

Notes on Australian Flies of the Genus *Calliphora*.

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Early in 1922, when first I paid attention to the taxonomy of the Australian Calliphorines, the absolute necessity to determine which of the many names should be applied to the common Australian species was so apparent that, in collaboration with Dr. T. Harvey Johnston, a preliminary synonymic list of names was compiled (these Proceedings, 1922). It was intended that this should be a forerunner to a revision of the genus *Calliphora*, treated much in the same way as that accomplished with the genus *Sarcophaga*. There was no time to complete the scheme before Professor Johnston left to take up his duties at the Adelaide University, and thereafter the matter was deferred.

With regard to status, there was nothing to indicate which of the numerous proposed genera would have to be amalgamated, and so the conservative policy was indulged in and certain species that had been long considered typical of the undefined genera were retained as such. Neither Dr. Johnston nor I had much faith in the values of the only characters we could find that would hold sufficiently well for the determination of these Australian groups, and such was indicated in the paragraph above the key that was then given. The main purpose of the paper was to definitely place as synonyms certain names that no amount of what is generally termed "splitting" could render acceptable under any other status.

The publication of this original synonymic list has had a very salutary effect. On account of it several letters have reached us pointing out weaknesses contained therein, chiefly to the effect that the characters given in the key for those genera adopted were found to grade with allied species found in other parts of the world. In these letters opinions expressed were unanimous upon the point that all species listed should have been included under one genus *Calliphora*.

The most important information came through Professor Johnston from Dr. J. M. Aldrich, who informed us that *Anastellorhina bicolor* was not a Calliphorine, and he sent characters taken from the type in support of this. Dr. Aldrich intends to publish upon this matter, and I have sent him the information that led us to include the name in the paper on the synonymy referred to.

It becomes apparent that *Neopollenia* must be substituted for *Anastellorhina*, and that *A. bicolor* Bigot must be deleted from that list. Also *Ochromyia* (*Proekon*) *lateralis*, to be found in the last and the first lines of pages 192 and 193 respectively, should be cancelled; the lines were accidentally inserted in these positions and overlooked in the proof.

W. S. Patton* has recently published the results of his studies of the types of these *Calliphora* which are situated in Europe, a class of paper that is always welcomed by Australian entomologists, who have only the descriptions—usually too inadequate—to guide them in the determination of Australian species. It is gratifying to note that, of the various synonyms suggested by Professor Johnston and myself, all generic and two specific names are maintained by Dr. Patton, but like others he has considered it expedient to place all the species under the one generic name. The type of one species was not found by him and a second is not mentioned, whilst *A. bicolor* is retained as a synonym but attached to an allied species to which the description does not conform.

There are, however, several matters in Patton's paper that do not conform to the knowledge of the blowflies that has been acquired in Australia. *Calliphora quadrimaculata* Swederus, to which *C. dasyophthalma* and *C. testaceifacies* Macquart are placed as synonyms, is stated to be "a common Tasmanian blowfly." Surely this should have been New Zealand, where the species abounds, and although *C. testaceifacies* is recorded from Tasmania (I cannot make the description agree) I have not seen the New Zealand form from there. I lived for five years in the island without meeting it, and during a recent visit collecting blowflies I again did not find it.

I believe the list of Australian species of *Calliphora* given below will be acceptable tentatively to most Australian workers on blowflies. The synonymy is amended from Patton's paper and such other sources of information as I have to hand.

Key to the Species of Australian Calliphora.

1. Eyes hairy; reddish or yellowish brown species 2
 Eyes bare; colour variable 3
2. Dorsum of thorax black with slight silvery tomentum that extends on to the
 head *hyalipennis* Macq.
 Dorsum of thorax completely covered with yellowish tomentum that is
 traceable on the head *ochracea* Schiner.
3. Abdomen yellow with blue stripe; thorax black.. .. . *augur* Fabr.
 Abdomen never with yellow (except hairs), usually blue, green, or bronze .. 4
4. Abdomen black, bronze, green, or if slightly blue then with abundant yellow
 pubescence 5
 Abdomen distinctly metallic blue with black pubescence 9
5. Abdomen with abundant yellow pubescence at least on the under side, and
 conspicuously stencilled with yellowish tomentum; legs yellowish
 red; if ♀ then *stygis* Fabr. but if ♂ see 6
 Yellow pubescence never present on abdomen, legs entirely blackish.. .. 7

* Patton, Philippine Journal of Science, xxvii., 1925, pp. 397-401.

