

The Tachinid Times

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I would like to thank all of you who have contributed to this issue of **The Tachinid Times**. The next issue is planned for a year from now, in keeping with the distribution schedule established some years ago. The mailing list continues to grow, though I have noticed there has not been a corresponding increase in the number of contributions. I would like to encourage all of you who are actively pursuing research on the Tachinidae to consider dropping a note to me sometime this year about your work for inclusion in the next **Tachinid Times**, so that this newsletter can continue to inform its readership about current tachinid research.

Third International Congress of Dipterology (by J.E. O'Hara)

This Congress will be held at the University of Guelph, 15-19 August 1994. Plans for the Congress are progressing well and good attendance is expected. Anyone wishing to receive information about the Congress should contact the Congress Chair, Steve Marshall (address in accompanying mailing list).

Some Diptera systematists have expressed interest in visiting the Canadian National Collection in Ottawa either before or after the Congress. The Diptera in the CNC total approximately 2 million pinned specimens. The holdings of Tachinidae fill about 800 drawers and include the primary types of more than 1000 nominal species. Many tachinid types of Mesnil, Villeneuve, Reinhard and Thompson are housed in the CNC. Persons planning to visit the CNC to work on the Tachinidae (or allied families) while in Canada for the Diptera Congress should let me know so that we

can plan accordingly in the Diptera Unit. A limited number of microscopes will be available.

Annotated Catalog of Family-Group Names in Diptera (by C.W. Sabrosky)

My big *Annotated Catalog of Family-Group Names in Diptera* is nearing completion at last. As a special note for tachinidologists, I counted 429 generic names of Tachinidae in the Catalog. True, not all have had group names based on them because the Catalog includes senior synonyms that have not been the basis of group names in order to show the modern classification of the names of type genera. Also there are a few cases where citation of a preoccupied name is needed because the fixation of its type species applies automatically to the replacement name that has been the basis of a group name. I have not done the laborious search to get a final figure, but there must be easily 350 or more names that a specialist would need to check if he or she dared to propose even a new subtribe! Second place goes to Sarcophagidae with 121, and third place to Cecidomyiidae with 94.

Incidentally, it would be simpler to write "tachinists", in the same way as we write dipterists instead of dipterologists!

Release of *Triarthria setipennis* in Ottawa and notes about the New World distribution of the genus (by J.E. O'Hara)

The tachinid *Triarthria setipennis* (Fallén) is a native parasitoid of the European earwig, *Forficula auricularia* L., in Europe. It has been successfully introduced into Canada in southwestern British Columbia and Newfoundland. Four attempts were

made in the past to establish the parasitoid in the Ottawa area, without apparent success. A total of 53 *T. setipennis* adults were released in the Ottawa area in 1986 (Sarazin 1988a: 7), 37 adults were released in 1987 (Sarazin 1988b: 9), 59 adults were released in 1988 (Sarazin 1989: 7), and 12 adults were released in 1991 (Sarazin 1992: 6). Each of those releases involved unmated adults of *T. setipennis*, as attempts to elicit mating among caged individuals in the laboratory were unsuccessful (B. Cooper and B. Gill, pers. comm.).

In the spring of 1992, a study on *T. setipennis* funded by Agriculture Canada and conducted by U. Kuhlmann at the European Station of the International Institute for Biological Control (IIBC) was completed. Approximately 1100 puparia of *T. setipennis* being reared at the Station were no longer needed, and were offered to us for possible release in the Ottawa area. A group comprising myself, A. Schmidt (BRD), B. Gill (Food Production and Inspection Branch) and D. Parker (FP&I) was formed to handle an *ad hoc* release of these *T. setipennis* in Ottawa.

The *T. setipennis* puparia, and some recently emerged adults, arrived in mid June and were placed in cages (40 cm³) for adult emergence and maintenance. Most of the puparia were dead on arrival or died later, but several hundred adults emerged over a period of a week. Attempts were made to elicit mating indoors by placing cages in different lighting conditions (including near windows) and under varied humidity regimes, and by confining pairs of males and females in small vials. No mating was observed under these conditions. However, matings took place readily when cages were placed outdoors. Cages were placed outside on a near daily basis from June 16 to June 24 and matings were observed between 10:00 a.m. and 4:00 p.m., in light rain to bright sunshine, and between about 19-25°C.

