

an explanatory note. The products of these closets is just the material that is wanted by our farmers as a top-dressing for their grass lands.

"How now, Dame Partlet! the hen?"

Let us invite to a careful reading of our Poultry columns. Therein will be found some excellent advice as to the kind of fowls that suit amateurs best, as well as remarks on the best methods of management, hatching, and fattening. But we chiefly desire to draw attention to a new organization that has come out in full feather, and which, as its name indicates, is of varied plumage,—the "Dog, Pigeon, and Poultry Club." We publish the rules of the club, and the programme of the prizes to be competed for at the exhibition in June. It embraces all kinds of Feathered and Furred Poultry, Pigeons, Singing Birds, Parrots, and even Domestic Pets that have no story to tell. We hope that our farmers, henwives, Poultry, Pigeon, and Dog Fanciers all over the Province, will enter cordially into the scheme, and so contribute to the show as to make it creditable to themselves and to those who have taken so much pains in getting it up. The annual subscription of Members is one dollar, and the prizes to be given will be handsome.

Within the last year or so we have had a great many enquiries regarding the breeds of Pigs. We print a short account of the "Chester Whites," which are highly valued in the United States.

A large portion of the present number is occupied with Reports of the various Agricultural Societies, organized under the Board of Agriculture. We know very well that it is difficult even for a literary genius to convert Annual Reports into light, pleasant reading. But our Reports are none the less useful on that account, and many of them are pregnant with suggestions of a valuable character, from men who have made the agriculture of the Province their study for a lifetime. These Annual Reports exhibit to the public the various ways in which the Agricultural Societies use their own funds, and the grants-in-aid that are given to them, in the furtherance of agricultural objects.

Field operations in this month of April will depend entirely upon the weather. Every fine day should be taken advantage of. Fences have to be put in order

—manure taken out—land cleared, and fruit trees pruned. More air should be given to cow-houses and stables. Cattle do great damage to the grass fields if allowed to wander over them in wet weather. In the garden, the hotbeds require constant attention, currant and gooseberry bushes want pruning; and the old canes of raspberries should be removed. Take the coverings off strawberries, and have them dug between the rows when the ground is dry enough. The Flower Garden and Shrubbery should be dressed, bushes and trees pruned and neatly tied up where necessary, and the coverings taken off climbers and tender plants.

PRINCIPLES OF VEGETABLE ANATOMY AND PHYSIOLOGY AS APPLIED TO AGRICULTURE.

[Continued.]

I. THE VEGETABLE CELL.

On the present occasion we shall briefly consider the Vegetable Cell in its anatomical and physiological relations.

The material world consists of bodies of two kinds,—*Inorganic bodies*, without life (minerals and rocks), and *Organic bodies*, which are endowed with life and possess an organized structure, (animals and plants). These two groups possess no characters in common save the universal properties of matter. Although the term "organic" originated in the possession of special *organs* for the performance of functions, it has in reality a wider and more definite meaning than that would indicate. Since it has been discovered that there are both plants and animals which scarcely possess special organs for the performance of different functions, but that all plants and animals are made up of tissues adapted for vital action,—the existence of such tissues is taken as the basis of organization. All living bodies possess these vital tissues, which are the apparatus of life; they have the power of assimilating dead matter and converting it into their own living substance; in this the growth of organic beings consists. It would be beside our present purpose to enter upon a discussion of the intensely interesting question of the distinction between plants and animals, which it would however be necessary to discuss before placing in a clear light what science can offer as an abstract definition of the plant. The animal and the vegetable kingdoms are so closely linked together, that "from man to the primary animal and the vegetable cell, there exists no gap in the realization of a general idea upon which nature as a whole is based." (Schmidt.) There are

no chemical characters whereby we can separate the two kingdoms; respiration affords no definite distinction; their modes of reproduction merge into each other in the lower organisms; and locomotion is common to both animals and plants; even many of the algae which are fixed during the progress of their development give off spores which are furnished with delicate cilia whose vibratory movements propel the spore until it has found a suitable resting place, whereupon its erratic life ceases, and it grows up into a plant with no desire to change its fixed abode. We can only define plants as organized beings endowed with life and motion, but without sensation and voluntary action.

The tissues above mentioned as composing the substance of plants are so fine that their peculiarities can only be seen by the aid of a compound microscope. If we make a cross section of the stem of a growing corn plant or grass, or cut a thin slice of a turnip or other succulent root, we shall find it to present a honeycomb appearance. The network therein shown is a cellular tissue; it presents the appearance of a substance in which numerous six-sided cavities have been made, and this was the explanation given by the earlier writers on Vegetable Anatomy. By careful manipulation, however, it can be shown that the membrane forming the partitions between the cavities is double, so that the tissue might be separated into as many minute vesicles or bladder-like bodies as there are meshes in the specimens. Each of these vesicles is a CELL. Cellular tissue is so called because it is composed of cells.

The primary form of the simple cell is that of a globular vesicle composed of solid membrane of cellulose; with fluid and solid contents. Its form and structure are subject to great variation, and, if cells do not become converted into vessels (or compound elementary organs), the early development of vessels is certainly not appreciably different from that of cells. According to Mohl, the sphere must be regarded as the fundamental form in which every freely developed cell first appears; its ultimate form depends upon its indwelling laws of development, and the influences exerted upon it in modifying the expression of these by surrounding tissues. We accordingly find that while cells are most frequently of a roundel or oval form, they vary much in shape according to their mode of arrangement in the tissue and their special functions. For example when they occur in the form of hairs on the plant's surface they are often drawn out into a conical form; in the pith of the rush, &c., the cells are of a stellate form, an arrangement which gives rise to numerous inter-cellular spaces or air cavities. The same object is effected more fully in the tissue forming the pith-like substance of the