(For the Scientific American.)

Photography.

In a late number of the SCIENTIFIC AMERICAN you give the new discoveries of Mr. Mascher ; the reason of my now addressing you is to remind your readers of facts long known which Mr. Mascher claims as his discovery. Mr. Mascher, in speaking of his discovery in producing representations of objects on ground glass. cannot imagine for a moment he has discovered anything new. Baptista Porta, of Padua, every photographer knows, discovered the camera obscura, and Mr. Hunt, in his treatise on Photography, page 33 American edition, says; "Its principle will be best understood by the very simple experiment of darkening a room by closing the window shutters, and boring a small hole in them. If a piece of paper is held at a little distance from this hole, the figures of external objects will be seen delineated upon it, and by putting a small lens over the hole they are rendered much more evident, from the condensation of the rays by the spherical glass, If, instead of a darkened room, we substitute a darkened box, meaning a camera, the same effect will be seen to result." This I presume is sufficient to show that Mr. M. is not the discoverer of the camera obscura, for it is this precisely he claims.

Further on Mr. Mascher informs us it is self-evident we have the means of doing with one camera that for which two were deemed indispensable. I refer again to Mr. Hunt's treatise, page 308, English edition, he says: "Sir David Brewster contends that it is not practicable to obtain sufficient exactness by either of these methods, alluding to the use of two cameras with lenses of the same focal length, and with one camera and one lens, by adjusting it at a certain measured distance from the object to be copied, and having obtained one picture, move it round about 20 degrees and take the second image. Sir David Brewster therefore proposes the use of a binocular camera, which he thus describes: In order to obtain a photographic picture mathematically exact, we must construct a binocular camera which will take the pictures simultaneously, and of the same size, that is, a camera with two lenses of the same aperture and focal length, placed at the same distance as the two eyes. As it is impossible to grind and polish two lenses, whether single or achromatic, of exactly the same focal length, even if we had the very same glass for each, I propose to bisect the lenses, and construct the instrument with semi-lenses, which will give us pictures of precisely the same size and definition. These lenses should be placed with their diameters of bisection parallel to one another, and at a distance of two and a-half inches, which is the average distance of the eyes in man, and when fixed in a box of sufficient size, will form a binocular camera, which will give us, at the same instant, with the same lights and shadows, and of the same size, such dissimilar pictures of statutes, buildings, landscapes, and living objects, as will re-produce them in relief in the stereoscope."

Mr. Mascher informs your readers that Sir David Brewster, and a host of others, as far as practical results are concerned, never determined the proper stereoscopic angles ; the above proves a different story.

As regards the superiority of small lenses over large ones, every practical photogenist knows it; yes, most amateurs, even, know the superiority of small over large lenses, and as Mr. Mascher justly observes, pictures taken with large lenses produce distortions, but I believe, and the majority of artists will bear with me, that the distortions are not to the extent represented, but they may, by careful examination, be discovered in the finest photogenic portraits to a greater or less extent.

I would not have troubled you with the explanation, but I believe in giving credit where credit is due ; Hill claims Neipce's discovery, Cutting claims Archer's discovery, and Mascher claims the discovery of Baptista Porta and Brewster.

JOSEPH FITZPATRICK, Electro Metallurgist.

Rochester, N. Y., April 22, 1855.

[We do not understand Mr. Mascher to claim the discovery of the camera obscura ; We had never heard of, nor have we ever seen, stereoscopic pictures produced in the manner described by him. Until we are furnished with positive proof to the contrary, we must entertain the opinion that he has done something which no other person did before him. His practical results, then, are proofs of his first determining the proper stereoscopic angles, and his manner of doing it was entirely different from the plan proposed by Sir David Brewster.

The Cause of Drought.

MESSRS. EDITORS—With your permission I will lay before you numerous and scientific readers what I imagine to be the cause of drought. I believe it is caused by the burning of coal; that the smoke arising therefrom is injurious to vegetation, to the soil, to the air, and to the clouds. The ashes from coal are of no use to the farmer, it depreciates his soil, whether thrown upon it or falling upon it in particles from the smoke. Coal smoke has no sharpness in it, to irritate and stimulate plants ; it is entirely devoid of moisture, and it, in my opinion, counteracts the formation of clouds, especially "cirrus," the scarcity of which, for some time past, has been observed. The smoke from wood, on the contrary, has all the properties which coal has not. This subtle fluid, I think, penetrates the atmosphere of the whole world on account of its diffuseness.

