

DIPTERA



RECORDING SCHEMES BULLETIN NO 36, AUGUST 1993

ANNUAL MEETING OF THE DIPTERA RECORDING SCHEMES - NOVEMBER 6 1992 Natural History Museum, South Kensington, London

Morning Session - Flett Theatre. The Flett Theatre is in the Earth Science section and the easiest way to it is through the old Geological Museum entrance in Exhibition Road though it can also be reached from the Life Science section of the Natural History Museum.

Chairman - Dr Stuart Ball (Co-organiser of the Hoverfly Recording Scheme)

11.00 - 11.30	Martin Drake	Flies on grazing marshes
11.30 - 12.00	Brigitte Peterek	Behavioral studies on hoverflies
12.00 - 12.30	Laurence Clemons	Picture wing flies sensu lato
12.30 - 1.00	Kenn Watt	Hovering over Scotland - a dipterist's eye view

Lunch - Pubs, cafés, or bring your own packed lunch.

Afternoon session - Demonstration Room, Palaeontology Department

2.00 - 6.00	Setting up exhibits and informal period. Identification service - bring along your awkward specimens.
2.30	Demonstration of genitalia mounting.
3.00 - 3.30	Brief general discussion session.
3.30 - 4.00	Empid identification made simple - Roy Crossley
4.00	Quick slide show introducing next summer's Shropshire meeting.

Entrance Fee and Parking. You will have to pay the entrance fee to the Museum (£4.50 for adults, £2.20 for senior citizens, students and unemployed - documentary evidence of status required, £2 for 5-17 year-olds). There is no parking available in the Museum grounds.

Synopsis. The morning talks begin with Martin Drake (Larger Brachycera scheme organiser) bringing together the results from many surveys of the insects of grazing marshes, which are those apparently uninteresting stretches of flat pasture dotted with cows and lined with ditches. As they make ideal land to build on, they frequently come under threat, though the remarkable assemblage of flies (among other groups) often save the day. Brigitte Peterek, from the University of Central Lancashire (Preston), is undertaking a PhD study on the behavior of hoverflies and her particular interest is their relationship with the bees and wasps that they mimic. To most of us, picture wings flies are synonymous with tephritids, the group that Laurence Clemons is the national recorder for. Starting with the pretty flies is an easy way of breaking into a new group and Laurence's talk will stray far beyond tephritids to show how pictured wings are found throughout the Diptera. Finally, Kenn Watt will tell us how far his hoverfly recording has got in Scotland after many years as the regional hoverfly co-ordinator for the country, with illustrations from his forthcoming atlas of Scottish hoverflies (a proof may be ready on the day) and rather more on the biology.

In the afternoon, Andy Godfrey, an old hand at fiddly flies, will demonstrate different ways to make genitalia mounts which are useful to essential for those of you getting interested in smaller fry. Following last year's popular session introducing a new group, Roy Crossley, organiser of the Empid & Doli Study Group, will show how easy it is to identify emipids. David Heaver from English Nature's West Midlands office will give a resumé of the interesting sites that we are going to visit in next summer's field meeting in Shropshire.

THE DIPTERIST'S SUPPER, SATURDAY 6 NOVEMBER 1993

As last year, it will be held at the **Rooms of the Royal Entomological Society**. Arrive at 6.30 p.m. to start eating at 7.00 p.m. We cater for only 45 people in that room. So don't delay, send today, your £12.00, plus an SAE, if you don't want me to hold it (the ticket), for thee. If there are too few applicants by 1 October, I will have to cancel the doo, as the costs become unreasonably large to bear alone. I would appreciate some help on the day in setting up the Rooms.

David Henshaw, 34 Rounton Road, Waltham Abbey, Essex EN9 3AR.

MAILING LIST UPDATE

Apologies to those of you who did not want to receive this bulletin any longer - recycle it. Stuart summarises the returns from the circular he sent out in the last issue asking whether you wanted to continue receiving the bulletin and other newsletters (see the new address list). If you did not reply before, this is your last chance - we will strike you off the list otherwise. Please reply to Stuart (address at end of Bulletin).

