we find we can use it as a capital varnish and mixing medium, a varnish at once antiseptic and complete so that the cell may not after all be polished and varnished with the orthodox mixture of propolis any more than we ourselves need polish timber, fetching and carrying the materials, when we have a varnish ready made. The worker's sting, then, may be a tool used for macerating wax by the aid of the secretions upon it, a moistening gum-like secretion being all the while pumped out through the openings in the rear of the barbs by each muscular movement of the darts, the palpi of the sting being used as a brush or spreader of the acid secretion—our bees, perhaps, diligently working when we have been crediting them with the idleness of wax-secretion.

Dr. A. Von Planta (*B. B. Journal*, p. 410) throws some light on the value of bee-poison as a preventive of fermentation when mixed with honey; on this subject I have nothing to add to my remarks made in a recent paper on the medicinal properties of honey. *It is generally understood* that the *active* principle of the bees' sting is formic acid, and that a hypodermic injection of this acid is *poisonous to the bee and other animals*; this is not the case, the result of this act is only a local irritation and inflammation. Now formic acid corresponds to methylic alcohol, just as acetic acid corresponds to ethylic alcohol (wood spirit or spirits of wine); these are the two simplest acids, and are most nearly related. Acetic acid (dil) is prescribed as a subcutaneous injection for cancer, so there cannot, after all, be much danger from formic alone; indeed I have experimented on myself with it and find little harm in it. This acid alone produces upon wax, on the skin, or in the blood—(1) effects quite different from those made by bee-poison; (2) it is very volatile, giving off an odor much resembling that from acetic acid, not leaving a crystalized or gummy residue as does bee-poison; (3) its color is different; (4) it is not poisonous; (5) it does not mix with, soften or varnish wax, as is the case with bee-poison. Now, although the bee requires formic acid it does not gather either it or the oxalic acid from which it may be derived, it is a secretion of its body from (in all probability) some other more complex acid which it may gather (I refer to uric acid, from the very mention of which some hypersensitive natures seem to recoil). From this acid oxidising agents may give the bee compounds containing oxalic (or, oxalic may be secreted from nectar, honey, or other carbon compounds acted upon nitrogenous substances). For the matter of that, the decomposition of the liquids said to be much sought after by bees will give them their formic acid: I prefer, however, to lean to the pleasanter formula:—the oxidation of hydro-carbons into the simplest of the fatty acids, say, for instance, a hydo-carbon CH_4 is oxidised into $C H_4 O$, again into $C H_2, O$, and, finally, into $C H_2 O_2$, the formula of formic acid (at least this is a process of the laboratory), how much more simple or intricate in the alembic of the bee we may never know—the conversion of floral perfume into what we find it—we know this, however, it is secreted copiously and used plentifully in various ways, least of all as a venom or poison. I have come to the conclusion that the truly toxical (or poisonous) principle of the bee-sting is an animal alkaloid, a virulent poison secreted in its body from the volatile and essential oils found in nectar,* that this alkaloid is collected by glands and stored in the poison-sac mixed with a gummy, non-saccharine substance, and heavily diluted with formic acid. What is this gummy substance, this residue left by a dried-up drop of poison? Taking the temperature of the bees' body at something near our own (90° being required in the hive for wax-secretion) I find Canada balsam and formic acid soon give us a suitable gum; fir-wood oil, terebine, and preparations of turpentine do this also, but in my experiments with formic acid and sugars I fail altogether. Now, if the bees gather turpentine (a resinous substance exuding from the pine tribe, which we call propolis), oxidation of a small quantity of this taken into its system converts it into various acids, or, having undergone a slight change, it may be stored in the poison-bag for use in wax-softening; thus giving our bee its furniture-polish, varnish-pot, and gum-pot, in one. We are often told about bees mixing propolis and wax together, doing this, that, and the other, but we are not told whether the tools are at the tail or the head of the insect; neither have we been informed where the flux or mixing medicine is found. I think we know now. Triturating wax with formic acid produces no perceptible result so far as softening it is concerned, but, on the other hand, treating wax with an alkaline gives a soft, plastic mass, which, in turn, by the addition of a little acid, becomes a similar froth-like substance, such as we find in the bees' first process of preparing wax-scales for cell-building.

While agreeing with Mr. Cheshire that the offices of Nos. 2 and 4 glands are of a digestive

*It has recently been proven that alkaloids are the products of organic decomposition, that they can be artificially induced by the decomposition of vegetable matter, that alkaloids of the most toxic kinds exist even in the human economy during life, existing in the kidneys, viscera, muscles and brain matter, in the sweat, blood and saliva, an interesting study may then be made of diseased conditions of the body ending fatally from a bee's sting.—"Life Lore," p. 60.