The sublimity and grandeur of the clouds, to my vision, are nearly destroyed, and the "powers of the heavens" are considerably weaker, and may gradually grow less as coal is used among men. I am neither a wood nor coal speculator, I wish prosperity to the whole human race. If my belief can be substantiated by any of your scientific correspondents, the removal of such a cause will be of more importance to the world than war in Europe or the acquisition of Cuba to the United States. ONE OF YOUR READERS.

Baltimore, April 28th, 1855.

[Our correspondent has not given us a single reason for his belief in coal smoke being the cause of drought. We take this occasion, however, to impart to him some scientific information.

He says that coal smoke has no *sharpness* in it—does not irritate and stimulate plants, is devoid of moisture, and therefore he concludes it counteracts the formation of clouds. Now suppose all this were true, no reason is afforded him for coming to such a conclusion. The same reasons might as well be presented for coal smoke being the cause of rains, during a wet season. During very dry and very wet seasons, a thousand-and-one reasons are generally given by as many different theorists, as the cause for such seasons ; whereas the causes are beyond all our speculations. Wet and dry seasons have occurred since the flood, and they will continue to occur to the end of time, irrespective of the use of any kind of fuel.

The smoke of bituminous coal and wood is the same in composition ; there is no difference, for the coal is of vegetable origin.

However useless coal ashes may be, we know that coal smoke (soot) is excellent for plants, and contains considerable potash. Our correspondent is mistaken respecting its qualities in agriculture. It is sold in London in bags to gardeners and farmers like guano.

Neither coal nor wood undergo perfect combustion, when smoke passes off—the smoke is a black loss. In a stove or furnace which burns coal or wood perfectly, gas, which passes off, is mostly carbonic acid, and we can assure our correspondent that it is a pretty sharp gas.

He is mistaken also about the difference of diffusiveness in coal and wood smoke. All gases are obedient to the law of diffusion ; that is, light and heavy gases diffuse through one another. The gas produced from the burning of the anthracite coal is nearly pure carbonic acid with no smoke, and is the very same as that given out by all plants during night, and by the whole animal creation in breathing, So *it* cannot be the cause of drought. The summer of 1853 was a very wet one in the region of New York, while that of 1854 was very dry. As coal is the only fuel used here, it could not have affected both seasons so differently.

Our correspondent need not have his fears excited respecting the powers of heaven being considerably weakened, by the use of coal as fuel. The operations of nature take place on such a grand scale, that the efforts of man to change them would be like a pismire aspiring to conduct the siege of Sevastopol.

(For the Scientific American.)

Chemistry of Steam Boiler Explosions.

Permit me to rectify a few errors into which your correspondent, J. B. Conger, has fallen in his article on the Chemistry of Steam. He seems to think that the sudden explosions which semetimes happen in steam boilers may be caused by the decomposition of a portion of the steam, and he bases this hypothesis on the assumption that steam contains twelve times its volume of hydrogen, which assumption is greatly at variance with known facts. A cubic foot of oxygen weighs 592 grains, instead of 48 grains, and the same bulk of hydrogen weighs 37 grains. The constitution of vapor of water, therefore, is two volumes of hydrogen and one of oxygen condensed into two volumes, so that it contains only its own volume of hydrogen. Consequently if steam were decomposed in a boiler by the hot iron absorbing its oxygen, the hydrogen set free would not exert a greater elastic force than did the steam.

Philosophers are now generally agreed that the electricity excited by a jet of high pressure steam is to be ascribed to friction, and not to mere evaporation. Faraday has found that if the jet pipe be made perfectly clean, the electricity will be positive, while the introduction of the least particle of oily matter will cause it to become negative. If it were produced by the evaporation it would always be of the same kind. But however it may be excited, it cannot decompose water, for galvanism is the only kind of electricity which can directly produce chemical changes. SIMON NEWCOMB.

Sudlersville, Md., April 28, 1855.

Inventions Wanted.