Kuhlmann (1992) reported difficulty in eliciting mating among adult *T. setipennis* until he placed them in a large outdoor screen tent measuring 180x180x220 cm. Our observations suggest that a mating cage need not be large but must be placed outdoors. We observed that virgin females would mate at the age of three days post-eclosion and probably older, in agreement with Kuhlmann (1992). The females of some tachinid species are thought to be receptive to mating for only hours, rather than days, after eclosion.

We collected larval and adult earwigs and artificially parasitized them using a technique of Kuhlmann (1992), in which earwigs were anaesthetized with CO₂, placed ventral side up on adhesive

tape, and parasitized individually with first instar maggots of *T. setipennis*. Maggots were applied singly to approximately 115 earwigs, and the earwigs and 20 flies were later released at one site in Ottawa. Though this *ad hoc* release program was useful as a pilot study, the release of such a low number of potentially-infected earwigs makes success of this introduction of *T. setipennis* extremely remote.

Triarthria setipennis has been successfully introduced into Oregon, Washington, southern British Columbia, California, Idaho, Utah, Massachusetts and Newfoundland. It has also been released in Connecticut and Rhode Island, with unknown results. I have also seen specimens of *T. setipennis* collected from the Queen Charlotte Islands and New Hampshire.

I discovered recently that there is a native *Triarthria* species, or complex of species, in the New World. It is known from very few specimens, with records from Sinaloa (Mexico), Guatemala, Honduras, Costa Rica and Nova Teutonia. The species was named by Townsend and placed by him in a monotypic genus, but it is undoubtedly a *Triarthria* species. I will not mention its name here to avoid validating the new generic synonymy in this newsletter. I plan to write a short paper about this native *Triarthria* later this year. I thank Norm Woodley of the USDA for loaning me the type series and some additional specimens of this *Triarthria* species.

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New Guinea tachinids (by R.W. Crosskey)

When the late Joe Szent-Ivany was Principal Entomologist at the Department of Agriculture at Port Moresby, Papua New Guinea, back in the 1960s, he took a great interest in the tachinids being reared there from various pest hosts. At the time, I was the dipterist for the Commonwealth (now International) Institute of Entomology in London, so many

specimens of New Guinea tachinids came to me for identification. Often it was impossible to do much, if anything, to name material because of the unworked state of the New Guinea fauna. To try and remedy this, Joe and I hatched the idea that I should go to New Guinea with the object of collecting tachinid material - and, hopefully, working it up into a published regional fauna. In the event I visited New Guinea (including New Britain and Bougainville) for eleven weeks in 1965 and collected some 3500 tachinids.

The collecting was the (relatively) easy part, the tough part was working out what had been collected in the absence of any faunal coverage for neighbouring Australia and Oriental region. (We were still floundering then in the welter of meaningless genera proposed by Townsend and among the plethora of Oriental-Australasian nominal species proposed by Walker, Wulp, Townsend, Baranov, Curran, Malloch and others for which none of the types had been studied.) I soon found that I had little hope of working out the New Guinea fauna without first tackling the genera for the fauna of Australia and the Oriental region and that's how it came about that I prepared my 'conspectuses' for these areas: they were to provide the foundation for working out the New Guinea fauna.

After joining the Museum staff (1972) I had to tackle, first, certain Hymenoptera and later the Simuliidae, and a good opportunity never then arose to prepare the once-intended faunal monograph for New Guinea tachinids. So what is the position now? Well, all my material is worked out to generic level and some obviously undescribed genera and species set aside for ultimate description. Thus sorted, the material is now cared for by Mr. Nigel Wyatt in the Department of Entomology at the Natural History Museum in London, and Nigel is gradually incorporating parts of it into the 'BM' collection. Anyone interested in what my material contains should contact Nigel.

My material contains some beautiful and remarkable tachinids such as the plump golden-green or blue-green *Formosia* (bigger than bluebottles) and the extraordinary long and spindly *Doleschalla*. It was interesting collecting these: at first I didn't see them but later I discovered that for *Formosia* you had best bend low and look under the uppermost curvature of wild ginger leaves and for *Doleschalla* you must walk around the trunks of coconut and casuarina trees until you spot the silhouette: after this, the flies can be netted fairly easily.