FIELD MEETING REPORTS

Norfolk, July 1993.

Thirty-four people gathered for this meeting at the Horstead Centre, close to the Norfolk Broads, for a very successful meeting. We were rained off completely on only one day and would have appreciated less wind when the sun did shine. We visited something like 90 sites in more than 40 10km squares covering an area from the west end of the north coast to the Suffolk border, and including some Breck sites en route to the centre.

Stuart Ball spend long hours inputting the results into his RECORDER database, so by the end of the meeting we knew we had identified about 1000 species altogether, including 100 hoverflies and 30 soldierflies (about 60% of the British list). The preliminary list showed 88 to be nationally scarce or Red Data Book flies. Some of these were Norfolk specialities, notably *Dolichopus laticola* and *D. nigripes* from the Broads. Two unexpected stratiomyids which have not been recorded in the Norfolk Broads area for a very long time were *Odontomyia angulata*, a species found in a very few rich fen sites, and *O. ornata*, which seems to be virtually restricted to grazing levels. Another specimen of *Oxycera leonina* was taken at its one known locality. The carr crane fly *Erioptera meijeri* turned up, another species whose distribution is mainly in Norfolk, and, on several sandy sites, there was *Tipula helvola*. Among the horseflies, *Hybomitra muhlfeldi* was frequent at some Broads and *Atylotus latistriatus* was found on the north coast saltmarsh. Both species are known mostly from this area. Bee flies, from the tiny *Phthiria pulicaria* to the large *Villa modesta*, were found on the dunes, and the asilid *Eutolmus rufibarbis* was found on most sandy inland sites. Although quite a number of the hoverflies were nationally scarce species, there were no outstanding discoveries but it was still nice to find *Anasimyia interpuncta* and *Neoascia interrupta* on some of the grazing levels, *Cheilosia cynocephala* which breeds in musk thistle, and *Xanthandrus comptus* whose larvae feed on micro-moth caterpillars. Among the smaller flies were *Stenomicroa delicatula* and the *Urophora solstitialis*, another species feeding on musk thistle.

The meeting was a joint venture with BEWARS, the hymenopterist's group. Although the dipterists outnumbered them heavily, they turned up at least a dozen nationally scarce species, including the large bee wolf, *Philanthus triangulus*.

We formed a mutual admiration group with the Horstead Centre staff. The hospitality and organisational help was excellent and, as a centre for this type of meeting, the Centre can be thoroughly recommended. In turn, they said that we were the best adult group they had for a very long time (OK, so it is a centre for young people).

FORTHCOMING MEETINGS

Autumn Meeting - Dorset, 13 - 17 October 1993

The exact venue has not been fixed but it is hoped that this 5 day meeting will be centred at Dorchester. It is targeted mainly at crane flies and fungus gnats but there usually plenty of other families still flying, especially Heleomyzids and the hoverfly *Arctophila fulva*, at this time in the south of England. Dorset has an extraordinary range of habitats and geologies, and has been a very productive area earlier in the year. Much of the county is in Areas of Outstanding Natural Beauty so its worth visiting even if you don't catch much.

Please contact Alan Stubbs who is organising the meeting. 181 Broadway, Peterborough, Cambs, PE1 4DS, tel. 0733 346648. Martin Drake can pass on messages if you cannot contact Alan.

Joint Identification Workshops, 11-13 March, 1994, Preston Montford.

The first workshop run by members of the Hoverfly Recording Scheme in March this year was so successful that we have been encouraged to organise two other workshops. They will be run in parallel, on the assumption that it is unlikely that anyone would want to attend both. Because the booking needs to be confirmed soon, we need to know what interest there is in these workshops, so please book by 15 December with a deposit of £30 if you are interested in attending. 25 places have been provisionally booked.

1 Introduction to flies. Everyone had to start sometime and for most of us it was a slog. This workshop aims to cut the learning corners. Aspects that will be covered include collecting techniques, a breakdown of the gross taxonomy of the flies, the range of biologies and habitat associations, and more detailed identification of a few popular families to get you started so you go away enthused.

