

### THE UNITY OF PRINCIPLE IN THE VEGETABLE KINGDOM.

The following is a synopsis of the lecture on the above subject delivered by Dr. Lisboa Pinto to the students of the School of Agriculture. We regret that there was no reporter present on the occasion on which the lecture was delivered. As may be gathered from the meagre notes which we have persuaded Dr. Pinto to allow such to reprint, the lecture was a most interesting and instructive one, and Dr. Pinto was accorded a hearty vote of thanks not only for his able address, but also for the kindly interest which he evinced in our agricultural students by consenting to address them in spite of the great demands which the duties of a professional man make on his time.—Ed.]

We should look down upon the great system of vegetable life from the loftiest standpoint. Such a view not only tends to simplify the study of that beautiful Science—Botany—but also elevates man in his own estimation and raises him to his true dignity as the noblest of beings inhabiting this earth.

There are numberless isolated and apparently trifling facts in Botany, but they all become very simple and easy of comprehension when we see the great principle of unity which pervades the whole vegetable creation.

The great principle is like the small wave raised by a stone thrown into a lake. The successive circles which rise around it represent the corollaries which follow from the great principle, and although in the recesses or the prominences of the coast the circle appears to be broken up, yet it is a circle all the same, &c., &c.

Nature is the book for the true botanist. Between a book botanist and a botanist in the field the difference is even greater than between the man who knows a piano only from a verbal description of it and the one who has seen the instrument a dozen times, &c.

1. *All plants are similar at some period of their existence.*—The Protococcus (1 cell), the Oscillatoria (a thread of cohering cells), the Mushroom, and the developed plant

The prototype of all vegetable growth is a cell; or every plant is at first a cell.

The principle applies throughout:—The Capitulum is an undeveloped spike; the latter an undeveloped raceme &c. *Entire, Toothed, Lobed and Compound leaf. Orthotropous and Campylotropous Ovary.*

2. *All vegetables increase by developing in a centrifugal manner.*—A tree with its trunk, branches, twigs, leaflets, &c., is like the Solar System. Everything proceeds from a centre outwards. The principle applies to *opposite, alternate, verticillate leaves* &c. Also to the parts of a flower. Put a pin through the vary and you will find that all the structures are around it.

3. *The Unity between all members of a plant.*—A root and stem are much alike. Also a stem and bud. A flower-bud and leaf-bud. Buds and leaves also. And between the stem and leaves there is a wonderful uniformity. A flower is only a stunted axis with its leaves. The flower and inflorescence from an ornamental point of view are quite allied:—The panicle is contracted into a thyrus, this into a raceme, the raceme into an umbel, and this into a capitulum.

4. *Unity from classification.*—There are thousands of known plants; yet the varieties of a species are almost exactly the same in construction, form, &c., e.g., the *Bandakai, Shoeflower* and *Sooriya*.

Species, through their affinities resolve into Genera. Two children of the same parents, one dark, the other fair; one sharp, the other dull.

Genera arrange themselves into Orders, e.g., Cruciferae &c. Orders group themselves into subclasses and classes, e.g., *Thalamiflorae* &c.

5. *Unity in the arrangement of parts of plants,* e.g., *alternate, opposite leaves, &c.* The arrangement of flowers, of bracts, of buds, always corresponding in the different species and genera.

6. *Unity in the habits of plants,* e.g., *prone-ness to grow together, like the social man, as seen in connate leaf, gamösepalous calyx, syncarpous ovary.*

Also a sessile leaf becomes perfoliate. Stipules become ochreate; carpels grow together. Peculiarity of twining as seen in tendrils, leaves, petioles, &c. Wing-like expansions in the petiole, seed, &c. Some parts become succulent as in the *cashew, orange, raspberry, pomogranate, pineapple,*

7. *Unity in relation to the world.*—Plants administer to the wants of animals, they are the flesh formers. A tiger feeding upon an animal and a child at the breast, like the herbivora &c.

From plants we get ornament, timber, shelter, food, perfumes, relishes, medicines, &c.

Plants purify the atmosphere.

By decomposing they form new earth.

8. *The artistic phase of plants.*—The thousands of colours produce in us three kinds of impressions, &c.

9. *The poetry of plants.*—The language of flowers and plants.

### TROPICAL FODDER GRASSES.

*Leersia hexandra, Sw.*—"Rice-grass." A widely distributed perennial swamp-grass found in the warm regions of both hemispheres. It has a somewhat slender stem, 2 to 3 feet long, with narrow leaves and paniced spikes. In the Philippine Islands this grass is regularly cultivated under the name of *Zacate*, for the purpose of supplying food for domestic animals. It is treated like rice, being transplanted to wet and previously ploughed meadows. Bailey found it to be one of the most relished by cattle amongst the aquatic grasses of East Australia. In Singapore it is regularly gathered in waste places as a green fodder for cattle and horses.

*Panicum Colonum, L.*—An annual grass widely distributed throughout tropical countries. It prefers a rich soil, and is often found as a weed of cultivation. In some parts of India it is cultivated for its grain. The straw is much used in the Madras Presidency and in Mysore as cattle fodder. Duthie gives the following account of this grass (*Fodder Grasses of Northern India*, p. 5):—

"It is generally considered to be one of the best kinds of fodder grass. It is abundant all over the plains, and ascends to some few thousand feet on the Himalayas. It is greedily eaten by all kinds of cattle both before and after it has flowered, the abundant crop of grain yielded by