Mounting tachinids from ethanol (by J.E. O'Hara)

Anyone who has ever air-dried tachinids directly from 70-75% ethanol knows that the results are quite unsatisfactory, because a great deal of shrivelling takes place. Tachinid specimens prepared in this manner are often submitted to our Identification Service, making the task of identifying them quite difficult. There is a very simple procedure for mounting tachinids from 70% ethanol that gives such good results that I use it all the time for preparing specimens from Malaise trap samples. I have found that the less time specimens spend in ethanol the better they come out of it. Similarly, distilled water is preferable to tap water for diluting 95% ethanol to 70%. The method described here is a slight modification of the one published by Vockeroth (1966, *Can. Ent.* **98**: 69-70).

- 1) Remove specimens from 70% ethanol, blot on Kimwipes™ or tissue paper for a few seconds, then place them in a container of ethyl acetate. Large specimens can be pinned, if desired, before they are placed in ethyl acetate. Specimens cannot be pinned after removal from ethyl acetate because they are then too brittle.
- 2) Leave small specimens in ethyl acetate for at least four hours, leave large specimens overnight.
- 3) Remove specimens from ethyl acetate and allow to air-dry on Kimwipes™ for a few minutes.
- 4) Apply a small amount of glue to the side of a pin at an appropriate distance along the shaft and touch this point against the right side of a specimen. Small diameter pins are good for small specimens, #3 pins for large specimens. White (woodworking) glue gives satisfactory results and dries quickly, while allowing just enough time for adjustment of the specimen. Shellac glue is preferred by some dipterists because it can be applied very thinly and is easily dissolved; however, it is slow-drying and therefore difficult to use except on small specimens. (Shellac glue is excellent for attaching an abdomen to a thorax after a genitalic dissection. Its big disadvantage is that it must be made from commercial shellac because it cannot be purchased.)
- 5) Specimens pinned before immersion in ethyl acetate do not adhere well to pins. After such a specimen has been removed from ethyl acetate and air-dried, place a small amount of glue at a point of contact between the specimen and pin. This will prevent the specimen from spinning on the pin later on.
- 6) Ethyl acetate can be used for several batches of specimens. Specimens that shrivel either have not

remained long enough in ethyl acetate or fresh ethyl acetate is needed.

7) The above procedure works well for a wide variety of insects. Some Nematocera with very delicate wings are not recommended because their wings tend to fold while drying.

Two tachinid species discriminate between parasitized and non-parasitized hosts (by R. López)

[Ed. note: The following formed the basis of a talk presented by R. López at the 1993 Annual Meeting of the Entomological Society of America (Indianapolis, Dec. 11-16), and is the abstract of a paper submitted to *Entomologia Experimentalis et Applicata*.]

The abilities of *Myiopharus doryphorae* (Riley) and *Myiopharus aberrans* (Townsend) (Tachinidae) to discriminate between parasitized and non-parasitized larvae of the Colorado potato beetle, *Leptinotarsa decemlineata* (Say) (Coleoptera: Chrysomelidae), were investigated under laboratory and field conditions. Laboratory experiments showed that both *Myiopharus* species have a significantly greater frequency for larvipositing in non-parasitized hosts over parasitized ones. Direct field observations of both *Myiopharus* species' larvipositional behavior over three growing seasons showed effective restraint from larviposition into parasitized hosts, while larviposition into non-parasitized ones occurred readily. Avoidance of previously-parasitized hosts occurred after the larvipositing flies briefly landed on host larvae without attempting to insert the larvipositor.

The low levels of superparasitism which occurred in the caged experiments and in the field appeared to be due to a breakdown of the larvipositing parasitoids' restraint when they met only parasitized hosts or when many parasitoids competed for reduced numbers of hosts late in the season.

Studies on the oviposition behaviour of *Ocytata pallipes* (by U. Kuhlmann)

Ocytata pallipes (Fallén) is a member of the group of tachinids that deposit large numbers of fully incubated eggs on the food of the host. Eggs are ingested with the food and later hatch in the host's alimentary tract. In central Europe, *O. pallipes* is a parasitoid of the European earwig, *Forficula auricularia* L.

During the oviposition period, female flies were kept individually in ventilated plastic cylinders at a relative humidity of 80-90%. Carrot disks with earwig feeding marks from the previous night were used as the most convenient oviposition substrate.

