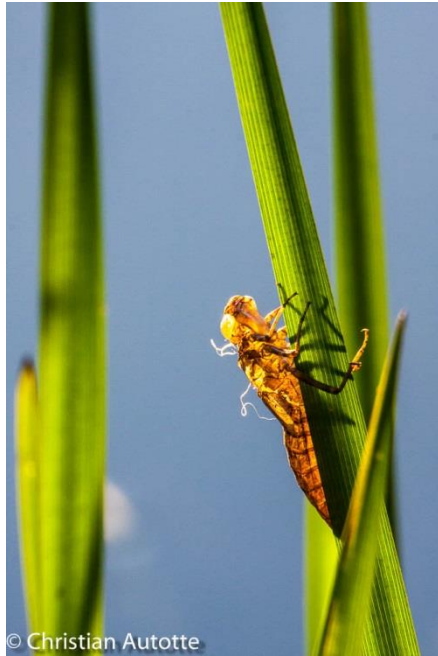


# DRY SKINS

Christian Autotte

Arthropods, it is well known, change skin on a regular basis as a way to grow larger or to go through a metamorphosis during the various stages of their lives. These exoskeletons are made of chitin, a resistant material what can last for years. If you have a keen eye, you can often find such empty skins still attached to vegetation, where insects or spiders went through a new change of clothes...



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Dragonflies and damselflies may spend most of their life underwater as nymphs, but they must get out for their metamorphosis into their flying adults forms. Their fragile empty nymph skins can be picked up on vegetation near the water's edge. These retain all the visible organs found on the living nymph. The most interesting ones for me tend to be the legs and mouth parts. Below, we can see the jaws and mandibles. As with most insects, the polarized light can lend some interesting results.



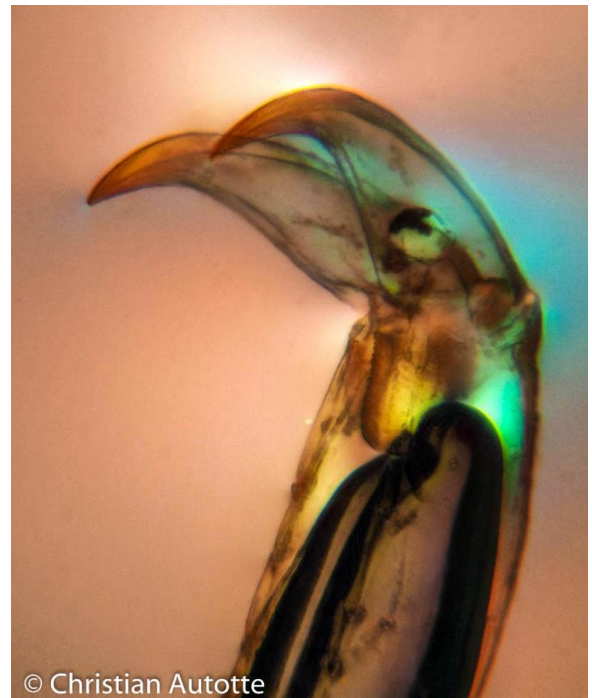
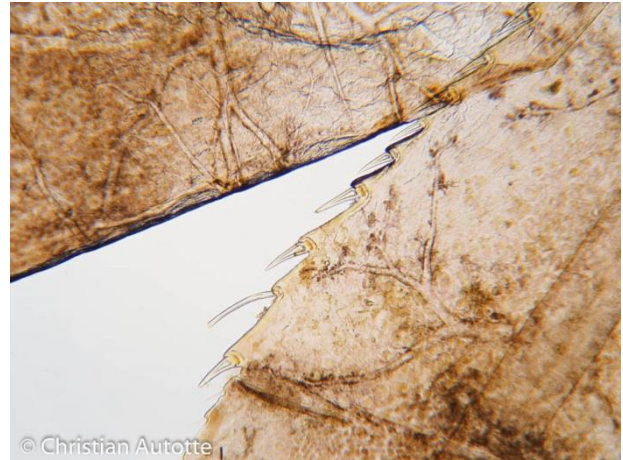
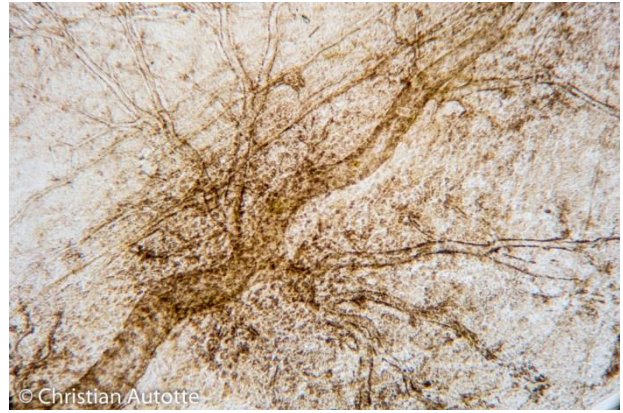
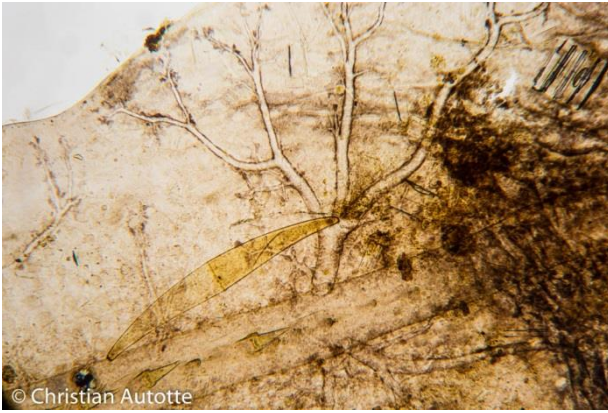
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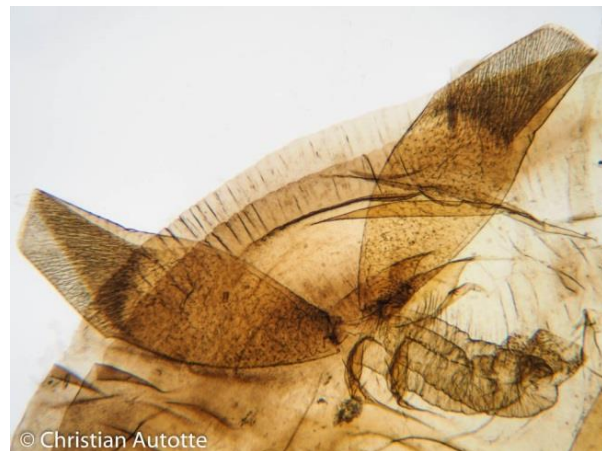


