[Condensed from La Nature.]

CHINESE FINGER-NAILS.

ONE of the most curious customs, the existence of which may justly be charged to the vagaries of fashion, is that which impels the upper classes of China and Indo-China to allow their finger-nails to grow to the most extraordinary lengths and to assume strangely-fantastic forms. It is common to find in China men and women whose nails measure from $\frac{1}{2}$ to $1\frac{1}{2}$ inches from the retro-ungueal fold to the free extremity. In Siam, Annam, and Cochin China the habit is carried to a remarkable extent, and human claws, singular in their very enormity, are popularly considered marks of beauty and gentility.

The accompanying engravings are taken from photographs made from the hands of two Annamese noblemen. The hand on the left is armed with nails measuring from four to nearly five inches in length, curved inward almost like talons. The thumb-nail is very oddly trained first to a curve and then to form a spiral. The nail of the index-finger is cut short, in order to allow of the usage of that finger for prehensile purposes, the other fingers being practically useless for picking up small objects.

In the second engraving, on the right, the nail of the fore-finger is likewise comparatively short, but those of the rest of the hand exhibit an astonishing exuberance, and measure from 16 to 18 inches in length. The spiral on the thumb is fully twice as long as that referred to in the preceding example, and is marked by a much more pronounced curve. It will be observed also that the horny matter is hypertrophied or thickened, a condition probably caused by the use of particular agents or some mode of development calculated to render the secretion more abundant. The excessive thickness serves in a measure to explain the strength of the nails, which otherwise, owing to their growth, it would appear would become enfeebled.

Our third illustration represents a Siamese comedian dressed to impersonate a great nobleman. Whether the rank of the wearer is indicated by length of nails is not known, but the actor has furnished himself with false appendages of metal, of inordinate size, the better to complete his costume.

The thought will doubtless suggest itself that this apparently abnormal growth of the nails is not in fact abnormal, but just the reverse. Among the refined of civilized nations the nails are invariably trimmed and their development constantly repressed, while among others manual work accomplishes the same object through the breaking and tearing away of the fragile horny matter. It has been pointed out that of all animals man is the worst provided by nature with physical means of offence and defence. The growth of the Chinese finger-nails may throw a doubt upon this assertion, for, beyond being a subject of simple curiosity, the fact leads to the idea that by proper cultivation the human nail may be converted into a claw capable of giving severe wounds. We might add still further to this belief expressed by *La Nature* that it is generally credited that the human nail has a poisonous property, and this appears to be substantiated by the swelling and inflammation which frequently follows the scratching of even small insect-bites until the blood is drawn. This being the case, a "crawling" by an irate John Chinaman—and such is that almond-eyed individual's favorite mode of combat—might lead to more serious injuries than are now supposed possible.

THE CANKER-WORM.

By A. S. PACKARD, Jr.

LET us now examine the life-history of a canker-worm. And here we will confine ourselves to a single species, the *Anisopteryx vernata* of Peck, which appears in the spring, not touching at present on the autumnal species. About the first of May, at the time when the leaves of the apple are unfolding, the young canker-worms break through the eggs, which have been laid earlier in the season, in March and April, in patches on the bark of the trunk and limbs. They may be soon found clustering on the terminal buds and partly unfolded leaves, and are then about a line in length, and not much thicker than a bit of thick thread.

How they grow and devour every green thing on the tree is too well known to the fruit-raisers in the eastern part of the State. Fortunately, owing to the want of wings, the female is exceedingly sedentary, and year after year the trees of particular orchards and towns are defoliated and turned brown, while adjoining orchards and towns scarcely suffer. By the 20th of June in Essex County, Mass., the orchard looks as if a fire had run through it. At that date the worms are fully fed, and they then descend to the ground, letting themselves down by a silken thread. At this time I have destroyed thousands by jarring the tree and collecting those which fall down. I have watched old and young robins busily engaged in eating them, and from the number of toads in my garden, gathered about under the trees, I feel confident that they eat multitudes of them.

The worms at once enter the ground, change to chrysalids several inches below the surface, near the trunk of the tree, and there remain until the early days of March and April, when the wingless females ascend the trees, and the winged males may be seen fluttering about.

I took pains last spring, in the middle of April, to count the number of these moths on my apple-trees, fourteen in number, averaging from six to seven inches in thickness, besides three elms. They were more abundant on the apple-trees than the elms. But on those seventeen trees there were counted, adhering mostly to the tarred paper, 1000 males and 200 females. The spring of 1875 was cold and backward, and few moths were seen before this date. From these data we can ascertain approximately the relative numerical proportions between the sexes, which seems to approximate five males to one female.

The species I have referred to is the spring moth, the *Anisopteryx vernata* of Peck, but not of Harris. The other species

is much less abundant in the adult condition, and only appears in the autumn. The wings are thicker than those of *vernata*, and the caterpillar has an additional pair of prolegs, though so short as to be useless. I find that most of the damage is done by the caterpillars of *vernata*. On June 15th, 1875, I collected 557 caterpillars from the apple-trees in my garden. Of these 520 were *vernata*, and 27 were the young

FINGER-NAILS OF ANNAMESE NOBLEMEN.

of the autumn species. Peck, in his account published in 1795, states that *vernata* does the principal damage.

As for remedies, the use of printer's ink laid on tarred paper is the cheapest, though the ink should be applied every day or two. The use of tin troughs of oil surrounding the tree is almost sure to stop the ascent of the females, while wooden troughs of oil built around the bottom of the trunk is almost equally efficacious. Care and attention, and, above

SIAMESE ACTOR DRESSED AS AN ANNAMESE NOBLEMAN.

all, co-operation among those suffering from these worms, would enable us to check their ravages.—*Scientific Farmer*.

