the private property of individuals, they will not be generally useful as Model Farms.

CONTINENTAL STATEMENTS ON BEET CULTIVATION.

Boussingault (1851).—In France, it is estimated that the average amount of white sugar obtained from the beet is only about 4½ per cent., while the composition of that root shows so much larger a proportion of saccharine matter. This considerable loss is chiefly attributed to the action of the salts of potash contained in the juice of the beet, as well as in that of the sugar-cane, salts that are again found in large proportion in the molasses obtained from each of those juices. To this undoubted cause of the alteration of the sugar during boiling must be added another, more powerful, perhaps, and of which the effects are manifest in the juice immediately after its extraction by the press. This destructive action proceeds from the circumstance of the albuminous matter modifying itself in contact with the air into a real fermentative substance, which renders the sugar uncrystallizable. In the opinion of M. Melsens, who has successfully devoted his attention to the study of the causes of changes taking place in saccharine matter, it is sufficient, for the purpose of opposing the formation of destructive ferments, to exclude all intervention of air. In setting out from this principle, M. Melsens has applied himself to the discovery of a body very absorptive of oxygen, without action on the sugar, without danger to the health, and easy to be prepared. The bi-sulphite of lime has appeared to him to satisfy these various conditions. This salt effects the coagulation of albumen, of casein, and of white of egg, at the temperature of boiling water. The bi-sulphite of lime possesses all the properties of a clarifier, as it removes all the nitrogenous matter from the juice of the sugar-cane and that of the beet; it acts, too, as a decolourizer, or bleaching agent; it substitutes for the fixed acids in the juice an acid that is gaseous and inert—namely, the sulphurous acid. M. Melsens having made a great number of experiments on this subject, is so fully persuaded of the preservative properties of the bi-sulphite of lime, that he believes that it will become possible, in tropical regions, where the juice of the cane turns sour so rapidly, to extract the sugar from it by the sole employment of the sun's heat, evaporating the juice in the open air in the same manner as the salt water is dried up in marshes near the sea. Without participating in all the expectations of M. Melsens on this subject, I am inclined to think that the bi-sulphite of lime will find an useful application in the treatment of the "begasse" (cane-trash or sugar-cane stalks that have passed through the mill, and are used only for lighting fires), the residuary sugar of which is destroyed with astonishing rapidity. The employment of the bi-sulphite would allow of the beet roots being gra ted in advance, and of their pulp being kept o hand, to be pressed at convenient leisure, afte undergoing successive macerations. The juic would furn sh limpid and colorless decanta tions, no longer requiring the employment of an imal charcoal. Concentrated in evaporatin vessels to the density of 1.30, it would then b removed to the crystallizing chamber. Th method would much simplify the extraction o sugar; and even supposing that it were no adopted on a large scale, it would be the mea of bringing the manufacture of beet sugar wit in the range of farmers. All, indeed, that woul be required, as M. Melsens himself remark would be a rootcutter, a few casks, a boiling co per, and some earthenware pans, to extract a once from a ton of beet roots a whiter sugar tha any of the finest sugars of commerce. During close investigation of the juice of the beet, M Bracconnot has ascertained that the nitrogenou principle—albumen—that it contains, does no become coagulated by the action of heat, eve on continuing the boiling of the liquid or co centrating it by evaporation. He attributes th non-coagulation of the albumen to the absenc of salts of lime in the beet juice; for he foun that if a small quantity of a calcareous salt, suc for instance as the chloride of calcium, th acetate of lime, or even sulphate of lime i powder, was mixed with the juice, and hea then applied, the whole of the albuminous ma ter would be instantly precipitated in the form bulky floccules. By this simple addition of salt of lime, a liquor was obtained quite as lim pid and colorless as that resulting from th beet-juice when clarified by means of quick lime. This liquor, evaporated conveniently and removed to the drying room, yielded a ma of crystallized sugar almost completely fr from treacle. M. Bracconnot concludes his re searches by remarking that sulphate of lim in powder will probably be found advantageou ly to replace quicklime in the clarification beet-juice, without presenting any inconve ence of that caustic alkaline earth. From th whole of M. Peligot's experiments, it resul that the average composition of the beet ma be assumed to be constituted of 87 per cent. water, 8 per cent. of substances soluble in wa ter, chiefly sugar, and of 5 per cent. of insol ble woody matter; and, as only about 4½ pe cent. of sugar is extracted from the juice, it obvious how great a loss of sugar is experie ced in the manufacture. It occurs, however, this case as in that of the sugar cane, that a pa of such loss is occasioned by saccharine mat being left behind in the plan after the juice h been pressed out of it. Thus, with the press now in use, only from 60 to 70 lbs. of juice a obtained from 100 lbs of grated beet roots, whic at the same time, perhaps, contain very near 95 lbs. of that liquid. We cannot, therefo reckon on there being subjected to the proce of sugar extraction more than the average weig