Entomologica, XXI, Bari, 20-XII-1986

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Allocontarinia n.g., *A. sorghicola* (Coq.) n. comb. *(Diptera, Cecidomyiidae)*

ABSTRACT — A new genus, *Allocontarinia* is erected to include a morpho-biologically very unusual (Allo- *allos* = strange), though much studied, *Contarinina* (sensu RÜBSAAMEN-HEDICKE 1925-39): the species *sorghicola* Coquillet (1898). Adult and larvae morphological studies on specimens from Italian field samples and compared with original material on slides borrowed from the U.S. National Mus. of nat. Hist. Washington, together with an important biological feature (puparium formation), prove that a new genus is needed for *sorghicola*, at least until a complete revision of the genus *Contarinia* is done.

INTRODUCTION

This is not the first time, I think, that an insect, that has been studied as much as the Sorghum Midge, is to be removed from the genus where it was previously placed. The species *sorghicola* Coquillet (1898), originally described in the very general (now obsolete) genus *Diplosis* H. Lw., was later moved by FELT (1908) to another very large genus, i.e. *Contarinia* Rondani currently including about 275 described species (GAGNÉ, 1986). Actually, *sorghicola* adults are typical Contarinina (sensu RÜBSAAMEN-HEDICKE, 1925-39) but the species does not fit either in *Contarinia* or in any other related genus, as I hope to explain and prove below. I think *sorghicola* should be removed from *Contarinia* and put into a new genus (at least until a whole revision of *Contarinia* genus takes place) that I call *Allocontarinia* as it is closer to *Contarinia* than to any other related genus, but with the prefix Allo- (from Greek *allos* = strange) because it is also quite different from *Contarinia*.

MATERIALS AND METHODS

Morphological investigations have been carried out on specimens which were collected from sorghum fields near Perugia (Central Italy) from June to October 1985, then fixed, cleared and mounted on slides according to GISIN'S

method (1960). For comparison I used original material (males and females) of *Contarinia sorghicola* Coq. from U.S.A. (RILEY and CLEMSON COL.) on slides borrowed from the U.S. National Museum of Natural History, Washington D.C. The studied material has been preserved in the coll. Agricultural Entomology Institute, Perugia University, Perugia-Italy: Males: slides n. 386 (5 entire specimens), n. 387 (isolated pieces used in this study); Females: slides n. 388 (5 entire specimens), n. 389 (isolated pieces used in this study); Larvae: slides n. 390 (1st, 2nd, 3rd instar entire specimens), n. 391 (isolated pieces used in this study); Pupae and puparia: slide n. 392.

Observations and photographs have been carried out using a Zeiss III Photomicroscope.

Explanation of the symbols used in the Figs:

AE	aedeagus
AN	antenna
Ap	anal papillae
AVp	anterior ventral papillae
AS	anal slit
C	claw
CO	costal vein
CU	cubital vein
E	empodium
GC	gonocoxite
GS	gonostylus
IPp	inner pleural papillae
Lp	lateral papillae
MC	microtrichia
P	pulvillus
PD	pedicellus
PF	palpifer
PT	pretarsus
R_1, R_5	radial veins
rm-m	cross vein
Sp	sternal papillae
Tp	terminal papillae
Vp	ventral papillae
VIII, IX, X	uromeres
XS	tenth urosternite (inferior lamella)
XT	tenth urotergite (superior lamella)

