

STUDIES ON GALL MIDGES (ITONIDIDAE = CECIDOMYIIDAE :
DIPTERA, INSECTA) FROM INDIA.—IX

By

S. N. RAO

Department of Zoology, College of Science, Nagpur

(With 8 Text-figures)

CONTENTS

	PAGE.
I—Introduction	177
II—Systematics	177
III—Summary	193

I—INTRODUCTION

This paper contains descriptions of nine new species of gall midges. the type slides of which are in the collections of the Zoological Survey of India, Calcutta. I am grateful to Prof. M. S. Mani for guidance and constant encouragement. I am also indebted to the National Institute of Sciences of India for the grant of a research fellowship.

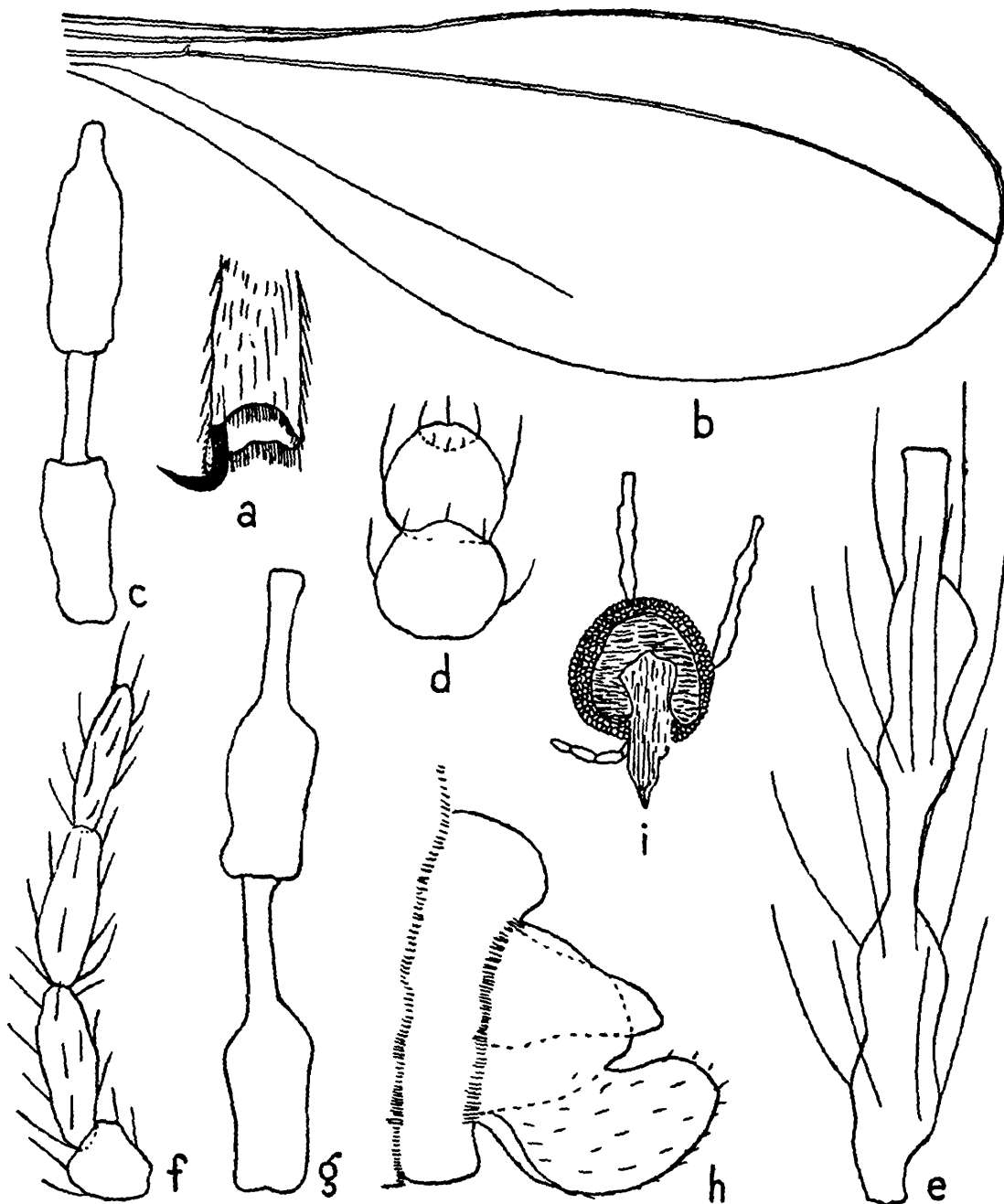
II—SYSTEMATICS

Subfamily *HETEROPEZINAE*

1. *Johnsonomyia indica*, sp. nov.

♀ Length 1.4 mm. Body light brown. Eyes (Text-fig. 1*i*) confluent above. Trophi (Text-fig. 1*i*) produced. Antenna pale brown, longer than body, with fourteen segments, flagellate segments cylindrical, gradually becoming reduced, enlargements slightly constricted in the middle, with long apical stems and with two whorls of long setae; first segment (Text-fig. 1*d*) nearly globose, pale brown, broader than long, length seven-ninths the width; second segment (Text-fig. 1*d*) longer than the first, nearly globose, length a little greater than the width; third segment (Text-fig. 1*e*) fused with the fourth, longer than both the first two segments combined, with a very short basal stem, enlargement cylindrical but for a slight constriction in the middle, apical portion of the enlargement slightly broader than the basal portion, enlargement nearly two-thirds the length of the segment and three and one-third times as long as the maximum thickness, stem nearly half the length of the enlargement, one-third the length of the segment and thrice as long as thick; fourth segment (Text-fig. 1*e*) shorter than the third, enlargement five-eighths the length of the segment and two and a half times as long as the maximum thickness, stem nearly

one-third the length of the segment, length nearly three and a half times the median thickness ; segments nine and ten as in figure 1g ; thirteenth segment (Text-fig. 1c) cylindrical, longer than the terminal, enlargement not constricted in the middle, as is the case in the basal segment, length two and two-fifths the thickness, stem slender, seven-twelfths the length of the enlargement and nearly five and a half times as long as thick ; terminal segment (Text-fig. 1c) with a small knob, enlargement slightly longer than that of the penultimate segment,



TEXT-FIG. 1.—*Johnsonomyia indica*, sp. nov.

(a). Claw. (b). Wing. (c). Terminal two antennal segments. (d). First two antennal segments. (e). Third and fourth antennal segments. (f). Palpi. (g). Ninth and tenth antennal segments. (h). Ovipositor. (i). Head.

cylindrical, without a constriction, length nearly thrice the thickness, knob one-third the length of the enlargement. Palpi (Text-fig. 1f) quadri-articulate, very sparsely setose, pale yellow, first segment shortest of all, nearly globose, length one and one-fourth the maximum thickness at the apical third ; second segment a little over twice the length of the