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| 6. Male with facets of eyes of two distinct sizes ; eyes contiguous .. | <i>stygia</i> Fabr. |
| Male with eyes well separated, facets all small | <i>stygia</i> ab. <i>hilli</i> Patton. |
| 7. Abdomen conspicuously stencilled with yellow tomentum .. | <i>tibialis</i> Macq. |
| Abdomen not so marked ; tomentum, if present, very inconspicuous and silvery white | 8 |
| 8. Abdomen metallic green | <i>clausa</i> Macq. |
| Abdomen bronze, with conspicuous red tinge | ? Sp. |
| 9. Squamæ entirely china-white | <i>dispar</i> Macq. |
| Squamæ black, white only at edges | <i>erythrocephala</i> Meig. |

Besides *Calliphora tasmanensis* Macquart, which I have been unable to include in the above key, the identities of the following species are yet to be ascertained :—

Somomyia melanifera Bigot.

Pollenia mortonensis Macquart.

Calliphora pusilla Macquart.

Pollenia viridiventris Macquart (type not found by Patton).

Neopollenia papua Taylor (recorded in Proc. Lin. Soc. N. S. Wales xlv., 1920, 203, and attributed to Walker).

Any of these may or may not belong to the genus *Calliphora*.

Gen. ? **calliphoroides** Johnston and Hardy (name attributed to Walker).

This strikingly handsome yellow species with metallic blue markings—the design consists of the golden thorax of three short uniform parallel stripes joined at the apex by a similar transverse bar, and on the abdomen transverse bands of blue alternating with yellowish white ones—was referred to in the original list and does not conform to the genus *Calliphora* as defined by Patton, nor is it a *Chrydomyia*. It is a Calliphorine, however, with contiguous eyes and bare squamæ. The latter character suggests *Lucilia*, under which genus Patton has described another yellow species from Australia ; the chætotaxy does not quite conform to *Lucilia*.

***Calliphora hyalipennis* Macquart.**

Ochromyia Macquart, *Neocalliphora* J. & H. Tasmania, 18 females.

Of the specimens referred to under this name, one is from Eaglehawk Neck, April 1916, one from Mt. Wellington, January 1918, and sixteen from Strahan (People's Park), February 1924. Apparently it is a rare species on the eastern side of the island and breeds more abundantly in the dense scrubs of the western side.

This form is not to be confused with the well-known mainland form hitherto called *ochracea*, and which Patton states is a synonym of *hyalipennis*. The difference between the two is most readily distinguished by the tomentum of the thorax and front. In *ochracea* practically the whole of the otherwise black dorsal area of the thorax is covered by a yellowish tomentum giving that well-known yellow appearance, whilst in *hyalipennis* the whole of this area is black, blue-black in certain lights ; the tomentum

is inconspicuous and of a silvery-white colour, similar to that on, say, *C. erythrocephala*, and does not interfere with the general blue-black appearance of the thorax.

Macquart states, "Thorax d'un noir bleuâtre; cotes et ecusson fauves," which exactly fits this species, as he makes no mention of yellow tomentum and moreover attributes the species to "Tasmanie." Schiner, on the other hand, in describing *ochracea*, leaves me a bit doubtful upon this subject, and Patton, in placing Schiner's name as a synonym of *hyalipennis*, naturally raises the question as to whether the locality for *ochracea* is an error, or is the Tasmanian reference itself an error and the description faulty. If Patton is right about the synonymy, then either the Australian or the Tasmanian form will need a new name. Surcoef's subsequent description reads more like a combination with the mainland species.

Dr. Ferguson informs me that Macquart used the name *Ochromyia hyalipennis* twice, once in 1834 for a species now known as *Palpostoma testacea*, and again in 1850 for the species here referred to; in consequence the name is preoccupied. It is advisable to await further information regarding the identity of the type, as it is possible that the mainland species needs the new name, whilst this would appropriate that of *ochracea*.

***Calliphora ochracea* Schiner.**

Neocalliphora (Brauer & Bergenstamm) J. & H. New South Wales and Queensland. A long series of both sexes.

Until such time as this and the above species have been satisfactorily identified, it seems advisable to retain the name *C. ochracea* hitherto used for the species. It differs from *C. hyalipennis* mainly by having the thorax almost entirely covered by yellowish tomentum and the abdomen is not a rich chestnut-brown that occurs on all but one of the Tasmanian specimens. It is significant to note that Patton in one place refers to "reddish brown" and in another "golden yellow" when referring to *hyalipennis*. The species is, I think, widely distributed over Australia, but no one has succeeded in breeding it. Like *C. hyalipennis* it is most abundant in the dense scrub-lands.

***Calliphora augur* Fabricius.**

Musca Fabricius, *Anastellorhina* Cleland. Synonymy: *oceanicæ* Desvoidy, *lateralis* Macquart, ? *rufiventris* Macquart, *dorsalis* Walker, to which Patton adds *dichromata* Bigot, *xanthurea* Bigot, and *selasoma* Erichson. Victoria, South Australia and Queensland; it also occurs in Tasmania and New South Wales. A long series of both sexes.

