## Literarn and Miscellancous. FAMILIAR CHEMISTRY. BY MRS. M. F. F. THOMAS.

## CHAPTER IV.

Having now glanced briefly at the elements, 35d combination of elements, which compose the visible world, the process of germination will cixt occupy our attention.

Plants are of two kinds---Oviparous and Vivi-The first reproduce their kind by seed; irous. is second by offshoots, or builds. The seed, Se the egg of animals, is composed of a microopposite structure, called the embryo; and its proflood stored up to nourish it, till it becomes ficiently developed to elaborate its own sushauce. The amount of the last, determines the \$ of the seed-the embryo of the sturdy oak, differing, materially, in size, from the little gaionette. Folded up, in a point almost imceptible to the naked eye, hes the vast foliage, I giant arms, of the sturdy oak.

"Each ravelled bud, fine film and fibre line, "Taced with nice penelt on the small design," "And boundless forests slum...er in a shell,"

firmth, moisture, and oxygen, are necessary The seed is composed mostly of germination. bon, and is dry and hard. The pericarp is Detimes succulent or juicy, as in the peach, ple, etc., in which case its early decay is usuneccessary to free the seed, and enable it to the necessary conditions of germination .absence of fluids, in seeds, -and consequentchanges which, in both the vegetable and hal economy, take place only by their influe-enables us to preserve seeds for an almost faited period, if secure from moisture. We accounts of some of the cereal grams being while the thousands of years. Seeds, if explanate, however, but decay. Neither can for air, or both, produce germination without ture. The three, combined, can only wake fe principle from its lethargy. Fluids pere, soften, render its substance susceptible of e, while heat aids the union of the carbon the oxygen of the air, thereby forming a by starchy substance, which constitutes the thod of the embryo. Hence, seeds bedded y in the earth, remain, sometimes, inert for and then, when exposed to the an by being up in ditching and other excavations, hate immediately. Seeds, therefore, plantply, or in soils nearly impervious to air,

germinate upon the surface of the soil, r even upon cotton floating upon water, or in any other position where exposed to heat, air, and moisture, but better a short distance below the surface of the soil, as an equality of moisture is better preserved, and light is excluded. Light, though it does not prevent, retards and stints germination,-for an obvious reason. Plants in the light are inclined to evolve oxygen, by decomposing carbonic acid, and retaining the carbon. The opposite process is necessary in germination. The carbon is thrown off, as carbonic acid, and oxygen is retained. Plants, unlike animals, can elaborate their pabulum from its primary elements. By a process, und oubtedly mercly chemical, as it has its counterpart in inorganic chemistry, the mero presence of the germ, causes the unison of these elements into substances fitted for its nourishment. Therefore, if lime, or any other ingredient of vegetable structures, be lacking in the soil, they can be supplied in the elementary form. It is therefore a great aid in, it not absolutely necessary to, successful agriculture, to understand the chemical composition of the soi', and also of the various manures usually applied. Though heat is necessary to germination, a too high degree destroys the vitality of the germ. The maiting of grains consist in first inducing germination, and then destroying the vitality of the germs by increased heat, at a certain period. Grains treated in this manner, when macerated or soaked m water, prossee a sweet liquid which is subject to fermentation. The process of fermenting liquors, or raising bread with yeast, is a process of germination. Yeast is a plant of the simplest order, consisting of single cells, which never attain any higher degree of development; but placed in favorable circumstances, propagate their kind with astonishing rapidity. How rapidly a few spoonfuls of yeast pervades and assiinulates a large quantity of dough. The pulliness of the dough is caused by the carbonic acid evolvel, as I before said, by the union of the oxygen of the air, with the carbon of the yeast, being retained by the tough gluten of the wheat. It is the absence of this principle (gluten) in cora meal, which prevents its ever assuring the spongy form of wheat dough. Mould is also a vegetation. Its geims are so widely diffused that the condition of their germination, alone, is necessary to develop them.

But to proceed with the process of germination. The embryo gradually enlarges, and emerges Late slowly, and uncertainly. They will from the seed coatings in two parts. First the