considerably larger, thinner and less dense than the compact cocoon within, allowing the outlines of the latter to be readily seen through its walls. It measured in this instance, 15 mm. in length by 7 mm. in width near the anterior end, the structure being in general, club-shaped. Like the fibers about it, this covering was reddish-brown but had been much lighter and more fluid at first and in time became darkened and hardened.

TWO NEW SPECIES OF PHLOEOSINUS CHAPUIS (SCOLYTIDAE-COLEOPTERA)

BY C. R. BRUCK,
Berkeley, California.

Phloeosinus setosus n. sp.

A small robust species, length 1.5-2.5 mm.

Front of the male deeply concave, clothed with short bristle-like hairs, sparsely granulate-punctate, surface opaque, with a long, shining, median carina; second suture of the antennal club subtransverse. Pronotum wider than long, 5.5:3.5; sides slightly rounded, narrowing on the anterior half, constricted behind the anterior margin; the constriction extends across the dorsum, widening on the disk thereby simulating a wide, deep impression on the anterior third; anterior margin is broadly rounded; the surface is moderately clothed with short setae and the punctures are large, dense, and deep. Elytral striae one-half as wide as the interspaces, distinctly impressed but not as deep as wide, punctures are small and deep and separated by many times their diameter; interspaces are convex, sparsely confusedly rugose-punctate and largely, deeply punctate on the disk; lateral interspaces confusedly rugose-punctate near the base, the remainder of the interspace is sparsely, definitely rugose-punctate with rugosities in a definite row and widely spaced, punctures are very large with a stiff, coarse, long seta arising from each puncture; the first and third declivital interspaces definitely elevated, the first is densely clothed with short scale-like hairs and long setae, and like the third and fifth, which have no scale-like hairs, it is definitely but sparsely serrate; serrations are much shorter than the setae, second and fourth interspaces are smooth, shining, and naked, the remainder of the interspaces are rugose. The mesasterum is precipitous.

The female differs from the male in that it has the front faintly impressed on the epistomal area and the carina is very short and indistinct. The rugosities of the elytral disk are less confused except near the base, while on the lateral interspaces they are more granular in appearance, less distinct, and more widely spaced; the declivital serrations are smaller and less acute.

This species is closely related to *P. (minutus) swainei* Bruck but is readily separated by the large erect setae and the larger punctures on the elytra; the second and fourth declivital interspaces are naked, smooth, and shining, and the first is densely clothed with scale-like hairs and setae, the third, fifth, and remainder are only clothed with setae. In *P. swainei* Bruck the elytra, including all of the declivital interspaces, is sparsely clothed with short scale-like hairs; granules extend well onto the summit of the second and fifth declivital interspaces and the faces of these interspaces are finely rugose; the first and third declivital interspaces are hardly elevated whereas in *P. setosus* they are distinctly elevated and the serrations are larger.

Long series of this species were collected by Dr. E. C. Van Dyke, Mr. E. F. Wohletz, and myself on the small branches and twigs of a recently felled Sargent cypress tree, at Mt. St. Helena, Calif. on March 29, 1931.

The holotype and allotype are retained in the author's collection, one pair of paratypes will be placed in the collection of Dr. Van Dyke, deposited in the California Academy of Sciences, San Francisco, one pair will be sent to Dr. Swaine for the Canadian National Collection, and a number of designated paratypes will remain in my own collection.

Phloeosinus frontalis n. sp.

Front of the male very deeply concave; concavity glabrous, with a short median carina arising from the epistoma, moderately fringed with short scale-like hairs. First suture of the antennal club subtransverse, second slightly oblique, third very strongly oblique. Pronotum wider than long, 3:4.5, deeply densely punctate, sparsely clothed with scale-like hairs, sides strongly arcuate, strongly sinuate anteriorly. Elytra slightly longer than wide, 5.0:6.0, striae narrow and deeply impressed, strial punctures small, deep, and widely spaced; interstriae moderately rugose on the disk, scarcely rugose on the sides, densely moderately punctate, sparsely clothed with scale-like hairs. First, third, and fifth declivital interspaces, strongly, acutely serrate, seventh with only two serrations and the ninth with only one; the serrations are long, acute, and widely separated; all of the declivital interspaces are densely clothed with scale-like hairs. Body densely clothed with scale-like hairs. Length 1.5-2.5 mm.

