

Wild Silk—An American Possibility

Experiments Indicate that the Silkworm May Thrive as Well in the United States as in the Orient

By S. F. AARON

IN THE northern central provinces of China, above the 35th parallel of latitude, and particularly upon the high table lands, there are great areas barren of cultivation, and here grow wide forests of bush or scrub oak and also many trees of other acorn-bearing species. Inhabiting this country is a large, eye-spotted, buff-winged emperor moth, the fat, green, lazy caterpillar of which feeds upon the leaves of oak. The Abbé Perny probably first made this insect known to the naturalists of Europe; it was he, at least, who brought the first account of its habits, together with the specimens, and in honor of the missionary the French naturalist, Guérin Menéville, named the species *Atticus* (now *Antheræa*) *pernyi*.

The observant and painstaking Chinese, familiar with the cultivation of the common silkworm which they had discovered many centuries before, have long since



Cocoon of a Chinese Silkworm

The silk which is reeled from this, is woven into pongee and similar materials

made use also of the pale brown, roughly elliptical cocoons of this wild silkworm; reeling from them the soft, brown silk, which they weave into pongees and other silken fabrics of coarser and cheaper grade. Pongee has been the product of the Celestial Empire for probably hundreds of years, and its value has led to a further step in the production of the raw material. The wild silkworm is now semi-domesticated; the eggs are hatched indoors; the caterpillars, placed on oak bushes, are carefully watched, and, as far as possible, guarded from toads, birds, and insect parasites that occasionally destroy them, and considerable areas of scrub oak are cultivated as food for the worms. When the cocoons are gathered a certain number are laid aside for further propagation. The handsome, bat-winged moths emerge in the spring, and within a few days lay their eggs. These hatch in a week or so, according to temperature, and at the end of about



Mother of the Japanese Silkworm

The female Yamamai moth, "the mountain cocoon." Rearing the worm differs in no important particular from the Chinese way

sixty days the rapidly feeding caterpillars are full grown and make their cocoons. The development through the chrysalis stage requires about twenty days. Then the second brood goes through its transformations, and the chrysalis remains within the cocoon all winter.

The production of oak-fed wild silk in China is about one-fourth that of the total for all silk, and within the last few years there have been exported, principally from the province of Shantung, about 4,000,000 pounds of wild silk annually. This is commonly known to the trade as Chinese "tasar," oak-fed silk, brown silk, wild silk, and pongee raw.

The Japanese Cocoon

IN JAPAN, upon the higher table lands and the mountain-sides and within regions abounding in scrub oaks of various species, there is reared, in semi-domestication, an emperor moth very similar both in appearance and habits to the Chinese species. The cocoon differs only slightly in color, and the male moth is generally darker and broader of wing, but there can be little doubt but what this insect is a

climatic variety of Perny's moth, and that the latter was at one time introduced from China. Naturalists have regarded it as distinct, and from its native name, "yamamai" (mountain cocoon), they have obtained the specific name, hence: *Antheræa yamamai*. The Japanese call the caterpillar "yama ko." The methods of rearing the worm differ in no important particular from that followed in China with the tasar worm.

Oak-fed wild raw silk of both China and Japan is only slightly inferior to the common, cultivated silkworm product in strength and fineness. It possesses equal luster, and is as susceptible to bleaching and dyeing. It is more easily degummed, and from it can be made all kinds and grades of silken fabrics. It is particularly suited to plushes, velvets, and heavy shot or changeable silks. The cocoons are larger than the average cultivated silk cocoons and the silk is as easily reeled or carded.

The Silkworm in America

IT HAS been often claimed for the United States that it is the only nation in the world that could supply itself with every necessity and luxury. Even we good Americans grow tired of this untruthful boast. If it were no longer possible to sail the seas there are many things we



An Oak-feeding Wild Silkworm

The caterpillar of Perny's moth—Chinese

should do without, at least for a time, and one of these, a most useful luxury, is silk. We go half-way round the world now for most of this raw product and quarter-way round for the rest, producing not a jot of it within our own shores, for we have not found a way to compete with the cheap, intelligent labor of the Orient and lower Europe in the delicate and expert handling of white silkworms. Neither man nor woman, white nor black, can make wages at the work; the weight of cocoons produced from the worms that require one person's labor will bring but a mere pittance each season. But what if the worms feed and largely care for themselves and there is only required the gathering of cocoons and the propagation of the insects within doors, lessening by two-thirds the amount of labor?

Leaving Their Enemies Behind

IN DIFFERENT parts of our country, generally in the region traversed by the 35th parallel of latitude and on southern mountain-sides and table lands, there are hundreds of thousands of acres of scrub oak barrens. Here also labor is comparatively cheap. It has been proved more than once that both Japanese and Chinese insects thrive when brought into the United States, often much better, indeed, than in their native countries, for they leave their natural enemies behind them, as has been the case with certain pests, the San José scale, for example. There is every reason to believe the wild silkworms of the upper Orient would do well here, and it is really difficult to see how their introduction would not prove to be a paying venture.

For entomological purposes, the securing of fresh and perfect specimens, the writer reared the yamamai, obtaining a few eggs through a correspondent in Japan. The caterpillars were fed on the leaves of our common red and scarlet oaks. Out of fifteen worms that hatched, all successfully developed into moths. I have often regretted the lack of opportunity in perpetuating the breed at that time.