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An illustrated key to the Families of order Diptera as known to occur in Egypt

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ABSTRACT

The present work provides a new illustrated key to the dipterous families represented in Egypt to facilitate the recognition and identification of these families. The key is based on the most distinctive and differentiated morphological characters.

Keywords: Diptera, key of Families, Egypt

INTRODUCTION

Flies of the order Diptera are of the most important insects and of wide distribution in all parts of the world, except in the Antarctic Circle. Some of them are pests of highly economic important plants; many are vectors of dangerous diseases for man and animal and cause threat in various parts of the world and exert effective serious problems (Borror and Triplehorn, 1976; Hendel, 1936-37; Lindner and Erwin, 1928; Oldroyd, 1949 in addition to Yeast and Wiegmann, 2005).

The recent world catalogues of the order lists over 100 valid families and approximately 240.000 species (James, 2008), of them 65 families, and 1339 species (Steyskal, 1967) are recorded in Egypt. Due to the lack of illustrated taxonomic keys for the representative families of the order in Egypt, the present work was planned to construct a new key to facilitate the recognition and separation of the families and for the benefit of entomologists interested in the dipterous insect fauna of Egypt. The present key cover the various dipterous keys in the literature, text books, taxonomic catalogues and the work of many authors, (Nagatomi, 1991; Wood, 1989; Yeates and Wiegmann, 1999; Thompson, 2005; Evenhuis, 1994; Hennig, 1973; Wood and Borkent, 1989; Wood, 1991; Kristensen, 1991; Griffiths, 1996; Kukalova-Peck, 1991; Merritt et al., 2003; and Kitching et al., 2005; McAlpine, 1989). Who gave the main classifications of the higher categories of the order, in other hand many literature that deal with the main morphological characters are used (McAlpine and Wood, 1983; McAlpine and wood, 1981&1987; Wiegmann, & Thompson, 1993; Verral, 1909 and wood, 1991).

Many particular references that deal with separated suborders and there sections by using a morphological characters or by phylogeny and classification of the suborders are recognized for the purpose of the key, (Bickel, 1982; Evenhuis, 1995; Hendel, 1928; Papavero, 2003; Wiegmann and Kishino, 2003; Wood, 1991 and yeast, 2007) to explained and provide a true variation in many families of the order.

The present work is considered also as a contribution and updating to the work of (Steyskal, 1967), who provided a checklist of order Diptera in Egypt including families and species together with their synonyms and representative material in various insect collections and other taxonomic notes and a key to the families. It is hoped that this work will serve and provide a stimulus for further taxonomic and zoogeographic work.

MATERIALS AND METHODS

The present work depends mainly on reviewing the literature, taxonomic catalogues and several keys concerning the order Diptera as (Bickel, 1990; Curran, 1934; Friedrich, 1997; Lawrence, 1992; Papavero and Ibanez-Bernal, 2001 and Sabrosky, 1999).

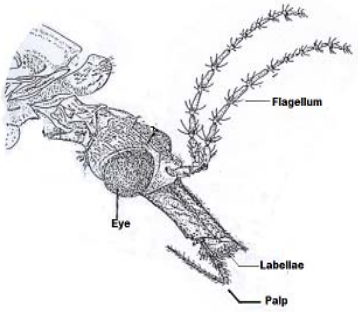
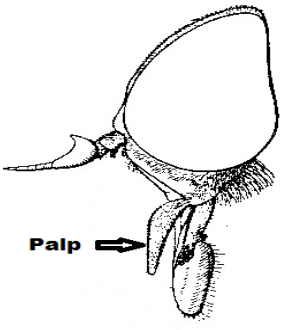
The key is constructed based on the main taxonomic features that differentiate and separate the families, provided with illustrations of the diagnostic characters of adults.

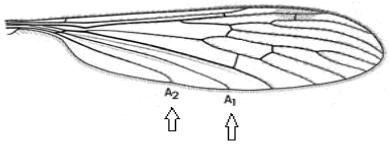
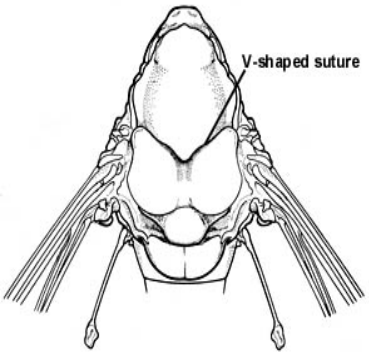
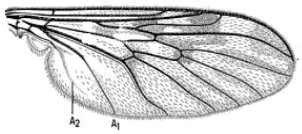
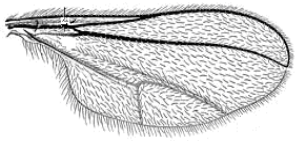
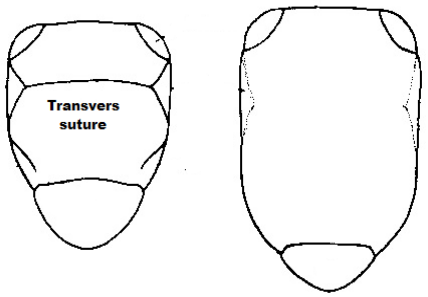
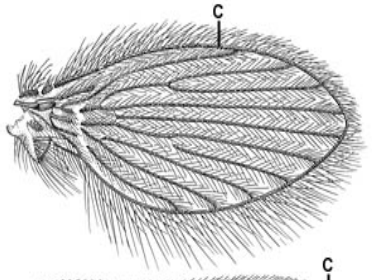
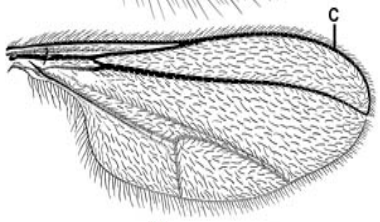
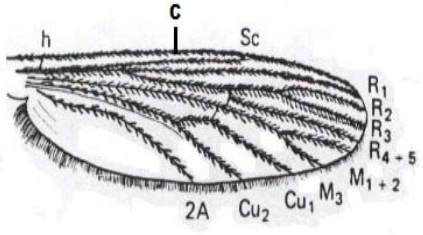
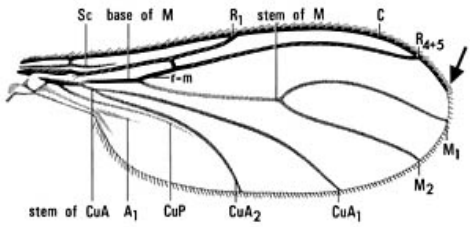
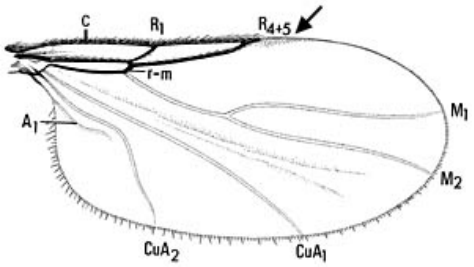
The main characters used in the key include antennae especially third antennal segment which an important characters to separate the two suborders Nematocera and Brachycera, the palpus, ocelli, the size of mouth opening, ptilinal fissure (suture), the relation between the size of head and thorax, shape of head, compound eye, Proposcis which separate the piercing sucking species from each other, also the wing venation, mesonotal suture, postnotum, pulvilli, the spurs on tibia specially the hind one, coxae, in additional to the end of abdomen.

