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Botany of Some Useful Pants—IV.

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(Continued from July issue)

Trigonella foenum—graecum.—The Fenugreek (Tamil Menthiyam or Venthayam) is an indigenous plant growing wild in many parts of Upper India. Its cultivation extends throughout India usually grown near wells or on tank beds but sometimes it follows cotton or cholam in garden lands. The seeds are usually sown in February and the crop is ready for harvest by April. It is capable of being cultivated in other seasons also the supply of sufficient water being the limiting factor.

It is a herbaceous annual growing to a height of 10 to 12 inches. The stem is rounded or slightly ridged and covered with hairs. The leaves are pinnately trifoliolate, petiolate and stipulate with 2 greenish white stipules. The petiole is grooved on the upper suface and is jointed just above the attachment of the stipules. The leaflets are obovate, dentate, obtuse, obscurely pinnate—reticulate, succulent and with a few hairs on the veins on the undersurface. The terminal leaflet has a jointed stalk.

The flowers are produced from the upper portions of the plants and are axillary and solitary. They open in the morning but by the evening all of them wither away. Bracts and bracteoles are absent. The calyx is tubular and hairy with 5 linear-lanceolate teeth. The corolla is yellowish in colour; the standard is big, ovate and yellowish with green dots on the surface; the wings are half as long as the standard, clawed and provided with a prominent spur; the keel petals are half as large as the wings and united except at the apex. There are 10 stamens, diadelphous, united for the major part of the length and with orange-coloured oblong anthers. The ovary is sessile covered with long silky hairs, with a short style and blunt stigma. The pod is hairy, compressed, 3—4 inches long and 1/6 inch broad with many seeds. The seeds have their long axes parallel to the suture. The seeds when wetted develop a mucilaginous envelope.

The young plant is used as a pot herb. The young pods are also sometimes cooked and eaten as vegetable. The seeds are largely employed as a condiment to flavour the curries. Both the entire plants and the seeds are rather bitter to the taste.

The seeds are largely used in the Indian and Muhammadan systems of medicine as a carminative, tonic or aphrodisiac. A poultice made from the seeds is applied to the skin as a cosmetic. Nurses are sometimes advised to take a gruel made by using the seeds in order to increase the flow of milk. The leaves are also made into a poultice and applied to reduce external swellings.

As a fodder the plant is held in great esteem since it is believed to have properties of increasing the yield of milk. The seeds are often mixed with the food of cattle. Musty hay is often flavoured by mixing fenugreek seeds to make it palatable to the cattle. The seeds yield a dye.

Pisum sativum:—The garden pea (Tamil. Pattani) is extensively cultivated throughout India. It has been in existence in Northern India from very remote times but some consider it to be probably a native of South Western Asia. In Madras the cultivation of this pea is more or less restricted to the cooler parts being common in the hill stations on the Nilgris and Pulney hills. In Mysore province also it is widely grown. Numerous varieties of peas exist differing widely in the colour of the flower, the colour, size and form of the seeds. In Northern India this is sown as a field crop in the months of October-November and harvested by February–March. However as the name indicates this is mostly grown as a garden crop. On the hill stations the pods come to the market during mostly from February to November.

This is an annual herbaceous climber climbing by means of tendrils. The stem is angular, herbaceous, fistular and glabrous and slightly glaucous. The leaves are pinnately compound and stipulate; stipules are large, leafy and auricled with dentate margins; usually 2 pairs of leaflets develop, the upper 2 to 3 pairs and the terminal leaflets being modified into tendrils. The leaflets are ovate-elliptic, with very short stalks, dentate, mucronate pinnate—reticulate, glabrous and glaucous.

The flowers are in axillary long peduncled racemes with minute bract and bracteoles. The calyx is campanulate with 5 lanceolate lobes. The standard is large, orbicular, clawed and of various colours; the wings are slightly clawed and with a prominent spur; the keel petals are united and broader than the wings.