2 Picture-wing Flies. This will explore this group of attractive flies, with attention focusing on the tephritids, otitids, platystomatids, pallopterids and sciomyzids. Many members of the last family only just qualify as picture-wing flies but they are becoming increasingly popular and deserve inclusion. This workshop is intended for people who already have some experience of flies and aims to expand their collecting horizons.

The meetings will start at 6 pm on Friday evening 11 March and finish after tea on Sunday 13 March and will be held at the Field Studies Council's Preston Montford Field Station near Shrewsbury, Shropshire. The cost will be about £55, with a £15 supplement for those wanting a single room. Leading the workshops will be Alan Stubbs, Stuart Ball, Roger Morris and others. Please **book with Roger Morris**, sending a non-refundable £30 deposit per person (required by the Field Centre in January) - make cheques made payable to R. K. A. Morris, 241 Commonsides East, Mitcham, Surrey CR4 1HB.

Main Summer Meeting - Preston Montford, Shropshire, 20-27 May 1994

For a change, an early meeting has been arranged for next summer. Habitats and places that may be visited are the vast areas of Fenns & Whixhall mosses, the meres that extend into Cheshire, Wyre Forest, and several hilly districts such as Wenlock Edge and the Welsh Borders.

Accommodation has been booked for twenty people. The cost for the seven days (Friday 20 to Friday 27 May) will be in the region of £160, with a £30 supplement for those wanting single rooms. **Roger Morris is in charge of bookings.** He needs to fill the 20 places that he has booked by 15 December, otherwise he has a large bill to foot (which he is not prepared to do). So book now! More places can always be found later if needed. The Field Centre requires a non-refundable deposit of £40 per person in January - make cheques payable to R. K. A. Morris, 241 Commonsides East, Mitcham, Surrey CR4 1HB.

Gordano Valley and surroundings, Avon - summer 1994

Ray Barnett will be organising a meeting, probably for a weekend, at this wetland NNR. The site contains ditch systems, wet meadows, fen and wet woodland on peat. If this site does not hold enough interest, there are plenty of other habitats in the immediate vicinity, such as the limestone Mendips and the dunes at Berrow.

More details will appear in the Spring Bulletin. If you are interested, contact Ray Barnett, Assistant Curator, Natural History Section Bristol Museum and Art Gallery, Queen's Road, Bristol BS8 1RL, tel 0272 223598.

INDOOR MEETINGS

British Entomological and Natural History Society Annual Exhibition, October 30, Saturday, Imperial College, South Kensington, London (north of Science Museum). Extensive members' exhibits, usually some Diptera.

Amateur Entomologist's Society Annual Exhibition, October 9, Saturday, Kempton Park Racecourse, Staines Road, Sunbury, Middx., outer SW London near end of M3. Equipment, new & second hand books, displays, etc. Usually attended by several dipterists.

NEWS FROM THE SCHEMES

Chironomid Study Group

After the notice announcing the intention to set up the above published in the May Bulletin, there has been an encouraging response. Most of the people known to be actively studying the family in Britain have signed up and many sent valuable background information on other networks and suggestions on how to recruit members.

Based on this initial response, a first newsletter is being compiled and will go out early this autumn.

Any readers who would like to keep abreast of British Chironomidology and have not already declared themselves might like to write to the study group's coordinator, Patrick Roper at South View, Sedlescombe, Battle, East Sussex TN33 0PE. Tel 0424 870208.

Crane-fly Recording Scheme

BRC are in the final stages of publishing the provisional atlas to Ptychopteridae. A key to British species is included.

The Newsletter has been delayed because of pressures from preparing the larger Brachycera book and the hoverfly workshop. It is still hoped to progress with this.

Thanks go to various contributors. Andy Godfrey has submitted a large volume of enveloped material and I am still wading through other batches which by comparison look modest!