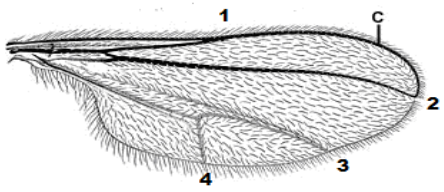
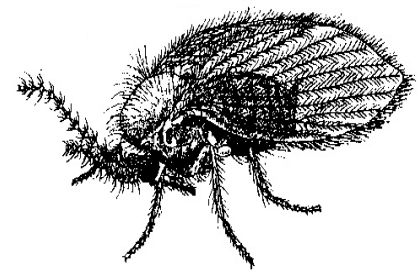
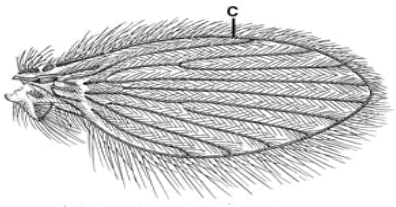
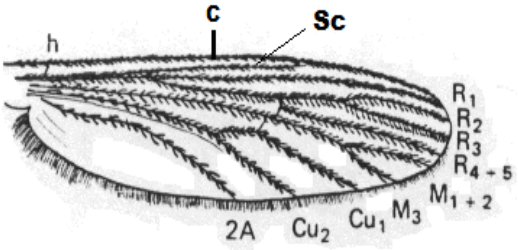
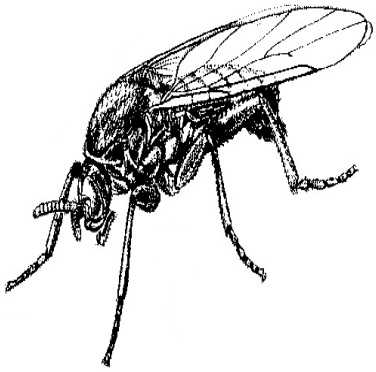
Some parts were drawn directly from the mounted insect, while others were pieced by USP microscope but others taken from literature.

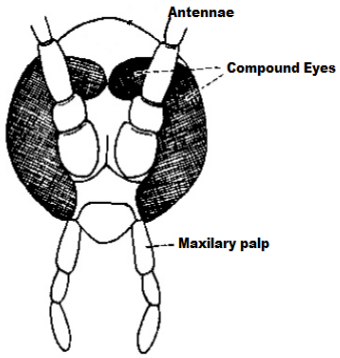
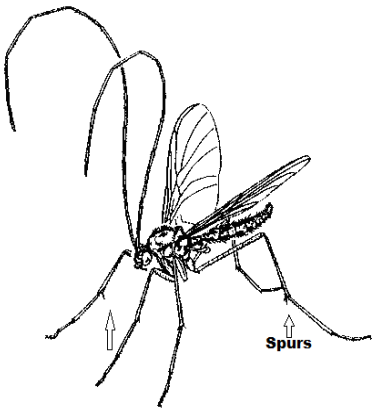
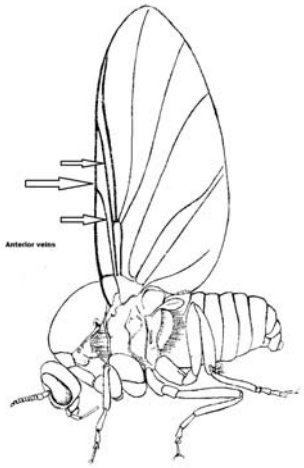
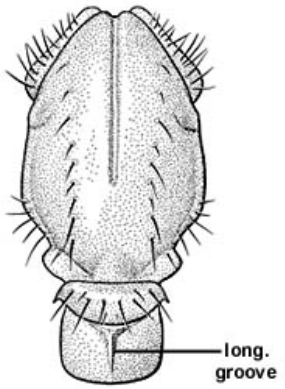
RESULTS

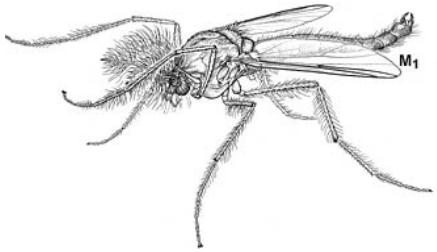
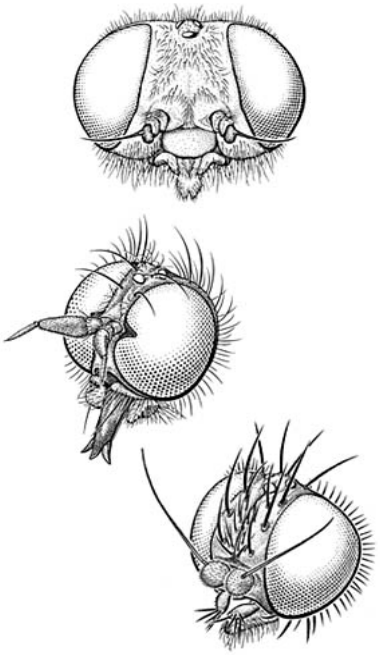
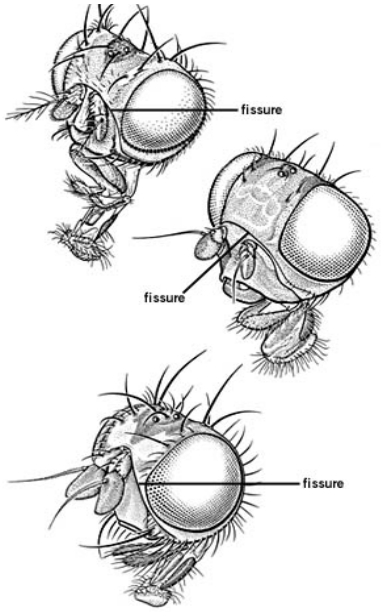
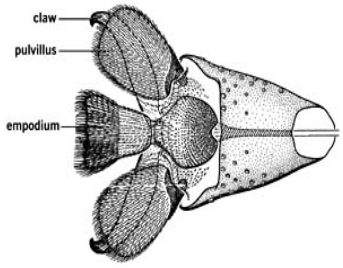
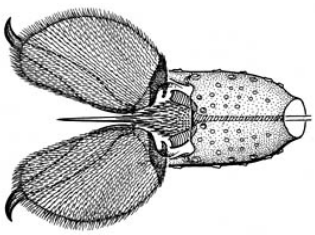
Key to the families of Order Diptera exist in Egypt

