

## JUDICIAL ENTOMOLOGY AND ON AN UNRECORDED HABIT OF WHITE ANTS;

BY

HENRY TRYON.

(*Read on the 9th September, 1887.*)

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OUR bodies, after death, unless they are hermetically sealed up, are tenanted by different insects, and these, whilst they live at the expense of the different tissues of which it is composed, gradually determine its dissolution. The body is not, however, occupied by these various insects at one and the same time, but there is a definite and remarkable succession in which their presence is manifested, one class of insects existing in it, till, partly by its agency, the body is rendered suitable for the members of a second class, and so on for those of a third—for these several insects do not feed indifferently on the same juices or tissues. Moreover, each of the insects composing these classes requires a definite time to multiply and undergo its metamorphosis and different evolutions. Owing to these facts, entomologists have of late years been able to lend important aid in judicial inquiries, and especially at such times as when a body has been found, and it is important to know what period has elapsed since the death occurred of the individual to which this body may be referred, whether that individual met with his or her end by homicide or through the operation of natural causes. (This general statement was considerably amplified by the author, who exhibited numerous insects and arachnids, representative of the different and successive classes of destroyers, and dilated on the rôle they severally performed—these belonged to the dipterous, coleopterous, and lepidopterous families, &c.—ED.)

In the *Comptes Rendus*, 96, 1883, I., pp. 1433-1435, M. P. Mégnin, introduces the subject of “L’Application de l’entomologie à la Médecine légale,” with the statement that “there is an occasion on which the medical jurist finds himself especially embarrassed; this is, when he is brought face to face with a dead body which is quite dry, and, in fact, reduced to the state of a



mummy, and a question arises as to the circumstances which determined the death, or at least as to the time when it took place;" and, after referring to the phenomena which attend the invasion of dead bodies by insects, he adds that he feels authorised to state "medical jurisprudence can, in some cases, call in the aid of entomology with as much certainty of success as it does human physiology and pathology in others, with the end of furnishing those tribunals, which deal with questions pertaining to criminal procedure, with the principles which should guide their application of the law."—*Trans.*

M. Mégnin then relates two occasions on which his opinion had been requested by Professor Brouardel, who had suggested to him the value of the investigations of an entomologist in such cases in eliciting facts not otherwise accessible. He found, in one instance, that a boy had met with his death two years prior to the date at which he conducted his inquiry, and that this boy also had been previously much neglected. And in the second instance—that of an infant, that only a year had elapsed since its death—a verdict, whose accuracy was subsequently sustained by the confession of the mother of the child.

Still more recently, Mariano de la Paz Graells, in the *Revista* of the *Real Academia de Ciencias*, I., xxi., No. 8, p.p. 458-471; Madrid, 1886, and in an article entitled "Entomologia Judicial," even further enlarges upon the subject, and expresses the opinion that the investigations of an entomologist should decide, in an approximate manner, the days, months, and even years, which have elapsed since a death has occurred. *op. cit.*, p. 462. This author then cites a number of instances in corroboration of this assertion, in which successful investigations, in cases the subject of judicial inquiry, had been conducted by Brouardel in 1882; more recently by Descoust, Mégnin, Bergeret, and lastly, by the justly celebrated entomologist, D. Julio Lichtenstein—giving a *verbatim* translation in Spanish of their several reports.

As, then, such important issues are connected with a proper understanding of the nature and life history of the different insects which affect the carcase of man, there needs no apology for introducing to the notice of the Society a new fact in this connection.

All the insects referred to, either by M. Mégnin or by Mariano de la Paz Graells, or the savants, whose reports are quoted by the latter of these authorities, confine their operations to the soft tissues of the body and do not attack the skeleton, or only the ligamentous and cartilaginous attachments to it. But there are



also bone-eating insects, which a judicial entomologist should have regard to, and in this category must be included the "white ants" which have suggested this note. Termites are accounted the most destructive insects in existence, with what justice we need not stop to inquire; but howsoever great and how variously directed their depredations, the writer has never before heard of their consuming bone, much less man's bone. The insects before you represent "white ants" addicted to this habit, and are examples of the following of the several forms of individuals usually met with in the termites' nests, namely:—(1) The larvæ not fitted for reproduction; (2) the soldiers; (3) the workers; (4) the larval forms fitted for reproduction; and (5) the "nymphs of the first and second classes."\* It will thus be seen that we have here nearly all the forms usually found in a complete termitarium, especially at this time of the year, and those who are familiar with Fritz Müller's investigations into the habits of the termites of Brazil will remember that the nymphs of the second class never leave the nest, and so will readily conclude that these specimens if found together, as was the case, must have lived in or near a termitarium, and have formed a component part of the community inhabiting it; or, in other words, a colony of white ants must have established itself in the immediate spot whence these exhibits were procured. Now, this was within the cavity of the skull, and from the long bones of a human skeleton—that of an aged female aboriginal—found in the bush near the Junction Hotel, Brisbane.