Dixidae Recording Scheme

Since the publication of the new BRC distribution maps in 1990 (Diptera Digest No 3, 8-26), I have received Peter Skidmore's magnificent list of 77 records from the Doncaster Museum; 47 records for Ireland from Patrick Ashe, including the first record for *Dixella attica*, with distribution maps for 12 species in the 1990 publication; and a smattering of records from other sources. Collections made at the various Dipterists' Field Meetings are now being computerised directly but, hopefully, will eventually reach me.

The NCC's Welsh Peatlands Invertebrate Survey produced 1418 dixid specimens, adults of 9 out of the total of 15 British species. Some of these were included in the 1990 map update. Among the 3,158 adult dixids that I identified from NCC's East Anglia Fens Invertebrate Survey were six specimens from a Suffolk site identified by Henry Disney as *Dixella graeca* Pandazis, bringing the British list to 15 species (Disney, R. H. L. 1992, A meniscus midge (Dipt., Dixidae) new to Britain. *Entomologist's mon. Mag.*, 128: 165-169). Although not usually abundant, *Dixella serotina* adults appeared widespread in this survey, including dates from June to December (and one up to March), but during this year's July Norfolk Field Meeting I was unable to find any

larvae or adults of this species, and recorded only *D. autumnalis*, *D. amphibia* and *D. nebulosa*. An occasional full-size larva was found but a sample from Woodbastwick of *D. amphibia* larvae, all small and of about equal size, supported my theory that synchronised rapid pupation and emergence of adults (followed within a few days by egg-laying) had been induced by the earlier heatwave. This may explain my inability to find *D. serotina* in exhaustive searches on Wicken Fen and Chippenham Fen in 1992. Although some dixid adults can survive many weeks, or months, in laboratory culture, it seems unlikely that they survive long in nature after the eggs are laid, during the summer, though possibly some species may pass the winter as adults. Spring and autumn "peaks" commonly occur in *Dixella*.

Inability to find again the *D. filicornis* I recorded at Oare, Kent, has a different cause: not only have years of drought lowered the water table in the wood, but the hydrology is interfered with by the angling club. While there was still a good flow of water from the wood into the neighbouring meadow, I was able to collect *Dixa nebulosa* larvae, hoping to breed it through and discover whether *Dixa* adults have to swarm to produce fertile eggs (*Dixella* does not) but the entire culture was decimated by virus; a particularly heart-rending frustration to observe! Meanwhile, I cannot determine whether the *D. filicornis* record is correct or should be *D. graeca*!

I am making detailed analyses of both the Welsh and the East Anglia records, for fuller account in a forthcoming Dixidae Newsletter, for which I should be glad to receive any comments or other contributions.

E. Kathleen Goldie-Smith, Wrens Cottage, New England Lane, Playden, Rye, East Sussex TN31 7NT

Empid & Doli Study Group

Newsheet 12 is circulated with this bulletin for those who have registered their interest in the Group.

Fungus Gnat Recording

No further additions have been made to the British list but work on known additions yet to be published is continuing. An updated Check List of the 522 species now recognised as British, annotated with references to all changes since the 1976 Check List, is now available for circulation in addition to the manuscript keys detailed in the previous Bulletin. A list of all the relevant publications is attached to the Check List.

Collecting has produced few surprises this year and the spring flush was less evident and more erratic than has been the case in recent years. Hopefully, the autumn will make up for this deficiency after the recent lean years resulting from drought.

One notable find was made in the genus *Dynatosoma*. Alan Stubbs collected one male of a species new to Britain at Bucklebury Common, Berks, in 1989. It is *D. thoracicum* (Zetterstedt) as figured by Landrock but different from *thoracicum* of Zaitzev's revision, which I have collected in Belgium, so may require a new name; this problem is under investigation. Having made several visits to Bucklebury Common in succeeding years and raised the site list to 120 species, I finally succeeded in finding a female of the species in a different part of the common on 6th June this year.

This is a distinctive species, the body entirely bright orange in both sexes, with the brown banded wings characteristic of the genus. Related species (not found in Britain) are known to develop in the similarly coloured "sulphur polypore" *Meripilus sulphureus*. However, I have not yet found this of any fungi of similar size or texture at the Common, so cannot confirm whether this species is also associated with the fungus.