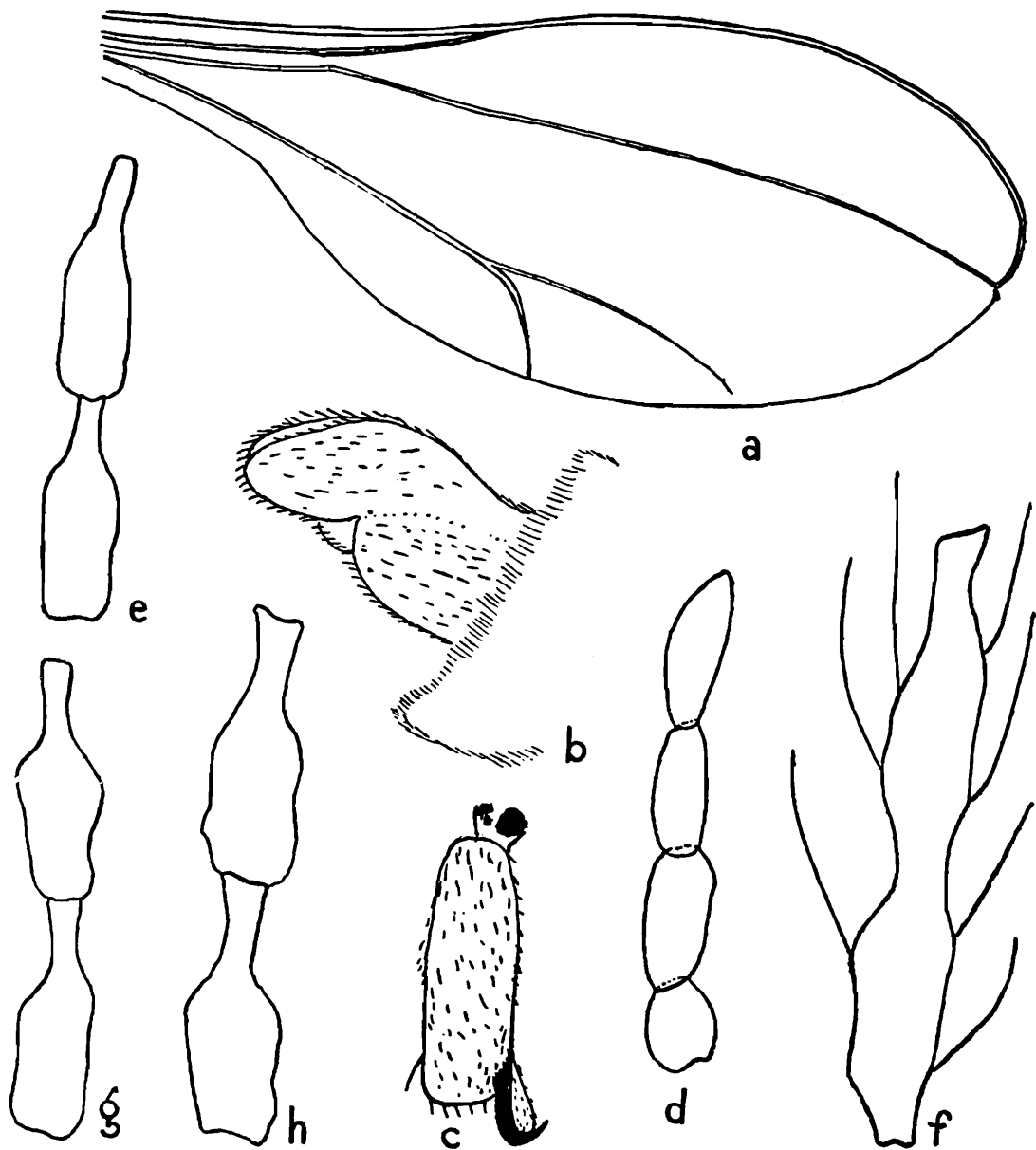
first, nearly cylindrical, slightly narrowed towards the apex, length two and three-fourths the maximum thickness ; third segment very slightly shorter than the second, elongate oval, length two and one-fourth times the maximum thickness ; fourth segment cylindrical, slightly shorter and slender than the third segment, length three and two-thirds the maximum thickness in the middle. Mesonotum yellowish-brown ; scutellum and postscutellum lighter. Halteres pale yellow. Abdomen yellowish brown. Wing (Text-fig. 1*b*) hyaline, length two and one-third the width, with three long veins, costa interrupted at its union with vein R_5 , vein R_s distinct but faint, at nearly right angles to vein R_1 , vein R_5 slightly curved and reaching the wing margin well beyond the apex, vein M_4-m-Cu simple. Legs long, pale brown, moderately hairy, metatarsus slightly shorter than the fifth tarsal segment. Claw (Text-fig. 1*a*) simple, curved at right angles. Empodium half the length of claw. Ovipositor (Text-fig. 1*h*) slightly exserted, terminal lobes oval.

Holotype : 1 ♀ on slide labelled " At light, Aizaz Manzil, Agra, S. N. Rao Coll., 10-9-1950 "

2. *Haplusia elliptica*, sp. nov.

♀ Length 1.2 mm. Body yellowish-black. Eyes confluent above. Antenna pale brown, slightly shorter than body, with fourteen segments, flagellate segments cylindrical, gradually becoming reduced, slightly constricted in the middle, with long apical stems and with two whorls of long setae ; first segment not visible in the preparation ; second segment globose, whitish-yellow, length nearly equal to the width ; third segment (Text-fig. 2*f*) confluent with the fourth and very slightly longer than the latter, with a very small basal stem, enlargement slightly narrower in the middle than at the apices, two-thirds the length of the segment and two and two-thirds as long as thick, apical portion of the enlargement slightly broader than the basal portion, stem nearly one-fourth the length of the segment, two and a half times as long as thick ; fourth segment (Text-fig. 2*f*) very slightly shorter than the third, enlargement slightly narrowed in the middle, apical portion very slightly broader than the basal portion, rest of the details as those of the preceding segment ; sixth segment shorter than the fourth, enlargement nearly cylindrical, basal and apical portions of the enlargement nearly of the same thickness, length nearly two-thirds the segment and twice as long as thick, stem less than half the length of the segment and three and a half times as long as thick ; seventh and eighth segments as in figure 2*h* ; ninth segment slightly shorter than the sixth, enlargement nearly cylindrical, length nearly twice the thickness, stem nearly half the length of the enlargement and twice as long as thick ; eleventh segment (Text-fig. 2*g*) nearly similar in all proportions to the ninth segment ; twelfth segment as in figure 2*g* ; penultimate segment (Text-fig. 2*e*) shorter than the terminal segment, enlargement nearly cylindrical, length twice the thickness with a stem of nearly half the length of the enlargement ; terminal segment (Text-fig. 2*e*) with a knob of nearly one-third the length of the segment, longer than the penultimate, enlargement nearly cylindrical, length nearly thrice the thickness, length

of knob thrice its own thickness. Palpi (Text-fig. 2*d*) short, pale yellow, quadriarticulate, moderately hairy, first segment shortest, nearly globose, length a little over maximum thickness; second segment longer than the first, nearly twice as long as the first and also twice as long as thick; third segment nearly equal to the second but slender, length two and one-third the maximum thickness; fourth segment longest of all. Mesonotum yellowish-brown; scutellum and postscutellum lighter. Abdomen yellowish black. Halteres pale yellow. Wing (Text-fig. 2*a*) hyaline, length nearly two and two-thirds the width, vein *Rs* faint, costa interrupted at



TEXT-FIG. 2.—*Haplusia elliptica*, sp. nov.

(a). Wing. (b). Ovipositor. (c). Claw. (d). Palpi. (e). Terminal two antennal segments. (f). Third and fourth antennal segments. (g). Eleventh and twelfth antennal segments. (h). Seventh and eighth antennal segments.

its union with vein R_5 , the latter reaching the margin well beyond the apex, vein M_4-m-Cu forked. Legs long, whitish-yellow, moderately hairy, metatarsus slightly shorter than the terminal tarsal segment. Claw (Text-fig. 2*c*) simple, bent at right angles. Empodium nearly equal to the claw. Ovipositor (Text-fig. 2*b*) moderately hairy, exserted, lamellae elliptic.

