NEW WESTERN DELTOCEPHALINE LEAFHOPPERS

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Three *Psammotettix*, one *Sorhoanus* and allotypes of two *Orocastus* are described: Types are to be deposited in the Collection of The Ohio State University unless other deposition is mentioned.

I am grateful to Dr. David A. Young, Jr., of the U. S. National Museum for sending a paratype of *Psammotettix excavatus* (Oman) for The Ohio State University Collection, and for other assistance.

Orocastus aurarius Knull

Figure 6

Described from ♂s. ♀ cream-colored with dark arcs on face, arc either side of apex of head extending to black ocelli, eyes dark gray, a pair of median broad longitudinal stripes on pronotum faintly indicated, veins pale, clearly outlined with fuscous. ♀ segment as illustrated.

Length: 4 mm.

Allotype ♀, Davis Mts., Tex., Aug. 2, 1937, 2 specimens, Aug. 2, 1940; 1, Culberson Co., Tex., Aug. 29, 1940; 1, El Paso Co., Tex., Aug. 30, 1940; 5, Chiricahua Mts., Ar., Aug. 28, 1940, D. J. and J. N. Knull, Collectors.

Orocastus omani Knull

Figure 5

♀s similar in coloring and general appearance to those of *O. aurarius*, with dark markings sometimes more pronounced. Last ventral segment with median lobe broader, as illustrated.

Length: 4 mm.

From Arizona, collected by D. J. and J. N. Knull: allotype ♀ and 4 specimens. Types, Patagonia Mts., Aug. 7, 1950; 17, Aug. 20, 1940; 1 Tumacacori Mts., Aug. 21, 1940; I, Huachuca Mts., Aug. 19, 1950; 1, Tucson, Aug. 27, 1938.

Psammotettix dentatus n. sp.

Figures 12, 13

A long, slender, dark species, unique in dentation of aedeagus.

♂.—Ground color cream with tan markings. Vertex as long as pronotum, shorter than width between eyes, bluntly rectangular, with eyes a little broader than pronotum. Elytra greatly exceeding tip of abdomen.

Anterior margin of vertex with pair of oblique black dashes at apex and a dot just below and anterior to pale ocellus, a tan cloud either side on center of disk and a pair of dashes either side at base. Pronotum with six broad tan longitudinal stripes. Elytra hyaline with pale veins and some irregular darkening in cells, especially apical cells. Dorsum of abdomen black, venter black with yellow edges. Face dark brown with pale arcs and streak down middle; clypeus dark in middle, remainder pale.

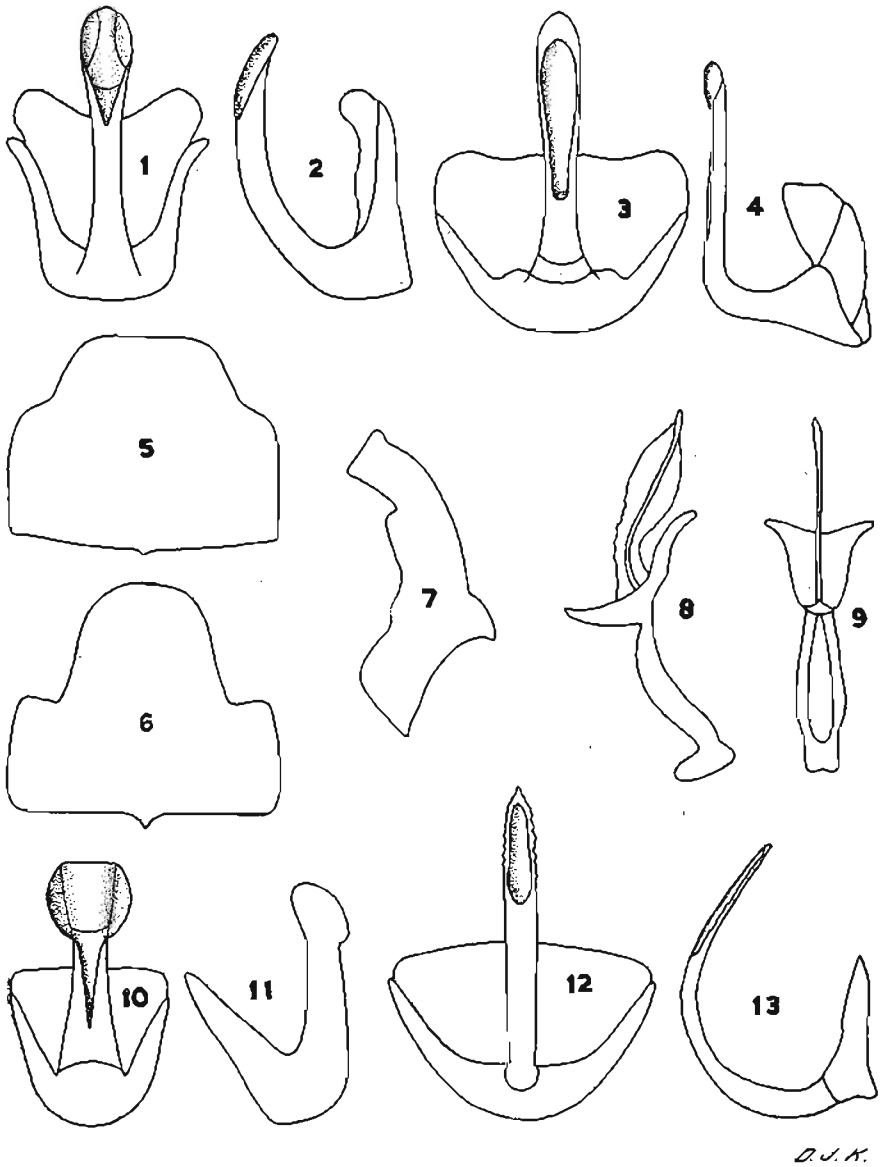
Valve large, more rounded than in other *Psammotettix*, exceeded by pale pointed plates by three-tenths of its length, base of aedeagus protruding distinctly beyond plates and pygofer. Aedeagus as figured with characteristic dentation.