When the female encounters a site inhabited by earwigs, she examines the substrate and, if it is accepted as an oviposition site, starts to lay eggs at varying time intervals. Each female was offered one disk that was replaced every 24 hours and the eggs laid were counted to determine the real reproductive potential.

While it was clear from these trials that a substrate with earwig feeding marks was an attractive oviposition site, more refined experiments were designed to show whether other cues, e.g. earwig odour without feeding, would elicit oviposition. Fifteen females were individually offered oviposition disks (2.5 cm ø) for two hours, rested in an odour-free room for one hour, and then a second substrate offered. The following test disks were randomly offered: carrot disk with feeding marks; carrot disk without feeding marks; dry cellulose disk with earwig odour; dry cellulose disk without earwig odour; moist cellulose disk with earwig odour; moist cellulose disk without earwig odour.

As was expected, carrot disks with feeding marks received the highest number of eggs. What is surprising is that carrots with neither feeding marks nor earwig odour induced a remarkable oviposition response similar to that of dry, odour-loaded cellulose disks. Similar results were obtained using pieces of other food including apple, plum, etc. This suggests that potential earwig food plants or their odour (enhanced in the experiments by slicing the carrots) elicits oviposition. The data were subjected to the Mann-Whitney test that shows that most of the substrates differed significantly in their acceptance as oviposition sites.

Tachinid collecting in Arizona and New Mexico (by J.E. O'Hara)

[This is a shortened version of an article printed in *Fly Times* 11 (1993).]

The American Southwest is, in my view, the hotbed of tachinid diversity in the Americas north of Mexico. In Arizona and New Mexico in particular there are to be found Neotropical elements from Mexico, boreal elements from the north, unusual records of predominantly eastern or western species, and a healthy number of endemics.

My trip was planned to coincide with the late summer rains of the Southwest, a time when insect activity is heightened and tachinid collecting is usually very good. I left Ottawa on 8 August 1993 in a Government Caravan, loaded with the appropriate collecting equipment and camping gear for a 25-day,

12,000km trip to Arizona and back. My first collecting site, the Fourth of July campsite in the Manzano Mtns. southeast of Albuquerque (New Mexico), was reached on August 11th. There I tried for the first time a collecting method recommended by Monty Wood, in which a mixture of honey, fresh cola and water is sprayed on sunlit leaves. The effect was astonishing! Tachinids of all sorts were attracted to a couple of patches of bigtooth maple that I had sprayed, and they kept me so busy I hardly had time to collect elsewhere. Even after two days of repeatedly spraying the same leaves there were still some species that yielded only a specimen or two. I also discovered that the response to sprayed areas can be quite varied, such that certain plants and certain locations work better than others. Later in the trip I sometimes found that sugaring was completely and inexplicably ineffective.

I had arranged to visit with Newel Jorgensen (Eastern New Mexico University, Portales) on August 13th, so I spent the morning of that day "hilltopping" in a small mountain range west of Corona, New Mexico. I collected on the top of a moderate hill that was sparsely clothed in juniper and pinyon pine. Collecting at the top yielded little of interest except a couple of bot flies (*Cuterebra austeni*) and a single specimen of *Euthera* sp., a rare tachinid with wings patterned like those of a deer fly.

I spent a couple of days in Portales with Newel and his wife Ilsa, setting up Malaise traps (kindly supplied and tended by Newel for the duration of my trip), collecting near Kenna at the type locality of a species I had named *Frontiniella jorgenseni*, and discussing good places to collect tachinids in New Mexico. Newel brought to my attention "The Roads of New Mexico" (1990, Shearer Publishing), which shows every dirt track and highway in New Mexico at a scale of about 3 miles per inch.

Early on August 15th I headed off again. First stop was Bluff Springs south of Cloudcroft in the Sacramento Mtns., which I could not have found without "The Roads of New Mexico." I found no tachinids so I continued on to Cherry Creek campground in the Gila Mtns. north of Silver City. I had camped at this site three times in the past and had collected more undescribed and rare tachinids there than anywhere else. I do not know why. This time tachinids were less abundant, but the site nevertheless yielded the first United States record of a small tachinid, *Siphona futilis* (not known previously from north of Durango, Mexico). From my Malaise traps at Cherry Creek I later extracted 2 females of *Paradmontia picticornis*, a tachinid hitherto known

only from the & type and from 1 & I had taken at Cherry Creek on a previous trip. Blacklighting attracted 1 *Muscopteryx* sp. that is unusual in possessing patterned wings; the CNC has no other specimens of this apparently undescribed species.