These termites had eaten circuitous grooves into the inner surface of the calvaria—the only portion of the cranium which remained—and these grooves were in several instances so deep as in several places to involve the outer table of the skull, which they pierced so as to occasion the presence of numerous irregular holes of various size, occurring not only on the anterior regions, but on the sides and behind, in fact all over the skull. From the appearance of the calvaria, it was very evident that the remaining portions of the skull had already been destroyed by the termites. Within that portion of the cavity which still remained, and in juxtaposition to the bone itself, was the peculiar substance usually composing termites' nests, and in a similar cellular condition. The white ants had also eaten into the heads of the long bones.

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\* In the absence of winged forms it were hazardous to express an opinion as to the species which these insects represent; but notwithstanding this uncertainty which attends their reference to one of the described species it is probable that they belong to Hagen's *Eutermes fumipennis*.



It remains now to show the connection of this subject with the special branch of Judicial Entomology alluded to by M. Mégnin and Mariano de la Paz Graells. In this particular case it does not appear that it is possible to realise M. Mégnin's views as to the possibility of finding the cause of the death of the individual whose remains furnished the material for this note. We may, however, in this instance, examine into the claims of any verdict put forward in reference to this subject, and though we may not be able to pronounce what the cause was, we may investigate the reasonableness of anyone which might be alleged in explanation of the occurrence of the remains in question under the circumstances mentioned.

From a previous examination of these remains, another observer who, in his investigations, removed the white ants and their nest, was led to regard the holes, which we have shown to have been caused by "white ants," as shot holes; and to conclude, as I presume, "on grounds phrenological," that the man to whom the remains had belonged had died a violent death"—a conclusion equally commendable with those given expression to on the same occasion, but with which we are not now concerned.\*

As concerning the time which has elapsed since the individual owner of the skeleton in which the termites occurred ceased to live, we can only state—Should one have previously ascertained (1) the time which must have been occupied by the usual destroyers of dead bodies, spoken of respectively as *Coprophagi*, *Adipophagi*, *Necrophagi*, and *Detriticolæ* to have played their successive parts; (2) the time during which the skeleton underwent, if any, such changes as would serve to convert the bone into suitable food for the termites; and (3) the time which must have elapsed since the original ant colony was established in the remains as judged from its present state of social development, and from the degree in which the bones evince the destructive attacks of its members. These factors would, when summed up, tell us what these investigators, in other instances, have sought to discover—namely, how long a time had elapsed since this aboriginal passed away. Not having as yet estimated the values of these factors we

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\* Professor J. Bumenthal has examined the skull, which was among the bones, and has found that it evidently belonged to a male aboriginal not more than 25 years of age, and that it must have been buried for at least fifteen years. On scraping away the encrustation of dirt he found no less than nine shot holes in the skull, leading to the conclusion that the man to whom it belonged had died a violent death.—*Courier*.



cannot at present supply this information,\*but are contented at having brought under notice what, in a climate like ours, might prove an important method of investigation in solving difficult questions of a particular description.

A discussion then arose in which Messrs. A. J. Turner, A. Norton, L. A. Bernays, and W. Fryar took part, and in this the general views enunciated by Mr. Tryon were subjected to criticism from several points of view; but the members, having examined the numerous insects and human remains exhibited, bore testimony to the accuracy of Mr. Tryon's conclusion as to the part played by the white ants. Mr. Tryon having replied, he then exhibited, on behalf of Mr. F. M. Bailey, several new plants from the Musgrave River.

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FRIDAY, 14TH OCTOBER, 1887.

J. THORPE, ESQ., IN THE CHAIR.

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DONATIONS.

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Tryon, Henry. 1887. "Judicial Entomology and on an unrecorded habit of White Ants." *The Proceedings of the Royal Society of Queensland* 4, 119–123.  
<https://doi.org/10.5962/p.351101>.

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