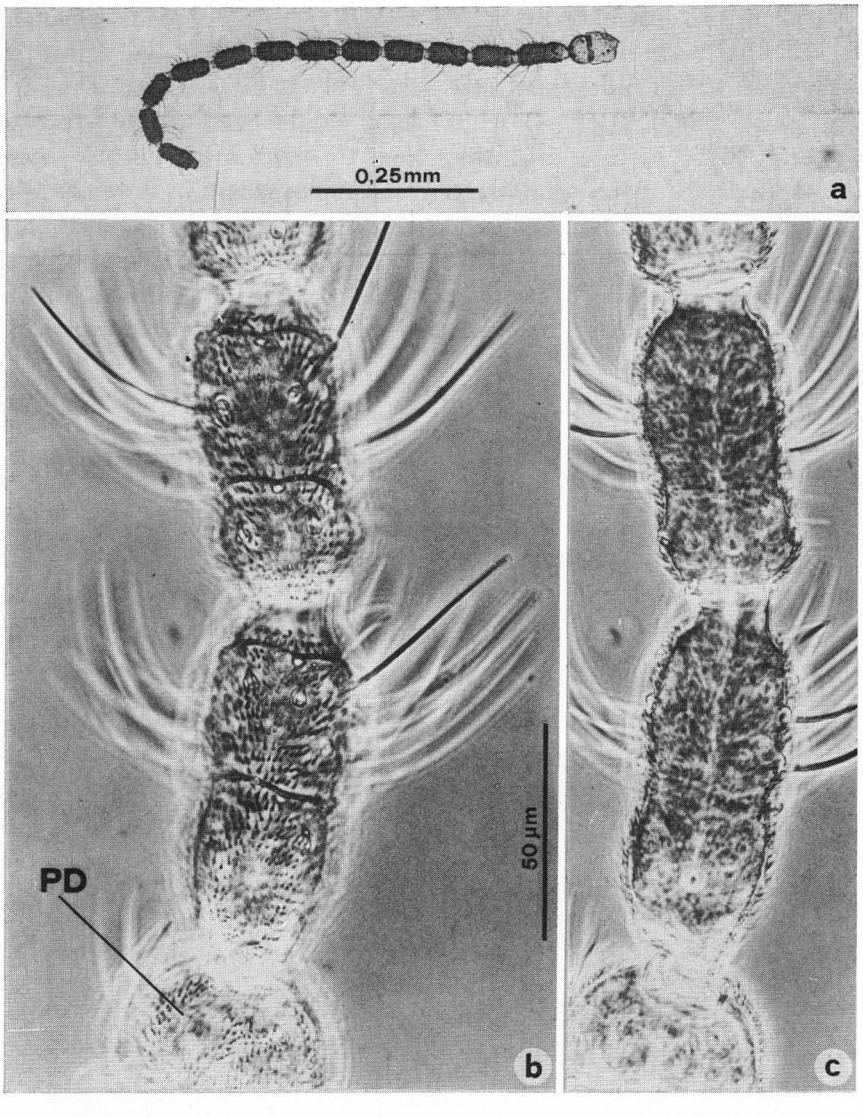

Fig. 1 - *Allocontarinia sorghicola* (Coq.) - Female: a) whole antenna; b) first two flagellomeres imperfectly connate (dorsal side in focus); c) ditto (outline in focus).

RESULTS AND DISCUSSION

The new genus *Allocontarinia*, erected specifically to arrange the species *sorghicola*, according to the classification of RÜBSAAMEN-HEDICKE (l.c.) belongs

to: subfamily Cecidomyiinae by having wings (Fig. 4) with four longitudinal veins and first tarsomere much shorter than the second one, and larvae with a longitudinal slit shaped ventral anus (Fig. 11); supertribus Cecidomyiidi by having: wing vein R_5 (Fig. 4) with faintly visible base so that cross vein *rm-m* seems to be R_5 base originating from *Cu*, ovipositor (Fig. 6) superior lamella 1-segmented, hypopygium (Fig. 7) without claspettes (= penisscheide), larvae with only two dorsal papillae on eighth uromere; tribus Contarinini by having: antennae (Figs 1, 2) 2 + 12 segmented, each male flagellomere bearing two circumfila whorls (Fig. 2), maxillary palps (Fig. 3) 4-segmented, all claws (Fig. 5) simple; subtribus Contarinina by having ovipositor protractile.