I next visited Portal in the Chiricahua Mtns. of Arizona. Collecting was poor so I pushed on to a desert site I have visited before, south of Safford at the foot of the Pinaleno Mtns. The site is on Hwy 366, in an area dominated by mesquite and acacia. Ground cover is a mixture of xeric plants and spent handgun, rifle and shotgun shells. This is the type locality of a species I had named *Frontiniella incarcerata*, a name inspired by the site's proximity to a federal prison. In the past I had not had very good net-collecting during the day but had caught a high diversity of insects in Malaise traps. So this trip I set up two Malaise traps and returned to the site every few days to empty the traps. Two rare tachinids were taken at blacklight at this desert location (*Muscopteryx chaetosula* and *Zaira* sp. nr. *nocturalis*).

Not far from my desert site is a conical hill a couple of hundred feet high. Called Cyclone Hill, this hill can be climbed in less than 15 minutes and was very productive for hilltopping. Morning collecting was best; I reached the top one morning at 0730 and on another at 0800, and both times the hilltop was buzzing with activity. *Cuterebra austeni* males were everywhere, darting across the hilltop like miniature jet fighters. I collected 12 in all, and could have taken more had I concentrated on them. Also hilltopping were males of *Mydas* sp., which I at first took to be a common pepsid wasp. On both mornings hilltopping activity dropped off considerably before 0930.

I spent half a day hiking through Ramsey Canyon in the Huachuca Mtns., but the sky was overcast and few tachinids were seen. Ramsey Canyon is owned and operated by the Nature Conservancy, and permission to collect there must be arranged prior to arrival. The fauna has a distinctly Neotropical element that is equalled in only a few of southern Arizona's canyons. My only interesting catch was a pitch black tachinid with the wonderful name of *Penthosia satanica*.

Next was a quick stop at Sycamore Canyon northeast of Nogales to set up a Malaise trap, then on to Tucson. There I stayed with Dave Maddison (a coleopterist with the University of Arizona) for a couple of days before returning to Safford for a day. I then drove to the Pinal Mtns. south of Globe, where I camped at about ca. 7500'. The vegetation is distinctly temperate at that elevation. The next

morning "sugaring" on oak leaves attracted hordes of tachinids, among them 1% of an undescribed species of *Siphona s.l.* I had not seen before.

It was now August 24th and I had until September 1st to reach Newel Jorgensen's in Portales. Unfortunately, the weather took a turn for the worse and I had few sunny skies for the rest of the trip. I made my way back to the Manzano Mtns., where I set up Malaise traps in New Canyon and Red Canyon and tried to collect again at the Fourth of July campground in Tajique Canyon. The total number of interesting tachinid species from the Manzano Mtns. was not realized until I had examined the pinned and Malaise-trapped specimens in Ottawa. Some were directly relevant to my current revisionary study: 6 specimens of an undescribed species of *Ollacheryphe* (which I first thought to be a *Lydina* sp.) known previously from a single specimen from Arizona, the first male of *Paradmontia picticornis*, and 1%&1& of *Dichocera lyrata*. Other interesting tachinids included 1% of an undescribed *Siphona s.l.* species that I had not seen before, several %% and the first && of a rare and undescribed *Siphona s.l.* species, 1& of an undescribed *Siphona* (subgenus *Pseudosiphona*) sp., and 1% of *Actia autumnalis* not known previously from west of Tennessee.

On my last day of collecting I had a flat tire at the top of a mountain and became horribly stuck in mud at the bottom, but was still able to rendezvous with Newel Jorgensen the next day. Three days later I was back in Ottawa.

I am now more convinced than ever that each trip to the American Southwest will be rewarded with species not hitherto taken, or taken but rarely. For me, the place to go is still the Southwest, and I am eager to return once again.