The front of the female is very densely clothed with short scale-like hairs, impressed behind the epistomal region, sub-glabrous, very faintly punctate, with a well developed longitudinal carina dividing the impression, the remainder of the front densely rugosely punctate. First, third, fifth, seventh, and ninth interspaces with smaller serrations than those in the male but as numerous and as acute.

This species closely resembles *P. (minutus) swainei* Bruck and *P. setosus* but is readily separated from both species by the elytral interspaces being much wider than the striae whereas in *P. swainei* Bruck and *P. setosus* the striae are almost one-half as wide as the interspaces. The front of *P. frontalis* differs from the front of *P. swainei* and *P. setosus* in that the male has a very deep concavity and the median carina is almost obsolete, the front of the female is distinctly impressed and has a very well developed carina. The male of *P. setosus* has a shallow concavity with a very faint carina, the front of the female is plano-convex with a very short indistinct carina. The front of *P. swainei*, male, is hardly impressed with a carina almost obliterated by the granules, the front of the female is flat with a long fine carina. The declivital serrations of *P. frontalis* are long, acute, very distinctly and widely separated and the first and third interspaces are faintly elevated.

The holotype and allotype will be sent to Dr. H. E. Burke to be deposited in the U. S. National Museum, one pair of paratypes will be placed in the collection of Dr. Van Dyke, deposited in the California Academy of Sciences, a male paratype will be sent to Dr. Swaine for the Canadian National Collection, and the remainder are retained in my collection through the courtesy of Dr. Burke.

Seven males and four females were reared from a branch of Arizona cypress which was collected at Rialto, Calif., on May 2, 1930, by Dr. H. E.

Burke of Palo Alto, Calif. The adults emerged in the summer of 1930.

The Arizona cypress is probably the adopted host for this species as it has never been taken from this cypress in the normal habitat of this tree. Its native host is possibly the Juniper for this is the only cupressine tree native to the San Bernardino territory.

Phloeosinus (minutus) swainei Bruck

In 1894, Mr. Walter F. H. Blandford described in his paper "Rhynchophorous Coleoptera of Japan," a new species of *Phloeosinus*. The description was published on page 71 in the "Transactions of the Entomological Society of London" and it was described as *Phloeosinus minutus*. In 1917 Dr. J. M. Swaine described a North American species of *Phloeosinus,* using the name *P. minutus*. This new species was described in his paper, "Canadian Bark Beetles" Pt. I, published in Dominion of Canada Department of Agriculture, Entomological Branch, Bulletin No. 17." Since the name has been preoccupied by Mr. Blandford at an earlier date and the species described by him is valid today, I designate the species described by Dr. Swaine in 1917 as *Phloeosinus swainei* in commemoration of the extensive work done by Dr. Swaine in the family Scolytidae of North America.

ADDITIONAL NOTES ON TROPAEA LUNA (LEPID)

BY HARRIET A. WICKWIRE AND ADELE CALALE,
Cortland, N. Y.

Robert E. Birdsong published some notes on *Tropaea luna* in the November 1932 issue of this magazine, which were of especial interest to us as we have been working along the same lines.

In addition to the variations in ova-coloration which were mentioned in the article, we have obtained ova which ranged in color from sky-blue to apple-green. In one of the few cases in which we obtained pure white ova, they turned green after a few days and never hatched. We have not noticed black micropyles.

We consulted the following works for descriptions: Ballard, Julia P., "Moths and Butterflies," 1902 (Page 128); Eliot and Soule, "Caterpillars and Their Moths," 1902 (Page 258); Porter, Gene Stratton, "Moths of the Limberlost," 1912 (Page 182); Miller, E. R., "Butterfly and Moth Book," 1931 (Page 35); Packard, A. S., "Memoirs of the National Academy of Sciences," Vol. XII, 1914 (Page 193; Plates XV, XVI, XVII).

After reading the above material one gathers that the early stages of *Tropaea luna* show considerable variation. Apparently the brown color is explained by the coating of brown glue which fastens the ova in place, and varies in quantity and quality with the age and condition of the mother moth; however, this fails to explain the white, blue, green, and cream-colored ova and how they are kept in place. Obviously these colors affect the shell pigment itself and cannot be attributed to a coating of glue.

In 1931 we discovered a peculiar thing about the two forms of *Tropaea luna,* described by Mr. Birdsong, and previously described and figured by A. S. Packard. We confined each moth in a paper bag for oviposition, placing the date and the number representing the individual on the bag. Each night's ovipositing was counted and recorded in our notes under the corresponding number of