

## NEW SYNONYMY IN THE BARK BEETLE TRIBE CRYPHALINI (COLEOPTERA: SCOLYTIDAE)<sup>1</sup>

Stephen L. Wood<sup>2</sup>

ABSTRACT.— A lectotype designated for *Bostrichus asperatus* Gyllenhal resulted in the clarification of the status of *Cryphalus* Erichson and the removal of *Trypophoeus* Fairmaire from synonymy. All species described by A. D. Hopkins in *Hypothenemus* Westwood and *Stephanoderes* Eichhoff were reviewed. New synonymy included: *Bostrichus asperatus* Gyllenhal (= *B. abietis* Ratzeburg); *H. birmanus* (Eichhoff) (= *H. maculicollis* Sharp, *S. perkinsi* Hopkins, *S. sterculiae* Hopkins, *S. psidii* Hopkins); *B. crudiae* (Panzer) (= *B. plumeriae* Nördlinger, *Cryphalus hispidulus* LeConte, *S. differens* Hopkins, *S. paraguayensis* Hopkins, *S. polyphagus* Costa Lima, *S. uniseriatus* Eggers, *S. hivaoca* Beeson, *S. lebronneci* Beeson); *H. californicus* Hopkins (= *H. tritici* Hopkins); *H. diptero-carpi* Hopkins (= *H. mangarivanus* Beeson); *H. erectus* LeConte (= *H. validus* Blandford, *S. puncticollis* Hopkins, *S. cubensis* Hopkins); *H. eruditus* Westwood (= *Cryphalus basjoo* Nüßima, *Cosmoderes schwarzi* Hopkins, *H. bradfordi* Hopkins, *H. ferrugineus* Hopkins, *H. flavipes* Hopkins, *H. flavosquamosus* Hopkins, *H. heathi* Hopkins, *H. koebelei* Hopkins, *H. lineatifrons* Hopkins, *H. mali* Hopkins, *H. myristicae* Hopkins, *H. nigricollis* Hopkins, *H. parvus* Hopkins, *H. punctipennis* Hopkins, *H. sacchari* Hopkins, *H. tenuis* Hopkins, *H. webbi* Hopkins, *S. elongatus* Hopkins, *S. flavicollis* Hopkins, *S. pygmaeus* Hopkins, *S. subconcentralis* Hopkins, *S. unicolor* Hopkins, *H. intersetosus* Eggers, *S. erythrinae* Eggers, *H. dubiosus* Schedl).

On the following pages are presented (a) a lectotype designation for *Bostrichus asperatus* Gyllenhal, 1813, type-species of the genus *Cryphalus* Erichson, 1836, and the consequent effect of this act on the genera *Cryphalus* and *Trypophoeus* Fairmaire, 1868, and (b) a review of all species of bark beetles described by A. D. Hopkins in the genera *Hypothenemus* Westwood and *Stephanoderes* Eichhoff. Comments on the synonymy of *Ernoporus* Thomson are also included.

### *Cryphalus* Erichson

*Cryphalus* Erichson (1836:61). Three species.

As originally proposed by Erichson (1836) the genus *Cryphalus* contained three species, *Apate tiliae* Panzer, *A. fagi* Fabricius, and *Bostrichus asperatus* Gyllenhal, as defined by references to Fabricius (1801:383) for the first two species and to Gyllenhal (1813:368) for the third species. Thomson (1859:46) designated *B. asperatus* as the type-species of the genus *Cryphalus* and transferred *A. tiliae* to his new genus *Ernoporus*. Thomson (1865:360) later transferred *A. fagi* to *Ernoporus*, thus leaving *B. asperatus* as the only original species remaining in *Cryphalus*. By definition the antennal funicle of *Cryphalus* contained four segments.

Ratzeburg (1839:199) named *Bostrichus* (*Cryphalus*) *abietis* and commented that until then this species had been known by his co-workers as *B. asperatus* Gyllenhal, presumably including Erichson.

<sup>1</sup>The research on which this paper was based was supported by the National Science Foundation.

<sup>2</sup>Department of Zoology, Brigham Young University, Provo, Utah 84601. Scolytoidea contribution no. 34

Based on syntypes in the Germar collection, now in the Zoologisches Museum, at Berlin, Ratzeburg (1839:198-199) redefined the true *B. asperatus* Gyllenhal and described several new species, one of which was *B. (Cryphalus) binodulus*.

On the basis of the 5-segmented antennal funicle, Fairmaire (1868:105) transferred *B. binodulus* Ratzeburg, 1839, to his new genus *Trypophoeus*. Later, Eichhoff (1878:139) placed *B. binodulus* as a junior subjective synonym of *B. asperatus* in the genus *Glyptoderus* Eichhoff, 1878, = *Trypophoeus* Fairmaire, 1868, even though *B. asperatus* was the type-species of *Cryphalus* Erichson, 1836. Eichhoff's usage continued until the error was pointed out by Wood (1954:988).

In an effort to clarify the nomenclatural confusion and to conserve the traditional usage of the name *Cryphalus*, an appeal to the International Commission on Zoological Nomenclature was prepared (Wood, 1967) requesting that *B. abietis* Ratzeburg, 1839, be designated the type-species of *Cryphalus* since Erichson's concept of *B. asperatus* apparently was based on erroneously identified specimens of *B. abietis*. When the appeal was considered by the Commission, a request was made that all type material be examined by me before any action be taken on this appeal. The following is a report on my examination of that material.

The Fabricius collection at the Universitetets Zoologiske Museum, at Copenhagen, contains several specimens of *A. tiliae* Panzer, all of which are of the species currently known as *Ernoporus tiliae* (Panzer); also present there is one damaged specimen labeled *A. fagi* Fabricius, although it actually is of *A. tiliae*, and almost certainly is not the type of the Fabricius species. The Germar collection at the Berlin Museum did not contain original specimens of *A. fagi* either.