Peter Chandler

Hoverfly Recording Scheme

A newsletter went out recently. More items are welcome for number 17; send your contributions to David Iliff, Green Willows, Station Road, Woodmancote, Cheltenham, Gloucester, GL52 4HN.

Larger Brachycera Recording Scheme

A newsletter for the converted accompanies this bulletin. Apologies for the delay in getting it out. More items always wanted by Martin Drake, address at end of this Bulletin. Alan Stubbs has found a third British location for *Chrysopilus erythrophthalmus*, at Horner Wood on Exmoor.

Pipunculid Study Group

Mark Jervis (1992) has published his revision of European *Chalarus* (*Zool. J. Linn. Soc.*, **105**: 243-252) which adds nine species including newly described species to the British list. The genus is a difficult one and the keys reflect this; females are easier than males.

Other pipunculids new to Britain have been added by Mike Akland (two species of *Cephalops*, *Entomologist's mon. Mag.*), Alan Stubbs (*Microcephalops vestitus*, *Br. J. Ent. Nat. Hist.* **5**: 70) and John Dobson and Alan Stubbs (*Pipunculus oldenbergi*, *Br. J. Ent. Nat. Hist.* **5**: 69).

Alan Stubbs

Tephritid Recording Scheme

Laurence Clemons has had delays in transferring BRC's data onto his own database so he is still willing to accept records for his preliminary atlas which he plotting by hand. He will also look at collections (dry specimens preferably) that have not been identified. Address: 14 St John's Road, Sittingbourne, Kent ME10 4NE.

DIPTERA DIGEST

No.13 was published and mailed out in May. If you haven't received one, you probably haven't subscribed. Contact Derek Whiteley for clarification. No. 14 is well advanced and should be available this year. Two Scottish Island editions are making good progress.

No.9, the special hoverfly larvae handbook, is not yet ready. We will not put a date on publication any more. Announcements will be made and subscribers mailed as soon as this edition rolls off the press.

Diptera Digest contacts:

Subscriptions/back issues/sponsorship: Derek Whiteley, 17 Rustlings Road, Sheffield S11 7AA (please do not send money to the Sheffield Museum, whatever you do!)

Editorial: Dr Graham Rotheray, Royal Museum of Scotland, Chambers Street, Edinburgh EH1 1JF.

PUBLICATIONS

Snow, K. R. & Rees, A. T. (1993). *A bibliography of the mosquitoes of the British Isles*. An Occasional Publication of the British Mosquito Group.

This publication lists over 400 references to the biology, ecology, distribution, identification, disease relationships and control of the British mosquitoes. Available from Keith Snow, University College London, Department of Environmental Science, University College London, Romford Road, London E15 4LZ. Price £2.50 (inclusive of postage) - make cheques payable to K R Snow.

NEWS, REQUESTS

Drosophilids. As mooted in the last Bulletin, Brian Pitkin and Paul Beuk want to start a recording scheme for these fruit flies and want your data. So far, Brian has had a poor response. Records to Dr B R Pitkin, The Natural History Museum, Cromwell Road, London SW7 5BD.

Malaise trap junk.

Many people are running Malaise and water traps for their favourite groups and get left with pints of unwanted gunge. Taking the lead from John Daws advert below, I would like to start a "free to a good home" slot in the bulletin so that people with excess material can relieve their consciences for their mass slaughter by knowing that more information is being extracted. The material would ideally continue to circulate until no-one wanted the remains. When advertising, useful information to give is the location, grid square (so recorders can fill in blank squares), dates (useful for working out flight times), what has been extracted already, and whether a species list is wanted by the original collector. I don't know what the Post Office rules are about posting liquid preservatives.

Martin Drake

Diptera Collection. The Biology section of the Leicestershire Museums Service has 6 litres of assorted fly soup divided among 120 jars. These were collected using a Malaise trap during did to late 1983 from a woodland and a wetland SSSI in Leicestershire. The Hymenoptera have been extracted.

Anyone interested in this material should contact either Derek Lott or Jon Daws (0533 473031). All we need is a species list at some later date.