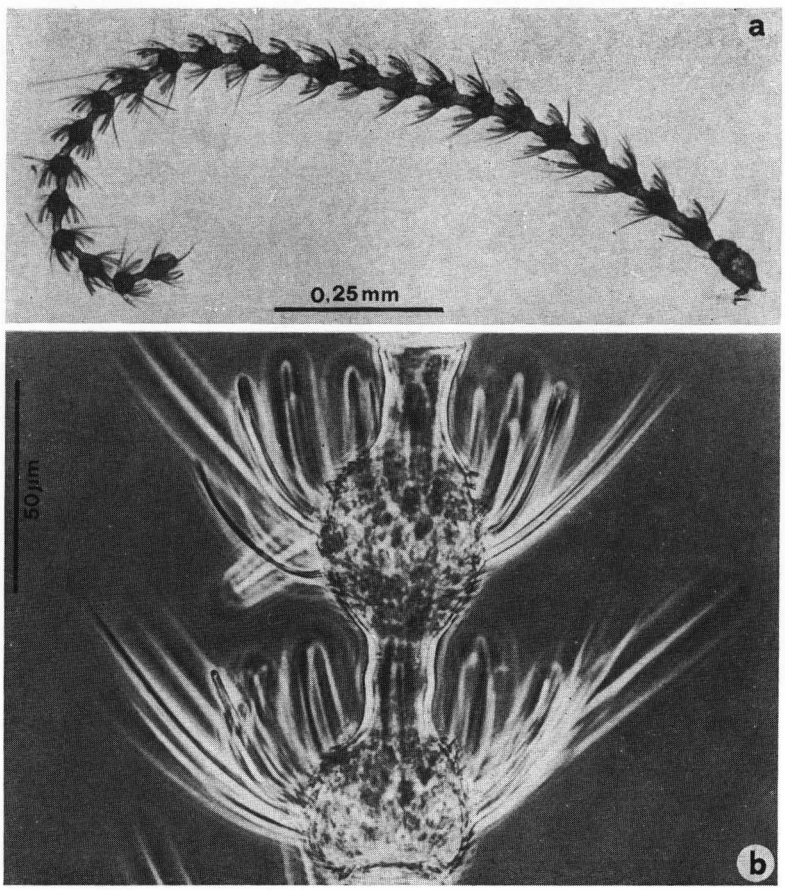

Fig. 2 - *A. sorghicola* - Male: a) whole antenna; b) third flagellomere (outline in focus).

Among the 9 genera included in this subtribus (*Anisostephus* Rübs., *Atylodiplosis* Rübs., *Contarinia* Rond., *Diodaulus* Rübs., *Stenodiplosis* Reuter, *Syndiplosis* Rübs., *Thecodiplosis* Kieffer, *Thurauia* Rübs., *Zeuxidiplosis* Kieffer), *Allocontarinia* adults seem to be (according to RÜBSAAMEN-HEDICKE's description) closer related to *Contarinia* but body colour (red) and antennal segments

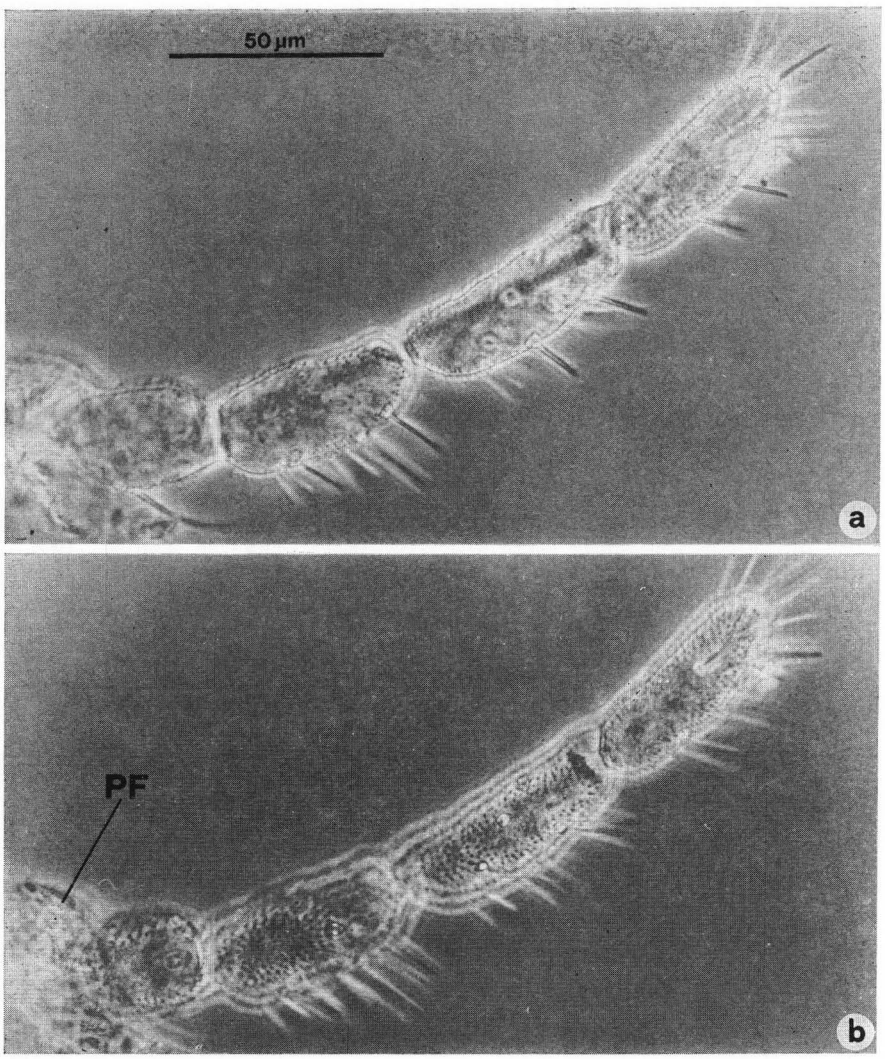

Fig. 3 - *A. sorghicola* - Female: a) maxillary palpus (outline in focus); b) ditto (dorsal side in focus).

