

torical botany), has indiscriminately mixed up the ancient histories of several plants in his treatise on the common Bean (*History of Cultivated Vegetables*, vol. I., pp. 65-74.)

The Bean is an annual plant, a native of Egypt, to which the botanical name of *Faba vulgaris* has been applied. It belongs to the natural order *Leguminosæ*, the distinguishing character of which is the legume or pod, which forms the fruit of all plants of the order, and is familiarly exemplified in the common pea and bean. In all European species of *Leguminosæ*, another peculiarity prevails, viz., the papilionaceous or butterfly shaped flower, all plants having such flowers being leguminous; but many of the tropical *Leguminosæ* want the papilionaceous flower, as the Acacias and Cassias, for example.

Some of our most eminent botanists regard the whole order as having decidedly poisonous properties, apparently following up the idea of Pythagoras, whose genuine "Bean" was a very different plant; he expressly forbade beans to be eaten by his disciples, because he supposed them to have been produced from the same putrid matter from which, at the creation of the world, man was formed!"

The poisonous character of the *Leguminosæ* is, however, ill supported by the fact that many of the most important economical plants of all (except arctic) countries belong to it; we have for example the pea, the vetch, the lentil, the bean, the kidney bean, clover, medick, lucern, trefoil, and saintfoin, all of greater or less importance in agriculture, while in warm countries the tamarind, the locust, (a delicious fruit understood to be the "locust" of scripture, which ignorant people have erroneously supposed to be the insect so called), the chickpea, and a long list of medicinal species, point out the important and wholesome character of many members of the order.

In the present day field beans are cultivated in England exclusively as food for horses and cattle, although in some districts the peasantry use them in various ways as an article of food. The prevailing opinion is that they are a flatulent and coarse food, better suited to the laborious than the sedentary class of society, but not very wholesome even to the farmer. However we have the authority of the earliest scientific botanist that appeared in England (John Ray, the devout author of the "Wisdom of God in Creation") that this is "not true," though he "frequently fed upon beans in the summer." "Nor do we (adds he) approve of the opinion of Dodonæus, who preferred the old and dry beans before the green ones, because he thinks them less flatulent; but, with Tragus, leave them to our horses; nor do I see why they should not fatten men as well as swine and other animals."

Professor Johnston tells us that Beans in common with other kinds of Pulse, contain, as a distinguishing character of the whole class, a large per-centage of gluten, mixed with a comparatively small per-centage of fat. "On an average the proportion of gluten is about twenty-four, and of fat about two in every hundred. The gluten of these kinds of grain resembles that of the oat, and does not therefore, fit bean or peas meal for being converted into a spongy bread. The large proportion in which this ingredient is present in them, however, renders all kinds of pulse very nutritious. Eaten alone they have a constipating or costive quality; but a proper admixture of them with other kinds of food, especially with such as contain a large proportion of oil or fat, is found to give both strength and endurance to animals which are subjected to hard labour. It is in this way that a certain quantity of beans given to horses among their oats is found so serviceable. It is because also of the same large per-centage of gluten that the chick-pea, the *gram* of the East, is considered, when roasted, to be more capable of sustaining life, weight for weight, than any other kind of food.—For this reason it is selected by travellers about to cross the deserts where heavy and bulky food would be inconvenient;" and, in like manner, the lentil (recently introduced to British agriculture) has been employed for ages in Southern Europe, and in Egypt, as the most suitable food for those who undertake long journeys.

The analysis of beans shows the following constituents:—

Legumino	27.5
Starch	38.5
Fatty Matters	2.0
Sugar (glucose?)	2.0
Gum	11.5
Woody Fibre, Pectic Acid	10.0
Salts, Phosphates, &c.	3.0
Water and Loss	12.5
	100.0

CULTIVATION.

Boussingault, the French agriculturist, observes with reference to beans and allied legumes, that although they scarcely ever open rotations they very often wind them up, and they may follow any crop. Haricots and beans, he thinks, might be advantageously intercalated with Indian corn. His meteorological observations lead to the conclusion that, to succeed, our leguminous plants require a temperature which in the mean does not fall below from 27° to 50° Fah. Hot climates agree with them perfectly. In respect to this statement our experience differs from that of the French chemist farmer. Boussingault says he has followed them from the sea-board of the Equatorial Andes to a height of 8200 to 9800 feet above the level of the sea. The following statement of the comparative produce of the different leguminous plants

generally cultivated is on the authority of Schwertz:—

Plants.	Weight per bush. in lbs.	Produce per acre in bush.	Weight of dry straw or haulm per acre.			
			Tons.	Cwts.	Qrs.	Lbs.
Beans,	70.4	27.6	1	2	2	15
Haricots	52.0	27.8				
Peas,	63.2	16.0	1	4	2	6
Lentils,	68.0	18.4				
Vetches,	68.0	17.6	1	4	2	6

The varieties of Bean have not been multiplied to such an extent as most other grains. In fact almost the only sort cultivated in Scotland is that known as the Common Horse Bean, which is so familiar that no description is required. The sample is however not always clean, other varieties being more or less mixed with the common sort, and even the character of the season exercises a considerable influence on the appearance of the sample. When a field of beans is in blossom the diversity of colour in the flowers is such as to attract general attention.

In addition to the common kind, we may notice the following varieties, which more or less deserve the farmer's attention

Alexandrian.—Later in ripening than the common sort, and generally not so well filled.

Annfield.—One of the largest class of field beans, of medium earliness and rather productive, but likes a superior early soil.

Heligoland.—An early and hardy sort, well filled, but small-headed, on which account the produce is not very heavy.

New Large Red or Scarlet.—Very prolific, beans large red.

Pigeon.—Early and prolific, and the beans darker than any other sort, but small (hence its name from being used instead of peas to feed pigeons.)

Prolific Purple.—Culture discontinued from a prejudice among dealers against its sample.

Purple.—Resembles the winter bean, but inferior.

Common Tick.—In England and France this is the common bean in use for feeding. It is shorter in straw and more prolific than the common Scotch sort, but prefers a light soil.

Harrow Tick.—Smaller even than the preceding in all its parts, and like it suited to light soils. There are a number of sub-varieties, such as *French Tick*, *Flat Tick*, and *Essex Tick*.

Winter.—Remarkably hardy and prolific, but not as yet, we believe, fairly tried in Scotland; in France and England it has stood well severe winters.

Beans may be sown by hand broadcast, on one furrow of tilth, or by the dibbling machine. They like a strong good soil. Winter beans are sown in October and November, in England; common beans in February and March.—With respect to quantity of seed, three