Six syntypes of *B. asperatus* Gyllenhal and two of *B. asperatus* var. B of Gyllenhal were located; three syntypes and the two variants are at the University of Uppsala, in Gyllenhal's Insecta Suecia collection, and three syntypes are at the Berlin Museum in the Germar material. The latter three syntypes apparently are those used by Ratzeburg (1839:198-199) for his redescription of the species. All six syntypes and the first of the two variants are identical and represent the same species described as *B. (Cryphalus) abietis* Ratzeburg, 1839. The other variant of *B. asperatus* Gyllenhal is of *Trypophoeus spiculatus* Eggers, 1927. Therefore, *B. binodulus* Ratzeburg, 1839, and *Trypophoeus* Fairmaire, 1868, the genus for which it is the type-species, have no bearing whatever on the synonymy of *Cryphalus* Erichson, 1836, or on its type-species *B. asperatus* Gyllenhal, 1813. I here designate as the lectotype of *B. asperatus* Gyllenhal the first syntype in the above-mentioned Gyllenhal Insecta Suecia series at the University of Uppsala Museum.

*Cryphalus asperatus* (Gyllenhal)

*Bostrichus asperatus* Gyllenhal (1813:368). Lectotype, male; presumably from Sweden; Univ. Uppsala Mus., present designation, above.

*Bostrichus (Cryphalus) abietis* Ratzeburg (1839:198). Syntypes; presumably destroyed with the Hamburg Museum. *New synonymy*.

As indicated in the above discussion, the type series of *Bostrichus asperatus* Gyllenhal was incorrectly identified by Eichhoff (1878) and subsequent workers. These specimens are of the same species that has been known since 1839 as *abietis* Ratzeburg. Specimens of *abietis* at the U.S. National Museum and the British Museum (Natural History) compared to the types by Eggers, Eichhoff, and, presumably, Blandford were used as a basis for this species.

### *Ernoporus* Thomson

*Ernoporus* Thomson (1859:147). Type-species: *Apate tiliae* Panzer, monobasic.

Schedl (1962:92-94), apparently using antennal characters exclusively, treated *Ptilopodius* Hopkins, 1915, *Stephanorhopalus* Hopkins, 1915, *Ernoporicus* Berger, 1917, *Allernoporus* Kurenzov, 1941, and *Eocryphalus* Kurenzov, 1941, as synonyms of *Ernoporus*. Authenticated specimens of the type-species of each of these genera are at hand or were recently studied by me, as well as all known species of *Ernoporus*, four additional species of *Ptilopodius* (sensu Hopkins), and two species erroneously placed in *Ptilopodius* by Schedl, except for *Eocryphalus* which is known to me only from the description. From this material it is apparent that *Ptilopodius* and *Stephanorhopalus* are completely unrelated to the other genera; the similarity of the antennae to other species mentioned here is superficial at best. (These genera will be treated in greater detail at a later date.) *Ernoporicus spessivtzevi* Berger, type-species of the monotypic genus *Ernoporicus*, is a typical *Ernoporus* except for the smaller antennal club and very obscure sutures on the club; I agree with Schedl in transferring it to *Ernoporus*. My specimen of *Allernoporus evonymi* Kurenzov is very closely allied to *Ernoporus*, but the antennal funicle is 3-segmented and the club is totally devoid of sutures; until more material is available for study I prefer to retain this species in *Allernoporus*.

### *Hypothenemus* Westwood

*Hypothenemus* Westwood (1836:34). Type-species: *Hypothenemus eruditus* Westwood.

Hopkins (1915) described 106 species in the genera *Hypothenemus* Westwood, 1836, and *Stephanoderes* Eichhoff, 1871. Since then *Stephanoderes* has been placed in synonymy (Browne, 1963:53) under *Hypothenemus*. The species named by Hopkins in this taxon were based on unique females, and most of them have not been examined by specialists of the group since then. Recently it was my privilege to study holotypes of all of the Hopkins species named in these genera as well as to study the types of a few other species of special interest in a review of the Hopkins material. Several of the American species were previously placed in synonymy (Wood, 1954).

A review of all species named by Hopkins follows. Valid names are presented in alphabetical order with synonyms and my comments listed beneath them. Of the 106 species named by Hopkins 21 are considered valid and 85 are treated as synonyms.

*Hypothenemus africanus* (Hopkins)

*Stephanoderes africanus* Hopkins (1915:30). Holotype, female; Capetown, South Africa; USNM, 7542.

This species is allied to *setosus* (Eichhoff). Specimens have been examined from the following new localities. Jamaica, 13-IX-35, in Poinciana pods; Lagunillas, Merida, Venezuela, 12-I-70, 1000 m elevation, *Mimosa* twig, S. L. Wood; Buitenzorg, Java, 7-VIII-35 (host not legible), L. G. E. Kalshoven; Singapore, Malaya, IX-64, *Mangifera indica*, N. L. H. Krauss.

The above Java specimen was received from Kalshoven and bears an unsigned label in his handwriting "*Stephanoderes multipunctatus* Schedl." This specimen bears the same data as Schedl's type of *multipunctatus*. Although Schedl's type was not available for study, it is highly probable that it is a junior synonym of *africanus*.

*Hypothenemus brunneus* (Hopkins)

*Stephanoderes brunneus* Hopkins (1915:31). Holotype, female; Texas; USNM, 7545.

The name *Stephanoderes frontalis* Hopkins is a synonym of *brunneus* (Wood, 1954:1031). This species almost certainly was introduced to America from Africa where all near relatives appear to have originated, although no African specimens have been examined. It is closely allied to *setosus* (Eichhoff).

*Hypothenemus birmanus* (Eichhoff)

*Triarmocerus birmanus* Eichhoff (1878:42, 486). Holotype, female; Burma; presumably lost in Hamburg Mus.

*Hypothenemus maculicollis* Sharp (1879:101). Syntypes; Oahu, Hawaiian Islands; British Mus. Nat. Hist. *New synonymy*.

