WILD SILK: AN INTRODUCTION (by Dianora Della Torre Arrigoni)

There are more than 400 species of wild silk moths which spin a silk cocoon
Their silk it's also called non-mulberry silk because, with the exception of about six species of Bombyx, they feed on plants other than the mulberry tree.
The colour of their silk depends on the nutrients of their feeding plants and on the different metabolism of each species
Wild silk has all the good properties of Bombyx mori silk, with a more effective protection from humidity and harmful sun rays thanks to their porous filament which is a characteristic of all the Saturniidae
The components of the silk filament are the same as for mulberry silk, that is fibroin and sericin; the biochemical analysis of fibroin structure is particularly important because its amino acids change in number and quantity from species to species, thus enabling researchers to know which specific species of silkmoth has produced the fibre.
Only the filament of Bombyx and Antheraea species is continuous like that of Bombyx mori, so it can be easily unreeled from the cocoon; whereas the filament from the other species is fragmented and silk need to be hand-carded and hand-spun.
Wild silk has a very, very long history
Along with vegetable fibres it is supposed to be one of the very first fibres used by humans
Wild silkmoth cocoons, so attractive to humans ' eyes, so easy to spot and collect when still attached to the tree branches must have become an ideal stuff to make cordage, basketry, necklaces, non-spun textiles and then woven textiles.
For at least 25 species we have historical records of their use
For many centuries wild silk has been used by different civilisations in many different areas of the world, and long before they knew about the Bombyx mori silk
Wild silk, in fact, is the very first kind of silk known and used by humans.
We shouldn't forget that in the beginning there were only wild silkmoths because Bombyx mori, which produces the so famous Chinese domesticated silk, has never existed in the wild; it is, in fact, a human creation.
The Chinese started from a wild ancestor, Bombyx mandarina, still living in some areas of China, Japan and Korea, and through a heavy selection they created a new species, which could be reared indoors and which was totally dependent on man's care.
Archaeological finds have proved that wild silk from three different species of wild silkmoths was already used by the Harappa civilisation since the mid-third millennium B.C.
It is interesting to note that in the II millennium B.C. there was already a well developed trade between the Harappans and the city states of Mesopotamia, as testified by the several made –in- India items found in UR.

The Harappans took advantage of the Hindus river, which becomes perfectly navigable in its southern course until the sea, and then sailing along the coast and going up the Euphrates river, they reached the Sumerian city.
This map shows that archaeological wild silk finds are spread along all Eurasia, from Mongolia to Mediterranean Europe.
Wild silk from local silkmoths was used in the Aegean islands starting at least from the mid second millennium B.C.
The Eastern Mediterranean Islands were very rich in butterflies and moths; these creatures must have played a very important role in religious and every day life; they are represented in many different work of art, from wall painting to jewels, from seals to funerary objects.
Excavations in Pyrgos have brought to light an industrial settlement for the production of olive oil, wine, perfumes, metallurgy, textiles.
Along with many tools related with textile production, whorls spindles, loom weights, animal and vegetable fibres, archaeologists have also found some silk fibres from a local moth, Tortrix viridana, a clear evidence for the use of wild silk in Cyprus as well.
Tortrix silk is very thin and fragmented and requires a great ability to be spun and weaved, but, at that time, spinning and weaving techniques were much more skilfully developed than thought before.
Two wild silkmoths, in particular, are credited to have been of great importance for textile weaving and trade in the Eastern Mediterranean, their silk being used for both domestic and commercial purpose: Pachypasa otus and Saturnia pyri; both native to North-East Syria, they quickly spread westward.
Very few people know that their cocoons have been collected by people in some of the Greek islands until the late 19th century, and until more recently in Syria, to make garments for personal use.
Syria, as well as Turkey and Persia, has been growing Pistachio nut tree from time immemorial, so providing Pachypasa otus with one of its primary feeding plants: not for nothing among its vernacular names we find “pistachio silkworm’’, ‘’pistazienspinner’’ and similar; today in Syria, which is the forth world pistachio producer, Pachypasa worms, which do love the young and tender leaves of the tree, may become a serious problem for pistachio farmers.
Said that, we can reasonably suppose that also the ancient civilizations of the Near East and of the Eastern Mediterranean had made use of their local wild silk;
for example, it could be the case of the luxury silk and gold embroidered garments of Assyrian, Median and Persians, so often recorded by the ancient historians and which amazed the young Cyrus at the Median court and , later on, Alexander the Great when he saw the silk dresses of the Persian court.
After Darius the third extended Achemenid control to north-west India, the Persian court could be easily provided not only with Levantine silk but also with Indian wild silk.
STILL: An inscription in Petra mentions a Syrian city which had produced (wild) silk for almost a millennium.