Egg morphology of *Thelymyia saltuum* and *Lypha dubia* (by S. Gaponov)

The egg of *Thelymyia saltuum* (Meigen) is rather membranous and white, with a length of 0.51 mm and width of 0.30 mm. The dorsal chorion is thin with little tuberos hills of the plastron system. The polygonal network is absent. The aeropylar structure is situated on the anterior egg pole and consists of groups of respirative cripts of different diameters.

The egg of *Lypha dubia* (Fallén) is yellowish, and irregular-oval in shape. The chorion is thin, membranous and transparent with a polygonal network of the plastron surface. The posterior egg pole is now down with pores and serves for egg attachment to the substrate. The aeropylar structure is absent.

PERSONAL NOTES

Stig Andersen finished his Ph.D. thesis last summer. His thesis is entitled "The Siphonini of Denmark and Fennoscandia" and deals with the systematic revision of almost all the European species of Siphonini. It also contains chapters on the classification of Tachinidae, recognition of Siphonini, Leskiini and Minthoini, discussion of the phylogenetic position of these tribes (as forming together a monophyletic group within the subfamily Tachininae), and a review of the phylogeny of the genera of Siphonini. The defence of his thesis will probably take place in early April 1994.

On 1 September 1993 Stig began full-time work on the identification of insects from Baltic amber. That work will last until 1 April 1994. Stig is also busy identifying insects he collected in Greenland on the "Skjoldungen Expedition" in 1992, the results of which will be published in the Greenlandic periodical "Tusaat."

Timothy Foard writes: I am a graduate student (M.Sc.) presently revising the Nearctic species of the genus *Spallanzania*. I am interested in the Tachinidae in general, especially systematics, host-parasitoid relationships and ecology. After I receive my Masters I am interested in examining the phasiine genus *Trichopoda*, using morphological, karyological, and biochemical approaches to systematics.

Benno Herting continues his work on the genera *Billaea* and *Dinera* for *Die Fliegen der paläarktischen Region*. He also continues the revisions of old host records of Palearctic Tachinidae.

Nikolai Kolomiets writes: Last year I coauthored a book with Dr. S. Artamonov (of the Ussurian Pedagogical College), entitled "Dipteran insects - entomophages of forest silkworms," containing 10 printed lists. Silkworms are the lepidopterans *Lymantria dispar*, *L. monacha*, *Dendrolimus pini* and *D. sibiricus*. We summarized in the book all the materials of our research and the literature concerning taxonomy, biology and practical use of 85 species of Diptera in seven families in the former territory of the USSR. Unfortunately, the process of publishing this book is quite difficult because of the high costs involved.

In July-August 1993 I became the first dipterist to visit the Siberian Urals in the North of Western Siberia (63°n.l. and 73°e.l.). I attempted to make a

collection of tachinids, but found only one blossoming plant species (*Epilobium angustifolium*) and during 2 weeks I caught only two species on it, *Winthemia* sp. and *Gymnosoma* sp. There were, however, a great number of bloodsucking insects such as Culicidae, Simuliidae and Heleidae.

Rolando López writes: I am in the process of finishing the writing of my dissertation about the "Field Behavioral Ecology of *Myiopharus doryphorae* and *Myiopharus aberrans* in Massachusetts" under the advice of Dr. Dave Ferro from the Department of Entomology at UMASS-Amherst. I expect to have my defense sometime in February or March 1994.

Jim O'Hara writes: I have in press a revision of the North American species of *Ceromya* Robineau-Desvoidy. It will be published in *The Canadian Entomologist* in mid summer in an issue dedicated to my Ph.D. supervisor, George E. Ball of the University of Alberta. Nearing completion is a compilation of the tachinid taxa described by the late L.P. Mesnil, including the whereabouts of his primary types, where known. Bruce Cooper (CLBRR, Ottawa) and I are working on a catalog of the primary types of the CNC Tachinidae, to be published (probably in 1995) as Part 4 in the series "Diptera types in the Canadian National Collection of Insects." My main systematic focus is the *Lypha*-group of the Tachininae, about which I will present a talk at the Diptera Congress in Guelph this summer (progress permitting!). Recorded elsewhere in this newsletter are the results of a successful field trip to Arizona and New Mexico last August.

