

Mechanics and General Science.

We think it right to inform our readers, that the following article is one of a series, from the pen of a gentleman of high scientific standing, whose critical acquaintance with the theory and practice of Chemistry, as well as Natural Philosophy generally, we hope to see occasional proofs of in the pages of the *Agriculturist*.

SCIENTIFIC NOTICES.

NO. I.

ON THE SUBSTANCES THAT FALL FROM THE HEAVENS.

The consideration of these bodies may be divided into two parts. In the first we shall treat of those substances which are solid, and not easily altered in form; while in the second part will be included those that are either fluid originally, or may be rendered so by the application of heat.

In the first part we shall therefore speak of the so-called sulphur rains; the root, fish, frog and corn rains; as also of meteoric stones. In the second we shall describe the different forms under which water is separated from the atmosphere, and shall thus embrace the subjects of rain, hail, snow and frozen rain; and shall append to this a short account of clouds, from which these bodies are originally derived, as well as of fogs and mists.

The phenomena are so constantly occurring, and so continually attracting our attention, that it is extraordinary how few persons ever give themselves the trouble of enquiring either into their real nature, or into the causes that produce them. The following series of articles may perhaps serve to give some of our readers, who may not have paid particular attention to the matter, a clearer insight into the nature of these phenomena than they at present possess.

To commence with the first on our list, "The sulphur rains." How unusually prevalent is the idea, that sulphur or brimstone occasionally falls from the sky! We find the same idea extending in all countries—for in almost every part of the world the phenomena has been observed, under precisely similar circumstances. We find, indeed, that in some localities the so-called sulphur rain is of much rarer occurrence than in others: thus, in some parts of England the yellow deposit which characterizes the phenomena is scarcely ever seen, while in every part of Canada it appears every year.

Sometimes the quantity of the yellow substance that falls is so great, as to cover the whole ground with a thin coating, like snow; but it is more generally only seen on the surface of water in butts and tanks, or on the edges of puddles. The substance floats easily on water, without immediately becoming wetted; and it is in such situations as the above-mentioned, that it more readily attracts our attention.

It is not to be wondered at that this substance should have received the name of sulphur; its yellow colour, its granular structure just like common flowers of sulphur, and its burning when thrown into the fire, are sufficient reasons for the prevalence of the opinion regarding its composition. If it were

sulphur, however, we could perhaps only account for its presence in the atmosphere by supposing that it had been ejected from some active volcano, and brought to us by the winds. Were that the case, however, these sulphur rains would probably occur at one season of the year just as well as at another; while we find, on the contrary, that they occur, at least in this country, almost exclusively in June or July. It does occasionally happen, particularly in some parts of the world, that these sulphur rains are observed in April or September, or other summer months; but by far the greater number take place in those above mentioned; from which we may conclude that there is some cause existing every year at that particular period which produces the phenomena.

A microscopic examination of the yellow substance affords us immediate insight into its nature, and we find it to consist of minute grains of the pollen of plants. The substance that we generally find in Canada, is the pollen or fructifying principle of the different species of pine, the flowers of which arrive at maturity and produce abundance of pollen just about the time when these sulphur rains are usually observed. The cones being charged with this light substance, if a high wind should arise and drive through a pine forest, it will naturally carry with it, by the agitation of the trees, a large quantity of the pollen, which will not be deposited from the air for a considerable time, or will perhaps only be carried down by the first rain that falls. We find, indeed, that on the side of a pine forest from which the wind blows, there is no yellow substance to be found, while it extends for miles on the other side in the direction of the wind. All doubt as to the origin of the substance may be removed by collecting some of the sulphur rain, and also some pollen from the cones of the red and white pine, when, on examining them both with a tolerable microscope, they will be found to be exactly the same—the powder in both cases consists of small particles, not perfectly globular, but rather kidney-shaped, a form that is peculiar to the pollen of all pine trees. All plants produce pollen, the grains of which vary very considerably in shape, each plant having a peculiar form of pollen; and hence we can easily determine from the shape of the grains, the plant from which the pollen is derived; and as some plants come to maturity and produce pollen at different seasons, it may occasionally happen that a sulphur rain will be at other seasons than that mentioned above as the common one, and which will be found to consist of the pollen of other plants than pines.

That the yellow substance called sulphur rain, does not really consist of sulphur, has been proved since the time of Scheuchzer, but the idea of its being so remarkable a substance was too attractive to be easily relinquished. It has been stated that lightning when passing over a wall or other surface sometimes deposits a quantity of sulphur, and it has also been stated that these sulphurs, or to speak more correctly, pollen rains, are observed principally during thunder storms, and hence the one has been supposed to depend on the other. The observation is probably correct, but the explanation of the circumstance seems to be, that the period when the pines become loaded with pollen is that part of the summer when electrical storms are prevalent, and as they are usually either preceded or followed by