*Stephanoderes perkinsi* Hopkins (1915:31). Holotype, female; Honolulu, Hawaii; USNM, 7594. *New synonymy*.

*Stephanoderes sterculiae* Hopkins (1915:32). Holotype, female; Calapan, Philippine Islands; USNM, 7551. *New synonymy*.

*Stephanoderes psidii* Hopkins (1915:32). Holotype, female; Calapan, Philippine Islands; USNM, 7552. *New synonymy*.

Previously designated synonyms include *Stephanoderes alter* Eggers, *S. pacificus* Beeson, and *S. castaneus* Wood (Wood, 1960:35). The syntypes of *maculicollis* Sharp, and the holotypes of *S. perkinsi* Hopkins, *S. sterculiae* Hopkins, and *S. psidii* Hopkins were studied and all agree with my specimens that were compared to material Schedl compared to the type of *birmanus*. It is a common species in Indonesia, southern Asia, the Pacific Islands, Central America, and southern Florida.

*Hypothenemus californicus* Hopkins

*Hypothenemus californicus* Hopkins (1915:19). Holotype, female; Pomona, California; USNM, 7364.

*Hypothenemus tritici* Hopkins (1915:19). Holotype, female; Dallas, Texas; USNM, 7526. *New synonymy*.

This species occurs in the southern United States, California, Mexico, and one series was seen from Liberia in western Africa. It is very closely allied to other African species, including *albipilus* Reitter, and probably was introduced to America from Africa. Wood (1954:1055) treated *H. tritici* Hopkins as a subspecies and *H. thoracicus* Hopkins as a synonym of *tritici*. In view of the extended distribution into Mexico, with intergradation, and its discovery in Liberia, the status of *tritici* should be reduced to that of a junior subjective synonym.

*Hypothenemus ceibae* Hopkins

*Hypothenemus ceibae* Hopkins (1915:20). Holotype, female; Cayamas, Cuba; USNM, 7583.

Apparently this is a distinct species similar to but larger than *H. eruditus* Westwood, with very slender interstitial scales.

*Hypothenemus columbi* Hopkins

*Hypothenemus columbi* Hopkins (1915:18). Holotype, female; Columbus, Texas; USNM, 7361.

This common distinctive species occurs from the southern United States to Colombia and Venezuela. Previously published synonyms of Hopkins's species include *H. abdominales*, *H. rufopalliatu*s, *H. brunneipennis*, and *H. amplipennis* (Wood, 1954:162).

*Hypothenemus crudiae* (Panzer)

*Bostrichus crudiae* Panzer (1791:35-38). Syntypes.

*Stephanoderes obscurus*: Eggers (1929:50, nec Fabricius, 1801).

*Bostrichus plumeriae* Nördlinger (1856:74). Syntypes: Venezuela.

*Cryphalus hispidulus* LeConte (1868:156). Syntypes. *New synonymy*.

*Stephanoderes differens* Hopkins (1915:25). Holotype, female; San Bernardino, Paraguay; USNM, 7541. *New synonymy*.

*Stephanoderes paraguayensis* Hopkins (1915:26). Holotype, female; San Bernardino, Paraguay; USNM, 7377. *New synonymy*.

*Stephanoderes polyphagus* Costa Lima (1924, nec Eggers, 1924). Syntypes? *New synonymy*.

*Stephanoderes uniseriatus* Eggers (1924:103). Lectotype, female; Luebo, Congo; USNM, 60169. *New synonymy*.

*Stephanoderes hivaoca* Beeson (1935:105). Holotype, female; Tahauku Hivaoa, Marquesas Islands; Bishop Mus. *New synonymy*.

*Stephanoderes lebronneci* Beeson (1935:104). Syntypes. *New synonymy*.

The types of *crudiae* (Panzer) and *plumeriae* Nördlinger have not been examined by me. The usage of these names is based on

series in the Eggers collection, at the U.S. National Museum, that apparently were based on authentic specimens. These specimens agree with syntypes of *hispidulus* LeConte, *polyphagus* Costa Lima, *lebronneci* Beeson, the lectotype of *uniseriatus* Eggers, and the holotypes of *differens* Hopkins, *paraguayensis* Hopkins, and *hivaoca* Beeson. The series of three specimens of *Hylesinus obscurus* Fabricius in the Copenhagen Museum does not include a specimen of this species (see *H. obscurus*, below). Hopkins's names previously placed in synonymy under this species include *brasiliensis*, *guatemalensis*, and *lecontei* (Wood, 1954:1041). The origin of this pantropical species is uncertain, but it probably is American.

#### *Hypothenemus cylindricus* (Hopkins)

*Stephanoderes cylindricus* Hopkins (1915:25). Holotype, female; Trece Aguas, Alta Verapaz, Guatemala; USNM, 7564.

*Hypothenemus pallidus* Hopkins (1915:18). Holotype, female; Mount Coffee, Liberia; USNM, 7590. *New synonymy*.

*Stephanoderes transatlanticus* Eggers (1941:99). Holotype, female; Trois Rivières, Guadeloupe; Paris Mus. *New synonymy*.

Hopkins's holotypes of *cylindricus* and *pallidus* and two cotypes of *transatlanticus* Eggers were compared directly and apparently all represent the same species. The option available to me to ignore page priority is exercised and I select *cylindricus* as the name for this species, because large series of American specimens are available for study.

#### *Hypothenemus dipterocarpi* Hopkins

*Hypothenemus dipterocarpi* Hopkins (1915:17). Holotype, female; Calapan, Mindoro, Philippine Islands; USNM, 7588.

*Hypothenemus mangarevanus* Beeson (1940:196). Holotype, female; Aukea, Margareva Islands; Bishop Mus. *New synonymy*.

The holotypes of both *dipterocarpi* Hopkins and *mangarevanus* Beeson were compared to my Micronesia specimens to establish the above synonymy. The interstitial bristles are scalelike on the disc and hairlike on the declivity of this distinctive species.

