like one in a factory near Manchester, England. We should have factory inspectors as well as boiler inspectors, for we know some factories that from top to bottom, are no better than match boxes. We hope the above will be thoroughly investigated.



☞ Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 11, 1851.

To B. F. Adams, of Bangor, Me., for improvement in Cheese, Butter, and Bread Cutters.

I claim the arrangement of the circular revolving table and knife, the said knife being attached to the sliding shaft, and operated by means of a treadle and weighted cord and pulley, or their equivalents, so that the cheese or other article to be cut, may be placed upon the table and not removed until, by a single revolution of the wheel, and a few slight pressures of the foot upon the treadle, it is cut into as many parts as may be desired, without crumbling or waste.

To David Anthony, Sen., of Springport, N. Y., for improvement in the construction of Scythe Fastenings.

I claim the mode of adjusting the lever by rotating the ring around its own axis, by which the point of the scythe is thrown out or drawn in, as shown and described, the upper end of the lever, passing through an eye attached to the ring, the fulcrum of the lever being near the end of the snath, and the scythe attached to the lower end of the lever, as set forth.

[This is a capital improvement—we can endorse its good qualities. A farmer can set a scythe, by this improvement, in a trice.]

To B. F., Bee, of Harwick, Mass., for improvement in Hand Planes.

I claim the application to carpenters' planes and moulding tools, of a new method of confining the iron, by a metallic apparatus, acting upon the principle of the lever and cam, in combination with the set screw for adjusting the same, as described, using for the purpose the aforesaid contrivance or arrangements of parts, or any other, substantially the same, and which will produce the same effects in like manner.

To Jonathan Bean, of Montville, Me., for improvement in screens for Winnowing Machines.

I do not claim any part or portion of the gear, fans, or forms of the hopper, or shoe, as an original invention, as I am aware that all these have been in common use; I claim the arrangement of guides, and side apertures in the upper movable screen, and the lower screen attached to the shoe, and which screen may be attached to any common winnowing machine, in the manner and for the purposes described.

To Daniel Drawbaugh, of White Hill, P. O., Pa., for improvement in Stave Jointing Machines.

I claim the adjustable knife, in combination with the adjustable rest, as described, to adapt them to the jointing of staves for casks of different bilges.

To G. W. Perry, of Thompson, Ct., for improvement in Shuttle Motions of Looms.

I do not claim hanging the picker staff on a radius rod, as I am aware that it has been so hung, and by the aid of other devices, in connection, a motion parallel to the raceway has been produced, but what I claim is hanging the picker staff or staves, upon radius rods, and having two distinct radial motions, substantially as set forth, for the purpose of causing the end which operates upon the shuttle, to describe, or make a rectilinear motion parallel with the raceway, and with less power than has heretofore been done.

[This is a good improvement.]

To Joseph Steger, of Roxbury, Mass., (assignor to Wm. Mitchell), for improvement in machines for Cutting the Soles of Boots and Shoes.

I claim the mode or means described for insuring the unerring turning of the knife frame for cutting both sides of the sole, said means consisting of notched pawl, lever, and spring, operating on the journal plates of said frame, substantially as described.

To Ezekiel Booth and Ezra Ripley, of Troy, N. Y., for improvement in Car Seats.

We claim the arrangement of two levers in a cross position, so that any required height of back may be carried, and reversed from and to either side of the seat, and secure it firmly in its position, at any required angle, substantially as described.

To Alvan Clarke, of Cambridge, Mass., for improvement in Telescopes.

I claim combining the glasses or glasses and diaphrams, with a sliding or eye-piece tube, of a telescope, by means of a tube or slide, perforated through its side or sides, in such a manner as to enable a person, when the said tube is withdrawn from its enclosing tube, to obtain ready access through the openings or perforations, to the glasses or lenses, the whole being substantially in the manner and for the purposes as described.

To J. C. Flint, of Boston, Mass., for improvement in Machines for Cutting Hides.

I claim the combination of mechanism for reducing dry hides to a strip, and mechanism for cutting or removing the hair from the underside of the said strip at one continued operation, substantially in the manner as described.

To A. W. Johnson, of St. George's, Del., for improvement in Bending Felloes.

I claim the curbs, in combination with the box or its equivalent, said curbs being constructed in the manner and for the purposes substantially as described.

To Richard Kitson, of Lowell, Mass., for improvement in Card Grinders.