(female 1st flagellomere not much longer — see Fig. 1 — than the second and the following segments gradually shoter to the antennal apex) are as in *Syndiplosis* Rübs., furthermore the first two flagellomeres are imperfectly (only dorsally: Fig. 1) connate, and gonostyli (Fig. 8: e, f) about 2/3 pubescent.

Allocontarinia larvae are quite different from all Contarinina larvae described until now, even though they share some morphological characters like: the absence of *spatula sternalis* (Fig. 10, a) and the presence of only two anterior ventral papillae (Fig. 11, a) with *Stenodiplosis*; the second antennomere about 1.5 times as long as wide (Fig. 9) with *Atylodiplosis*; and the habit of forming a puparium from the second instar larva skin with *Thurauia* (MÖHN, l.c.).

The mature larvae of the new genus are easily distinguished by the following features:

— antennae (Fig. 9) with second article about 1.5 (instead of 2, as in all other Contarinina except *Atylodiplosis*) times as long as wide;

— surface of skin almost completely smooth but with fields of spinule-rows on the anterior area of metasternum and first seven urosternites (Fig. 11, a) and on either side of the anal slit (Fig. 11, b); and papillae situated on little or insufficiently defined mamelons;

— *spatula sternalis* absent (Fig. 10, a);

— lateral papillae (Fig. 10) of the basic model (sensu SYLVÉN, 1975) 5:4:1, but deviations frequently occur from the basic model as well as from the normal distribution of papillae, as illustrated in Fig. 10;

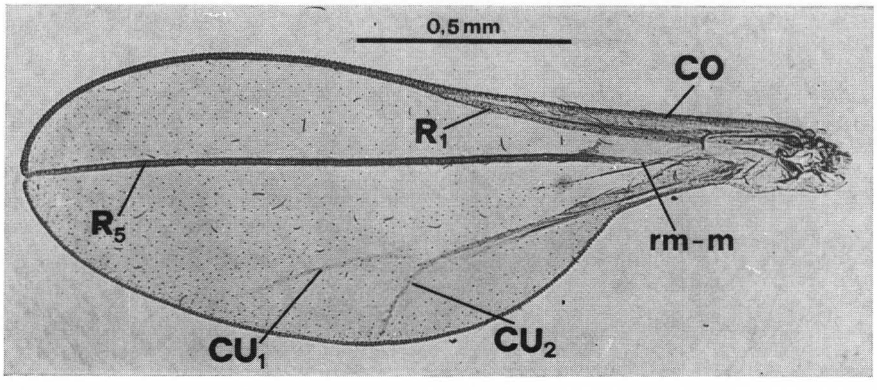

Fig. 4 - *A. sorghicola* - Female: wing.

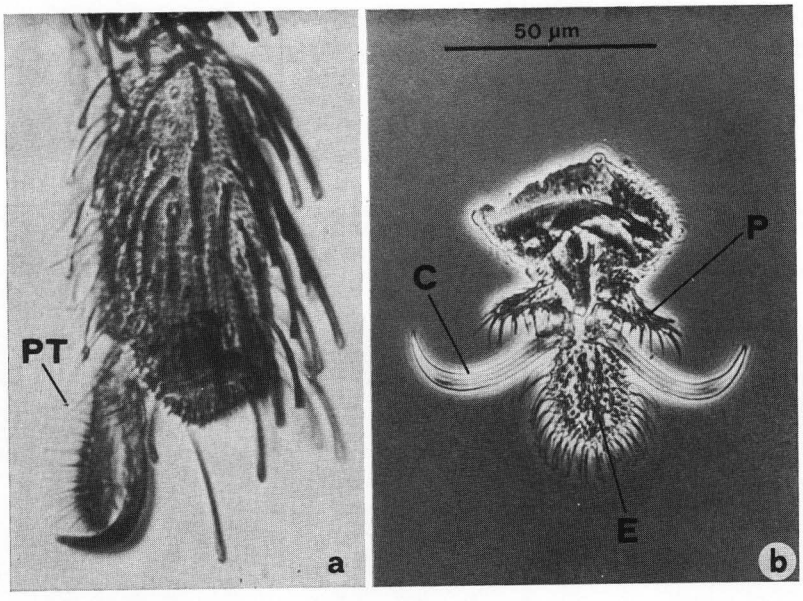

Fig. 5 - *A. sorghicola* - Female prothoracic leg: a) fifth tarsomere with pretarsus; b) pretarsus (ventral view). (a and b at the same magnification).