CURIOUS AUSTRALIAN IMPLEMENT.

Mr. J. P. GLOVER, in *Nature*, figures the following instrument used by the Australian "river" blacks to throw their light reed spears with, which consist of a heavy miall-wood point and a shaft of reed. The bone hook is inserted in the head of the reed, the spearresting between the forefinger and thumb of the hand that holds the thrower and lying parallel to it, thus:

the spear being propelled from the hooked end of the thrower, which is rapidly brought forward into a vertical position, thus propelling the spear before it.

GLANDS OF THE DIGESTIVE APPARATUS OF INSECTS.

By M. JOUSSET.

THE physiological functions of the glands of the digestive apparatus of insects have not yet been determined with sufficient certainty; hence the differences of opinion that exist in science as to the part to be attributed to each of these glands in the digestion of food.

The naturalists who have paid attention to this subject have almost always made use in their researches of the liquid contents of the digestive tube; and I have thought that the different results at which they have arrived were to be ascribed to this very defective practice, since these liquids are complex and mixed in always unknown proportions. I have therefore sought amongst the various insects for one in which the arrangement of the glandular organs might enable me to collect these liquids in the gland itself, before their entrance into the digestive tube.

The cockroach (*Blatta orientalis*) is in this case. The three glandular groups of its digestive apparatus are very favorable to experiment, and arranged as follows: the upper region, consisting of an oesophagus, a crop, and a triturator apparatus, bears oesophageal glands in bunches, called *salivary glands*, nearly 1 centim. in length; the middle region or stomach presents eight glandular cæca, 4 or 5 millims. in length; and, lastly, the lower region, or intestine, bears Malpighian tubes which are easily isolated. These three glandular apparatus occur in all insects; but they vary much in dimensions, and are usually too small to enable us to collect the contents in a state of purity. The cockroach thus forms a fortunate exception.

By experimenting with these liquids collected before their entrance into the digestive tube, I have been able to ascertain that the sole agent in the digestion of amylaceous matters is the secretion-product of the oesophageal or salivary glands. I have convinced myself, by direct experiment, that none of the other glands possesses a marked action upon amylaceous substances, and that the secretion-product of the salivary glands has no action upon the albuminoid and fatty foods. I think that the digestion of feculent substances takes place principally in the crop in those insects which have the oesophageal glands greatly developed, like the cockroach—and that when these glands are small and lodged in the walls of the oesophagus, this digestion, which in this case is of little importance, takes place in the stomach. The glucose produced is absorbed by the stomach and does not pass into the intestine.

The cæca which surround the stomach are endowed with quite different properties. They secrete a yellowish liquid, which is feebly but distinctly acid. After collecting a sufficient quantity, I ascertained that, as already stated, it has no action upon amylaceous matters, but that it dissolves with remarkable energy the albuminoid substances, coagulated albumen, caseine, and in particular fibrine, of which it rapidly liquefies as much as twice its own volume. I have also ascertained that the albuminoids were not simply dissolved, but transformed into true peptones, no longer coagulable by heat or by acids, but only by bichloride of mercury.

The liquid of the cæca further possesses the property of energetically emulsifying fats, a property which is not shared either by the salivary glands or by the Malpighian tubes. This emulsion lasts for a very long time and acquires a marked acidity.

We see, therefore, that in a general way the product of the gastric cæca constitutes the most important agent of digestion in insects; and those of them which, like the herbivorous insects, feed upon substances difficult of digestion, possess innumerable gastric cæca and have at their service a great quantity of this liquid. This property of emulsifying and acidifying fatty matters, which the gastric juice of the Vertebrata does not possess, appears to approximate this product of secretion to the pancreatic juice; and the assimilation would be complete if it applied also to the amylaceous substances; but we have seen that this function belongs exclusively to the oesophageal glands in the digestion of insects. Nevertheless, taking into consideration the weak acidity of the liquid of the cæca and its action upon fats, I incline to regard it as presenting much analogy with the pancreatic juice, the character of the action upon starches not being primordial in the pancreas, as M. Claude Bernard has demonstrated that in certain fishes this organ is already destitute of action upon amylaceous matters.

However this may be, I believe that the peptones formed in the stomach and the fatty emulsions are absorbed at once by the walls of the stomach, which is the essential part of the digestive apparatus and plays the double part of the stomach and the small intestines of the Vertebrata. The materials which have resisted these actions, and which are consequently unfit for digestion, alone pass into the intestine, which I regard as playing scarcely any part in digestion properly so called.

The Malpighian tubes in these researches have always offered clearly negative characters. Their product of secretion does not act upon amylaceous substances, or upon albuminoids, or upon fatty matters. This confirms the opinion generally adopted that this group of glands is purely and simply an organ of excretion, a urinary organ probably more complete than that of the Vertebrata, since it is the sole eliminating organ of insects. The presence here of uric acid and of urates has long since been ascertained; but perhaps they furnish other principles analogous to the excrementitious matters that the liver has to eliminate in the Vertebrata.

These researches confirm the opinion long ago maintained by M. Blanchard as to the very high grade that insects should occupy in the animal series. We see, in fact, that their digestive functions greatly approximate to those of the higher Vertebrata.—*Comptes Rendus*.

Beds of ore yielding 30 per cent pure nickel have recently been found near Onailon, New-Caledonia.