

GOSSYPIMUM, a genus of Plants belonging to the natural order *Malvaceæ*, common to both the Old and New World, and which, from the hair, or cotton, enveloping its seed being so admirably adapted for weaving into cloth, is, after those affording food, one of the most important groups of plants. There can be no doubt that it is indigenous in America, as, besides the distinctness in species, specimens of cotton still attached to the seeds, as well as cloth fabricated from the former, have been brought by Mr. Cumming from the Peruvian tombs. Some of the cloth, consisting of chequered squares of black and white, very nearly resembles some modern patterns. Humboldt has moreover stated that it formed the only clothing of the natives of Mexico, and is one of the plants they most anciently cultivated. With respect to the Old World, the almost universal use of cotton as clothing in the East is well known; and as the species, so far as ascertained by botanists, appear to be Indian and Chinese, the historical investigation is interesting as proving an early communication between the civilised nations of remote antiquity. Though Rossellini incorrectly states that cotton was employed as mummy-cloth, it must have been known to the ancient Egyptians, as he found some of the seed in one of the monuments of Thebes. In later times, we learn from Arrian that muslin was exported from India to the Arabian Gulf, and from that country cotton was no doubt first made known to the rest of the world.

The Sanscrit name of the Cotton-Plant is 'karpasi,' and the Hindoo 'kupas;' the cotton itself is in the latter language called 'rool.' The former is interesting, as 'karpasus' occurs in the 'Periplus' of Arrian, and is rendered by Dr. Vincent 'fine muslin.' It is derived from the Sanscrit 'karpasi,' from which probably, as indicated by the editor of 'Harris's Dictionary,' the Hebrew word 'karpas,' employed in the book of Esther (chap. i. v. 6), is also derived; so likewise the Latin 'carbasus.' Dr. Royle, in his 'Essay on the Antiquity of Hindoo Medicine' (note, p. 145), infers, that as in the above passage of Esther, white, green, and blue hangings fastened to pillars of marble are described in the court of the garden of the king's palace; the practice appears similar to what is now adopted in India, where calico curtains, usually in red and white stripes, and stuffed with cotton (commonly called 'purdahs'), are employed everywhere in India, and at Delhi even in the king's hall of audience. This consists of colonnades of pillars supporting a light roof in the court before the private apartments of the palace. On the outer rows of pillars these purdahs are suspended; hence, the author infers, we may understand the use to which were applied the rows of pillars in front of the palace in the ruins of Persepolis.

Cotton was no doubt in later times cultivated and manufactured into cloth. Pliny (lib. xix. c. 1) states that Upper Egypt produces a small shrub which some call 'gossypion,' others 'xylon,' bearing fruit like a nut, from the interior of which a kind of wool is produced, from which very white and soft cloth is manufactured. Had it been common in Egypt in the time of Herodotus, it could not have escaped him; as he says specially of the Indians, that they possess a kind of plant which, instead of fruit, produces wool of a finer and better quality than that of sheep: of this the natives make their clothes. Nearchus describes the dress of the Indians as being made of flax from trees ('Library of Entertaining Knowledge,' Egypt. Antiq., ii. p. 125). Theophrastus (lib. iv. c. 9) clearly describes the cotton with leaves like the vine as being abundant in the Island of Tylos in the Persian Gulf. Heeren, in his work on the 'Commerce of the Ancients,' comes to the conclusion that these plantations of cotton in the Island of Tylos were the result of the commerce with India, the true country of the cotton. The inferences from these quotations of the original introduction of cotton from India into Egypt are in some measure confirmed by there being no species of *Gossypium* indigenous and peculiar to the latter country. In conclusion, it is necessary to refer to the facility with which cotton is distinguished from linen to controvert the assertion of Rossellini that it was always employed

for mummy-cloth; as the result of numerous observations by Bauer, &c., with the most powerful microscopes of modern times, and every variety of mummy-cloth, has proved that it is invariably composed of linen, and not of cotton cloth. The one fibre is easily distinguished from the other; that of cotton having a flat tape or riband-like appearance, while the fibre of the linen has a round tubular and even-jointed structure. (Egypt. Antiq., 'Library of Entertaining Knowledge,' vol. ii. p. 182.)

The genus *Gossypium* is characterised by having a double calyx, of which the inner is cup-shaped, obtusely 5-toothed, the outer or involucre tripartite, with the leaflets united at the base, cordate, with the margins irregularly cut. Stigmas, 3-5. Capsules, 3- or 5-celled, many-seeded. Seeds clothed with wool-like hairs, or cotton.