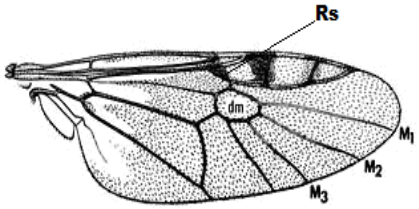
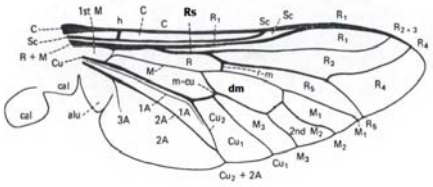
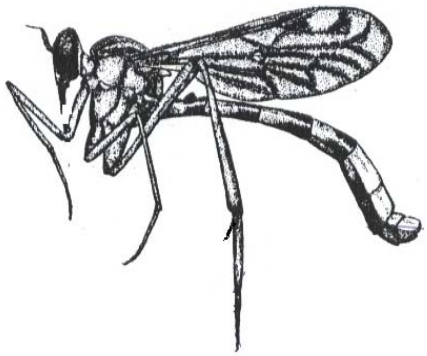
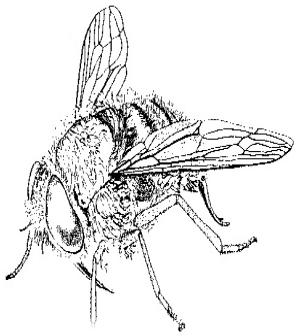
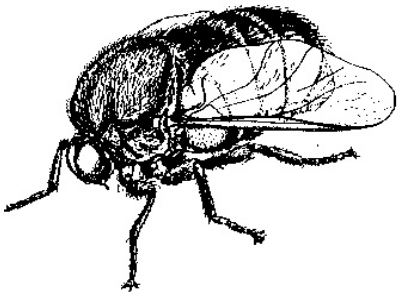
Either:	**Or:**
1a. Third antennal segment with four or more freely articulated flagellomeres.  **Go to (1b)**	**1a`.** Third antennal segment usually consolidated into one compound segment, typically with a terminal to dorsal stylus or arista.  **Go to (1b`)**
Either:	**Or:**
1b. Palpus usually with three to five segments.  **NEMATOCERA** **(Go to 2)**	**1b`.** palpus with fewer than three segment.  **BRACHYCERA** **(Go to 13)**

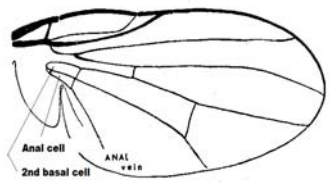
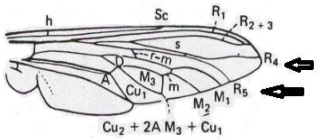
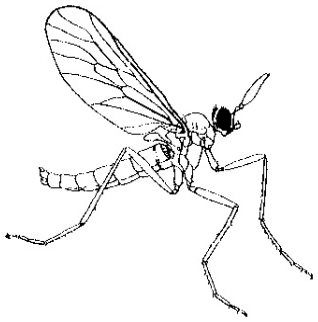
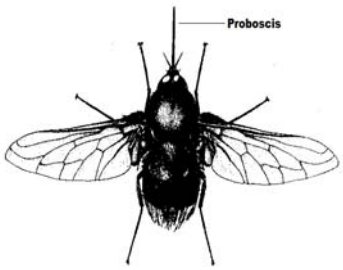
Either :	**Or:**
2a. Wing with two strong anal veins A1 and A2 reaching to the wing margin; V-shaped mesonotal suture present.   **Tipulidae**	**2a`.** Wing with at least A_2 absent or faded out before reaching wing margin; wing with fewer than 10 veins reaching to margin; V- shaped mesonotal suture absent.    **Go to (3)**
ither:	**Or:**
3a. Wing with scales **Go to (4a)**	**3a`.** wing without scales **Go to (4a`)**
4a. Wing with C continuing around margin, sometimes with a break beyond insertion of last branch of R, often weaker along hind margin.    **Go to (5)**	**4a`.** Wing with C distinctly ending at or before wing tip.   **Go to (7)**

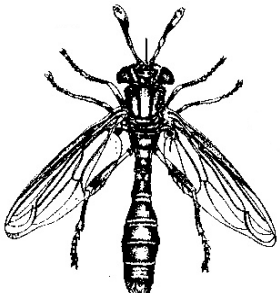
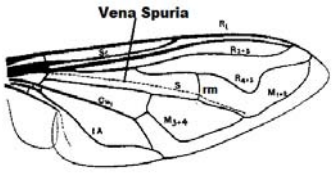
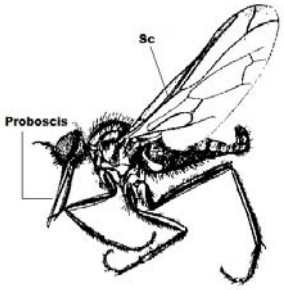
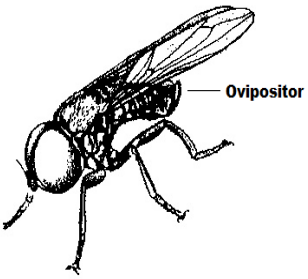
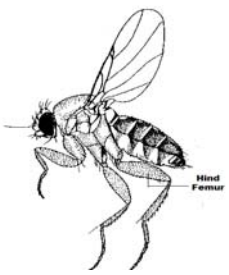
Either:	**Or:**
5a. Wing with at least 9 veins reaching margin. **Go to (6)**	**5a`.** Wing with much fewer 9 veins reaching margin.  **Cecidomyiidae**
Either:	**Or:**
6a. Subcosta free, not ending in Costa   **Psychodidae**	**6a`.** Subcosta ending in costa.  **Culicidae**
Either:	**Or:**
7a. Ocelli present. **Go to (8)**	**7a`.** Ocelli absent. **Go to (10)**
Either:	**Or:**
8a. Tibia without apical spurs.  **Scatopsidae**	**8a`.** Tibia with apical spurs. **Go to (9)**