I claim an instrument for grinding or sharpening wool, cotton, or other cards, made with sectional card-teeth, which are so bent at the heel as to make the sharp edge more prominent than its opposite and broad edge, together with its application to the card that is to be ground in such a direction as to cause the sharp edge of the teeth of the grinder to be first presented to and enter among the teeth of the card.

To William, Wm. H. & H. J. Lewis, of New York, N. Y., for improvement in Daguerreotype Apparatus.

We claim, first, the combination of a camera box, with a cross opening, or mortise, to receive a sliding frame that carries both an object glass and the daguerreotype plate, as described.

Second, the construction and application of a sliding frame with a division to receive a frame carrying an oblong object glass, so formed as to be placed either vertically or horizontally, as described.

Third, the construction of the slide, so as to receive in the other division, a daguerreotype plate in a frame, such frame being pressed in place by springs, and held in place by blocks, taking notches in the frame, as described.

To L. D. Livermore, of Hartland, Vt., for improvement in Coupling Railroad Cars.

I claim the combination of a stiff car coupling, with the ends of a couple of cars, and with the trucks under the same, substantially in the manner set forth, by which the cars are made to guide the trucks under them, and keep them in their proper positions on the track, to wit, in such positions that a line drawn midway between and parallel with the truck axles, will be at right angles to any straight track, and also at right angles to the tangent of any curved railroad track.

To A. J. Lonsbury, of Somerville, Tenn., for improvement in Abdominal Supporters.

I claim the employment of a pubic brace of the peculiar form described, so as to fit the os pubis, and press uniformly upon the inguinal region, while the upper edge of the brace is bent forward, so as to effect no inconvenient pressure upon the abdomen of the wearer, said pubic brace being made of hammered leather, or other tenacious material, in the manner and for the purpose described.

To Levi Newcomb, Jr., of New Bedford, Mass., for improvement in Bedsteads.

I claim the manner of securing the lower bedstead to the upper one, so that it may slide underneath the upper one or be drawn out from it as described, viz., by having the clamps attached to the upper part of the foot posts of the lower bedstead, and clamps fitting in the recesses of the rails of the upper bedstead, and the rails of the lower bedstead passing through the mortise holes in the foot posts of the upper bedstead, substantially as set forth.

To Richard Rickey, of Rutland, O., for improvement in Horse Collars.

I claim connecting the sides of the breast plate by a flat joint, in combination with the levers attached to the sides of the breast plate and rising over the neck without touching the shoulders of the animal, and connected at the top, by which means the breast plate is made adjustable to the side of the horse, substantially as set forth.

To I. S. Stover, of Erwina, Pa., for improvement in Grain Kilns.

I claim the combination of the heating chamber with the two drying beds, one above and the other below, as described.

To Isaac Taylor, of New York City, for improvement in Frosting Plates of Glass.

I claim the use of a rocker, containing pebbles, sand, and water, for the purpose of frosting plates of glass, or embossed work, as above described.

DESIGN.

To S. W. Gibbs, of Albany, N. Y., (assignor to North, Harrison & Chase, of Philadelphia, Pa.), for Design for Stoves.

Artesian Wells.

The Southern Standard contains a very interesting account of an artesian well lately bored in Columbus, Miss., by Messrs. Copeland and Evans.

The well is near the centre of the town, 100 feet above low water mark, is a little over 560 feet deep, and discharges about thirty gallons of water per minute four feet above the ground. The temperature of the water is 65° Fah., while that of the ordinary wells in the vicinity, 30 and 40 feet deep, is 62°.

The following strata were bored through during the progress of sinking the shaft. It will be of interest to our geologists.

1. Feruginous clay, sand, and water-worn silicious pebbles—50 feet.

2. Green sand, composed of fine grains of silex, chlorate of iron, mica, alumina, and a small portion of lime—160 feet. A few feet of the lower portion of this stratum contains a considerable number of small black water-worn pebbles, and also lignite.

3. Argilio—Micaceous earth—45 feet.

4. Incoherent argilaceous earth, of a light ash color, containing lignite and iron pyrites. This stratum resembles in structure pressed, dried prunes, with interstices glazed. The caving tendency of this stratum occasioned more difficulty than any other portion of the well—5 feet thick.

5. Argilio—Micaceous earth, with a small portion of fine sand—20 feet.

6. Argilio—Silicious earth, darker than the 5th, also containing lignite—13 feet.

7. Brown colored argilite, sufficiently hard, when dry, for slate pencils, interspersed with lignite—7 feet thick.

8. Fine grit, ash color, with fine particles of mica. The grit in this stratum has been used by some on razor strops, and pronounced very good—7 feet thick.