#### *Hypothenemus dolichocola* Hopkins

*Hypothenemus dolichocola* Hopkins (1915:19). Holotype, female; Canton, China; USNM, 7580.

This species resembles *eruditus* Westwood in all respects, except the frons. The frons is shallowly, transversely impressed; it is about intermediate between *vafes* Blandford and *eruditus* on the lower half of the frons. Apparently it is a valid species, but additional material should be examined.

#### *Hypothenemus erectus* LeConte

*Hypothenemus erectus* LeConte (1876:356). Lectotype, female; Texas; Mus. Comp. Zool., present designation.

- Hypothenemus validus* Blandford (1904:228). Holotype, female; Motzorongo, Veracruz, Mexico; British Mus. Nat. Hist. *New synonymy*.
- Stephanoderes puncticollis* Hopkins (1915:32). Holotype, female; Tampico, Tamaulipas, Mexico; USNM, 7547. *New synonymy*.
- Stephanoderes cubensis* Hopkins (1915:32). Holotype, female; Cayamas, Cuba; USNM, 7553. *New synonymy*.

The holotypes of *H. validus* Blandford, *S. puncticollis* Hopkins, and *S. cubensis* Hopkins and a syntype of *erectus* LeConte were all examined and were found to represent the same species. The only syntype of *erectus* LeConte remaining in the LeConte collection and labeled as the type, is here designated as lectotype of this species. A cotype of *Stephanoderes sambesianus* Eggers, in the Eggers collection at the U.S. National Museum, apparently is conspecific with *erectus*. It is also noted that three cotypes of *S. mozambiquensis* Eggers and one cotype of *S. dispar* Eggers are doubtfully distinct from this species. More material from additional African localities should be studied before this synonymy is established.

Since this species has no close relative in America that was not introduced through commerce, and since all closely allied species are from Africa, I suspect this species is of African origin. Its introduction into America evidently occurred long before it was described. It is common from southern Texas to Venezuela.

#### *Hypothenemus eruditus* Westwood

- Hypothenemus eruditus* Westwood (1834:36). Syntypes, England?
- Cryphalus basjoo* Niisima (1910:9). Syntypes; Tokyo, Japan. *New synonymy*.
- Cosmoderes schwarzi* Hopkins (1915:11). Holotype, female; Haw Creek, Florida; lost except slide mount of antenna in USNM. *New synonymy*.
- Hypothenemus bradfordi* Hopkins (1915:15). Holotype, female; Honolulu, Hawaii; USNM, 7567. *New synonymy*.
- Hypothenemus ferrugineus* Hopkins (1915:20). Holotype, female; Trece Aguas, Alta Verapaz, Guatemala; USNM, 7584. *New synonymy*.
- Hypothenemus flavipes* Hopkins (1915:18). Holotype, female; Cayamas, Cuba; USNM, 7575. *New synonymy*.
- Hypothenemus flavosquamosus* Hopkins (1910:15). Holotype, female; Mount Coffee, Liberia; USNM, 7591. *New synonymy*.
- Hypothenemus heathi* Hopkins (1915:20). Holotype, female; Independencia, Parahyba, Brazil; USNM, 7521. *New synonymy*.
- Hypothenemus koebeli* Hopkins (1915:17). Holotype, female; Brazil; USNM, 7572. *New synonymy*.
- Hypothenemus lineatifrons* Hopkins (1915:17). Holotype, female; Cayamas, Cuba; USNM, 7570. *New synonymy*.
- Hypothenemus mali* Hopkins (1915:17). Holotype, female; Capetown, South Africa; USNM, 7573. *New synonymy*.
- Hypothenemus myristicae* Hopkins (1915:16). Holotype, female; Buitenzorg, Java; USNM, 7589. *New synonymy*.
- Hypothenemus nigricollis* Hopkins (1915:16). Holotype, female; Capetown, South Africa; USNM, 7568. *New synonymy*.
- Hypothenemus parvus* Hopkins (1915:17). Holotype, female; Cayamas, Cuba; USNM, 7574. *New synonymy*.
- Hypothenemus punctipennis* Hopkins (1915:20). Holotype, female; Capetown, "West" Africa; USNM, 7585. *New synonymy*.

- Hypothenemus sacchari* Hopkins (1915:17). Holotype, female; Nevis, West Indies; USNM, 7379. *New synonymy*.
- Hypothenemus tenuis* Hopkins (1915:16). Holotype, female; Trece Aguas, Alta Verapaz, Guatemala; USNM, 7569. *New synonymy*.
- Hypothenemus webbi* Hopkins (1915:17). Holotype, female; Calapan, Mindoro, Philippine Islands; USNM, 7587. *New synonymy*.
- Hypothenemus intersetosus* Eggers (1928:85). Lectotype, female; Sao Paulo, Brazil; USNM, 60153. *New synonymy*.
- Stephanoderes elongatus* Hopkins (1915:25). Holotype, female; Cayamas, Cuba; USNM, 7561. *New synonymy*.
- Stephanoderes flavicollis* Hopkins (1915:24). Holotype, female; Cayamas, Cuba; USNM, 7559. *New synonymy*.
- Stephanoderes pygmaeus* Hopkins (1915:24). Holotype, female; Pagbilao, Philippine Islands; USNM, 7560. *New synonymy*.
- Stephanoderes subconcentralis* Hopkins (1915:25). Holotype, female; Cayamas, Cuba; USNM, 7563. *New synonymy*.
- Stephanoderes unicolor* Hopkins (1915:25). Holotype, female; Cayamas, Cuba; USNM, 7562. *New synonymy*.
- Stephanoderes erythrinae* Eggers (1936:628). Holotype, female; Sakalapur, India; British Mus. Nat. Hist. *New synonymy*.
- Hypothenemus dubiosus* Schedl (1940:207). Syntypes; Hamburgfarm, Ebene Limon, Costa Rica. *New synonymy*.