The species of *Gossypium* occupy naturally a belt probably exceeding the torrid zone in breadth, but in a cultivated state we have cotton now extending on one hand to the south of Europe, and Lower Virginia and even Maryland in the United States of America; while on the other we have it as far south as the Cape of Good Hope, and in America to the southern parts of Brazil. Within these limits it may also be seen cultivated at considerable elevations. Baron Humboldt mentions having seen it even at 9000 feet of elevation in the Equinoctial Andes, and in Mexico at 5500 feet. Dr. Royle states that it is cultivated in small quantities at 4000 feet of elevation in 30° N. lat. in the Himalayas. The localities suited for the production of cotton depend as much upon the climate as the soil, and also upon the specific peculiarities of the different kinds of cotton plants. That the production of cotton is so much influenced by external circumstances is not more remarkable than in many other cultivated plants; indeed, we might expect it to be more so from the susceptibility of this hairy development to the influence of situation. Humboldt has remarked that *G. Barbadosense*, *G. hirsutum*, and *G. religiosum* flourish in a climate where the mean annual temperature is from 32° to 68°; but that *G. herbaceum* is successfully cultivated where, the summer heat being 75° or 73°, that of winter is not less than 46° or 48°. The cultivation of this cotton however does not depend so much on winter cold as on sufficient length of suitable summer heat. The thermometer in Upper Virginia is sometimes as low as zero of Fahrenheit in winter, and yet cotton can be cultivated during the long summer.

It is remarkable that a genus so important for its produce, and so long known, and with comparatively so small a number of species, should yet have these undetermined. The celebrated De Candolle states, that no genus more urgently requires the labours of a monograph from a careful botanist who could have the opportunity of seeing the species in a living state. The confusion has in a great measure proceeded from botanists absurdly neglecting the cultivated in their search for new species; and cultivators being incompetent or unwilling to distinguish varieties from species, frequently raising the former to the rank of the latter, because the produce, in which alone they are interested, happened to be more or less valuable. In the proceedings of the East Indian Committee there is an interesting letter from Mr. Spalding, where he informs us that the American cultivators confine their attention to such plants as are of annual growth: 1st. The Nankeen Cotton, introduced at an early period. This is abundant in produce; the seed covered with down, the wool of a dirty yellow colour, and usually low priced. 2nd. The Green-Seed Cotton with white wool, which, with the former, is grown in the middle and upland districts, whence the latter is called Upland Cotton, also Short Staple Cotton, and, from the mode in which it was cleaned, Bowed Georgia Cotton. 3rd. The Sea-Island or Long Staple Cotton, which is distinguished by the black colour of its seed, and by the fine, white, strong, and silky long staple by which it is surrounded. This is grown in the lower parts of Georgia and South Carolina, near the sea, and on several small islands which are not very distant from the shore.

The species admitted by botanists are not yet clearly determined. M. De Candolle admits 13 species, and notices others. Two have since been described by Dr. Roxburgh, one by Rœusch, and another in the 'Flore de Senegambie.' Of varieties Mr. Bennett says he knows more than one hundred kinds, and that they appeared to him never-ending. Dr. Royle, the most recent author who has treated expressly of the genus, admits eight species, in which are absorbed some of De Candolle's; while others are avowedly unnoticed for want of materials for satisfactory determination. But from his own observations, Dr. Roxburgh's 'Flora Indica,' as well as from Swartz, 'Observ. Bot.' for the West Indies, and the specimens, though few, in the British Museum, it is probable that several of the cultivated species are correctly determined.

*G. herbaceum* (Linn.), which is herbaceous in temperate, and usually with bi-triennial stems 4-6 feet high in tropical countries, is no doubt the *Xylon* s. *G. antiquorum*, and includes also the *G. Indicum* of Lamarck, which would indeed be the preferable name for this species. The younger parts of the stem, as well as the flower- and leaf-stalks, hairy and marked with black spots. Leaves hairy, palmate, 3- (generally) 5-lobed, lobes broad and rounded with a little point, or in the woody varieties sub-lanceolate and acute. Stipules falcate, lanceolate. Flowers of a lively yellow colour, with a purple spot near the claw. Segments of exterior calyx dentate, sometimes entire. Capsules ovate, pointed, 3- or 4-celled. Seeds free, clothed

with finely-adhering grayish down under the short-staple white wool.

This and its varieties are those chiefly cultivated in India. It has been procured from China and the Malayan Peninsula, and also from Egypt. *G. punctatum*, from Senegambia, is probably a variety. It is that cultivated in the Mediterranean region, and must have been the species taken to America from Smyrna.