Wants and Experts list

Many years ago, Tony Irwin produced a list of workers who either wanted specimens or would be prepared to check identifications for each dipteran family. I would like to revive this list. If you would like to be on such a list, please send me details. I fear that if you are interested in receiving lots of specimens of popular groups, this is not the best way to go about it, but if you are working on new identification guides, say, this could be useful. I will circulate a preliminary list in the next bulletin.

Martin Drake

The BENHS Diptera collection and recording at Dinton Pastures

As members of the British Entomological Society are already aware, since October 1992, the collections and library of the Society have been housed in a newly constructed building at Dinton Pastures Country Park, where they are frequently made available to members and visitors. A short account of the Diptera collections is being circulated with this Bulletin.

Because of the location of the new building, use is being made of the habitats in the park for fieldwork during workshop meetings and we wish to build up knowledge of what occurs in the area. Considering that much of the Park comprises flooded gravel pits and recently colonised or planted areas, the fauna is proving surprisingly diverse although impoverished in some areas. The River Loddon flows through the Park; its banks have wooded fringes and there is a small alderwood with Loddon lilies at the north end. There are also remnants of fen, sallow carr, herb-rich grassland and several ancient mature hedges with old oaks; these habitats have evidently enabled the survival of many species from before the gravel working.

Already more than 600 species of flies have been collected (about 380 so far determined to species including 89 fungus gnats!). These include one species new to Britain, the lauxaniid *Homoneura biumbata*, and many other notable species, among them *Epistrophe diaphana*, *Epistrophella euchroma*, *Colobaea punctata*, *Pherbellia*

grisescens, *Sciomyza simplex*, *Norellia spinipes*, *Astiosoma rufifrons*, *Rhacochlaena toxoneura*, *Oxya nebulosa*, *Oedalea tibialis*, *Rhamphomyia lamellata*, *Rhaphium micans*, *Campsicnemus pectinulatus*, *Piezura boletorum*, *Tipula helvola*, *T. peliostigma*, *Nigrotipula nigra*, *Rhipidia uniseriata* and *Agromyza ferruginosa*.

In order to build up a more complete knowledge of the dipterous fauna it would be desirable in due course for the involvement of specialists in the more "obscure" groups. Some groups are being collected to pass on for determination. Other groups are being avoided, Chironomids for example are numerous and diverse but have not yet been collected; mosquitoes are prolific in the shadier parts but so far regarded chiefly as a hazard to collecting.

Peter Chandler

The Malloch Society and the Scottish DOTY Awards: an explanation

John Russell Malloch (1875 - 1963) was a Scottish dipterist around the turn of the century. Born and brought up in Dunbartonshire, he trained as a textile engraver. An intelligent self-taught man, endowed with a remarkable memory and diligence, he developed a keen interest in flies. He was soon in correspondence with leading dipterists of the day, like J. E. Collin. Unfortunately his abrasive character led him into conflict with others, particularly his superiors. In 1970 he emigrated to America where his work with the U.S. Biological Survey soon made him Scotland's most productive and respected entomologist. He is principally remembered in his rigorous use of chaetotaxy in the revision of family level classification, together with a prodigious output of over 480 papers describing some 3300 species in 500 genera. His Scottish collections are now in the Royal Museum of Scotland, Edinburgh.

Today, some ten Scottish dipterists have formed the Malloch Society in his honour. Their aim is to further the knowledge, understanding and conservation of Scottish Diptera. To date, they have carried out research on the Caledonian Pinewood Hoverfly - *Callicera rufa*; the Aspen Hoverfly - *Hammerschmidtia ferruginea*; surveyed the river shingle banks around Speyside; and are presently carrying out three projects to:

- a) investigate the saproxylic Diptera breeding in dead wood and sap flows in Scotland's woodlands,
- b) survey the Fife coast SSSIs,
- c) look for the larval stages of certain montane hoverflies.

Each year, at their annual meeting and dinner of the Malloch Society, the Scottish DOTY Award (Dipterist of the year) is presented to the member who has contributed most to furthering the aims of the Society.