The Bible, according to King James' translation, refers to silk as to the most luxurious and expensive cloth, symbol of the highest and most prestigious rank. Ezechiel, who lived in the VI century B.C., mentions silk in two passages of his Book (16:10 e 16:13)

16:10 I clothed thee also with broidred worke, & shod thee with badgers skin, and I girded thee about with fine linen, and *I couered thee with silke.*

16:13 Thus wast thou decked with gold and siluer, and *thy raiment was of fine linen & silke,* and broidered worke, thou didst eate fine floure and honie and oyle, and thou wast exceeding beautiful, and thou didst prosper into a kingdome.

Ezekiel had probably in mind the Aegean silk which could reach the heartland of Neo-Babylonian Mesopotamia via the port city of Tyre and then along the ancient Jordan desert route.
In the Book of Proverbs (chap.31, n°22) from the VI century B.C. there is a famous passage related to silk: " *She maketh herself covering of tapestry*; *her clothing is silk and purple* " where silk and purple represent the most precious stuff for textiles.
In the Book of Revelation (Saint John's Apocalypse, 18:12) written in the I century A.D., silk is listed among the goods which define the wealth of the VI century B.C. Babylon before its fall

18:12The merchandise of gold, and siluer, and pretious stones, and of pearles, and *fine linnen, and purple, and silke,* and scarlet, and all Thine wood, and all maner vessels of Yuorie, and all maner vessels of most precious wood, and of brasse, and iron, and marble,

In the V century B.C. the Greek philosopher Aristotle describes the way the women process the cocoon of a wild silkmoth, that is combing and spinning, just the way of processing cocoons with a non-continuous filament, like that of the Mediterranean wild silkmoths, and he adds that this technique had been developed in Kos island.
In the same century the Greek author Aristophanes mentions the transparent chitons produced in Amorgos island and worn by women to seduce men, a fashion which later spread to Rome as well; the transparent cloths from the Aegean islands were called Coae Vestes by Romans, and became famous for their thin and 'see-through' texture and were so much recorded by the Latin writers and poets of the Augustean period.
Several art historian see a close relation between those transparent chitons described in literature and the transparent dresses of the Hellenistic sculpture; artists, inspired by the real contemporary fashion, perfectly reproduced the fineness and the transparency of those wild silk cloths, the same as, much later on, Antonio Canova did in his Hellenistic style dancers.
While Saturnia pyri silk has different shades of brown, it's a bit coarse, warm, very strong and durable, Pachypasa otus silk is pure white, very fine and lustrous even when totally degummed; the long strands of filament are easy to spin and weave into light, semi-transparent, gauze-like fabrics as the ones described for the Coae Vestes.

Wild silk from India was largely imported for the textiles centres of the Near East and of the Coptic Egypt since the I century A.D. It was often blended with linen and wool.
The caravan city of Palmyra has been the heart of the trade between Rome and the East for almost three centuries.
Many rich textiles have been found in the tower tombs of the wealthy Palmyran merchants who preferred the river and sea routes for their intense trade with India and Arabia during the I and the II century A.D.
Apart the many kind of Indian spices found in situ, their strong link with India is testified by some textiles made of silk from Antheraea mylitta and Samia cynthia which only lived in India and by the fact that many silks are dyed with Lac, a red insect dye which gives silk beautiful shades of red, and Indian madder (*Rubia cordifolia*) , two dyestuffs which could only come from India.
So, Chinese silk, even after China had started a trade with the West, has never been the only chance for getting silk textiles, even though Chinese scholars stubbornly insist that every archaeological silk find can only be from Chinese domesticated silk. They should at least consider that it is rather curious, if not suspicious, that there is no Chinese official record of a trade with the Western Countries before the Han period and, even more curious, that the evidence for the presence of silk textiles from local wild silk in the eastern provinces of the Roman Empire comes just from an important Chinese source, the ‘’Book of Later Han’’, mostly based on the report of the expedition to the West in the early II century A.D.
In the chapter on Daqin, the Chinese term for roman territories, the author Fan Yen, one of the most reliable Chinese historians, writing about the region corresponding to modern Syria, relates that “*they have fine textiles of different fabrics and very fine and light cloths made of silk from their local wild silkmoths.*”
During the Han period the Chinese themselves prized silk from the oak feeding Antheraea perny silkmoth very much. The presence of silk cloths made of Atheraea perny silk among the Palmyran textiles shows that China traded both domesticated and wild silk, a production and trade which have never stopped, today-China being the major producer of oak silk.
But let’s see some examples from other continents
In pre-hispanic Mexico, Aztecs, Mixtecs and Zapotecs made different uses of the silk from the communal nest of Gloveria psidii (Lasiocampide) and Eucheira socialis (Pieride), the silk bag of the latter being used for both fabrics and paper for their codeces.
In Africa, the Yoruba ethnic group of Nigeria have always considered cloths made of silk from Anaphe (Notodontidi) communal nest a status symbol and only kings and aristocrats could wear them; still today only women of a high social rank can afford the traditional wrapping shawl called ‘sayan’.
The great development of mulberry sericulture started in Central Asia between the IV and the V century A.D. , then expanded to Byzantine Empire and finally to all Southern Europe put wild silk in a shade. Even if wild silk trade never ceased, its