9. A continuation of the same fine grit, with alternate layers of like colored argilaceous earth, 11 feet thick.

10. Yellowish colored argilaceous earth, hard when dry—12 feet thick.

11. Brown colored argilaceous earth, difficult to bore, hard and brittle when dry—28 feet.

12. Compact green sand, resembling stratum second, 3 feet thick, and then passing into a coarse drift sand, with green particles of chlorate of iron, &c.

The most of the water in the prairies, west of Columbus is obtained in a thin stratum intervening between the green sand and indurated marl, composed of calcareous sandstone, conglomerate, loose water-worn pebbles, a whitish colored silicious rock, and lignite.

At a recent meeting of the New Jersey Historical Society, held at Newark, an interesting report on an artesian well in that place was presented.

It was commenced in October 1850, by the Newark India Rubber Company, to obtain a supply of water, and was relinquished in June, 1851. The water is now 36 feet below the surface of the earth. The entire rock through which the bore passes is of red shale. At the depth of 90 feet the auger penetrated a cavity of the rock and fell three feet, when 14 feet of water which had previously existed in the bore, passed off. The "Newark Advertiser," in speaking of the matter, says:—

"The well was commenced with a bore of 4½ inches in diameter, and continued of this size to the depth of 170 feet, when the auger broke and it was found impossible to remove it. A smaller bore of 2½ inches was then commenced so as to pass down by the side of the imbedded drill This continued on to a depth of 376 feet, when the work was abandoned, ultimate success being thought very doubtful. The committee was not able to take the temperature of the well at different depths, on account of the large quantity of water in the bore during its progress.

The chairman of the committee, Mr. Wm. Kitchen, regretted that this attempt was so soon abandoned, inasmuch as a continuance of the work might have brought to light new and interesting facts relative to the geology of this district, as well as, in all probability, ultimately realizing the objects of the boring. From geological data based upon the dip or inclination of the sand-stones, and particularly their relation to trap-rocks, it seems probable that, by penetrating the sand-stones to the igneous rocks on which they lie, abundance of water would be obtained, and that under very considerable pressure. To effect this would require a boring of probably not far from 1,000 feet in depth.

Analysis of Atmospheric Air.

M. Lewy, to whom the Academy of Sciences in Paris entrusted a commission for the examination of atmospheric air, in New Grenada and elsewhere, has made an interesting report of his labors to that distinguished body.

"He has followed the accurate method of M. Regnault, of analysing by volumes, and so minute are his investigations, as to descend into the infinitesimal quantities of the one ten-thousandth part of a degree of the endiometer. As to France, his labors agree with those of Gay Lussac and others; that is, in volumes of oxygen, 20·80; of nitrogen, 73·20; of carbonic acid, ·004. In New Grenada, he took the mean of eleven observations at different localities, and found that in 10,000 volumes of pure atmospheric air, he had uniformly 1201·425 of oxygen, 7894·557 of nitrogen, and 4·008 of carbonic acid. These proportions are almost identical with those observed in various parts of Europe. He remarked, however, that the air of New Grenada presented once or twice a year a very remarkable increase in the proportions of carbonic acid, attended with an appreciable reduction of the oxygen; and causing a very sensible alteration in the constitution of the atmosphere.

M. Lewy ascribes this phenomenon to volcanic action, the frequent discharges of lava clearing the soil, burning up the forests and setting free large quantities of the former gas. He has found ten or twelve times the usual proportion of the acid at those times; and a corresponding absence of oxygen. To the same volcanic causes, M. Lewy lays the extraordinary development of vegetation in South America. The immense volumes of carbonic gas projected into the air, contribute, he thinks, largely to nourish the prodigious growth of tropical plants, which frequently furnish us the spectacle of a sizeable tree as a representation of what, in less genial latitudes, is represented by a lowly bush. Carbon, it is well known, constitutes one-half the composition of wood.

In examining the atmosphere at the level of the sea, M. Lewy has arrived at some curious results. In the daytime he found the air contained a little more of oxygen and carbonic acid than at night. The further he proceeded from the shore the more marked the difference became. He attempts to account for the fact by suggesting the probable action of the solar rays, which, by warming the water during the day, determine the disengagement of a portion of the gas held in solution. Air extracted from water is known to be more highly charged with oxygen and carbonic acid than the atmosphere. By an increase of carbonic acid gas, and a decrease of oxygen m the atmosphere, at certain seasons, epidemics can easily be accounted for in those countries subject to great atmospheric changes.