Stamens are 10 in number, diadelphous with uniform oblong anthers. The ovary is glabrous and flattened with a sharply bent flattened style, densely bearded on the inner surface. The pod is inflated with a varying number of globular seeds. The latter are either wrinkled or smooth and vary in colour in the different varieties.

The young green pods are cooked as a vegetable or roasted and consumed. The green immature seeds are made into soups or curries or roasted and eaten. The ripe seed is used either as it is or split or ground into a meal. The familiar 'pattani kadalai' sold in bazaar is prepared from the ripe seeds roasted and spiced. Imperfectly cooked peas are believed to cause intestinal disorders resulting in flatulence or sometimes in diarrhoea. The entire plant is used and valued as a fodder for cattle.

Historically this plant is famous. The famous experiments on hybridization by Gregor Mendel were carried out with the garden pea and from these experiments he formulated certain laws regarding the behaviour of the hybrids, which go by the name of Mendel's laws.

Suborder—Caesalpineae.

This comprises shrubs and trees and very few herbs. The leaves are mostly compound but rarely simple leaves also occur. The flowers are formed either in the axils of leaves or the apices of branches and are mostly borne on racemes or very rarely cymose. The flowers are hermaphrodiate and irregular (very rarely regular). The calyx is made up of 5 or 4 (by the fusion of the upper two into one) lobes. The lobes are separate very nearly to the base except in some in which the calyx is gamosepalous. Petals usually number 5 or fewer and the upper most petal is innermost in the bud and is usually smaller or more brilliantly coloured. This petal is usually termed as the 'Odd petal.' The aestivation is imbricate and as distinguished from that in Papilionatae is termed as 'ascending imbricate' since the posterior petal is the innermost in the bud. There are usually ten stamens sometimes less and mostly free or rarely united. The pods are dehiscent or indehiscent.

Tamarindus indica.—The tamarind (Tam. Puli) is common throughout India being found as far north as the Jhelum. It is said

to be indigenous to South Africa but it is found wild in parts of South India also. This tree is sometimes planted but is more commonly selfsown. The tamarind is rare or absent in the cooler parts of the country and is very common in the hotter plains.

It is a perennial large-sized tree growing to a height of 40-60 feet with many spreading branches, but leaving a thick trunk up to 15 feet in height. The leaves are pinnately compound, parripinnate, with 10-16 pairs of leaflets. petiolate with the petiole grooved on the upper surface, and stipulate with small deciduous stipules. The leaflets are opposite subsessile, oblong, retuse to emarginate, entire, pinnate reticulate, glabrous, sour to the taste.

The flowers are in terminal racemes at the ends of branchlets. Orange or pink coloured large bracts and bracteoles are present. The pedicels are jointed. The calyx tube is shallow with 4 imbricate lobes the posterior lobe being the largest and yellowish (slightly petaloid). The corolla consists of 3 petals, the upper 3 alone being present. The petals are orange coloured with prominent reddish forking veins. The upper-most petal (the odd petal) is the smallest. The two anterior petals are represented by 2 hair like processes. There are 3 well developed stamens united to form a sheath (monadelphous) on the anterior side splitting above half the length and curving upwards with 4 bristle like staminodes alternating with the stamens; the anthers are oblong. The ovary is compressed and provided with a short stalk and a hairy style and subcapitate stigma. The number of ovules vary from 1 upwards. The pod is indehiscent and varies in size and shape from a small one—seeded oval one to a long straight or curved slightly compressed many seeded structure. When young it is greenish but with age a hard brown epicarp develops forming a shell. The meso-carp is fleshy and acid to taste, and the endocarp is lethery. The seeds are separated by the development of false septa, and are hard, shiny black and flattened with truncate ends.