*G. arboreum*, Linn. Stem arboreous, 15-20 feet, sometimes shrubby, young parts hairy, tinged of a reddish colour. Leaves palmate, 3- or 4-lobed, hairy, dotted with blackish spots of a dark green colour; lobes elongated, lanceolate, sometimes mucronate, sinus obtuse, glands one, sometimes three. Stipules oval-shaped. Flowers solitary, with short peduncles, red, with a yellowish tinge near the claws. Leaflets of the exterior calyx cordate, ovate, entire, sometimes dentate. Capsule ovate-pointed, 3- or 4-celled, seeds covered with a greenish-coloured fur, enveloped in fine silky yellowish-white wool. This species is found in the island of Celebes and in every part of India. It is noticed among lists of the plants of Arabia, and also of Egypt. It is planted near temples and habitations of Faqueers in India, and is stated to be sacred to the Hindoo deities, and therefore employed only for making muslin for turbans. The species is marked *G. religiosum* in Heyne's 'Herbarium,' and one specimen of *G. Barbadense* is marked *G. arboreum* in the 'Linnean Herbarium.'

*G. religiosum*. Perennial. Stem 3-4 feet, branches and petioles a little velvety, hirsute towards the apex, and covered with black points. Leaves cordate, superior 3-lobed, inferior 5-lobed, deeply divided; lobes ovate-acuminate, entire, pubescent (some of the lower ones ovate-acuminate), one to three glands; stipules lanceolate, deciduous (cordate-acuminate, Roxb.). Flowers large, fulvous, peduncles short, dotted; leaflets of the exterior calyx large, cordate-acuminate, deeply lacinate, hairy and dotted; capsule ovate-acuminate, dotted, 3-4- or 5-celled; seeds black, covered with firmly-adhering short tawny fur under the long tawny-coloured wool.



*Gossypium Barbadense*.

1, branch with full and half-blown flowers; 2, capsule burst open, showing the cotton in three divisions corresponding with the cells of the capsule; 3, a seed enveloped with cotton.

There is considerable confusion with respect to the species which should be called *G. religiosum*. The distinguishing characteristic of what is considered such at present is the having tawny-coloured instead of white wool. There are at least two distinct localities for this kind of cotton, one Siam, the other China. From the latter country it was introduced both into India and America under the name of Nankin Cotton. Dr. Royle is of opinion that two distinct species yield tawny-coloured cotton; one with small velvety-looking

leaves and much dotted in every part, of which he has seen specimens from Macao, Tahiti, and Guzerat. The other is a much larger plant, with the general appearance and leaves of *G. Barbadense*, of which there are specimens in the 'East Indian Herbarium.' Mr. Wilkinson has brought specimens from Egypt of a rather tawny-coloured cotton, with brownish seed, free from fur, which he says is there called 'gotun Hindee.'

*G. hirsutum*, Linn. Shrubby, about six feet high, young pods very hairy. Leaves, the upper undivided, cordate, acute; the lower 3- or 5-lobed; lobes ovate, acute (triangular, Roxb.), hairy on the under and smooth on the upper surface. Petioles very hairy, dotted with black spots; glands 1 or 2 to 3; stipules lanceolate (Cavanilles); corolla, base yellow, purplish towards apex (uniform yellow, Roxb.); exterior calyx ovate-acute, very hairy, cordate, 3-toothed (Cav. lacinate, Roxb.); capsule large, ovate-acute; seeds many, free, clothed with firmly-adhering green down under the fine long white wool. (Swartz.) This species is cultivated in Jamaica, according to Swartz; and would appear, from the description of the seed, to be the Green-Seeded, Short-Staple, or Upland Cotton of the Americans.

*G. Barbadense*. Stem shrubby, 6-15 feet, smooth; leaves, the upper 3-lobed, the lower 5-lobed; lobes ovate, acute, smooth, often pubescent on the under surface; leaflets of exterior calyx large, deeply lacinate; flowers yellow; capsule ovate, acuminate, smooth; seeds 8-12, free, oblong, black, and without any other pubescence than the long fine easily-separable cotton. Swartz describes this species as extensively cultivated in the West Indies: it is also the *G. vitifolium* of Cavanilles. It is one of the cultivated cottons of Egypt.

It is more than probable that the Sea-Island or Long Staple Cotton is a variety of this species, as its seeds agree in character. More than this it is not possible to say, as, among the numerous collections which London contains, strange to relate, there are none in which genuine specimens of cultivated cottons, properly named, can be seen; but it is to be hoped that travellers and naturalists will be induced to pay a little more attention to the products of a country, whether natural or the result of art, and deposit them in our museums, with the plants which produce them.

Several other species, as *G. punctatum*, from Senegal; *G. obtusifolium*, from Ceylon; and *G. Peruvianum*, from Brazil, have been described; but Dr. Royle is of opinion that all the species of cotton may be reduced to four—*G. Peruvianum* (*G. acuminatum*); *G. Indicum* (*G. herbaceum*); *G. arboreum*; and *G. Barbadense*.

For further information the reader is referred to the works quoted above, and to Royle's 'Illustrations of the Botany, &c., of the Himalayan Mountains.' [COTTON, in ARTS AND SC. DIV.]