Holotype: 1 ♀ dissected and mounted on slide labelled "At light, Research Laboratory, St. John's College, Agra. S. N. Rao Coll., 10-9-1949"

This species closely resembles *H. longipalpia* Rao¹ and its position along with other Indian species is shown in the following key :

Key to species

- | | |
|---|-----------------------------|
| 1. Palpi short ; flagellate antennal segments with short stems ; third and fourth antennal segments equal in length | <i>brevipalpia</i> Rao |
| Palpi long ; flagellate antennal segments with long stems | 2 |
| 2. Third antennal segment shorter than the fourth ; empodium shorter than claw | <i>longipalpia</i> Rao |
| Third antennal segment longer than the fourth ; empodium nearly as long as the claw ; ovipositor lobes elliptic | <i>elliptica</i> , sp. nov. |

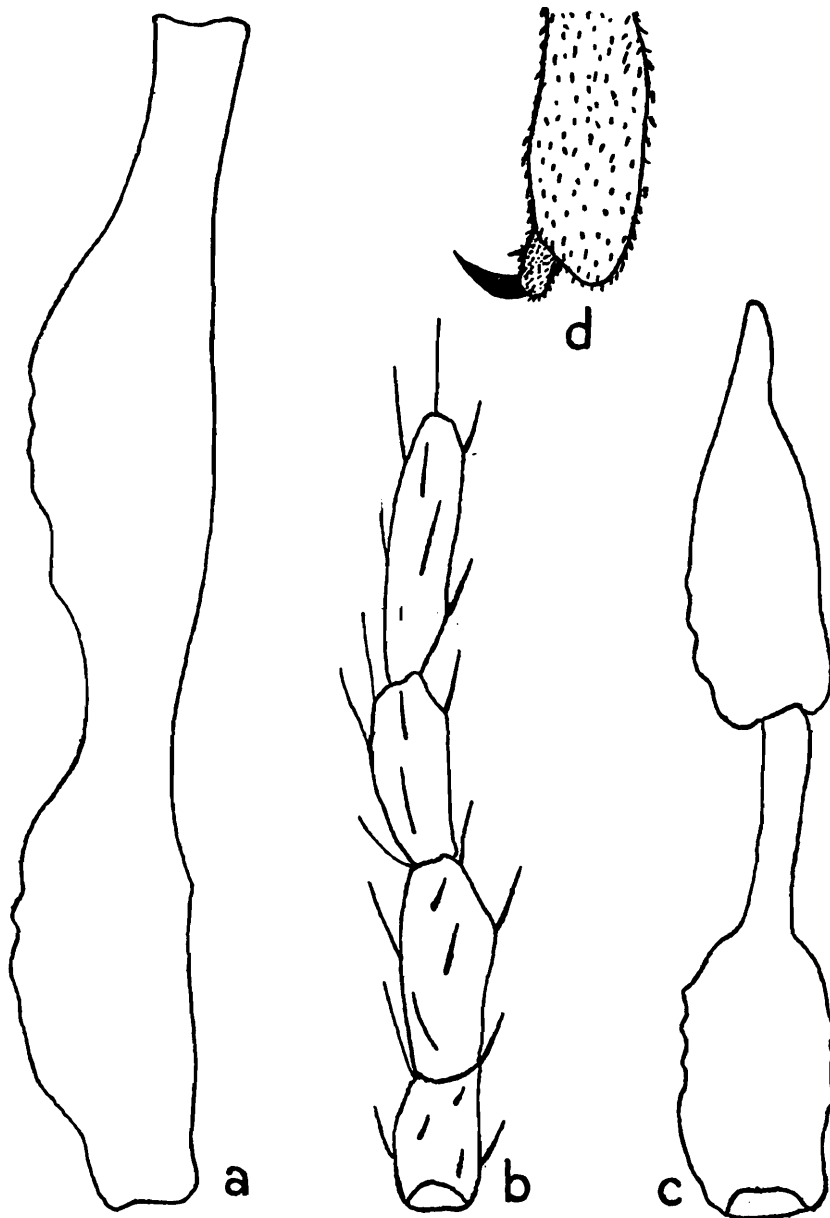
3. *Neohaplusia inaequipalpis*, sp. nov.

♀ Length 1.4 mm. Body brown to yellowish-brown. Eyes confluent above. Antenna light brown, longer than body, with fifteen segments ; flagellate segments cylindrical with apical stems ; first and second segments not clear in the preparation ; third segment (Text-fig. 3a) confluent with and equal in length to the fourth, with a very short basal stem, basal portion of enlargement slightly narrower than the apical portion, length nearly two-thirds the segment and two and one-third times the maximum thickness, stem nearly half the length of the enlargement and twice as long as thick ; fourth segment (Text-fig. 3a) similar in all essential details to the third ; penultimate segment (Text-fig. 3c) slightly longer than the terminal, enlargement nearly half the length of the segment and twice as long as thick, stem nearly half the length of the segment and as long as the enlargement, length five times the thickness ; terminal segment (Text-fig. 3c) with a knob of nearly half the length of the segment, enlargement two and one-third times as long as thick, knob nearly thrice as long as thick. Palpi (Text-fig. 3b) long, quadriarticulate, pale yellow, sparsely setose, first segment cylindrical, shortest of all, length one and a half times the thickness, second segment twice the length of the first and two and a half times its own thickness, nearly cylindrical, third segment shorter than the second, length two and one-third the thickness, fourth segment longest of all, cylindrical, length nearly four times the thickness. Mesonotum dark brown ; scutellum and postscutellum lighter. Abdomen yellowish-brown. Wing hyaline, two and a half times as long as broad, vein *R*_s distinct, costa interrupted at its union with vein *R*₅, the latter slightly curved and joining the wing margin beyond the apex, vein *M*_{4-m-Cu} forked. Halteres pale yellow. Legs long, hairy, metatarsus one and one-third the length of the fifth tarsal segment, second tarsal segment longest of all. Claw (Text-fig. 3d) bifid basally, empodium one-third the length of the claw. Ovipositor triarticulate, slightly exerted.

¹ Rao, S. N., *Indian J. Ent.*, New Delhi, 11, p. 112 (1949).

Holotype : 1 ♀ on slide labelled " At light, Aizaz Manzil, S. N. Rao Coll., Agra, 27-9-1949 "

This species closely resembles *Neohaplusia neohaplusia* Rao¹, but is easily separated by the differences in the antennal and palpal segments and empodium being only one-third the length of the claw. The relation of this species with other known species is shown in the following key :



TEXT-FIG. 3.—*Neohaplusia inaequipalpis*, sp. nov.

(a). Third and fourth antennal segments. (b). Palpi. (c). Terminal two antennal segments. (d). Claw.

Key to species

- | | | |
|---|---|---------------------------------|
| 1. Antenna less than the length of the body | 2 | |
| Antenna greater than the length of the body, third and fourth antennal segments equal to each other in length ; terminal palpal segment longer than the third ; metatarsus longer than the fifth tarsal segment | | <i>inaequipalpis</i> , sp. nov. |
| 2. Antenna slightly more than half the length of the body ; third antennal segment slightly shorter than the fourth ; terminal two palpal segments equal in length ; metatarsus equal to the fifth tarsal segment ; empodium three-fourths the claw | | <i>agraensis</i> Rao |

¹ Rao, S. N., *Indian J. Ent.*, New Delhi, 11, p. 114 (1949).

Antenna half the length of the body ; third antennal segment longer than the fourth ; terminal palpal segment shorter and slenderer than the penultimate ; metatarsus half the length of the fifth tarsal segment ; empodium shorter than claw

neohaplusia Rao

Subfamily *ITONIDINAE*

Tribe Lasiopterini

4. *Lasioptera orientalis*, sp. nov.