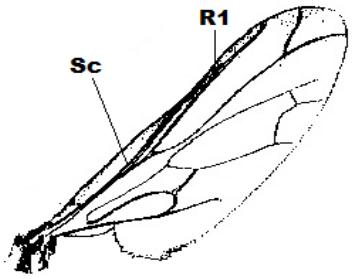
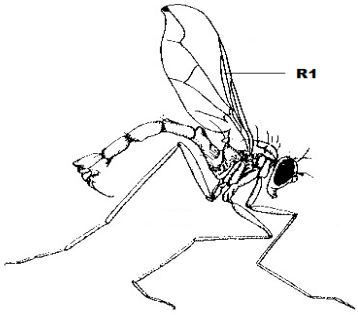
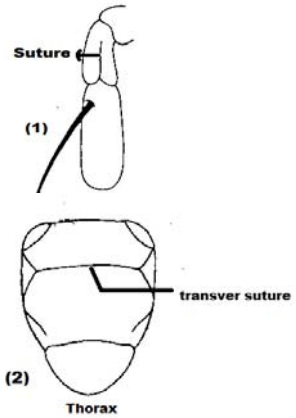
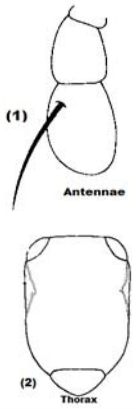
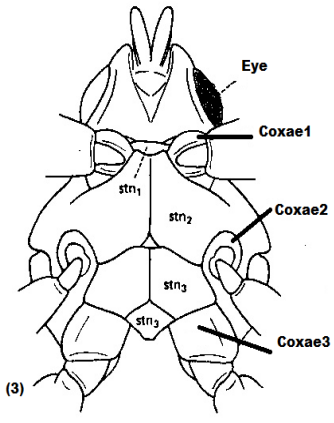
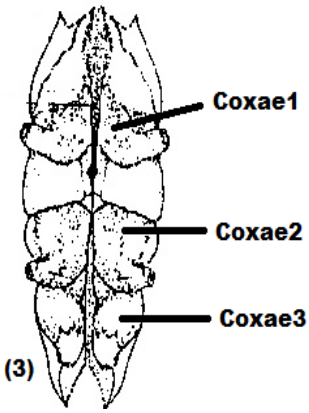
Either:	**Or:**
9a. Eye connected above antennae.  **Sciaridae**	**9a`.** Eye not connected above antennae.  **Mycetophilidae**
Either:	**Or:**
10a. Anterior veins more strongly develop.  **Simuliidae**	**10a`.** Veins equally developed. **Go to (11)**
Either:	**Or:**
11a. Postnotum without a longitudinal groove. **Go to (12a)**	**11a`.** Postnotum with a longitudinal groove.  **Go to (12a`)**

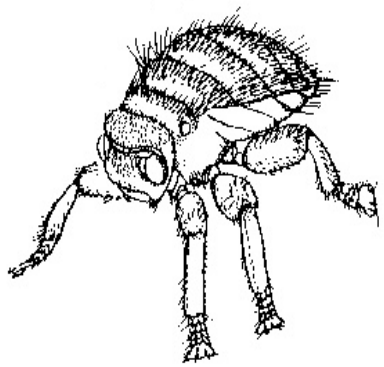
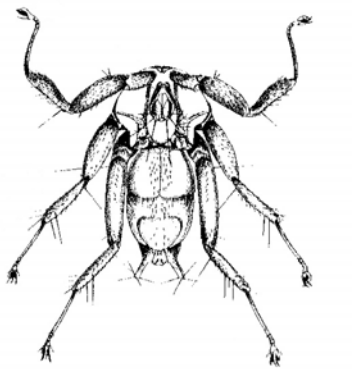
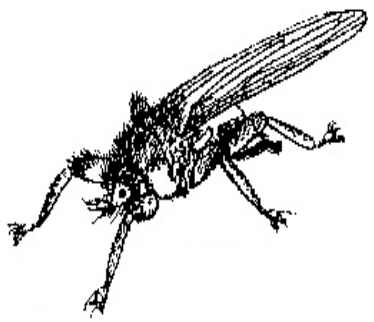
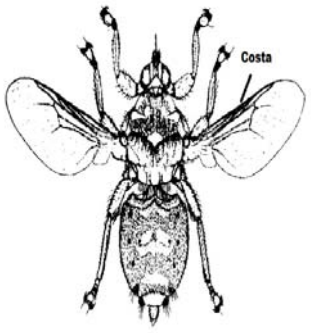
Either:	**Or:**
12a. Front legs not lengthened; wings overlapping when at rest, M with 2 branches  **Ceratopogonidae**	**12a`.** Front legs lengthened; wings held at an angle when at rest, M with 1 branche.  **Chironomidae**
Either:	**Or:**
13a. ptilinal fissure (suture) and lunule absent. **Brachycera (Cyclorrhapha - Aschiza)**  **Go to (14)**	**13a`.** ptilinal fissure (suture) and lunule present. **Brachycera (Cyclorrhapha – Schizophora)**.  **Go to (29)**
Either:	**Or:**
14a. Three Pulvilli Present (Empodium pulvilli form). Head and thorax with strong bristles.  **Go to (15)**	**14a`.** At most, two Pulvilli (Empodium setiform, or absent), sometimes the two pulvilli also absent. Bristles often well developed on head and thorax.  **Go to (19)**

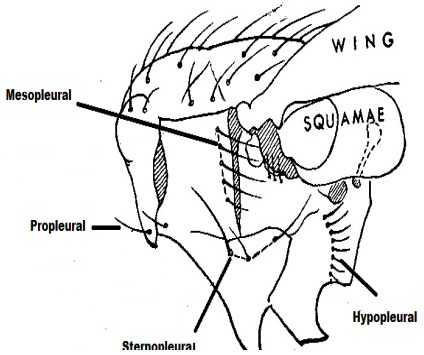
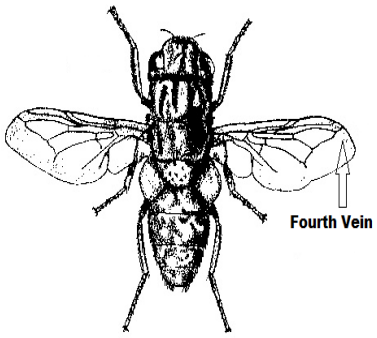
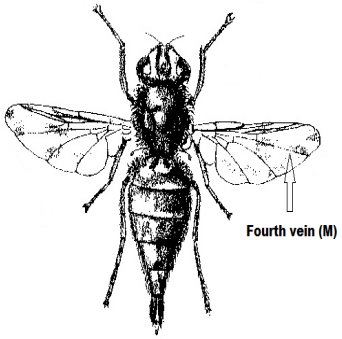
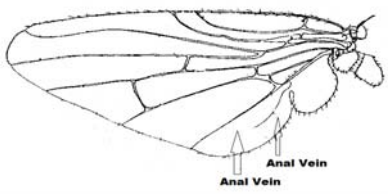
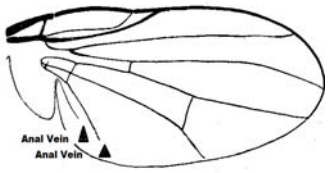
Either:	Or:
15a. Rs Arising opposite base of discal cell, wing with cell (dm) short.  **Stratiomyidae**	**15a`.** Rs arising closer to wing base before of discal cell except in some cases, wing with cell (dm) long. **Go to (16)**
Either:	**Or:**
16a. Rs vein arising distinctly before base of discal cell, R4 and R5 widely divergent.  **Tabanidae**	**16a`.** Rs vein rather arising befor base of discal cell. R4 and R5 not widely divergent. **Go to (17)**
Either	**Or**
17a. Hind tibia with spurs; proboscis short in Egyptian species  **Rhagionidae**	**17a`.** Hind tibia without spurs or vestigial; proboscis often quite long. **Go to (18)**
Either:	**Or:**
18a. Head as wide as thorax  **Nemestrinidae**	**18a`.** Head much narrower than the swollen thorax.  **Acroceridae**