In establishing the above synonymy, the following specimens were examined and compared to my material and to one another: *Cryphalus basjoo* Niisima, 4 cotypes; Hopkins's holotypes of *bradfordi*, *ferrugineus*, *flavipes*, *flavosquamosus*, *heathi*, *koebeleri*, *lineatifrons*, *mali*, *myristicae*, *nigricollis*, *parvus*, *punctipennis*, *sacchari*, *tenuis*, *webbi elongatus*, *flavicollis*, *pygmaeus*, *subconcentralis*, and *unicolor*; the lectotype of *intersetosus* Eggers; a cotype of *erythrinae* Eggers; and a syntype labeled "type" of *dubiosus* Schedl. In addition, the balsam mount of the antenna of *Cosmoderes schwarzi* Hopkins was examined (the type was lost). Since this antenna is entirely typical of *eruditus*, because Hopkins did not have a taxonomic knowledge of the group with which he was working, and in view of the fact that the description of the type fits *eruditus* (except for the erroneously described antenna), *schwarzi* is placed in synonymy under *eruditus*.

Into this species I have grouped similar forms in which the hair-like setae of the elytra vary from uniseriate and sparse strial rows to confused and moderately abundant. There appears to be a complete transition from one extreme to the other. With that exception, interstitial scales, features of the head, pronotum and elytra are rather uniform.

#### *Hypothenemus flavus* Hopkins

*Hypothenemus flavus* Hopkins (1915:17). Holotype, female; Java; USNM, 7571.

This species evidently is distinct. It is allied to *eruditus* Westwood.

#### *Hypothenemus glabripennis* (Hopkins)

*Stephanoderes glabripennis* Hopkins (1915:32). Holotype, female; Angat, Philippine Islands; USNM, 7548.

This distinctive species is well known to specialists.

*Hypothenemus gossypii* (Hopkins)

*Stephanoderes gossypii* Hopkins (1915:25). Holotype, female; Cayamas, Cuba; USNM, 7557.

The synonymy between *gossypii* Hopkins and *H. beameri* Wood has been established (Wood, 1962, Gt. Basin Nat. 22:78). Since *H. gossypii* Sampson evidently is a *nomen nudum* Hopkins's name is used here.

*Hypothenemus hampei* (Ferrari)

*Cryphalus hampei* Ferrari (1868:11, 12). Syntypes.

*Stephanoderes punctatus* Eggers (1924:101). Lectotype, female; Eala, Congo; USNM, 60160. *New synonymy*.

The lectotype of *punctatus* Eggers and the holotype of *cooki* Hopkins were compared to my series of this well-known species and were found to be identical. It is an important pest of coffee.

*Hypothenemus interstitialis* (Hopkins)

*Hypothenemus interstitialis* Hopkins (1915:28). Holotype, female; Victoria, Texas; USNM, 7555.

*Stephanoderes obliquus* Hopkins (1915:30). Holotype, female; Cayamas, Cuba; USNM, 7538. *New synonymy*.

The holotypes of *interstitialis* Hopkins and *obliquus* Hopkins were compared directly to establish the above synonymy. Wood (1954:1033) also placed Hopkins's *interpunctus*, *approximatus*, *flavescens*, *opacipennis*, and *quadridentatus* in synonymy under *interstitialis*.

*Hypothenemus liberiensis* (Hopkins)

*Stephanoderes liberiensis* Hopkins (1915:31). Holotype, female; Mount Coffee, Liberia; USNM, 7593.

This species is very closely allied to *erectus* (LeConte), but the pronotal asperities are smaller, and the lateral areas of the pronotal disc are rugulose. The holotype is 1.8 mm in length.

*Hypothenemus mallyi* (Hopkins)

*Stephanoderes mallyi* Hopkins (1915:32). Holotype, female; Capetown, South Africa; USNM, 7549.

*Stephanoderes soussouensis* Eggers (1943:74). Holotype, female; Sone, Zambeze; Paris Mus. *New synonymy*.

The holotype of *mallyi* Hopkins and the cotype of *soussouensis* Eggers in the Eggers collection at the U.S. National Museum, were compared and found to represent the same species. It is allied to *rotundicollis* (Eichhoff).

*Hypothenemus multidentatus* (Hopkins)

*Stephanoderes multidentatus* Hopkins (1915:28). Holotype, female; Tampico, Tamaulipas, Mexico; USNM, 7532.

*Stephanoderes ferrugineus* Hopkins (1915:29, nec Hopkins, 1915:20). Holotype, female; Livingston, Guatemala; USNM, 7535. *New synonymy*.

*Stephanoderes nitidifrons* Hopkins (1915:31). Holotype, female; Tampico, Tamaulipas, Mexico; USNM, 7546. *New synonymy*.

The holotypes of Hopkins's *multidentatus*, *ferrugineus*, and *nitidifrons* were compared directly to one another. They all represent a species that is very close to *interstitialis* Hopkins.

*Hypothenemus obscurus* (Fabricius)

*Hylesinus obscurus* Fabricius (1801:395). Lectotype, female; Essequibo, British Guiana; Copenhagen Mus., present designation.

*Hypothenemus künneimanni* Reitter (1902:140). Lectotype, female; Bremen, Germany, in Brazil nuts; Budapest, Mus., present designation. *New synonymy*.

*Stephanoderes moschatae* Schaufuss (1905:8, reprint p. 2). Holotype, female; Guadeloupe; presumably lost with Hamburg Mus. *New synonymy*.

*Stephanoderes rufescens* Hopkins (1915:29). Holotype, female; Allegheny, Pennsylvania; USNM, 7527. *New synonymy*.

*Stephanoderes buscki* Hopkins (1915:30). Holotype, female; Trinidad, West Indies; USNM, 7537. *New synonymy*.

*Stephanoderes amazonicus* Eggers (1934:78). Lectotype, female; Manaus, Brazil; USNM, 60142. *New synonymy*.