♀ Length 1.2 mm. Body yellow. Eyes confluent above. Antenna yellowish-brown, nearly as long as the body, with sixteen sessile and cylindrical segments, flagellate antennal segments gradually becoming reduced, with scattered hairs ; first segment yellow, obconical, length slightly less than the maximum width at the apical three-fourths ; second segment yellow, broader than long, maximum width one and one-fourth the length ; third segment confluent with the fourth, with a very short basal stem, length of the enlargement nearly one and one-third the thickness ; fourth segment nearly as long as the third, enlargement a little less than one and a half times the thickness ; penultimate segment equal to terminal, nearly globose, length a little more than the thickness ; terminal segment similar in all essential details to the penultimate but slightly slender. Palpi quadriarticulate, long, pale yellow, moderately hairy, first segment nearly oval, shortest of all, length nearly equal to the maximum thickness ; second segment two and one-fourth times the length of the first, nearly cylindrical, wider at base than at apex, length three and one-eighth times the maximum thickness ; third segment longer but slenderer than the second, cylindrical, ends slightly tapering, length nearly three times the maximum thickness ; terminal segment similar in all essential details to the third but slightly slender. Mesonotum brown ; scutellum and postscutellum lighter. Halteres pale yellow. Wings hyaline, length two and one-third times the width, costa slightly scaled and interrupted at its union with vein R_5 , the latter not reaching the tip of the wing but ending in the distal third, vein M_4-m-Cu forked. Legs long, hairy, pale yellow, metatarsus shorter than the terminal tarsal segment. Claw bifid, slender, evenly curved, empodium nearly half the length of the claw. Ovipositor exerted.

Holotype : 1 ♀ on slide labelled " At light, Bishop French Hostel, S. N. Rao Coll., Agra, June 1949 "

This species closely resembles *Lasioptera indica* Rao¹, but is easily distinguished from it in the antenna being equal to the length of the body, in the different proportions of the palpal and antennal segments and in the differences in the wing. The relationship of this species with other Indian species is shown in the appended key :

Key to species

- | | |
|--|---|
| 1. Abdomen brown or black ; antennal segments eighteen or more | 2 |
| Abdomen not as above ; antennal segments less than eighteen | 5 |

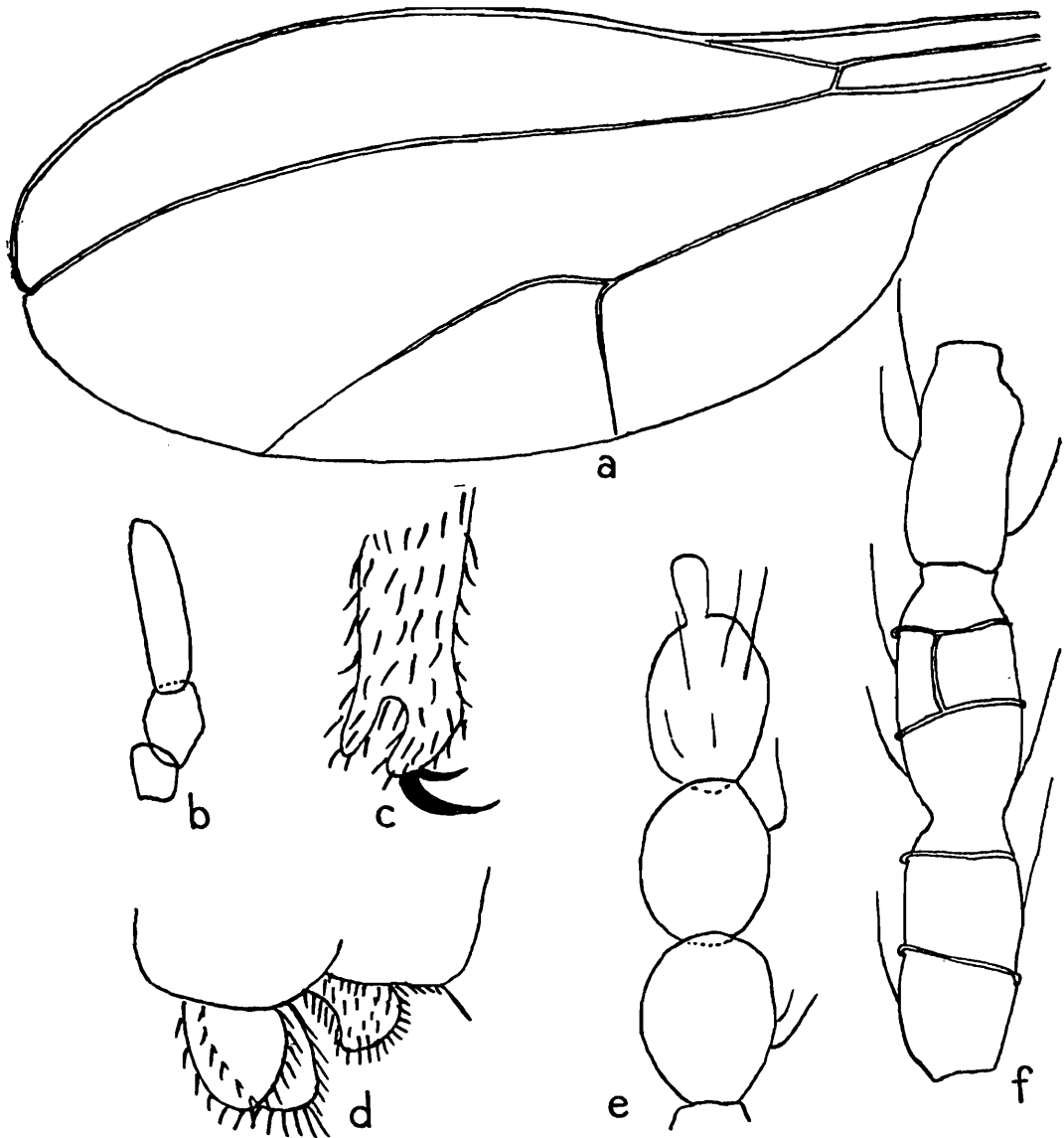
¹Rao S. N., *Proc. R. ent. Soc. Lond.*, London, 21, p. 50 (1952).

2. Abdominal segments narrowly margined posteriorly, antenna extending to the base of the abdomen, empodium a little shorter than claw; ovipositor about three-fourths the length of the abdomen *eriochloa* Felt
- Abdomen not as above, dorsally with silvery-white submedian lines 3
3. Antenna with twenty-four segments in ♀ and extending to near the base of the abdomen, ovipositor nearly equal to the length of the body *falcata* Felt
- Antenna with less than twenty-four segments 4
4. Antenna with eighteen segments in ♀, ovipositor as long as the abdomen, terminal two palpal segments unequal *fluitans* Felt
- Antenna with twenty segments . *bryoniae* Felt
5. Terminal two palpal segments equal in length . 6
- Terminal two palpal segments unequal in length 7
6. Antenna less than half the length of the body . *indica* Rao
- Antenna as long as the body . *orientalis*, sp. nov.
7. Antenna with ten and possibly fifteen segments, empodium as long as the claw *paniculi* Felt
- Antenna with sixteen segments, empodium about the length of the claw *asytasiae* Nayar

5. *Bryocrypta deepica*, sp. nov.

♀ Length 1.35 mm. Body light brown to brownish-yellow. Antenna yellowish-brown, a little over half the length of the body, with fifteen segments; first segment (scape) short, widest at apex, width at apex equal to the length; second segment (pedicel) short, subcylindrical, slightly broader than long, wider at the basal one-third; third segment (Text-fig. 4f) confluent with the fourth, cylindrical, moderately setose, twice the length of the first segment, twice as long as thick, slightly wider at the distal end, apical stem very short; fourth segment (Text-fig. 4f) equal to the third; fifth segment (Text-fig. 4f) slightly shorter than the fourth, length one and a half times the thickness, with a stem of one-fifth the length of the enlargement; sixth segment equal to the fifth; eighth segment similar to the sixth; eleventh segment five-sevenths the length of the third, nearly oval, without stem; terminal segment (Text-fig. 4e) longer than the eleventh and with an apical knob of one-fifth the length of the enlargement. Trophi prominent. Palpi (Text-fig. 4b) triarticulate, long, moderately setose, first segment wider at apex, narrow basally, one and a half times as long as broad; second segment one and a half times the length of the first and two and a half times as long as broad, cylindrical; third segment cylindrical, longest of all, more than one and a half times the length of the second and four times as long as broad. Mesonotum brown, scutellum, postscutellum and abdomen lighter. Wing (Text-fig. 4a) hyaline, normal, two and a half

times as long as broad, with three long veins, vein R_s distinctly at an angle with vein R_1 , vein R_5 reaching the apex of wing and interrupting the costa at its union, vein M_4-m-Cu forked. Halteres light brown. Legs pale yellow, long moderately hairy, metatarsus short, slightly shorter than the fifth tarsal segment; second tarsal segment the longest, slightly shorter than the rest of the segments combined. Claw (Text-fig. 4c) dentate on all legs, bent at right angles, pale yellow. Empodium much shorter than claw. Ovipositor (Text-fig. 4d) slightly exserted, dorsal lobe broad, ventral lamellae small and narrow.