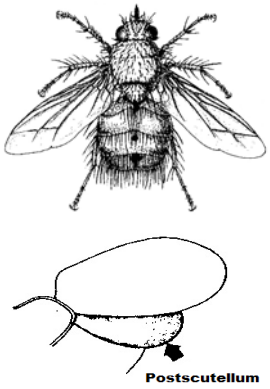
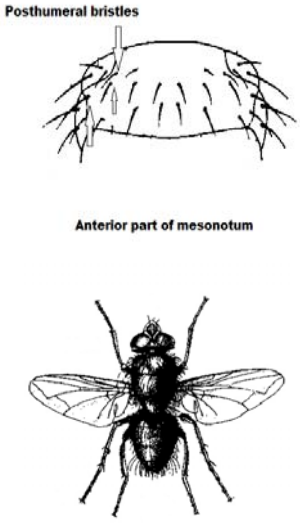
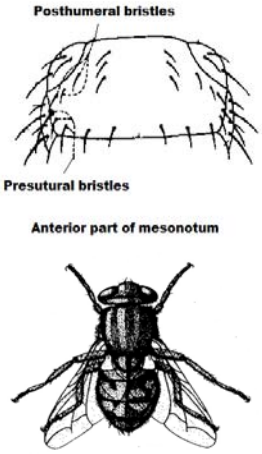
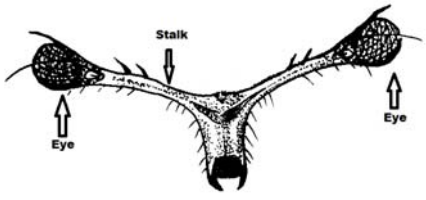
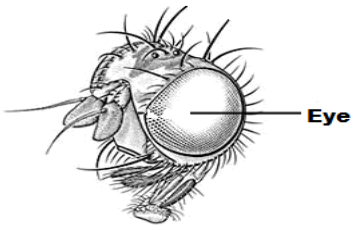
Either:	**Or:**
19a. anal cell of wing distinctly longer than second basal cell, either open or closed in or near wing margin. **Go to (20)**	**19a`.** Anal cell short, rarely pointed closing some distance from wing margin.  **Go to (27)**
Either:	**Or:**
20a. Vein Rs 3- branched, R4 and R5 separate  **Go to (21)**	**20a`.** Vein Rs 2-branched, R4 and R5 united. **Go to (24)**
Either:	**Or:**
21a. Top of head flat or convex, eyes not bulging, those of male often meeting**.** **Go to (22)**	**21a`.** Top of head sunken, eye bulging and never meeting. **Go to (24)**
Either:	**Or:**
22a. Body bare; third antennal segment without style or arista; costa absent on hind margin of wing; rather small flies with flattened abdomen  **Scenopinidae**	**22a`.** Body with hairs, bristles, or scales; costa continuing all around wing; flies of small to large size **Go to (23).**
Either:	**Or:**
23a. Vein M 4 - branched; proboscis short.  **Therevidae**	**23a`.** Vein M 2 - or 3 - branched; proboscis often long.  **Bombyliidae**

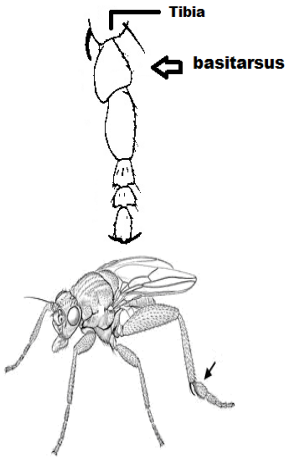
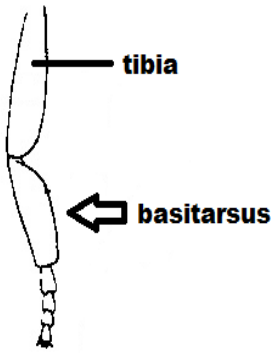
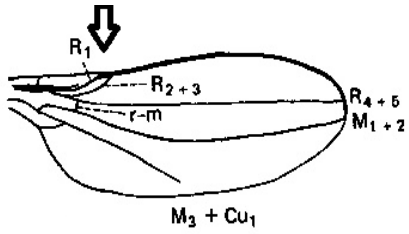
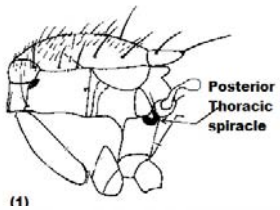
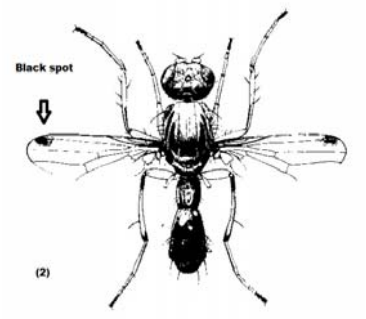
Either:	Or:
24a. Third antennal segment club or boot-shaped; body without bristles; venation complex; ocelli reduced to one or absent.  **Mydidae**	**24a`.** Third antennal segment not club or boot-shaped, with apical style or arista; body with bristles; venation close to basic type; 3ocelli present.  **Asilidae**
Either:	**Or:**
25a. Wing with 1st posterior cell closed, veins R5 and M1 united apically; cross-vein rm crossed by a false vein (vena spuria); ovipositor soft, retractile  **Syrphidae**	**25a`.** Wing with 1st posterior cell open, although often strongly narrowed at tip; vena spuria lacking. **Go to (26)**
Either:	**Or:**
26a. Proboscis firm, stout, adapted for piercing; vein Sc Vanishing before reaching costa; ovipositor directed backwards  **Empididae**	**26a`.** Proboscis small and soft; vein Sc ending in costa; ovipositor turned forward, base swollen, ovipositor tip sharply pointed  **Pipunculidae**
Either:	**Or:**
27a. Discal cell lacking, long veins weak and pale; eyes widely separated; small to very small flies with broad and flat hind femur  **Phoridae**	**27a`.** Discal cell (or also second basal cell) usually present; eyes of male sometimes meeting. **Go to (28)**