♀.—Last ventral segment as long as preceding, slightly emarginate on median third.

Length: ♂ and ♀ 3.8 mm.

Taken in northern California by D. J. and J. N. Knull. ♂ holotype, allotype, 7 ♂ and 2 ♀ paratypes, Quincy, June 25, 1948; 1 ♂ and 1 ♀ Forest Glen, June 19, 1941; and Chester: 1 ♂ and 1 ♀, June 12, 1941; 1 ♂ and 4 ♀, June 23, 1948; 8 ♀, June 25, 1951; 3 ♀, July 1, 1951; 1 ♀, July 11, 1951.

In the long narrow form of aedeagus this species shows some affinity to *Psammotettix attenuens* (DeLong and Davidson).



1, 2. *Psammotettix revae* n. sp. Ventral and lateral view of aedeagus.
3, 4. *Psammotettix ferratus* (Del. & Dav.). Ventral and lateral view of aedeagus.
5. *Orocastus omani* Knull. ♀ last ventral segment.
6. *Orocastus aurarius* Knull. ♀ last ventral segment.
8, 9. *Sorhoanus fidus* n. sp. Style, lateral and ventral view of aedeagus.
10, 11. *Psammotettix obesus* n. sp. Ventral and lateral view of aedeagus.
12, 13. *Psammotettix dentatus* n. sp. Ventral and lateral view of aedeagus.

Psammotettix obesus n. sp.
Figures 10, 11

A strikingly marked, robust small species with stubby aedeagus.

♂.—Head shorter than space between eyes, as long as pronotum, bluntly angled, with eyes a little wider than pronotum. Ground color cream with the following brown markings: vertex, median small apical triangle with pale center, below apex on either side two broad, irregular, somewhat X-shaped spots, and at base a pair of narrow, elongate stripes, outer longer; eyes brown; pronotum with six broad longitudinal stripes; scutellum, a median spot; elytra mottled, cells across middle more embrowned forming very irregular saddle, apical cells and lower part of median anteapicals also dark; below, face dark with fine pale transverse arcs; dorsum and venter black with segments narrowly yellow-margined, showing some red toward lateral margins.

Valve large, characteristic of genus, exceeded by plates by two-thirds its length, plates joined half their length beyond valve then diverging sharply to triangular points, space between them forming an equilateral triangle; connectives of aedeagus and pygofer exceeding plates only slightly. Aedeagus illustrated.

♀.—Lighter in color throughout, but pattern distinct, sides of ovipositor dark. Last ventral segment a little longer than preceding, almost truncate, but with shallow excavation on median third and faint sinuation either side. A rounded translucent spot over base of ovipositor, surrounded by darkened area.

Length: ♂ and ♀ 3 mm.

♂ holotype, allotype, 2 ♂ paratypes, Grand Teton National Park, Wyoming, July 14, 1939, D. J. and J. N. Knull.

Psammotettix revae n. sp.
Figures 1, 2

Small, pale, robust species related in form of aedeagus to *Psammotettix cephalotes* (H.S.).

♂.—Head bluntly rectangular, as long as pronotum, not as long as width between eyes; ground color cream with light brown markings as follows: a pair of small triangles below apex, an arc below each black ocellus, a square spot behind each apical triangle and a pair of dashes either side of base; eyes gray brown; pronotum gray discally because of dark coloring underneath; scutellum pale. Elytra pale creamy subhyaline with sparse brown markings outlining some irregularly, scarcely covering tip of abdomen. Front brown with pale arcs and median strip, sutures black, venter and dorsum dark with sides broadly pale, and genital segments also pale. Valve and plates typical of genus, exceeded a little by base of aedeagus and pygofer.

♀.—Last ventral segment as long as preceding, parallel-margined, usually quite convex, which may make it appear excavated.

Length: ♂, 2.9 mm; ♀, 3.2 mm.