TEXT-FIG. 4.—*Bryocrypta deepica*, sp. nov.

(a). Wing. (b). Palpi. (c). Claw. (d). Ovipositor. (e). Terminal three antennal segments. (f). Third, fourth and fifth antennal segments.

Holotype: 1 ♀ on slide labelled "At light, Hewett park, M.S. Mani Coll., Agra, August, 1947"

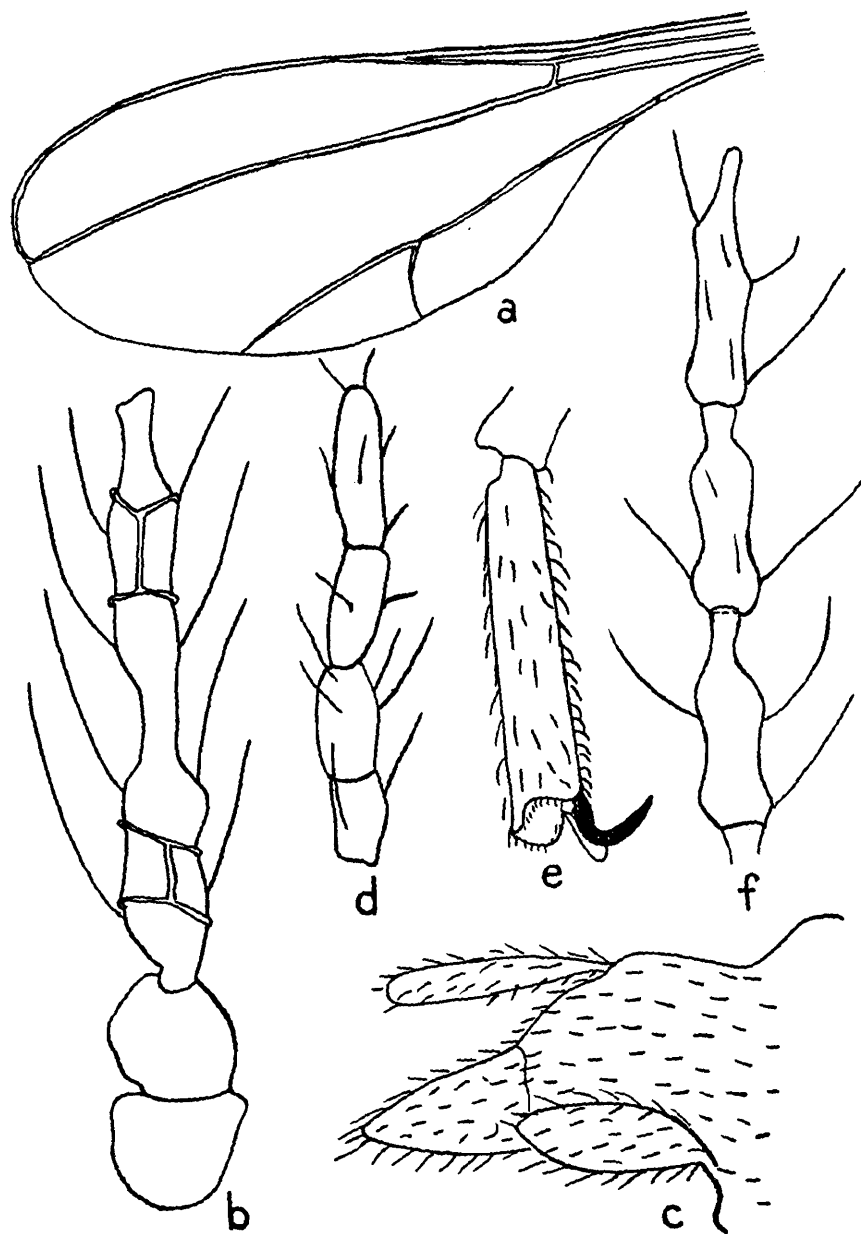
This species differs from the only known species, *B. dubia* Kieffer¹, in the length of the second palpal segment being two and a half times its own thickness and less than the length of the other two segments combined, in the flagellate segments being cylindrical and with short

¹Kieffer, J. J., *Berl. ent. Z.*, Berlin, **41**, p. 8 (1896).

stems, in the slightly exserted ovipositor and in the claw being longer than the empodium.

6. *Liebeliola dehradunensis*, sp. nov.

♀ Length 4.0 mm. Body brown. Antenna light brown, longer than body, with fourteen segments, flagellate segments nearly cylindrical, gradually becoming narrowed towards the apex, slightly constricted in the middle, with long stems and with two whorls of long setae and two whorls of closely attached circumfila; first segment (Text-fig. 5b)



TEXT-FIG. 5.—*Liebeliola dehradunensis*, sp. nov.

(a). Wing. (b). First four antennal segments. (c). Ovipositor. (d). Palpi. (e). Claw. (f). Terminal three antennal segments.

short, slightly wider at apex than at base, width at apex a little over its own length; second segment (Text-fig. 5b) as long as first, broadest in middle, length equal to the maximum width; third segment (Text-fig. 5b) cylindrical, very slightly longer than and confluent with fourth segment, much longer than the first two segments combined, enlargement slightly constricted in middle, nearly twice as long as thick, with a stem twice as long as its own thickness and measuring nearly one-third the