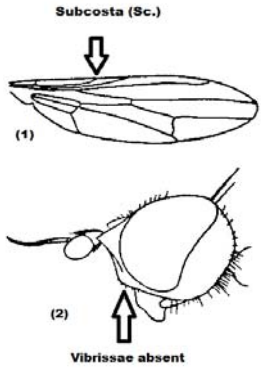
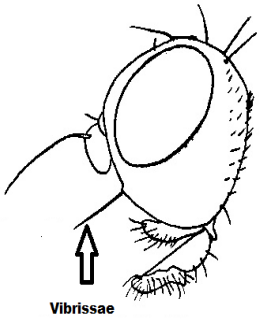
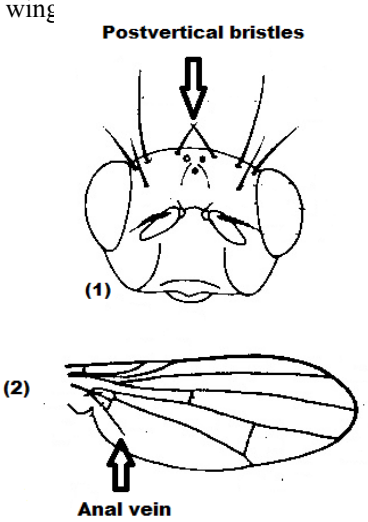
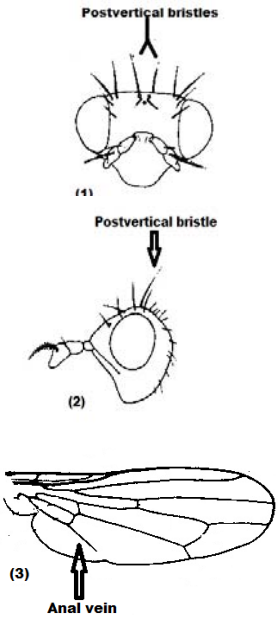
Either:	Or:
28a. Vein R1 ending near middle of wing; cross vein rm beyond basal of wing; Egyptian species non-metallic in color.  **Empididae**	**28a`.** Vein R1 usually ending much beyond middle of wing; cross vein rm within basal fifth of wing; usually flies of metallic greenish color  **Dolichopodidae**
Either:	**Or:**
29a. Second antennal segment nearly always with longitudinal seam(1); lower calypter usually large and thorax nearly always with a complete transverse suture before wings (2).  **Calyptratae Go to (30)**	**29a`.** Second antennal segment usually without longitudinal seam (1); lower calypter vestigial and thorax without complete transverse suture before wings (2).  **Acalyptratae Go to (40)**
Either:	**Or:**
30a. Hind Coxae broadly separated.  **Go to (31)**	**30a`.** Hind coxae closed together  **Go to (34)**

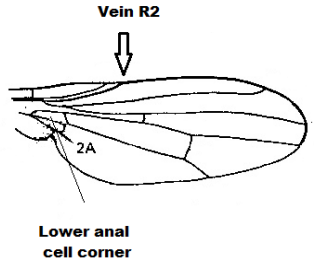
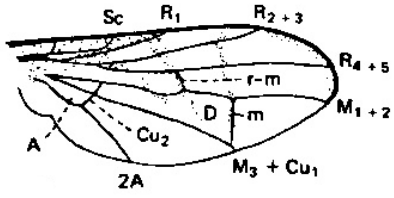
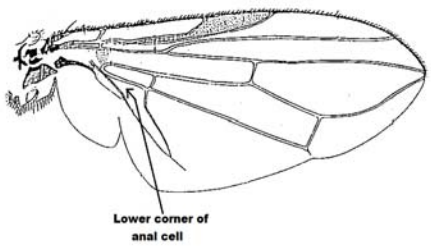
Either:	Or:
31a. Wingless flies with short mesonotum resembling abdominal segment; scutellum absent; parasites of honey bees.  **Braulidae**	**31a`.** Winged or wingless flies; thorax distinct from abdomen, sculellum developed; parasites of vertebrates. **Go to (32)**
Either:	**Or:**
32a. Head small, capable of folding back up on mesonotum; wingless, long-legged species parasitic upon bats.  **Nycteribiidae**	**32a`.** Head not folding back upon mesonotum; abdominal segments more or less united; winged or wingless parasites of birds and mammals. **Go to (33)**
33a. Wing veins not crowded along costa;  **Streblidae**	**33a`.** Stronger wing veins crowded along costa.  **Hippoboscidae**

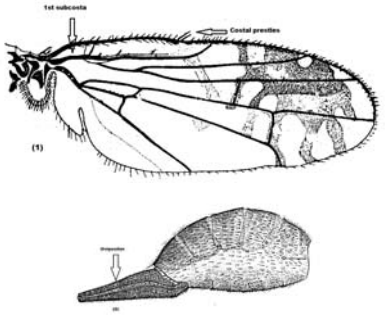
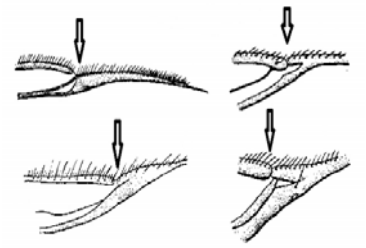
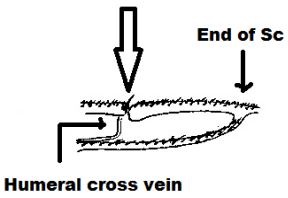
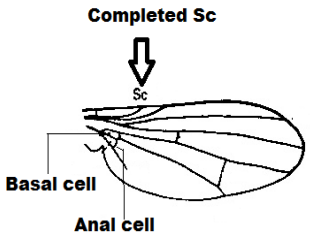
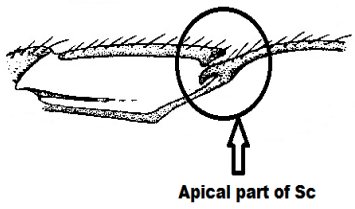
Either:	**Or:**
34a. Mouth opening small, proboscis vestigial or wanting; sternopleural bristles absent: hypopleuron with long thin hairs or bare. **Go to (35)**	**34a`.** Mouth opining large, mouth parts well developed; usually at least one sternopleural bristle present; hypopleuron bare, with fine hairs, or with vestigial row of bristles.  **Go to (36)**
Either:	**Or:**
35a. Hypopleural hairs present; fourth vein turned forward, ending in or near apical part of third vein and before wing tip  **Oestridae**	**35a.** Hypopleural hairs absent; fourth longitudinal vein (M) weakened apically, but directed to margin well behind wing tip.  **Gasterophilidae**
Either:	**Or:**
36a. Hypopleural bristles absent, sometimes a few fine hairs present. **Go To (37)**	**36a`.** Hypopleural bristles present with distinct vertical row. **Go to (38)**
Either:	**Or:**
37a. Anal vein complete to margin of wing, although often faint toward end; under side of scutellum usually with fine hairs.  **Anthomyiidae**	**37a`.** Anal vein not reaching margin, even faintly; under side of scutellum very rarely with fine hairs.  **Muscidae**