production couldn't compete in quantity, and to some extant in quality, with that of mulberry silk which could be produced on a very large scale.
In the XVII century the birth of the various East India Companies made Europe discover the beautiful wild silk and cotton textiles from East Asia . A document from 1680 says that each year at least 1 million textiles were imported for the British, French and Dutch markets.
After India became part of the British Empire wild silk textiles had a new great revival and from then on U.K never stopped importing them.
Rediscovered by European high fashion in the '70ies of the past century, wild silk has become a very valuable fibre.
Today about 15 species of wild silkmoths are cultivated for commercial use
They are reared in a semi-domesticated way, under a heavy human control and intervention; cocoons selection, mating, hatching, birth take place indoors; when the young larvae have completed their third instar they are transferred outside on their feeding plants which are protected from predators with nets.
Non-mulberry silk world production represent only about 15% of the entire silk production.
It satisfies only 50% of the world demand which is constantly increasing.
In recent years several countries, both in Africa and in Asia, have started experimental wild silk farming, some of them with excellent results, their production being already on the international market.
The best known kind of non-mulberry silk is tussah or tasar silk produced by Antheraea perny in China, by Antheraea proylei and Antheraea mylitta in India; tussah silk, very versatile and suitable for blending with other fibres, especially wool and linen, has become a high fashion star both in Asian and European famous stylists' collections. This beautiful Mughal style dress, all made of tussah silk, was one of the finest belonged to Lady Diana.
Muga silk from the Antheraea assamensis looks like gold and is only produced in India, in Assam state; it's one of the three most expensive silks in the world. First quality is all consumed by the domestic market for luxury dresses which look as made of gold.
Japanese tussah, also called 'Tensan silk' from Antheraea yamamai, was once used only for the Royal Family: it was the most prestigious silk; together with Muga, it posses, in fact, the greatest sheen, as their filament has the highest number of pores. Today 'Tensan silk', is extremely rare to find and extremely expensive. In the mid '70ies of the last century western fashion replaced the traditional one and in few years 'Tensan' silk production dropped to 3%; its current price is about 30 times more than that of first quality Bombyx mori silk.
Eri silk, from Samia ricini, is produced above all in India, Thailand and Ethiopia; easy to dye, very affordable, warm like wool and delicate to touch like a soft cotton, it is perfect for winter clothes and bed blankets. Samia ricini is the only non-mulberry silkmoth which can be reared totally indoors like Bombyx mori
Indonesia has based its own silk revival on two endemic species; one is Cricula trifenstrata which produces beautiful golden netted cocoons and a bright yellow silk

very succesful on the Japanese market; the other is Attacus atlas, the world largest silkmoth; Indonesia has so transformed two pests for precious crops into a source of profit. Attacus silk is very warm and durable; Cricula paper made of cocoons outer shell is transformed into handbags, wallpaper, sun umbrellas, while the whole cocoons are made into gold-like earrings and flower ornaments
Among the more than 60 different species of wild silkmoth of central-east Africa, Kenya has chosen three as the most commercially valuable.
Gonometa spp. is largely distributed in Acacias eco-system and has also become the South African and Namibian wild silk
Still produced on a small scale, platinum-like silk of Argema spp. is the most expensive silk in the world; outside Kenya it is produced in Madagascar from the beautiful endemic silkmoth Argema mittrei.
Madagascar has a very long tradition in weaving wild silk textiles from Borocera spp. silk which is also called Lamba after the name of the large shawl used by Malgashy people in religious ceremonies and to wrap the body of their dead.
Today over 20.000 families are involved in the production of scarves and shawls for both the local and the international market, the silk being left undyed or dyed with vegetable dyes.
Borocera cocoons outer shells can also be made into original silk-paper curtains which now are very in fashion in New York.
Undyed non-mulberry silks have a range of different colours, depending on the plant the silkmoths feed on: from a shimmering silver white to pure white and creamy white, from beige to dark beige, from light yellow to golden yellow, from green-yellow to emerald green, from light brown to golden bronze and to dark brown.
Wild silk farming means not only producing a natural health-friendly fibre, but it is also a great improvement to forest conservation or to reforestation and a powerful means to alleviate poverty in many countries of the world.

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