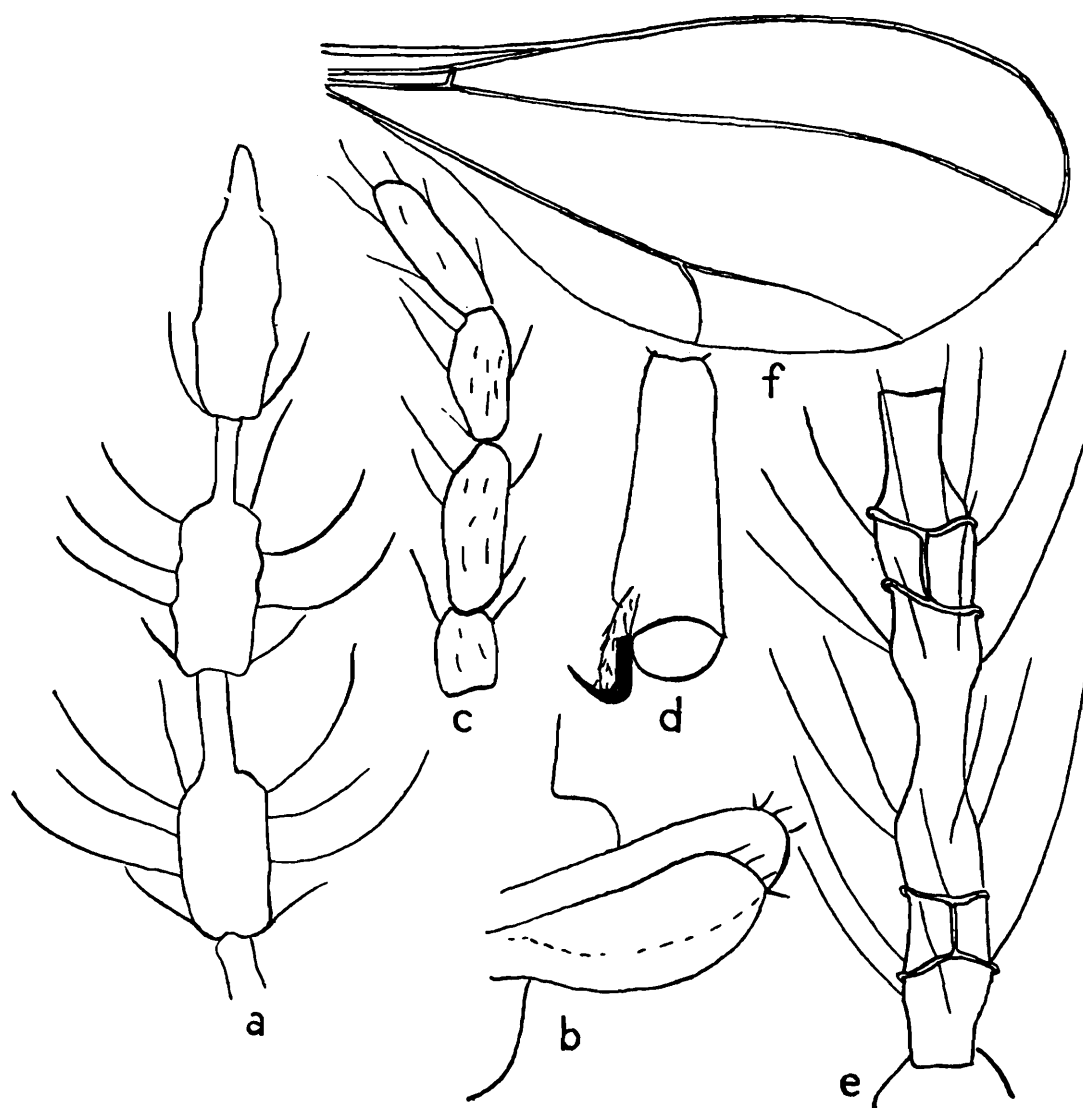
length of enlargement ; fourth segment (Text-fig. 5b) similar in all essential details to the third segment but very slightly slenderer than the latter ; sixth segment shorter than the fourth, enlargement very slightly constricted in middle, twice as long as thick, with a stem a little over half the length of the enlargement and two and a half times its own thickness ; eighth segment slightly slender but as long as the sixth, enlargement very slightly constricted in middle, two and one-fourth times as long as broad, stem a little longer than half the length of enlargement and nearly thrice as long as thick ; penultimate segment (Text-fig. 5f) much shorter and slenderer than eighth segment, length of enlargement a little less than thrice its own thickness, stem one-third the length of the enlargement and thrice as long as thick ; terminal segment (Text-fig. 5f) longer than the penultimate, enlargement slender but longer than that of the penultimate, four times as long as thick, with an apical knob of one-fourth the length of enlargement and thrice its own thickness. Palpi (Text-fig. 5d) quadri-articulate, long, moderately hairy, pale brown, first segment nearly cylindrical, length one and two-thirds the width in the middle, second segment widest at the apical three-fourths, length one and one-sixth the length of the first and a little less than the maximum width, third segment longer than second, wider at apex than at base, length two and one-third the maximum width, terminal segment longest of all the segments, cylindrical, length three and a half times the maximum width. Mesonotum dark brown, scutellum and postscutellum brown. Abdomen pale brown. Halteres pale yellow. Wing (Text-fig. 5a) hyaline, nearly twice as long as broad, with three long veins, vein *R*₅ slightly curved and reaching the wing margin a little beyond the apex, vein *M*₄-*m*-*Cu* forked. Legs pale yellow, long, thickly hairy, metatarsus nearly one-sixth the length of the second tarsal segment and also slightly shorter than the terminal tarsal segment, second tarsal segment longer than the rest of the segments combined. Claw (Text-fig. 5e) slender, simple, dark brown, bent at right angles ; empodium nearly half the length of the claw. Ovipositor (Text-fig. 5c) slightly exserted, dorsal lamellae elliptic, small.

Holotype : 1 ♀ on slide labelled "On wing, Officer's Rest House, S. N. Rao Coll., Dehra Dun, 7-7-1950"

7. *Liebeliola diurni*, sp. nov.

♀ Length 4.5 mm. Body brown. Antenna light brown, nearly equal to the length of the body, with fourteen segments, flagellate segments cylindrical, distal segments gradually becoming narrowed, enlargements slightly constricted in the middle, with long stems and two whorls of setae and two whorls of circumfila ; first and second segments not visible in the preparation, third segment (Text-fig. 6e) cylindrical, longer than but confluent with the fourth segment, enlargement very slightly constricted in the middle, thrice as long as thick, with the stem a little over twice as long as thick and one-third the length of the enlargement ; fourth segment (Text-fig. 6e) shorter than the third segment, enlargement a little over twice as long as thick, stem a little less than half the length of the enlargement and nearly twice as long as thick ; sixth segment shorter

than the fourth, enlargement very slightly constricted in the middle, length a little less than twice the thickness, stem two-thirds the length of the enlargement and nearly thrice as long as thick; eighth segment similar in all essential details to the sixth; penultimate segment (Text-fig. 6a) shorter than the eighth segment, length of enlargement a little over twice its own thickness, stem nearly four times as long as thick and half the length of the enlargement; terminal segment (Text-fig. 6a) longer than the penultimate segment, enlargement thrice as long as thick, with an apical knob measuring two-sevenths the length of the enlargement and two and a half times as long as thick. Trophi not very prominent. Palpi (Text-fig. 6c) pale yellow, quadriarticulate, long, moderately



TEXT-FIG. 6.—*Liebeliola diurni*, sp. nov.

(a). Terminal three antennal segments. (b). Ovipositor. (c). Palpi. (d). Claw. (e). Third and fourth antennal segments. (f). Wing.

setose, first segment nearly cylindrical, length one and one-fourth the thickness, second segment twice as long as the first, cylindrical, two and a half times as long as thick, third segment shorter than the second, widest at the apical three-fourths, length two and a half times the thickness, terminal segment longest of all, nearly cylindrical, length three and one-fourth times the thickness. Mesonotum brown. Scutellum brown. Abdomen yellowish-black. Wing (Text-fig. 6f) hyaline, length twice the breadth, with three long veins, vein *Rs* distinctly at an angle, vein

R_5 slightly curved and reaching the margin of wing beyond its apex, vein M_4-m-Cu forked. Legs yellowish-brown, thickly hairy, metatarsus one-sixth the second tarsal segment and nearly equal to the terminal tarsal segment, second tarsal segment nearly equal to the rest of the segments combined. Claw (Text-fig. 6d) simple, slender, dark brown, bent nearly at right angles, empodium half the length of the claw. Ovipositor (Text-fig. 6b) slightly exerted, small, lamellae elliptic.