The entire type series of *obscurus* Fabricius, *künneimanni* Reitter, *rufescens* Hopkins, and *buscki* Hopkins were examined, as well as the lectotype of *amazonicus* Eggers. Several specimens of *moschatae* Schaufuss compared by Eggers to the type were also examined. All of these were compared to my homotypes.

This very common species occurs from Costa Rica and Puerto Rico to Brazil where it breeds in twigs, nuts, and fruits of a wide variety of hosts. It is best known from infested Brazil nuts that are transported through commerce to virtually all parts of the world.

The type series of *obscurus* Fabricius consists of three female specimens in the Copenhagen Museum. The first two are of this species, the third (Kiel specimen) is in poor condition and probably is of *pulverulentus* Eichhoff, but might possibly be of *crudiae* Panzer. Since the second specimen is in better condition than the first, I designate it as lectotype of *Hylesinus obscurus* Fabricius; a red, printed lectotype label was placed on the pin bearing this specimen.

The Reitter syntypes of *künneimanni* consisted of five identical females labeled "Bremen, XII - 1900, Paranüse." The second specimen was in the best condition and was labeled and is here designated the lectotype of *Hypothenemus künneimanni*.

*Hypothenemus parallelus* Hopkins

*Hypothenemus parallelus* Hopkins (1910:25). Holotype, female; Tampico, Mexico; USNM, 7556.

This form is essentially identical to *eruditus* Westwood except for the frons which bears a small, low nodule at the center. It probably represents a genetic variation within a normal population, but due to the breeding habits and (suspected) partial parthenogenesis the frontal character appears to have greater importance than is warranted. Series in my collection are from Mexico and the Hawaiian Islands.

*Hypothenemus pilosus* Hopkins

*Hypothenemus pilosus* Hopkins (1915:20). Holotype, female; Cayamas, Cuba; USNM, 7586.

In this distinctive species the rows of interstrial setae are hairlike from the elytral base to the apex. Apparently it is very rare.

*Hypothenemus pubescens* Hopkins

*Hypothenemus pubescens* Hopkins (1915:19). Holotype, female; Key West, Florida; USNM, 7524.

*Hypothenemus subelongatus* Hopkins (1915:19). Holotype, female; Victoria, Texas; USNM, 7581. *New synonymy*.

*Stephanoderes opacifrons* Hopkins (1915:25). Holotype, female; Aguadilla, Puerto Rico; USNM, 7565. *New synonymy*.

This species is almost identical with *sparsus* Hopkins, but it possesses rows of strial hair and lacks interstrial granules. In addition to the localities cited above it occurs in Mexico and Hawaii. It breeds in the axis of fruiting stems of various grasses, including the genera *Andropogon*, *Cynodon*, and *Paspalum*.

*Hypothenemus pulverulentus* (Eichhoff)

*Stephanoderes pulverulentus* Eichhoff (1871:33). Syntypes(?), female; Mexico; presumably lost with Hamburg Mus.

*Stephanoderes vulgaris* Schaufuss (1897:209). Syntypes, female; La Digue, Sechelle Islands; presumably lost with Hamburg Mus.

*Stephanoderes georgiae* Hopkins (1915:27). Holotype, female; Georgia; USNM, 7385. *New synonymy*.

*Stephanoderes tamarindi* Hopkins (1915:27). Holotype, female; Manila, Philippine Islands; USNM, 7530. *New synonymy*.

*Stephanoderes niger* Hopkins (1915:31). Holotype, female; Brownsville, Texas; USNM, 7382. *New synonymy*.

*Stephanoderes nitidipennis* Hopkins (1915:29). Holotype, female; Cayamas, Cuba; USNM, 7533. *New synonymy*.

*Stephanoderes fiebrigi* Hopkins (1915:27). Holotype, female; San Bernardino, Paraguay; USNM, 7387. *New synonymy*.

*Stephanoderes minutus* Hopkins (1915:26). Holotype, female, evidently defective; Cayamas, Cuba; USNM, 7366. *New synonymy*.

*Hypothenemus emarginatus* Schedl (1942b:11). Syntypes, female; Buitenzorg, Java. *New synonymy*.

*Stephanoderes darwinensis* Schedl (1942a:178). Syntypes; Australia. *New synonymy*.

*Stephanoderes andersoni* Wood (1954:1045). Holotype, female; Coconut Grove, Florida; USNM. *New synonymy*.

*Stephanoderes liquidambarae* Wood (1954:1046). Holotype, female; Jacksonboro, South Carolina; Snow Ent. Mus., Univ. Kansas. *New synonymy*.

This abundant, widely distributed species is distinguished with difficulty from *obscurus* (Fabricius) by characters of the frons and elytral surface. It is possible that *multidentatus* Hopkins is a population variant at the upper limits of size. The above synonymy was based on a study of the holotypes of Hopkins's *georgiae*, *tamarindi*, *niger*, *nitidipennis*, *ficbergi*, and *minutus*; on syntypes of *emarginatus* Schedl and *darwinensis* Schedl; and on holotypes of *andersoni* Wood and *liquidambari* Wood. The holotype of *minutus* evidently is defective. There is a certain amount of variation in the minute details of sculpturing of the frons and in the shape of the interstitial scales. After examining many hundreds of specimens from America, the Pacific area, and the Indo-Australian region, I see no alternative to grouping all of the above under one name. The difficulty is complicated by the intensive inbreeding coupled with (suspected) partial parthenogenesis which may produce morphologically uniform local populations. When all of these local populations are studied, however, they intergrade completely. Previously published synonymy of Hopkins's species was established for *texanus*, *pini*, *salicis*, *floridensis*, *ficus*, *soltaii*, *lucasi*, *virentis*, *pecanus*, and *niger* (Wood 1954:1035, 1048). The basis for the names *pulverulentus* and *vulgaris* was specimens identified by and presumably compared to the types by Eggers.