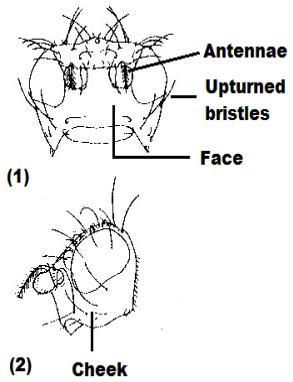
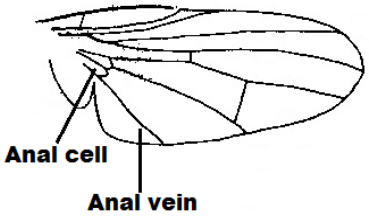
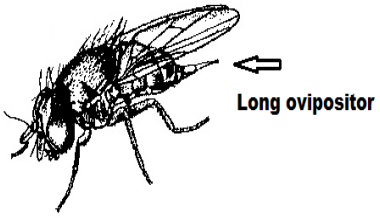
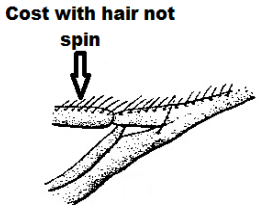
Either:	Or:
38a. Postscutellum well developed as rounded ridge immediately below scutellum.  **Tachinidae**	**38a`.** Postscutellum little or not at all developed. **Go to (39)**
Either:	**Or:**
39a. Hindmost posthumeral bristles placed closer to lateral suture of thorax than is presutural, or only forward posthumeral present; abdomen metallic blue, green, or bronzy or mesonotum with crinkly yellowish hairs between the black bristles.  **Calliphoridae**	**39a.** Hindmost posthumeral and presutural bristles equidistant from lateral thoracic suture or presutural closer to suture; abdomen grayish pruinose with checkered pattern or darker markings; thorax without crinkly yellowish hairs between the black bristles.  **Sarcophagidae**
Either:	**Or:**
40a. Eyes at end of long stalks  ***Diopsidae** (New recorded family in Egypt)	**40a`.** Eyes not on stalks  **Go to (41)**

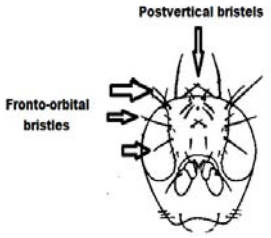
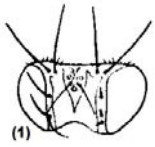
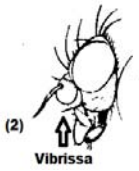
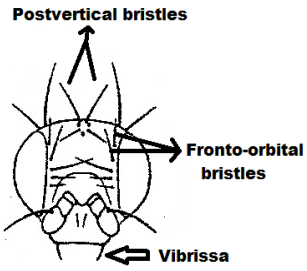
Either:	Or:
41a. Hind basitarsus thicker and usually distinctly shorter than second segment.  **Sphaeroceridae**	**41a`.** Hind basitarsus usually only slightly thicker and always distinctly longer than second segment.  **Go to (42)**
ither:	**Or:**
42a. Vein R3 very short, ending before middle of wing and curved forward to end close to end of R1.  **Asteiidae**	**42a`.** Vein R3 ending at or beyond middle of wing. **Go to (43)**
Either:	**Or:**
43a. One or more distinctly bristly hairs present among hairs forming fringe on posterior side of posterior thoracic spiracle (fig. 1); wing often with blackish spot at tip of R3(fig. 2); palpi vestigial; slender usually metallic purplish or black flies.  (1)  (2) **Sepsidae**	**43a`.** Fringe of fine and short hairs only on posterior thoracic spiracle; wing usually without such spot at tip of vein R3 and usually not of metallic purplish color nor with vestigial palpi. **Go to (44)**

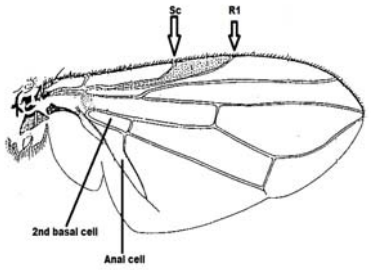
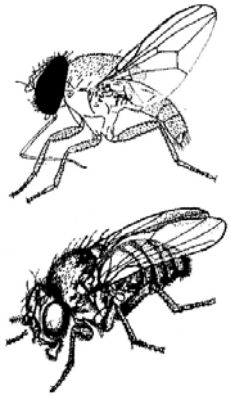
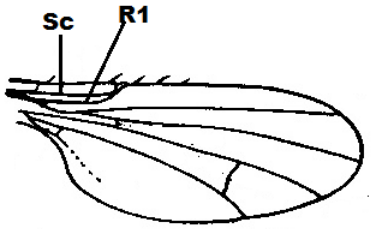
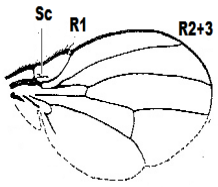
Either:	Or:
44a. Vein Sc complete (fig. 1); vibrissae absent (fig. 2); legs very long, straight, and slender; abdomen also long.  **Micropezidae**	**44a`.** Vein Sc complete or reduced; vibrissae present or absent; legs not especially long and slender.  **Go to (45)**
Either:	**Or:**
45a. Costa without interruption, neither near humeral crossvein nor before tip of R1; Sc. Complete and ending in costa some distance before tip of R1; vibrissae absent. **Go to (46)**	**45a`.** Costa more or less interrupted or greatly weakened at end of Sc (or where Sc would end in case it is reduced) or at end of R1 and sometimes also near humeral crossvein; Sc complete or reduced; vibrissae present or absent. **Go to (51)**
Either:	**Or:**
46a. At least middle tibia with distinct dorsal bristle close to tip (preapical bristle); ovipositor short, retractile. **Go to (47)**	**46a`.** Dorsal preapical tibil bristle absent on all tibia; sclerotized ovipositor present. **Go To (48)**
47a. Postvertical bristles convergent (fig 1); mesopleural britle present; anal vein strong on basal half and more or less abruptly discontinued midway to wing  **Lauxaniidae**	**47a`.** Postvertical bristles parallel or divergent (fig 1,2); mesopleural bristle absent or replaced by a row of hairs; anal vein reaching wing margin (fig 3), although sometimes only faintly.  **Sciomyzidae**

Either:	**Or:**
48a. Ocelli absent.  **Pyrgotidae**	**48a`.** Ocelli Present. **Go to (49)**
Either:	**Or:**
49a. Wing hyaline; anal cell small, lower corner not pointed; vein R1 bare; ovipositor membranous, tip of abdomen not specialized; small, usually pale gray flies, sometimes with black spots on abdomen and brown stripes on mesonotum.  **Chamaemyiidae**	**49a`.** Wing often with color pattern, anal cell large or with pointed lower corner; vein R1 sometimes with small bristles above; ovipositor flattened, spear-like, and more or less retractile into flattened tip of abdomen; flies seldom pale gray in color. **Go to (50)**
Either:	**Or:**
50a. Anal cell A, not pointed in lower corner, second basal cell half as long as discal cell; flies with dark wing pattern, but body neither metallic colored nor heavily pruinose.  **Platystomatidae**	**50a`.** Anal cell pointed in lower corner, but it and second basal cell short; flies either without wing pattern and of shining or metallic body color or with dark wing pattern and pruinose thorax.  **Otitidae**