Holotype : 1 ♀ on slide labelled "On wing, Zoology Laboratory, St. John's College, Agra, S. N. Rao Coll., 18-7-1950"

This species differs from *L. dehradunensis* Rao in the legs, palpi, antenna and ovipositor and its place is as shown in the following key :

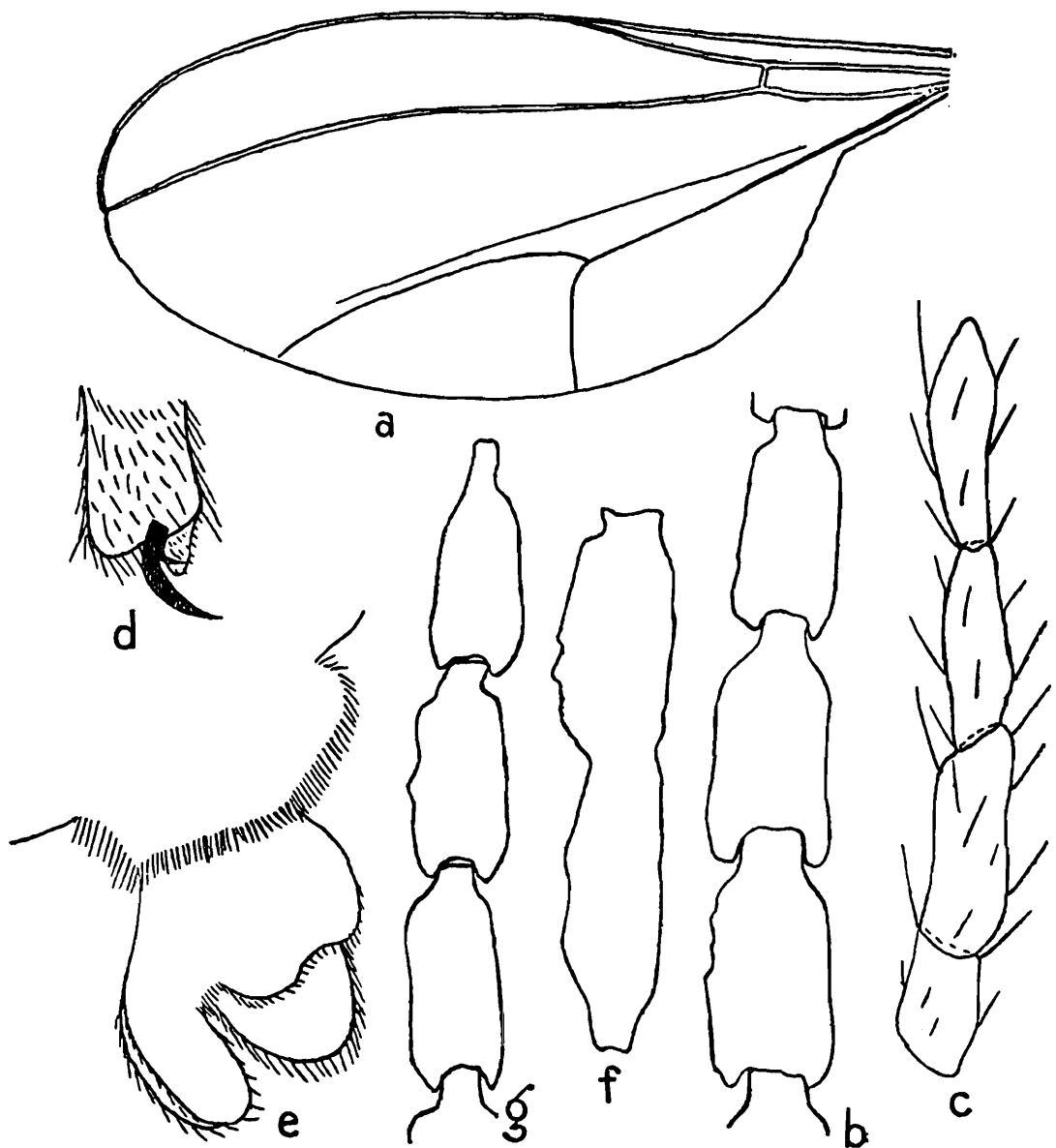
Key to species

1. Third antennal segment twice as long as the fourth and four to five times as long as thick ; stems of the antennal segments twice as long as thick *prosoipidis* K. & J.
- Not as above 2
2. Second palpal segment longer than the first but shorter than the third and less than twice its own thickness. *dehradunensis*, sp. nov.
- Second palpal segment longer than both the first and third segments and two and a half times as long as thick *diurni*, sp. nov.

8. *Vanchidiplosis brevipalpi*, sp. nov.

♀ Length 0.9 mm. Body brown. Eyes confluent above. Trophi slightly produced. Antenna light-brown, half the length of the body, with fifteen segments, flagellate segments gradually becoming reduced and cylindrical, with two whorls of closely attached circumfila and scattered setae with very short apical stems; first and second segments not visible in the preparation ; third segment (Text-fig. 7f) confluent with the fourth, appearing as one single segment but for a slight constriction in the middle, with a very short stem at base, enlargement slightly narrower than that of the fourth segment, length of enlargement a little over two and a half times its own thickness ; fourth segment (Text-fig. 7f) little shorter than the third, with a very short neck, length of enlargement two and one-third times its own thickness ; eighth segment (Text-fig. 7b) with a small apical stem, enlargement nearly twice as long as thick, stem very short, one-seventh the length of the segment and length nearly one-fourth the thickness of the enlargement and three-fifths its own thickness ; thirteenth segment (Text-fig. 7g) cylindrical, enlargement twice as long as thick, with a stem one-fifth the length of the enlargement, broader than long, length one-twelfth its own thickness ; penultimate segment (Text-fig. 7g) cylindrical, enlargement very slightly longer than that of the preceding segment, length very little over twice the thickness, stem shorter than that of the preceding segment, broader than long ; terminal segment (Text-fig. 7g) with a small knob of nearly one-third the length of the segment and twice as long as thick. Palpi (Text-fig. 7c) short, blackish-brown, with scanty hairs, first segment cylindrical, broadest at the apical three-fourths, length a little over one

and one-fourth times the maximum thickness ; second segment cylindrical, very slightly shorter than twice the length of the first and also a little less than thrice its own thickness ; third segment cylindrical, ends tapering, very slightly shorter than the second, length thrice its own thickness ; fourth segment cylindrical, ends tapering, longest of all, length four and a half times its own thickness. Mesonotum blackish-brown, scutellum and postscutellum brown. Halteres pale brown. Abdomen brown. Wing (Text-fig. 7a) hyaline, length nearly two and three-eighth the width, with four long veins, costa interrupted at its union with vein R_5 , vein R_s