Patton was unable to find the type of *rufiventris* Macquart, but I have reason to believe that it is still in existence and possibly allied to *Anastellorhina bicolor*. Patten referred the last-named to this position, but in view of the probable elucidation of its identity by Dr. Aldrich it

is advisable not to accept this determination. Doubtless there has been some confusion concerning the type, and it may be pertinent to remark that Macquart's description "Abdomine fulvo, incisuralis nigro anguste marginatis, latius in medio" does not conform to the abdomen of *C. augur* but might be applicable to that of some *C. stygia*, whilst the remainder of the description prohibits its being mistaken for any other *Calliphora*.

Calliphora stygia Fabricius.

Musca Fabricius, *Neopollenia* Brauer, *Anastellorhina* J. & H. Synonymy: *villosa* Desvoidy, *australis* Boisduval, *rufipes* Macquart, *ruficornis* Macquart, *læmica* Walker.

Male aberration, *hilli* Patton.

Tasmania, Victoria, South Australia, Western Australia, New South Wales, and Queensland. A long series of both sexes, including the aberrant male from Tasmania, New South Wales, and Queensland.

In the original synonymic list, under the name *stygia* were included two forms of the male, one with the facets of the eyes everywhere small (*hilli*), and the other with these conspicuously larger on the upper half of the eyes. The line dividing these sizes in the latter case is fairly distinct—that is, the transition from the smaller to the larger is rather abrupt. On the form having the eyes with all facets small the front is conspicuous and rather wide, whilst on that having the enlarged facets the eyes encroach upon the front and become contiguous. The latter form is the more abundant, whilst the former has been given the specific name *hilli* by Patton, who was under the impression that it represented a distinct species.

Both forms are to be bred in Brisbane under conditions that point to the progeny being from the same parent, but the species does not breed at all readily here, so I have not been able to ratify or refute this opinion by breeding the complete progeny of undoubtedly one parent.

Dr. Ferguson informs me that he considers *Pollenia ruficornis* Macquart, judging from the description, is possibly *C. tibialis*. Macquart described the male in 1847 and the female in 1850; it is the latter description that specially suggests the relationship, the first description being unsatisfactory in this respect. Patton makes no mention of the form.

Calliphora rufipes Macquart, given by Patton as a synonym, is presumably the species described by Macquart as *Pollenia rufipes* (I do not know *Lucilia rufipes* used by Patton presumably for the same, in error), whilst that species described by Macquart as *Calliphora rufipes* is referred to by Patton on page 401 as being "probably the South African species *segmentaria*."

Calliphora tibialis Fabricius.

Musca Fabricius, *Anastellorhina* J. & H. Tasmania, Victoria, and South Australia; a long series of both sexes. Queensland, 1 ♂.

For a long time I suspected this species would prove another variety of *C. stygia*, but not till I had searched for and taken it myself was I convinced otherwise. It has distinctive habits that are significant.

C. stygia, in Tasmania at least, occurs on bushes and low herbage and if disturbed from the ground invariably rises, whilst *C. tibialis* keeps close to the ground. Every specimen caught well above the ground proves to be *C. stygia*, whilst those caught resting on or flying just above the ground nearly always were *C. tibialis*. After discovering this habit, I again sought for the species in Queensland but without success. The only Queensland specimen seen by me was taken by Master Lewis Pottenger at Sunnybank, Brisbane, during October 1925, and was handed to me alive.

Professor Johnston informs me that *C. tibialis* occurs very abundantly around Adelaide, especially in certain kinds of hedges, and whilst *stygia* readily invades houses *tibialis* does not do so.

***Calliphora tasmanensis* Macquart.**

Pollenia Macquart. Not recognised in my collection but Patton considers it a good species.

***Calliphora clausa* Macquart.**

Tasmania, 5 males and 2 females.

Patton mentions that *C. clausa* Macquart was not found by him and he suggests deleting the name. Not only is this procedure inadvisable till all sources whereby the species might be determined are exhausted, but in this case I believe I have it represented from Hobart, Mt. Wellington, and Zeehan.

***Calliphora* sp.**

Tasmania, 2 males and 4 females from Zeehan.

***Calliphora dispar* Macquart.**

Synonymy :—*pubescens* Macquart, Johnston and Hardy ; *ruficornis* Walker ; ? *tessellata* Macquart. Tasmania and Queensland, 2 males and 4 females.

***Calliphora erythrocephala* Meigen.**

Tasmania, Victoria, South Australia, and New South Wales (introduced), 5 males and 5 females.



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