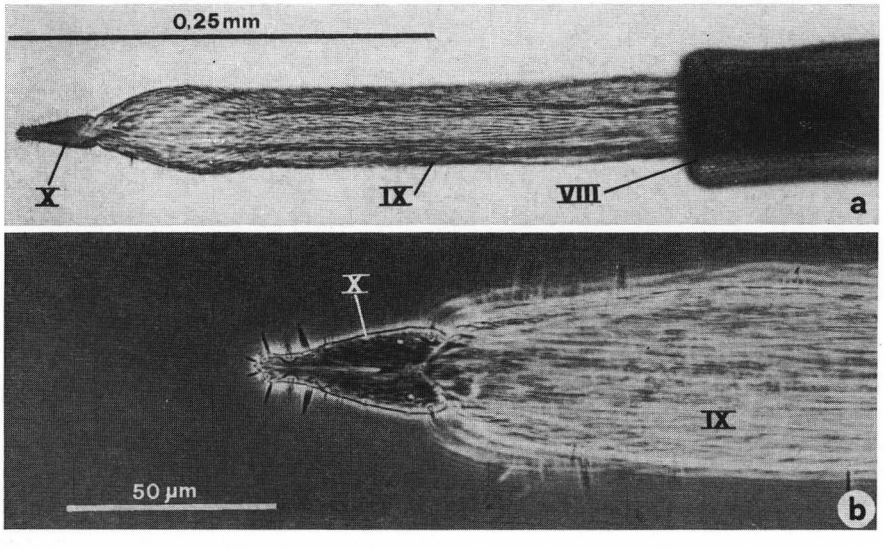

Fig. 6 - *A. sorghicola* - Female: a), b) ovipositor details.

— anterior ventral papillae (Fig. 11, a): only one pair, frequently difficult to detect near or among the spinule-rows because of the reduction of the mamelon supporting each papilla;

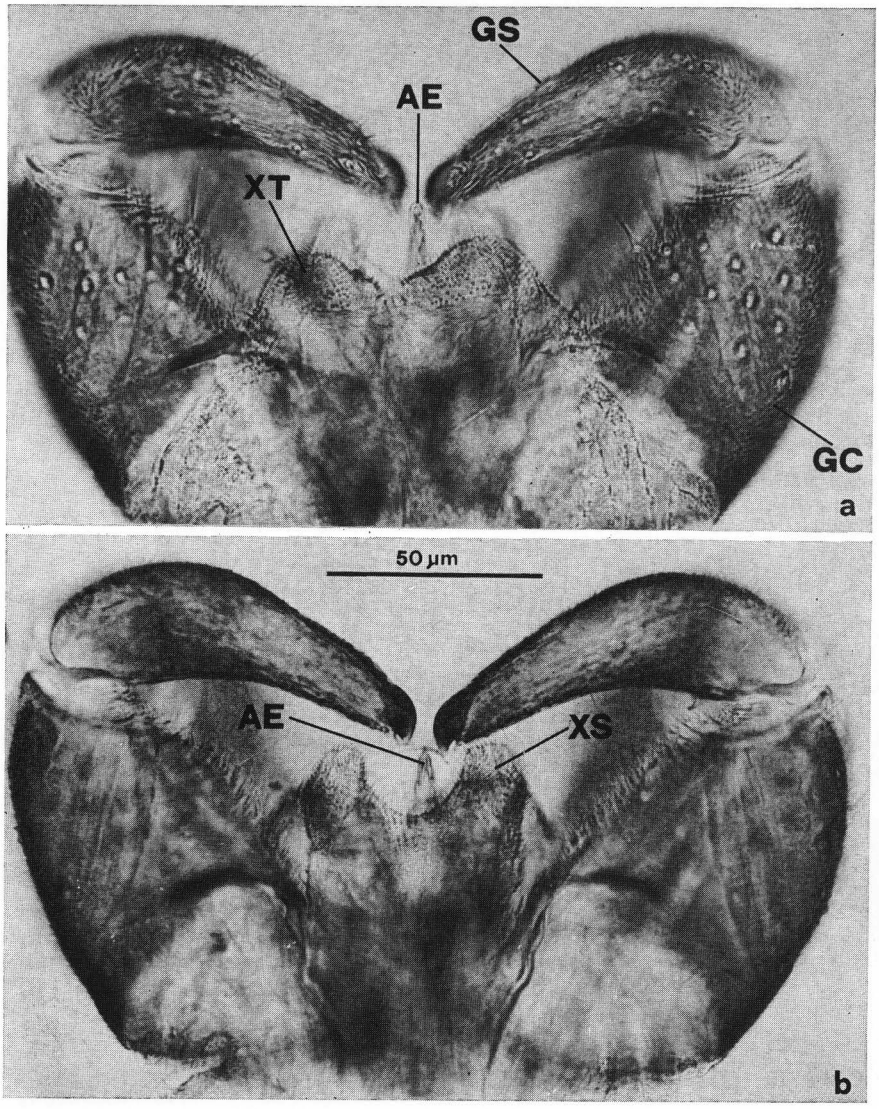

Fig. 7 - *A. sorghicola* - Male, hypopygium: a) dorsal view; b) outline of gonocoxites and gonostyli, and tenth urosternite (inferior lamella) in focus.

