

was found by him to possess such manurial powers as promised to be of great and general service to agriculture. He recommended and published the substance by both example and writing; and he speedily made a deep and extensive impression in its favour. Many agriculturists subjected it to experiment; and Schubart in Germany, Tschiffeli in Switzerland, and Franklin in America, wrote in recommendation of it, pushed it into notoriety, and both won for it a host of friends and provoked against it a host of foes.

The use of gypsum extended rapidly in various parts of Europe, particularly in the district around Paris; and was so zealously propagated in North America as to occasion exportations from the quarries of Montmartre to the western side of the Atlantic; and gypsum rapidly obtained the fame, in both the old world and the new, of being one of the most powerful auxiliaries of vegetation. But the opposers of it were many and formidable; and among the most strenuous of these were the proprietors of the salt-pans, who maintained that schlot or the refuse of their pans was the only true fertilizer of its class, and could never be superseded or competed with by gypsum; and yet this very schlot turned out, in a maturer state of mineral analysis, to be itself an artificial gypsum, of precisely similar constitution and action to the natural gypsum of the quarries. The advocates of gypsum, however, were, in a sense, its worst enemies; for they so exaggerated its powers, and spoke of it as a universal manure, and recommended it for all sorts of manurial purposes, as necessarily to produce great disappointment, and in consequence to provoke disgust, anger, and opposition. Experience eventually, though slowly and hesitatingly, assigned very distinct and somewhat confined limits to its fertilizing power; pronounced it to require, in every case, the co-existence with it in the soil, either naturally or artificially, of organic manures; declared it to be efficacious chiefly on soils rich in humus and poor in salts, and generally to but a small number of ordinarily cultivated plants, such as lucern, sainfoin, clover, rye-grass, turnips, and the grasses of artificial meadows; and condemned it as almost or altogether worthless to cereal crops, to the greater number of hoed crops, and to most kinds of natural grass lands. Opinions were very long divided, too, respecting the seasons and methods of applying it; particularly as to whether it should be pulverized and applied in its natural state, or first burned and then pulverized, and as to whether it should be sprinkled on the surface as a top-dressing or thoroughly intermixed with the soil. In many and extensive districts, also, whose soil has since been supposed to contain a sufficient natural intermixture of gypsum for all the purposes of vegetation, the application of the new manure, no matter how or when made, was found to produce no beneficial effect whatever upon any kind of ground or crop.

"The opinions of practical men, with regard to the advantages and propriety of applying gypsum," says Boussingault, "although they agree in certain determinate circumstances, were still far from being unanimous. A particular inquiry into the subject was therefore held worthy of its attention by the French Government, and a comprehensive report on all the information collected was made by M. Bose to the Royal Central Agricultural Society of France. This report shows in a striking manner the advantages that may be derived from the lights of practical men; in a single line or sentence, we frequently find a summary of 20 or 30 years' experience. The following series of questions and answers I believe to embrace most of the points of any interest connected with the employment of gypsum. 1st. Does plaster act favourably on artificial meadows? Of 43 opinions given, 40 are in the affirmative, and three in the negative. 2nd. Does it act favourably on artificial meadows, the soil of which is very damp? Ten opinions given; unanimously, No. 3rd. Will it supply the place of organic manure? or will a barren soil be converted into a fertile one by the use of it? Seven opinions given; unanimously, No. 4th. Does gypsum sensibly increase the crops of the cereals? Of 32 opinions, 30 were negative, and two affirmative." Some subsequent experiments, judiciously planned and carefully executed by Mr. Smith in England, and M. de Villele in France, as well as other experiments of a less prominent character by other distinguished agriculturists, have drawn a very distinct limit round the manurial utility of gypsum, and fully ascertained the conditions in which its fertilizing power is developed.

*The Methods of using Gypsum as a Manure.*—Gypsum, when used as a manure, ought to be ground and applied in its natural state; for it has been proved by abundant experiments to acquire no increase of power from burning or from any other known preparatory process than simple pulverization. It is usually sown or sprinkled upon the surface of meadows but, though it acts well enough when applied in that way, it acts still better when incorporated with the soil. It is generally believed to act peculiarly well when sprinkled under such conditions as to make it lie like a film upon the wet leaves of the growing plants; but it probably derives all the advantages of that mode of deposition from the equality with which it is distributed and detained athwart the surface. Yet whenever used as a top-dressing, it ought certainly be applied in calm, moist weather and will be all the more successful if applied at the particular time in spring when the young plants of lucern or sainfoin, or clover, have already made some degree of progress. "I have noticed, in applying gypsum to grasses," says Mr. Johnson, in his prize-essay in the Royal Agricultural Society's Journal, "that the weather at the time of spreading it has a ve-