MESSRS. EDITORS—Permit me through the medium of your valuable paper, to call the attention of inventors to some of the wants of the country physicians of the United States. First, A small scale which would accurately weigh from half a grain to twenty grains, is much wanted. It should be no larger than a pocket pen holder, and the pan need not be larger than a half dollar, with a delicate spring ; it seems to me such a thing might be constructed, and if it could be combined with a small minimeter so much the better. Second, Cannot the axle boxes of buggy wheels be so made as to be greased from an oil can without taking off the wheels? In the course of nearly twenty years' practice, in a hot, dry climate, and over a dusty or sandy soil, I have used up several buggies, and find that frequent greasing is absolutely necessary. It ought to be done every day, and it is a troublesome operation as at present performed. I hope that these suggestions may meet the eye of some of our ingenious mechanics.

AN ALABAMA PPYSICIAN.

April 20th, 1855.

[We have never seen an invention to meet the first want of our correspondent, but if he examines page 60, Vol. 8, he will find one illustrated to meet his second.

Superiority of American Iron.

In a lecture recently read before the London Society of Arts, by Prof. Wilson, on the Iron Industry of the United States, he awarded the prize for superiority in quality to the American over English iron, for railroads. English iron rails, it was stated, were used because they were so cheap. On all the curves, and places requiring the best iron, American iron was preferred, and the manufacturer found a ready market for all he could make at his own furnance.

To Destroy Red Ants.

A correspondent of the Southern *Cultivator* contributes the following method for destroying the above named insects:—"Produce a large sponge, wash it well ; press it very dry ; by so doing it will leave the small cells open—lay it on the shelf where they are most troublesome, sprinkle some fine white sugar on the sponge (lightly over it) ; two or three times a day, take a bucket of hot water to where the sponge is, carefully drop the sponge in the scalding water, and you will slay them by the thousands, and soon rid the house of these troublesome insects. When you squeeze the sponge, you will be astonished at the number that had gone in the cells."

Ruttan's System of Ventilation.

A new county jail lately erected at Oxford, Canada West, is warmed and ventilated under Ruttan's plan, and we learn that other institutions of the same character in Canada, are likewise to introduce it. The Oxford Grand Jury were so highly satisfied with the operation of Mr. Ruttan's system, that they introduced the subject in their stated presentment as follows:

"And the jury aforesaid, upon their oath, do further present that they have had their attention especially directed to the system of warming and ventilating the cells and rooms of which they are informed that Mr. H. Ruttan is the inventor, and to them it seems that this system is so nearly perfect as to meet the entire wants of the case, and to leave scarcely anything to be desired."

Mr. Ruttan's method has been often referred to in our columns. (See engravings also on page 299, Vol. 6, SCI. AM.) We have long regarded it as the only truly economical and effective way of ventilating city and other buildings with which we are acquainted, while for large public institutions of every character it is equally admirable. By its use, the temperature of apartments, no matter how numerous they may be, can be steadily kept at any desired point in winter, at the same time that a ventilator imperceptible but most thorough, is in constant operation. In summer the ventilator is equally excellent. We wonder that the officers in charge of the erection of our school houses, prisons, churches, hospitals, &c , have never adopted this, or some kindred system. In all private dwellings its introduction effects a saving of fifty per cent. or more in fuel, besides heating every part theeof, and securing families from that universal destroyer of health—impure air.

We regret to learn that the large and splendid passenger car on the Erie Railroad, which was fitted up for ventilation on Ruttan's plan, and which has been used with so much success for several months past, was burned in the fire which consumed the railroad depot of Jersey City, a few days since. We have been told by a gentleman who is a frequent traveler over the road, that when Ruttan's car was in the train it was always crowded ; the passengers would leave the other cars, where there was plenty of room, to enjoy the pure atmosphere, even temperature, and freedom from dust, which this improvement effected. It is said that the car was just as warm at the seats nearest the door as in the center, and that the air on the floor was heated just as much as next the roof. The heating was done by one small stove.

Eclipse of the Moon.

The total eclipse of the moon on the night of the 1st inst. was a fine scene. We thought as we witnessed the dark shadow of the earth stealing over the moon's disk, of the many telescopes that were then pointed to it, and the light which science had thrown around the phenomenon. At one time—not many years since either—people in their ignorance believed that such events were precursors of evil, social and national, such as death, war, famine, or pestilence. The Hindoos believe that an eclipse of the moon is caused by a great serpent—a spirit of evil—endeavoring to swallow the moon.

Astronomy is now perhaps the most exact of sciences. The very moment when an eclipse will take place can be predicted years before-hand.