Either:	Or:
51a. Vein Sc ending suddenly and sending a fold forward to costa, at which point there are a pair of more or less distinct bristles (fig 1); vibrissae and preapical tibial bristles absent; lower orbital bristles present: wing usually with color pattern; ovipositor spear-like (fig 2).  **Tephritidae**	**51a`.** Otherwise **Go to (52)**
Either:	**Or:**
52a. Costa interrupted or greatly weakened only at end of Sc.  **Go to (53)**	**52a`.** Costa greatly weakened or interrupted near humeral corossvein.  **Go to (61)**
Either:	**Or:**
53a. Sc complete; second basal and anal cells present.  **Go to (54)**	**53a`.** Sc incomplete or vestigial, apical part represented by a fold; second basal and anal cells present or absent.  **Go to (58)**
Either:	**Or:**
54a. Vibrissae and dorsal preapical tibia bristles absent; postvertical bristles parallel to divergent. **Go to (55)**	**54a`.** Vibrissae present; preapical tibial bristles present or absent; postvertical bristles various. **Go to (56)**

Either:	**Or:**
55a. Vein at end cell straight, anal vein vestigial; upper part of face swollen, broadly separating antennae; upturned bristles (fig 1); front and ocellar triangle large; cheek with a few large (fig 2), dull grayish flies.  **Canaceidae**	**55a`.** Vein at end cell bowed, anal vein distinct beyond anal cell; upper part of face not swollen, antennae little separated; cheeks and front narrow; cheeks without strong upturned bristles; shining, bluish. Metallic, or black flies.  **Lonchaeidae**
Either:	**Or:**
56a. Postvertical bristles parallel, divergent, or absent; costa not spiny. **Go to (57)**	**56a`.** Postvertical bristles convergent; costa sometimes with row of spins. **Go to (58)**
Either:	**Or:**
57a. Eye large, semicircular in outline; back of head concave; ovipositor long, retractile; wing vein dark; black or dark metallic flies.  **Lonchaeidae**	**57a`.** Eyes round; back of head convex; ovipositor short, soft; wing vein nearly colorless; shining blackish, often partly yellowish  **Piophilidae**
Either:	**Or:**
58a. Dorsal preapical tibia bristle lacking; propleural bristle absent; costa not spiny; small yellow flies.  **Chyromyidae**	**58a`.** Dorsal preapical tibial bristle present; propleural bristle often present; costa spiny. **Go to (59)**

Either:	Or:
59a. Postvertical bristles convergent; presutural dorsocentral bristle present; fronto-orbital bristles directed outward; one sternopleural bristle present.  **Tethinidae**	**59a`.** Postvertical bristles divergent or absent; otherwise different. **Go to (60)**
Either:	**Or:**
60a. Dorsal preapical tibial bristles present; vibrissae present (fig 2); one presutural and three postsutural bristles present (fig 1).   **Odiniidae**	**60a`.** preapicals absent or fly otherwise different **Go to (62)**
	Or:
61a. Vibrissae present; postvertical bristles divergent; anterior fronto-orbital bristles present; sternopleural and humeral bristles present; tip of female abdomen more or less truncate-conical.   **Agromyzidae**	**61a`.** Vibrissae absent; front with only one or two pairs of very short and fine upper orbitals; sternopleural and humeral bristles lacking; tip of female abdomen not truncate-conical nor forming funnel-like ovipositor sheath; second antennal segment with groove on outer side. **Psilidae**

Either:	**Or:**
62a. Sc complete and ending in costa separated from R1; second basal and anal cells well developed; postvertical bristles divergent; vibrissae absent.  **Otitidae**	**62a`.** Sc incomplete, vestigial, or ending in R1; second basal and anal cells usually weak, small, or absent. **Go to (63)**
Either:	**Or:**
63a. Inflexed lower fronto-orbitals present; wing often with incision immediately based of end of R1; hind margin of eye often with median notch.  **Milichiidae**	**63a`.** Inflexed lower fronto-orbitals absent; wing with costal notch; eye without notch. **Go to (64)**
ither:	**Or:**
64a. Sc complete, ending in R1; both mesopleural and sternopleural bristles present; hump-backed flies.  **Curtonotidae**	**64a`.** Sc disappearing without reaching R1; both mesopleural and sternopleural not present at same time; usually quite small flies without bulging thorax.   **Drosophilidae**

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ARABIC SUMMARY

مفتاح مصور لفصائل رتبة ذات الجناحين بمصـــــر

إيمن محى الدين إبراهيم – مجدى محمد سالم
معهد بحوث وقاية النباتات – مركز البحوث الزراعية – وزارة الزراعة

تعتبر رتبة ذات الجناحين واحدة من أكبر رتب الحشرات، وتتواجد أفرادها بكثرة فى معظم الأماكن تقريبا. ويمكن تمييز أغلب أنواع الرتبة عن الحشرات الأخرى بوجود زوجا واحدا من الأجنحة وهما الجناحان الأماميان أما الجناحان الخلفيان فقد أختزلا الى جزءين صولجانيين صغيرين يعرفان بدبوسى الأتزان ويعملان كأعضاء للأتزان.

ومعظم أنواع الرتبة صغيرة الحجم نسبيا وذات أجسام لينة و بعضها غاية فى الدقة بيد أن كثيرا منها له أهمية أقتصادية كبيرة حيث تمثل بعض الأنواع آفات ضارة للكثير من المحاصيل الزراعية الهامة ءاقتصاديا فى مصر، ومنها أيضا ما يسبب أمراض شديدة الخطورة للأنسان والحيوان.

وتضم الرتبة ٦٤ فصيلة فى مصر وهذا بناء على آخر حصر قام به ستيسكال سنة ١٩٦٧، مضافا اليها فصيلة ديوبزيدى والتى سجلت لأول مرة فى مصر، ليصبح عدد الفصائل ٦٥ عائلة. من هنا كان لابد من عمل تحديث للمراتب التصنيفية العليا من خلال مفتاح مصور يساعد الباحثين المعنيين فى هذا المجال بالتعرف على الفصائل وهذا بدورة يوجه الباحث للأهمية الأقتصادية للنوع الذى يشتغل بة.

أشتملت الدراسة على ٦٥ فصيلة و تم الفصل بينها من خلال الصفات التشريحية الخارجية الظاهرة مثل قرون الأستشعار، والعيون المركبة والبسيطة، وكذلك الشعيرات التى تحيط بها، كما كان لتعريق الجناح الدور الأكبر فى التفريق بين الفصائل وبعضها، وشكل الصدر من الجهات الثلاث الظهرية والجانبية والبطنية، والأرجل وشكل عقلها مثل الفخذ والرسغ وما تحملة من شعيرات، وكان لحلقات البطن دورا هاما فى الفصل بين بعض الفصائل. وتم عرض الرسومات موضحا عليها أهم الصفات المزكورة بالمفتاح، ومنها ما قد أخذ من المراجع، ومنها ما قد تم رسمة بواسطة الأستريو ميكرو سكوب ومنها ما قد تم تصويرة ب USB ميكرسكوب.