For further information on the Malloch Society or if anyone would like to attend the Annual Meeting, usually at the end of November, please contact Kenn Watt on 0224 272849.

Kenneth R. Watt, Aberdeen University Natural History Museum

Directory of mosquito workers.

Dr Keith Snow has published a work on the life and works of the eminent mosquito biologist John Marshall. He is now preparing an article on all of those who have contributed to the study of British mosquitoes. Having completed the literature search, he is now turning his attention to current investigators. If you are one of these and have not already been contacted by Keith, could you ask him for the proforma that he has prepared.

Write to Department of Environmental Science, University College London, Romford Road, London E15 4LZ.

Third International Congress of Dipterology

The 3rd ICD is to be held in Guelph, Ontario, Canada, from August 15-19, 1994. Although we were promised another announcement by now, we have been informed that there really will some more news by Christmas. Information may be obtained from:

Dr Steve Marshall, Dept. Environmental Biology, University of Guelph, Guelph, Ontario, Canada, N1G 2W1.

Alternatively, David Henshaw (address under Dipterist's Supper above) can answer any queries you may have before you apply.

AND NOW Virtual Reality

Are you loosing confidence that "seeing is believing"? This must be so if you own a TV. Even that pillar of truth, BBC News, proudly announces that its own studio sets do not exist - a marvel of deception. For those dedicated to TV adverts, the most dependable of real shapes distort into something that we know (think, perhaps?) is unreal. It is reassuring that there is at least one dipterist who shuns ownership of a TV and relies on his own eyes to perceive the world.

But what is the fly's view of reality, with its array of sense which go into realms we still have difficulty comprehending? For instance, much has been written and inferred about the nature of vision through compound eyes, but some pretty basic points are still emerging. A recent article in *New Scientist* (No 1884, p14) reports research which has found that colour vision requires a cork-screw structure in order to cut out polarised light, otherwise there would be psychedelic colour changes off reflective vegetation as the insect moves about. Meanwhile, the upper back rim of the compound eye has straight rods which are sensitive to polarised light for navigation.

So what about colour bands and other marking on the eyes of flies? They must have some function, sometimes, perhaps, just to impress the opposite sex. Why, for instance, do some horseflies have colour-banded eyes? A verbal report from a conference (but not the subsequent published paper) suggested that colour bands occur where the eye structure is adapted as a refractive grating, splitting light as in a prism into selective wave-lengths in order to enhance the detection of movement. Apparently, it was suggested that a female horsefly could detect a moving cow at a range of three miles (using infra-red?). If you believe that, then why do males also need apparently similar eyes? Or, why should the stratiomyid *Sargus iridatus* have eye-bands in both sexes, a species which has never fairly been accused of biting a cow? Perhaps detecting the source of a dollop of cow dung could be useful but *Oxycera leonina* has an eye-band but seemingly has no requirement even for dung. In some such flies, swarming forms part of the courtship behaviour.

In preparing the book on larger Brachycera, it has become clear that zoning of different sized eye facets and the presence of eye-bands or other markings goes well beyond the tabanids. Even a recent monograph on European soldier flies does not mention structural, let alone colour features and their relevance. There are two problems. Firstly, eye colours are rapidly lost once the fly is killed, so it is critical to look for and record colour patterns whilst the fly is alive (or at least very freshly killed). Secondly, the average field dipterist, such as myself, is in blissful ignorance of literature concerning the physiology and function of insect vision that may be relevant.

Every so often, "And Now" throws down a challenge, Eye colour patterns are widespread among the Diptera but can be recorded only by field dipterists, not by museum taxonomists. We should develop a catalogue of these colour patterns within the Diptera so that their purposes can then be better interpreted. After all, we should look at a fly as it really is.

Alan Stubbs

Central Panel of Diptera Recording Schemes

Co-ordinator:
Martin Drake
English Nature
Northminster House
Northminster
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tel. 0733 340345

Change of address & interests:
Stuart Ball
Joint Committee for Nature Conservation
Monkstone House
City Road
Peterborough PE1 1JY
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