#### *Hypothenemus rotundicollis* (Eichhoff)

*Stephanoderes rotundicollis* Eichhoff (1878:45, 145). Syntypes(?), female; America septentrionalis; presumably lost with Hamburg Mus.

The synonymy of this species with one Hopkins's species, *quercus*, has been established (Wood, 1954:1024). In addition to its distribution in the eastern and southern United States, it occurs in the states of Tamaulipas and Nayarit in Mexico. Allied species occur in Central America.

#### *Hypothenemus setosus* (Eichhoff)

*Hypoborus* (?) *setosus* Eichhoff (1867:391). Syntypes; Guadeloupe.

*Stephanoderes bananensis* Eggers (1922:167). Two syntypes; Banana, Congo; one in Eggers collection. *New synonymy*.

*Stephanoderes kalshoveni* Schedl (1939:35). Syntypes; Pasoeroean, Java; Buitenzorg Mus. *New synonymy*.

*Stephanoderes subagnatus* Eggers (1940:101). Holotype, female; Eala, Congo; Tervuren Mus. *New synonymy*.

Hopkins's species for which synonymy previously was established include *obesus* and *philippinensis* (Wood, 1957:402). The above new synonymy was based on a syntype of *bananensis* and two syntypes of *subagnatus*. Several specimens of *kalshoveni* received from Kalshoven and taken by him from the same branch as the syntypes, were used to establish the synonymy of Schedl's species.

It is difficult to establish the origin of this species at the present

time, but it evidently reached America from Africa where several allied species occur, or less probably from the Indo-Malayan area.

*Hypothenemus squamosus* (Hopkins)

*Stephanoderes squamosus* Hopkins (1915:26). Holotype, female; Cayamas, Cuba; USNM, 7566.

This distinctive species occurs from southern Florida and Cuba to Mexico. Its nearest relative occurs in Mexico.

*Hypothenemus sparsus* Hopkins

*Hypothenemus sparsus* Hopkins (1915:20). Holotype, female; Columbus, Texas; USNM, 7368.

Two of Hopkins's species, *similis* and *tridentatus*, have been placed in synonymy under this name (Wood, 1954:1040). It is rare and distinguished with difficulty from *pulverulentus* (Eichhoff) and *pubescens* Hopkins.

*Hypothenemus vafer* Blandford

*Hypothenemus vafer* Blandford (1896:241). Syntypes; Noumea, New Caledonia; British Mus. Nat. Hist.

*Stephanoderes polyphagus* Eggers (1924:104). Syntypes. *New synonymy*.

*Hypothenemus heterolepsis* Costa Lima (1928:117). Syntypes. *New synonymy*.

*Stephanoderes subvestitus* Eggers (1940:232). Holotype, female; Mosolo Kwenge, Kwongo, Congo; Tervuren Mus. *New synonymy*.

*Stephanoderes martiniquensis* Eggers (1941:99). Holotype, female; St. Pierre, Martinique; USNM, 60156. *New synonymy*.

In view of its present distribution and abundance, it is most remarkable that Hopkins did not encounter this species in his study. No examples of it were included in the collection he studied. This is the species to which I previously have referred as *areccae* Hornung (= *fungicola* Eggers, *hispidus* Eggers, etc.). Since a question has been raised as to the true identity of *areccae*, the next oldest name known to me for this species, *vafer*, will be used until the types can be examined.

The above synonymy was based on the type series of *vafer* Blandford, on two syntypes of *polyphagus* Eggers, two syntypes of *heterolepsis* Costa Lima, one cotype of *subvestitus* Eggers, and the holotype of *martiniquensis* Eggers.

It apparently is now established in southern Florida. It previously has been reported from Brazil, Martinique, Hawaiian Islands, Micronesia, Philippine Islands, the Indo-Malayan region, Ghana, and the Congo. It is polyphagous and, presumably, it can breed in nuts, twigs, or bark.

*Trischidias atoma* (Hopkins)

*Hypothenemus atomus* Hopkins (1910:15). Holotype, female; Morgantown, West Virginia; USNM, 7565.

Hopkins's species *Hypothenemus impressifrons*, *marylandicae*, *robiniae*, and *toxicodendri* were placed in synonymy under *atomus* by Wood (1954:1068) and transferred to the genus *Trischidias* Hopkins.

