

from the observation until attracted by the curious discovery of M. Boussingault, that fogs are eminently rich in ammonia. The presence of a large quantity of this important plant food in certain fogs is not difficult to account for. Not only does the gradually increasing quantity of aqueous vapour in the atmosphere before the positive appearance of mist in any locality, collect and condense rare and widely diffused ammoniacal vapours, but the exhalations from the soil produced by decomposing vegetable matter, are arrested and accumulate. The period of the year when fogs rich in ammonia may be expected depends naturally upon the frequency of the fall of rain—upon the moisture of the atmosphere, and upon the winds. In Canada it appears reasonable to suppose that we may expect to find fogs rich in ammonia during the hot months of July and August, when the rain fall is not so great as in September. During these months mist frequently hangs over the fields, particularly in low situations. The exhalation of vapour of water from the leaves of plants being then checked, and their juices partially stagnating in an atmosphere often rich in ammoniacal vapours, all the conditions for the appearance of the fungus called "Rust" on the stems and leaves of the cereals appear to be fulfilled. It is commonly remarked that rust is most prevalent on new land; this is perhaps explained by the large amount of vegetable matter thrown into a state of decomposition by access of air and the consequent production of ammonia. There is no doubt that much of the ammonia thus generated would combine with vegetable acids, and be fixed by clay, &c.; but some portion could not fail to combine with carbonic acid and escape into air in the form of the volatile carbonate, as is observed to a greater degree on manure heaps even where gypsum or other solid fixers of ammonia are employed to avoid it. We must regard new land as a storehouse of ammonia and other plant food, which become liable to volatilize when liberated by too free an exposure to air without proper precautions. If the supposition be correct that "Rust" is mainly occasioned by the concurrence of mists or fogs in July and August rich in ammonia; and that the active agent in inducing the sudden appearance of that destructive parasite is really ammoniacal vapours, we have a remedy at hand which promises, when properly and carefully applied, if not entirely to check, at least so far to arrest the growth of the parasite as to claim a general trial; especially as its effects would probably prove equally availing in arresting mildew and blight. What we require is an available absorbent of ammonia and its volatile compounds, not an absorbent which will destroy this valuable plant food; but one which possesses the property of inducing it to assume another form, perhaps equally available as a fertilizer, although of much slower action. Recent observations show that powdered charcoal answers these requirements. Charcoal not only absorbs ammonia to an immense extent, but it also oxidizes it to nitric acid, and thus renders it temperately inert, but not unavailable to future fertilization. Powdered charcoal is distributed with the utmost ease over large areas. Being an extremely light substance and easily reduced to a fine state of division, the least breath of air is sufficient to carry it for hundreds of yards. Any one who tries the experiment of gently shaking a muslin bag, containing coarsely powdered charcoal, in a gentle wind, will find that the operation of sowing, as we may technically express it, a ten acre field, would certainly not cost one-tenth part of the labour of sowing the same field with plaster; and as that operation is not unfrequent in this country, a practical guide is at once furnished of the amount of labour the operation involves. Powdered charcoal thus sown is very uniformly distributed by the least motion of air, and its effects are marvellous. In a stable, for example, strongly smelling of ammonia from fermenting urine, an ounce of powdered charcoal, shaken by means of a muslin bag or any fine network, rapidly and uniformly distributes itself, and instantly absorbs the ammoniacal vapours. A curious instance of the action of this deodorizer occurred at Balacaya during the heat of summer, when the stench was almost intolerable in that painfully celebrated harbour. A ship load of charcoal arrived, packed in bags, and the men who were engaged in transferring the cargo to