— terminal papillae (Fig. 11: b, c): only one pair, situated near (frequently aligned on) the median dorsal line of IX uromere, and bearing a minute point;
— papillary pattern (papillotaxy) for the rest as in *Contarinia*.

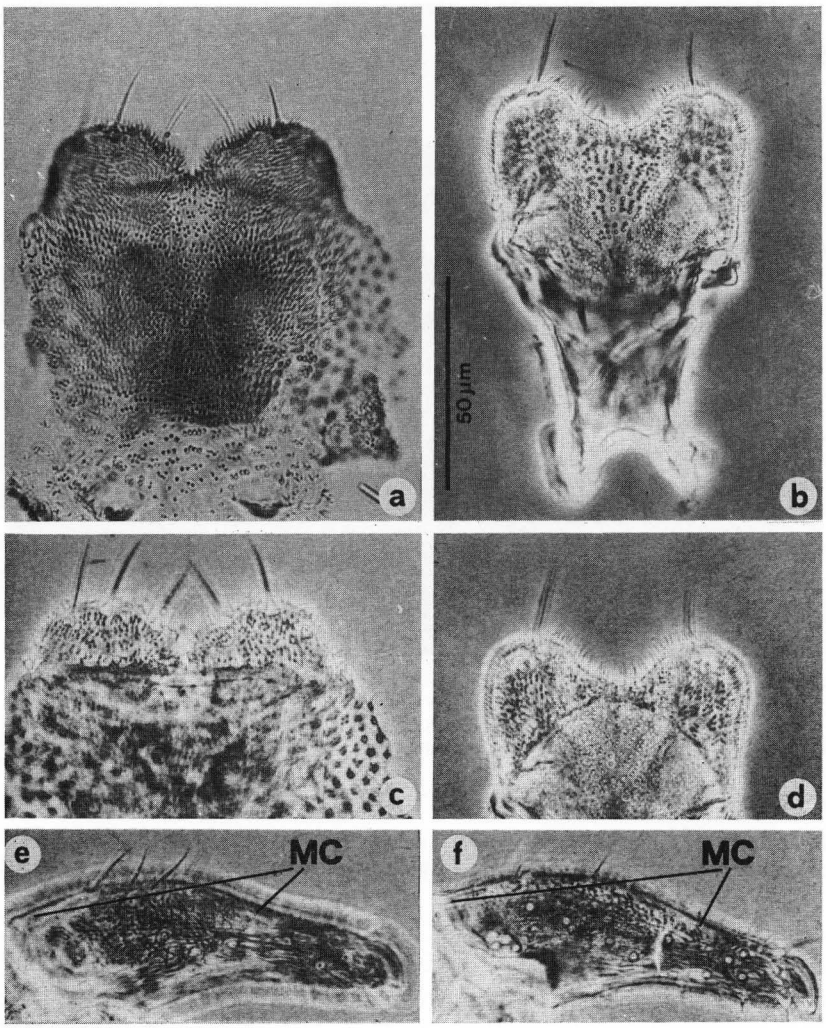

Fig. 8 - *A. sorghicola* - Male: a) tenth urotergite (superior lamella: dorsal side in focus); b) tenth urosternite (inferior lamella: ventral side in focus); c) tenth urotergite (ventral side in focus); d) tenth urosternite (dorsal side in focus); e) gonocoxite (dorsal side in focus); f) ditto (ventral side in focus). (All at the same magnification).

CONCLUSIONS

A new genus, *Allocontarinia*, is proposed to arrange more properly a known species (i.e. *Contarinia sorghicola* Coq.) which, on the base of a detailed morphological study of adults and larvae, does not fit either in *Contarinia* Rond. or in any other Contarinina genus. This at least provisionally, until a general revision of the genus *Contarinia* is carried out.