## REFERENCES CITED

- BEESON, C. F. C. 1935. Platypodidae and Scolytidae of the Society Islands. Bull. B. P. Bishop Mus. 142:115-121.  
 —. 1940. Scolytidae and Platypodidae of the Mangarevan Expedition. Occ. Pap. B. P. Bishop Mus. 15:191-203.
- BLANDFORD, W. F. H. 1896. Scolytides de la Nouvelle Caledonia. Ann. Soc. Ent. Belgique 40:241-245.  
 —. 1895-1907. Family Scolytidae. Biologia Centrali-Americana. Insecta. Coleoptera 4(6):81-384.
- BROWNE, F. G. 1963. Taxonomic notes on Scolytidae (Coleoptera). Ent. Berichten 23:53-59.
- EGGERS, H. 1922. Neue Borkenkäfer (Ipidae) aus Afrika. Ent. Blätt. 18:163-174.  
 —. 1924. Neue Borkenkäfer (Ipidae) aus Afrika. Ent. Blätt. 20:99-111.  
 —. 1928. Ipidae (Coleoptera) da America do Sul. Archiv. Inst. Biol. Def. Agric. Anim. 1:83-99.  
 —. 1929. Zur synonymie der Borkenkäfer (Ipidae, Col.). Wiener Ent. Zeit. 46:41-55.  
 —. 1934. Borkenkäfer (Ipidae, Col.) aus Südamerika. Ent. Blätt. 30:78-84.  
 —. 1936. Neue Borkenkäfer (Scolytidae, Col.) aus Indien. Ann. Mag. Nat. Hist. (10)17:626-636.  
 —. 1940a. Neue Borkenkäfer (Col., Scolytidae) aus Afrika. Nachtrag IX. Rev. Zool. Bot. Afr. 33:99-108.  
 —. 1940b. Neue Borkenkäfer (Col., Scolytidae) aus Afrika. Nachtrag X. Rev. Zool. Bot. Afr. 33:227-239.  
 —. 1941. Borkenkäfer aus Südamerika (Coleoptera: Ipidae). IX. Insel Guadeloupe. Arb. morph. taxon. Ent. Berlin-Dahlem 8:99-109.  
 —. 1943. Neue Borkenkäfer (Ipidae) aus Afrika. Nachtrag VIII. Ent. Blätt. 39:70-76.
- COSTA LIMA, A. M. DA. 1924. J. do Commercio, Oct. 19 (Not seen).
- EICHHOF, W. J. 1867. In: Kraatz, G., Beiträge zur Kenntniss der deutschen Käferfauna. 4. Stuck. Berliner Ent. Zeitschr. 11:391.  
 —. 1871. Neue exotische Tomiciden-Arten. Berliner Ent. Zeitschr. 15:131-136.  
 —. 1878. Ratio, descriptio, emendatio eorum tomicinorum qui sunt in Dr. medic. Chapuisii et autoris ipsius collectionibus et quos praeterea recognovit. Mem. Soc. Sci. Liege (2)8:1-531 (1879, preprint 1878).
- ERICHSON, W. F. 1836. Systematische Auseinandersetzung der Familie der Borkenkäfer (Bostrichidae). Archiv. Naturg. 2(1):45-65.
- FABRICIUS, J. C. 1801. Systema eleutheratorum. Kilia: Bibliopolii Academici. Vol. 2, 687 p.
- FAIRMAIRE, L. 1868. In: Jacquelin du Val and Fairmaire. Genera des coléoptères d'Europe. Vol. 4, 292 p.
- FERRARI, J. A. 1867. Die Forst- und Baumzuchtsschädlichen Borkenkäfer (Tomicides Lac.) aus der Familie der Holtzverderber (Scolytides Lac.), mit besonderer Berücksichtigung vorzüglich der europäischen Formen, und der Sammlungen des k. k. zoologischen Kabinetes in Wien. Gerold:Wien. 96 p.
- GYLLENHAL, L. 1813. Insecta Suecica descripta. Classis I. Coleoptera Siue Eleuterata. Vol. 1, pt. 3, 730 p.
- HOPKINS, A. D. 1915. Classification of the Cryphalinae, with descriptions of new genera and species. U.S. Dept. Agric., Sec. Rept. 99:1-75.
- LECONTE, J. L. 1868. Notes and appendix. In: Zimmermann, Synopsis of the Scolytidae of America north of Mexico. Trans. American Ent. Soc. 2:141-178.
- NÖRDLINGER, H. 1856. Nachtrage zu Ratzeburgs Forstinsekten. Stuttgart. 83 p. (Not seen).
- NIISIMA, Y. 1910. Die Borkenkäfer Nord und Mittel-Japans. Trans. Sapporo Nat. Hist. Soc. 3:1-18.

- PANZER, G. W. F. 1791. Beschreibung eines sehr kleinen Kapuskäfers. Naturforscher 25:35-38. (Not seen).
- RATZEBURG, J. T. C. 1839. Die Forstinsekten der Abbildung und Beschreibung der in den Nachbarstaaten als schädlich oder nützlich bekannt gewordenen Insekten. Vol. 1, Die Käfer (Borkenkäfer, p. 168-232).
- REITTER, E. 1902. Neue Coleopteren der palaearktischen Fauna. Wiener Ent. Zeit. 21:137-141.
- SCHAUFUSS, C. 1897. Beitrag zur Käferfauna Madagascars. III. Tijdschr. Ent. 40:209-225.
- . Borkenkäferstudien. Insekt. Borse 22: (Reprint, p. 1-12).
- SCHEDL, K. E. 1939. Scolytidae und Platypodidae. 47 Beitrag. Tijdschr. Ent. 82:30-53.
- . Scolytidae und Platypodidae (Coleoptera). 51 Beitrag. Arb. morphol. taxon. Ent. Berlin-Dahlem 7:203-208.
- . 1942a. Interessante und neue Scolytiden und Platypodiden aus der australischen region. Mitt. Münchner Ent. Ges. 32:162-201.
- . 1942b. Neue Scolytidae aus Java. Tijdschr. Ent. 85:1-49.
- . 1962. Zur synonymie der Borkenkäfer X. Mitt. Münchner Ent. Ges. 52:85-107.
- SHARP, D. 1879. On some Coleoptera from the Hawaiian Islands. Trans. Roy. Ent. Soc. London 77:77-105.
- THOMSON, C. G. 1859. Skandinaviens Coleoptera synoptiskt bearbetade. Lund. Vol. 1, 290 p.
- . 1965. Skandinaviens Coleoptera synoptiskt bearbetade. Lund. Vol. 7, 394 p.
- WESTWOOD, J. O. 1836. Description of a minute Coleopterous insect, forming the type of a new subgenus allied to *Tomiscus*, with some observations upon the affinities of the Xylophaga. Trans. Ent. Soc. London 1:34-36.
- WOOD, S. L. 1954. A revision of North American Cryphalini (Scolytidae: Coleoptera). Univ. Kansas Sci. Bull. 36(2):959-1089.
- . 1957. Distributional notes on and synonymies of some North American Scolytidae (Coleoptera). Canadian Ent. 89:396-403.
- . 1960. Platypodidae and Scolytidae. Insects of Micronesia 18(1):1-73.
- . 1962. Miscellaneous taxonomic notes on Scolytidae (Coleoptera). Gr. Basin Nat. 22:76-82.
- . 1967. *Cryphalus* Erichson, 1836 (Insecta, Coleoptera): Proposed designation of a type-species under the plenary powers. Bull. Zool. Nomencl. 24:121-122.