The tamarind is one of those trees which are very useful almost all parts of it being made of. The fleshy mesocarp of the fruit is used in the preparation of soups and other curries. Young

immature pods are made into chutneys. It is the ripe fruit however that is generally used. The pods are dried in the sun for a day or two and the shells removed. The fleshy portions are again exposed to the sun for a day and then the seeds and fibre are removed by beating with a wooden mallet. The pulpy meso-carp portion is again exposed to the morning dew for 2 days and then stored for future use. The older the pulp the greater is the value. It forms such an important constituent of the food that most of the people of South India cannot continue without tamarind for even a short time. Poor people utilise the seeds in the preparation of their food. The kernels are roasted and ground into flour or boiled and consumed. The seedlings are sometimes cooked as vegetable and young leaves and flowers are made into chutneys.

Various medicinal properties are attributed to the different parts of the tree and the different parts of the plant are valued both in Indian systems of medicine and in western Pharmacopias. The pulp is considered to be a refrigerant, digestive, carminative and laxative and is said to be beneficial in diseases caused by deranged bile. As a poultice the pulp is applied on inflammatory swellings and for sore throat a gargle made of tamarind water is recommended. The leaves are also made into a poultice, and applied to reduce inflammations. The bark is employed as a tonic and astringent.

A strong wood cement is prepared from the seeds after powdering and boiling with glue, A size is also made from the seeds and is used to dress blankets. The pulp is daily used to polish copper and brass vessels in Indian households. Silverware can be polished by the use of an infusion of the fruit. The leaves flowers and fruits are used as auxillaries in dyeing.

The tree supplies good timber. The heart wood, though rather small in size is very hard, durable and difficult of working and is used for parts intended to withstand heavy strain or pressure. Mallets, rice pounders, oil and sugar mills and wheels are ordinarily made from the heart wood of tamarind. This tree supplies good fuel which is much prized whereever great heat is required as in brickmaking. Gunpowder charcoal is also prepared from this.

Tamarind is generally planted as an avenue tree. Though it gives good shade the acid exhalations emanating from this are believed to be injurious to health and people are generally advised not to sleep in the shade of a tamarind or enjoy for a long time the breeze wafted past tamarind trees. It is said to have a

baneful influence on crops or plants either growing under it or in close vicinity. Clothes of tents remaining long under this tree are known to perish sooner than otherwise. In Indian mythology this tree is supposed to be haunted by ghosts and devils and women and children are warned against going alone near these trees especially during nights.

Sub-order Mimosoidae.

This comprises mostly trees and shrubs and very few herbs. The leaves are compound and more often bi-pinnate. The flowers are regular hermaphrodite sometimes polygamous and clustered together into globose heads or cylindric spikes or rarely into short racemes or umbels. The calyx is usually gamosepolous with 5 valvate lobes.

The corolla is gamopetalous or sometimes polypetalous with valvate lobes or petals equalling in number those of the calyx. The stamens are usually exserted, free or monadelphous or adnate to the base of the corolla. The stamens are equal in number to the petals or in multiples or more often indefinite. The pod is dehiscent or indehisecnt sometimes developing into a lomentum. The seeds are sometimes arillate.

Pithecolobium dulce.—The Korukapuli is a native of tropical America but is found in many parts of India either as a hedge plant or avenue tree and often run wild. In Madras it is seen in the districts of the plains.

When allowed to grow it reaches the size of a good sized tree. The leaves are bi-pinnate, each pinna being provided with one pair of leaflets and stipulate, stipules being transformed into spines. The leaflets are oblong and entire.

The flowers are borne in heads on elongated terminal panicles and are hermaphrodite with minute bracts and bracteoles. The gamosepalous calyx is greenish in colour with 5 teeth. The corolla is also greenish, gamopetalous with 5 valvate lobes. The stamens are indefinite in number and are monadelphous and much exserted with small anthers. The ovary is many ovuled with a filiform style. The pod is twisted and coriaceous and the seeds are provided with a white or pinkish out-growth called aril.

The plants when grown thick form a strong fence and are used often for this purpose. The aril is much relished by the poorer people and is consumed in the ripe stage. The pods and leaves supply fodder for cattle and goats. The wood is used as fuel.