Described from a series of specimens taken in South Dakota by Dr. H. C. Severin. ♂ holotype, allotype, 12 ♂ and 33 ♀ paratypes, Reva Alkali Flats, Sept. 8, 1948; 14 ♂ and 24 ♀, Reva, Sept. 8, 1948; 2 ♂, Springfield, Sept. 13, 1948; and 1 ♂, Buffalo, Sept. 10, 1948. Paratypes sent to Dr. Severin.

Sorhoanus fidus n. sp.
Figures 7, 8, 9

Cream colored, sharp-headed, elytra with short apical cells, not quite covering tip of abdomen.

Head acutely rectangular, as long as width between eyes, longer than pronotum; face tan with light arcs, eyes dark brown, ocelli black, pronotum darker; elytra hyaline with golden veins, not quite covering pygofer. Dorsum dark to pygofer, venter light below thorax, darker in ♂.

Plates in ♂ narrowed on outer half to half basal width, with pointed, divergent apices, almost as long as pygofer. Inner genitalia illustrated. Last ventral segment in ♀ about twice as long at middle as preceding, incised almost half its depth, segment produced gently from sides, subtruncate, with small tooth either side of incision; median incised area including teeth covered by black pentagonal mark.

Length: ♂, 3.3 mm; ♀, 3.7 mm.

Holotype ♂ and allotype, Gillespie Co., Texas, May 7, 1946, collected by D. J. and J. N. Knull.

Dr. P. W. Oman upon examining these specimens placed the species near *S. orientalis* (DeLong and Davidson), however the sharply pointed head will distinguish it at once from most members of the genus.

SELECTED REFERENCES

China, W. E. 1939. Additions to the British Homoptera. Entomologist's Monthly Mag., 75: 50–52.

DeLong, D. M., and R. H. Davidson. 1935. Some new North American species of Deltocephaloid Leafhoppers. Can. Ent., 67: 164–172.

Herrich-Schaffer, G. A. W. 1834. Deutschlands Insecten, Faun. Germ., 124: 6.

Knull, D. J. 1951. Eight new leafhoppers from the United States. Ohio Jour. Sci., 51: 179–83.

Ribaut, H. 1925. Sur Quelques Deltocephales du Groupe D. striatus (L.) Then., Bull de la Soc. d'Histoire Naturelle de Toulouse, 53: 5–22.

Wagner, W. 1947. Neue deutsche Homopteren und Bemerkungen über schon bekannte Arten. Verhandl. des Ver. für naturw. Heimatforschung zu Hbg. Bd., 29: 76–77.

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Plant Anatomy. *Katherine Esau.* John Wiley & Sons, Inc., New York. 1953. viii+735 pp. $9.00.

Miss Esau has achieved in this book the same high degree of excellence which characterizes her extensive research in the field of plant anatomy. The book is developmental in approach, sufficiently comprehensive in scope, accurate in most details, thoroughly documented, superbly illustrated and well written. The reader will find this book satisfying in that he will find answers to most of his questions, if the answers are known.

A good balance between topics has been achieved. The cell, cell types, tissue types, meristems, and the principal organs (except the hypocotyl) have been discussed separately in detail. Throughout the discussion of each, attention has been directed to its origin, and its significance with respect to the growth and attainment of form of the living plant. The physiological significance of the various structural phenomena are frequently called to the attention of the reader.

Some will say that the book contains too much material and too many details to be covered in a one quarter, or one semester course in plant anatomy. This is true—but this very fact makes the book more useful. This allows the instructor complete freedom to choose and to teach those topics which he believes to be most essential for his particular group of students. The book will serve as a broad and sound base upon which to construct a general course in plant anatomy which will serve the very real needs of the plant physiologist, horticulturalist, forester and entomologist. *Plant Anatomy* presents and elucidates the developmental and three-dimensional concepts of plant structure which every plant scientist must comprehend in order to completely and successfully relate the dogmas of his own special field to the growing plant. Miss Esau's book sets a new pace for plant anatomists and provides the means by which any plant anatomist may raise the level of understanding achieved by his students. *Plant Anatomy* has rendered the static, the cut-and-look, the paleobotanical, and the phylogenetic approaches to plant anatomy as archaic as a taxonomic approach to a general botany course.

R. A. POPHAM

The Scientific Adventure. Essays in the History of Philosophy of Science. *Herbert Dingle.* Philosophical Library, Inc., New York. 1953. ix+372 pp. $6.00.

A Textbook of General Botany. *G. M. Smith, E. M. Gilbert, G. S. Bryan, R. I. Evans,* and *J. F. Stauffer.* Macmillan Co., New York. Fifth edition, 1953. x+606 pp. $6.25.

Engineering Descriptive Geometry. *Charles E. Rowe* and *James D. McFarland.* D. Van Nostrand Co., Inc., New York. Second edition, 1953. ix+352 pp. $4.25.

Modern College Physics. *Harvey E. White.* D. Van Nostrand Co., Inc., New York. Second edition, 1953. xiii+823 pp. $6.75.