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Stéphane BOUCHER. – Passalidae of the Mission Vellard to Goiás, Brazil, 1929, with the discovery of *Passalus lunaris* Kaup, living in termite nests (Coleoptera, Scarabaeoidea)

During operations realized in the department of Coleoptera, at the Muséum national d'Histoire naturelle (MNHN), in Paris (2009-2011), I was able to examine samples of the “*Mission du Dr J. Vellard à Goyaz, 1929*”. Jehan Albert Vellard (1901-1996), renowned naturalist and ethnologist, travelled on this occasion in Central Brazil, especially in the State of Goiás, about five months, between July and December (RIVET, 1930; VELLARD, 1931). With his team he stayed at Viannopolis, Goyaz, Leopoldina, Bananal Island on the Araguaya River and Conceição. He reached finally Belém de Pará before returning to Rio de Janeiro.

The mission had for main object “the study of the variations of the fauna” and numerous samples of Zoology were brought back. However, since then there was no registered entomological material in the MNHN. This for a simple fact: the parcel of insects and other terrestrial arthropods, arrived in Entomology in 1931, has never been opened. For unknown reasons, samples were carefully put aside, and then they fell into oblivion, among collections in alcohol.

The small wooden crate labelled “n° 2, Brésil, Région de l’Araguaya, Dr. J. Vellard, Ambassade de France au Brésil” contained several hundred insects of various orders. The updated set is in an average state, especially dry specimens. There are also about twenty alcoholic flasks engraved “Butantan”, the name of the big museum in São Paulo. Three of them contained Passalids, in perfect condition. Two are labelled “region of middle Araguaya”, with the Passalini *Passalus interruptus* (Linnaeus, 1758) [13 ex.], *P. coniferus* Eschscholtz, 1829 [2 ex.], *Toxeutotaenius peruvianus* Kuwert, 1898 [1 ex.] and the Proculini *Veturius sinuosus* (Drapiez, 1820) [2 ex.]. Passalini are classic species for this area, including *T. peruvianus*, which has been mixed up for a long time with other species of the genus (revalided by BOUCHER, 2015), or other genera. The exception is thus *V. sinuosus*, the distribution of which in Goiás being previously unknown. The species is of Guyano-Amazonian origin and penetrates profoundly southward through the Paraguayan Corridor and the gallery forests (BOUCHER, 2006), or “wooded corridors” of VELLARD (1931). The third flask is more interesting as it is labelled “Viannopolis, in termites nest”, with one *Passalus lunaris* Kaup, 1869 (and two instar larvae of 3rd stage) and one Elateridae (and one instar larva of 3rd stage), *Compsoplinthus ruber* (Candèze, 1878). J. Chassain, to whom I owe the last identification, indicates that the species, predatory, can be in termite nests.

P. lunaris is a rather widely distributed species in South America, from the South of the Amazonian Hylaea and from the East of the Andes, but it remains uncommon. The dissection of one of the two larvae from Viannopolis shows that the alimentary canal contains a substratum distinct from that usually found in the family. Particles are not of wood, but are of organic structures close to those of detritus, including carton or likened, of termite nests. The information, crossed with the presence of adult and larva of *C. ruber*,

proves that larvae and adult of *P. lunaris* were taken inside a termite nest, as written by Vellard, and that they carry on their life cycle there. The biology of the species was badly known, but examination of numerous other specimens from collections gives evidence that they came from rotten logs. The dissection of two of them shows that their alimentary canal contains only wood particles. Otherwise, *P. lunaris* presents original morphological characters and that we find in a very few other species, such as *P. zikani* Luederwaldt, 1929. This last species is an endemic of Southeast Brazil and I studied recent specimens which were taken in rotten logs, undoubtedly, according to the collector. Still maintained in the genus *Passalus*, these species will be separated from it, within the framework of the begun split (BOUCHER, 2015).

There was, up to here, a single observed American Passalid —larva and adult— in epigeous termites nests: *Veturius transversus* (Dalman, 1817) in Brazil, from Mato Grosso, Chapada dos Guimarães, Limoeiro (COSTA & FONSECA, 1986) with *Anoplotermes* Müller, 1873, and from Goiás, Parque Nacional Das Emas (COSTA *et al.*, 1988) with *Cornitermes* Wasmann, 1897. These data were synthesized by COSTA & VANIN (2010). BOUCHER (2006) has shown that *V. transversus*, from Goiás, was possibly mixed up by the authors. It is the most likely with *V. sinuosus*, the species collected by Vellard. The two species are historically not separated by taxonomists and are sympatric in limits of their respective distribution areas. They are however well known to live in rotten logs in dense wet forests. *V. transversus* (if it is well about this species) is not thus strict dependent of termite nests, whereas it does not present (larva and adult) abdominal physogastry, a character specially adapted to the life with termites, as underlined by COSTA & VANIN (2010). Consequently, the species would be an occasional host and occupying maybe only dead parts of the nest. The same principle is doubtlessly applicable to *P. lunaris*. Larva and adult are not physogastric, and Vellard's samples included no termite. Nevertheless, a large part of the distribution pattern of the species coincides with those of epigeous termites, which are also widely distributed between the Amazonian Basin and the South of the Brazilian Plateau. VELLARD (1931) indicates moreover: “*Viannopolis... village situé sur un plateau ondulé, de 900 m d'altitude moyenne, couvert de taillis poudreux et de petits campos où les termitières abondent, avec quelques cuvettes marécageuses. La sécheresse est très grande.*”. Such a biotope is unusual for Passalids.

Following COSTA & VANIN (2010), the term termitariophily, *sensu* BERG (1900), followed by ARAÚJO (1970), would seem adapted to these Passalids living in termite nests. They would be in not obligatory, but opportunist, association there, with nests rather than with termites. Furthermore, in these regions where the abundance and the diversity of termites are notable (ARAÚJO, 1970; COSTA & VANIN, 2010), and where dense wet forests can be very scattered, we would have favourable combined elements for a real association of this special type.

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