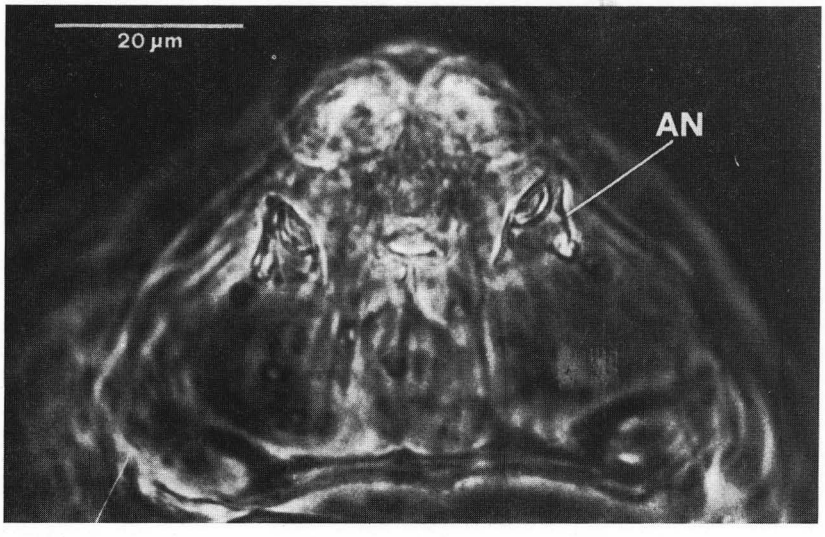

Fig. 9 - *A. sorghicola* - Last instar larva head.

Allocontarinia n.g. is recognised by the following combination of characters:

— Adults: body colour red; female first flagellomere not much longer than the second (Fig. 1); first two flagellomeres imperfectly (only dorsally) connate (Fig. 1: b, c), and the following segments gradually decreasing in length to the antennal apex (Fig. 10, a); hypopygium with gonostyli proximal part at least 2/3 pubescent (Figs 7, 8: e, f); for the rest as in *Contarinia*.

— Larvae (third and last instar, from puparium): second antennomere (Fig. 9) about 1.5 times as long as wide; surface of skin almost completely smooth

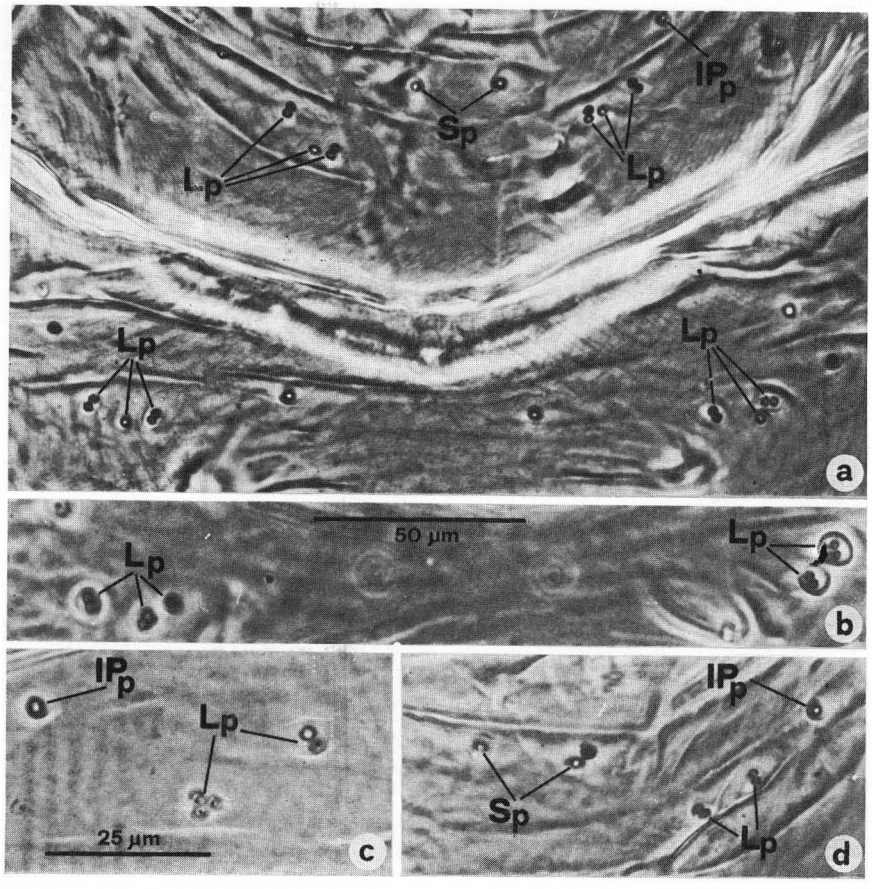

Fig. 10 - *A. sorghicola* - Last instar larva: a) prosternum (bearing lateral papillae 5:4:1 and 5:3:2) and mesosternum (with 5:4:1 Lp on either side); b) prosternum detail with 5:4:1 Lp on either side; c) metasternum detail with 5:4:1 Lp; d) prosternum detail with 4:4:0 Lp. (a, b, d, at the same magnification).