TEXT-FIG. 7.—*Vanchidiplosis brexipalpi*, sp. nov

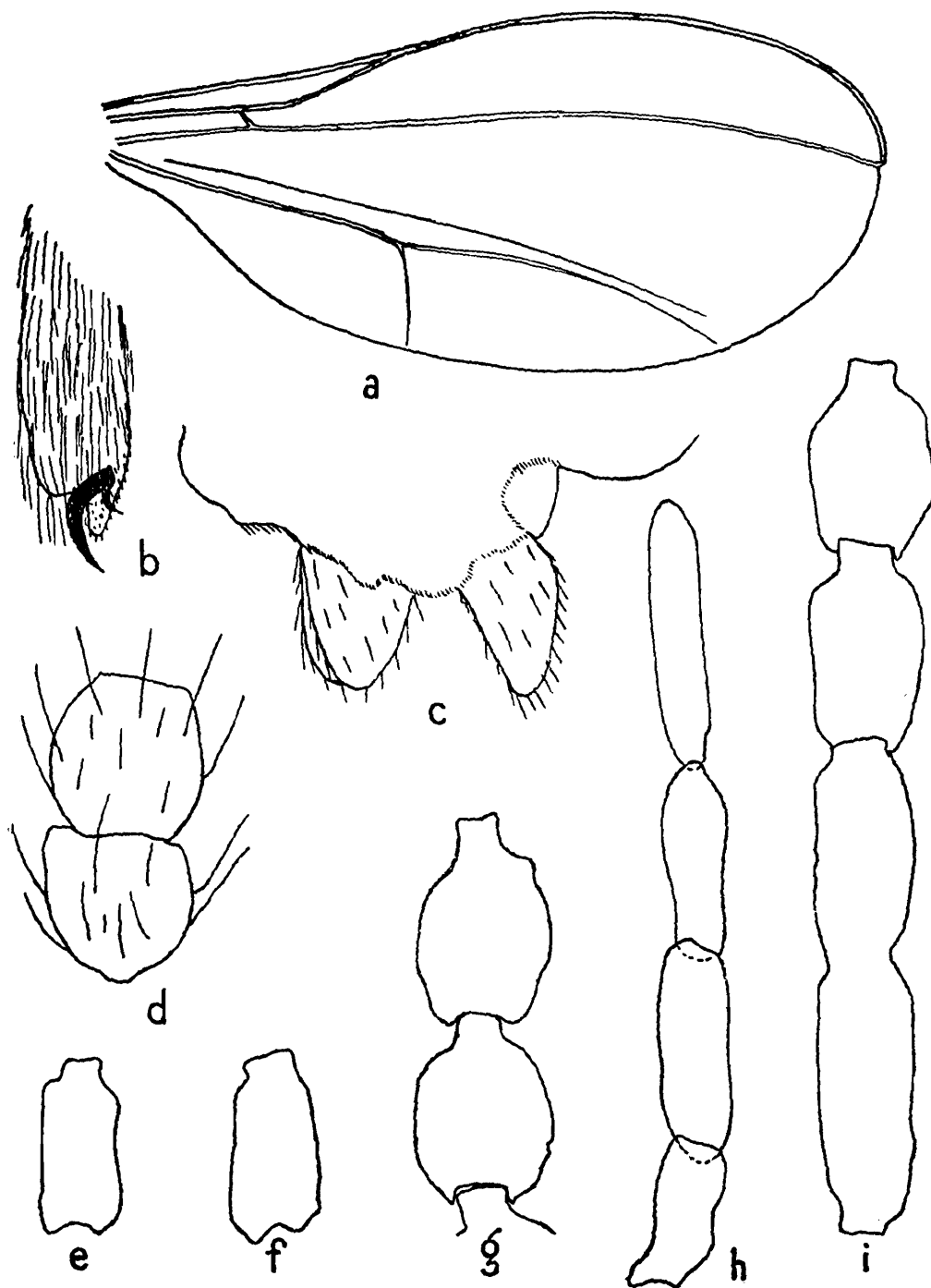
(a). Wing. (b). Sixth, seventh and eighth antennal segments. (c). Palpi. (d). Claw. (e). Ovipositor. (f). Third and fourth antennal segments. (g). Thirteenth, fourteenth and fifteenth antennal segments.

distinctly at right angles, vein R_5 reaching the margin of wing well beyond the apex, vein M obsolete both apically and distally, vein M_4-m-Cu forked. Legs long, hairy, brown, metatarsus shorter than the terminal tarsal segment. Claw (Text-fig. 7d) dark brown, bifid basally, evenly curved, empodium a little less than half the length of claw. Ovipositor (Text-fig. 7e) slightly exerted with elongate oval lobes.

Holotype : 1 ♀ dissected and mounted on slide labelled "On wing, at light, Aizaz Manzil, Agra, S. N. Rao Coll., 29-9-1950"

9. *Vanchidiplosis longipalpi*, sp. nov.

♀ Length 1.1 mm. Body yellowish-brown. Eyes confluent above. Trophi very slightly produced. Antenna light brown, a little less than half the length of body, with fifteen segments, flagellate segments gradually becoming reduced, cylindrical, (some segments are nearly globose),



TEXT-FIG. 8.—*Vanchidiplosis longipalpi*, sp. nov.

(a). Wing. (b). Claw. (c). Ovipositor. (d). First two antennal segments. (e). Twelfth antennal segment. (f). Ninth antennal segment. (g). Seventh and eighth antennal segments. (h). Palpi. (i). Third, fourth, fifth and sixth antennal segments.

with two whorls of closely attached circumfila and with hairs irregularly placed in two whorls, with very short apical stems, first and second segments as in Text-figure 8d; third segment (Text-fig. 8i) confluent with fourth, with a very small stem at base, slightly longer than fourth segment, enlargement two and a half times as long as thick; fourth segment

shorter than the third, appearing as though it is only one single segment with a small constriction in the middle, enlargement two and three-fifths as long as thick, length of stem two-thirds its own thickness; seventh segment as in Text-figure 8g; eighth segment (Text-fig. 8g) nearly globose, enlargement two and one-fourth times as long as thick, with a stem one-sixth the length of the enlargement and one-third its own thickness; ninth segment as in Text-figure 8f; twelfth segment as in Text-figure 8e; thirteenth segment partly shrunk, nearly globose, enlargement twice as long as thick, with a stem one-tenth the length of the enlargement and half as long as thick; penultimate segment partly shrunk, nearly globose, enlargement thrice as long as thick, with a stem which is broader than long; terminal segment as long as the penultimate, with a knob of two-fifths the enlargement, and four times as long as thick. Palpi (Text-fig. 8h) long, brown, quadriarticulate, with scattered hairs, first segment shortest of all, nearly cylindrical, length one and two-fifths the maximum thickness, at the apical three-fourths; second segment cylindrical, a little less than twice the length of the first and nearly thrice as long as thick; third segment nearly as long as the second, slender, nearly cylindrical, with the ends tapering, length four times the maximum thickness at the apical third; fourth segment longest of all, length nearly five times its own thickness. Mesonotum brown, scutellum and postscutellum lighter. Halteres pale yellow. Abdomen yellow. Wing (Text-fig. 8a) hyaline, two and three-eighths as long as broad, with four long veins and the veins moderately scaled, costa interrupted at its union with vein R_5 , vein R_s distinct and nearly at right angles to vein R_1 , vein R_5 slightly curved and reaching the wing margin well beyond the apex, vein M obsolete at the ends, vein M_4-m-Cu forked. Legs long, hairy, yellowish-brown, metatarsus three-fourths the terminal tarsal segment. Claw (Text-fig. 8b) brown, evenly curved, bifid basally, empodium half the length of the claw. Ovipositor (Text-fig. 8c) slightly exerted with broadly oval lobes.

Holotype: 1 ♀ dissected and mounted on slide labelled "At light, Hewett Park, M. S. Mani Coll., Agra, August 1947"

This species is distinguished from *V brevipalpi* Rao in the differences in the antennal segments, the antenna measuring less than half the length of the body, the third antennal segment being longer than the fourth, the second and third palpal segments being equal in length, and in the claw being twice the empodium. Its relationship with other species is shown in the following key:

Key to species

- | | |
|--|----------------------|
| 1. Terminal palpal segment spatulate, longer than the third; empodium nearly equal to claw; lobes of ovipositor oval | <i>vanchi</i> Nayar |
| Terminal palpal segment cylindrical; empodium half or one-fourth the length of claw | 2 |
| 2. Terminal palpal segment nearly equal to the third; empodium half the length of claw; lobes of ovipositor triangular | <i>agraensis</i> Rao |

Terminal palpal segment longer than the third ; lobes
of ovipositor oval 3

3. Antenna half the length of body ; third and fourth
antennal segments equal ; second palpal segment
shorter than the fourth ; empodium less than half
the length of claw *brevipalpi*, sp. nov.

Antenna less than half the length of body ; third
antennal segment longer than the fourth ; empodium
half the length of claw *longipalpi*, sp. nov.

III—SUMMARY

The paper contains descriptions of nine new species of gall midges from India, namely, *Johnsonomyia indica*, *Haplusia elliptica*, *Neohaplusia inaequipalpis*, *Lasioptera orientalis*, *Bryocrypta deepica*, *Liebeliola dehradunensis*, *L. diurni*, *Vanchidiplosis brevipalpi* and *V. longipalpi*. It also contains keys to the known Indian species of the genera *Haplusia*, *Neohaplusia*, *Lasioptera*, *Bryocrypta*, *Liebeliola* and *Vanchidiplosis*.