A few skins of damselflies nymph picked up from reeds during a kayak outing gave me quite a few interesting observations. At first, I was especially interested by their gills, the three leaf-like appendages at the end of the abdomen. Vessels that carry the oxygen to the rest of the body are clearly visible. On one of them, I even spotted a *Closterium* still stuck on the gill (top left). The feet are equipped with a pair of sharp claws.

Looking at the abdomen itself, we see a multitude of short bristles, all pointing backward. They probably act like a cat's whiskers to inform the nymph of anything that could try to grab it from behind.

Mosquito larvae change skin several times before becoming pupae and finally emerge as the noisy pest we all know too well.

Keep a few larvae in a jar and a few days later you should find several empty skins floating about. Eventually, larvae are replaced by nymph, those round tumblers that form the last stage before the adult mosquitoes. At that point, my suggestion would be to cover the jar unless you want a houseful of buzzing blood suckers...



From empty skins I was able to get a good look at the breathing apparatus of both larva and nymph. Both breathe air; that's why they tend to remain at the surface.



This empty stonefly nymph was found on the ramp of a wooden boardwalk in a local park. Its front and back appendages were very interesting, full of hairs and stiff bristles. Look at the hairs on the antenna; by their positions at the edge of each segment, I suspect that they inform the insect on the precise position of each segment of its antenna. As for the bristles on the tail end, they must be a warning system for any attack that could come from behind.





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Spiders also shed their skin several times during their life. Empty skins are often found in outbuildings, garage, sheds, barns, and the likes. I used to pick them in my former cottage. Some parts were photographed directly without



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mounting them, like the eyes seen at left. The reason for this is simple: trying to flatten them under a cover glass would have thorn them apart. Other parts were mounted permanently for subsequent studies, like jaws and legs. As we have seen before, many of these parts can give very interesting images when photographed under polarized light.



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This last set was made from the empty skin of an aphid. I'm not quite sure at what is seen in the first picture, but whatever it is it creates very interesting effects in polarized light combined with a wave plate.

The second one is clearer: it shows the thin mouth parts the aphid uses to sip plant sap.



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There are several advantages of working with empty skins. First, no critter is harmed in the process. Next, empty skins are mostly translucent right from the start. But it doesn't mean that the skin can be mounted without treatment. Skins from dragonfly nymph or large spiders can be very brittle; try to mount a part that shows a lot of curvature, like the head or some parts of the abdomen, and it will crack and crumble and turn to a jumble of smaller pieces. I often leave these skins in potassium

hydroxide for days or even weeks, which will soften the chitin and make it more flexible. However, potassium hydroxide must be handled with extreme caution as it is very toxic and corrosive: you can't even dispose of it down the drain as it has the potential of eating the pipes!

A bit of research on the web gave me a possible alternative. It seems that Nair, a hair removal cream, could be used to soften chitin. I'll have to try it...

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