but with fields of spinule-rows on the anterior area of metasternum and first seven urosternites (Fig. 11, a) and on either side of the anal slit (Fig. 11, b); all papillae situated on little or insufficiently defined mamelons; spatula sternalis absent; lateral papillae (Fig. 10) of basic model 5:4:1 but frequently variable in number (reduction) and distribution; anterior ventral papillae (Fig. 11, a) only one pair; terminal papillae (Fig. 11: b, c) only one pair; for the rest as in *Contarinia*.

Type-species: *Allocontarinia sorghicola* (Coq.).

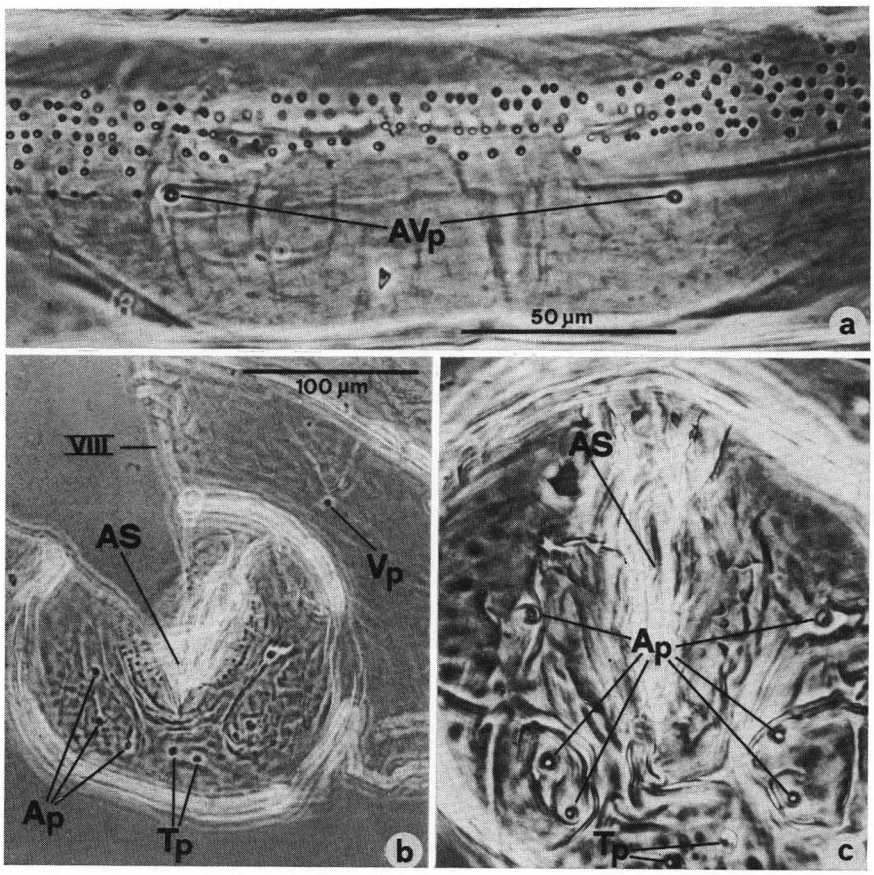

Fig. 11 - *A. sorghicola* - Last instar larva: a) first urosternite detail displaying the two anterior ventral papillae; b) posterior end; c) posterior end detail showing all anal papillae and terminals. (a and c, at the same magnification).

AKNOWLEDGEMENTS

The author wishes to thank Dr. RAYMOND J. GAGNÉ for lending the original material of *Contarinia sorghicola* (Coq.) from the U.S. National Museum of Natural History, Washington, D.C.

RIASSUNTO

Viene proposta l'istituzione di un genere nuovo, *Allocontarinia*, per dare una collocazione sistematica più appropriata ad una Contarinina morfologicamente e biologicamente « sui generis », quale la tristemente nota specie *sorghicola* Coquillet (1898). Uno studio morfologico di adulti e larve raccolti nell'Italia Centrale e confrontati con preparati originali della Cecidomia conservati nel U.S. National Mus. of Nat. Hist. di Washington, unitamente alla caratteristica biologica della specie di formare un pupario, indicano la necessità di spostare detta specie dal genere *Contarinia* in un genere a sé della stessa sottotribù Contarinina.

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