Thomas Pape writes: I have had an exciting 1993 with visits to museums and colleagues in Brazil, Germany, Russia, England and Japan. Collecting was not a primary priority and my stay was off-season in both Brazil and Japan anyway. However, I did manage to make a few excursions around Rio de Janeiro. One great experience was seeing females of the conopid genus *Stylogaster* as well as several species of the tachinid genus *Calodexia* following a swarm of army ants. Jerking around to keep intruding ants below my knees, I caught several specimens of *Calodexia* as well as a peculiar sarcophagid that had a striking similarity to these tachinids: same slight infuscation of wings, almost same pattern of abdominal microtomentum, and apparently a slight displacement of the female terminalia to a more ventral position. Unfortunately - although not unexpectedly - all tachinids and sarcs caught were

females.

I have recently been offered a permanent position as research entomologist at the Swedish Museum of Natural History in Stockholm. This should hopefully bring at least the possibility for long term planning of my research, and I look very much forward to that. [Ed. note: Starting date for Thomas in Stockholm is 1 February 1994.]

Knut Rognes writes: During the last year I have been busy with work on the phylogeny of the Calliphoridae for the Phylogeny of the Diptera Project (ed. Art Borkent). It has necessitated a study of all oestroid groups, including the Tachinidae. I am concluding that the Calliphoridae, as currently understood, is a paraphyletic non-group that must be abandoned. An interesting spin-off from my studies is that my cladogram pictures the Tachinidae and Sarcophagidae as sister-groups, although on the basis of characters other than those given by Thomas Pape. A new interpretation of the phylogenetic significance of the position of the outer posthumeral seta indicates that the position of this seta outside a line through the presutural belongs to the ground-plan of the non-mystacinobiine oestroids, and that Sarcophagidae and Tachinidae share the apomorphic position (inside a line through the presutural seta). Even though some other characters support the group Tachinidae + Sarcophagidae, it is not very reliable. My data give it a Bremer support index of +2.

Early in 1994, after more than 15 years among the amateurs, I will begin a career as a professional entomologist. I have accepted a permanent position at the Zoological Museum, avd. for landinsekter, University of Oslo, Sarsgt. 1, N-0562 Oslo, Norway. I will be in charge of all terrestrial insects (fortunately a small museum!).

Jens Roland writes: Effective 1 January 1994, I began a full-time position as Associate Professor in the Zoology Department at the University of Alberta. My program will include research on landscape-level population dynamics of insects, including the effect of habitat structure on parasitoid search and host mortality. I will also be continuing research on chemical ecology of tachinid search behaviour with projects on the tent caterpillar parasitoids *Leschenaultia exul* and *Patelloa pachypyga*, and the gypsy moth parasitoid *Ceranthia samarensis* (jointly with Vince Nealis at the Canadian Forestry Service).

Hiroshi Shima writes: Last summer I enjoyed collecting trips in China and India. In China I collected around Songfan Xian, northwest area of Sichuan, and Kangding (= Tatsien-lu), western area, from late July to early September. There were many sawfly larvae and it seemed to be slightly late for collecting tachinids. Many *Phebellia* and *Phyllomya* specimens, sawfly parasitoids, were obtained. As I soon left for India after returning from China, I have yet to finish sorting out the roughly 2000 specimens obtained. In India we mainly collected in the states of Orissa and Tamil Nadu from the middle September for about a month. I felt that it was indeed difficult to collect flies in south India. I collected there just one-tenth the number of specimens collected in China.

Because of the reorganization of university faculties in Japan, I have been very busy for these past years. I have not had enough time to work on tachinids, except to collect them from China and some other countries. I am planning to visit European museums in 1994 to study types of Oriental and Japanese tachinids.

Thomas Pape of Copenhagen visited Japan for about three weeks in December. We had pleasant days when he visited our laboratory.

Xuekui Sun writes: I am still working on *Phasia* (Tachinidae) and have made some progress. I estimate there are about 80 species of *Phasia* in the world including many new species (most from Australia and the Neotropical region). I hope to finish my Ph.D. program in two years. I also spent a little time in 1993 working on *Cylindromyia*, based mainly on specimens from China (this study in cooperation with Steve Marshall). Two new species of *Cylindromyia* have been discovered.

Peter Tschorsnig writes: The manuscript on the Central European Tachinidae, with keys for the species and the most important data on distribution and ecology, is finished. It will be published during 1994.

Vera Richter has been in Stuttgart for four weeks. We had many interesting and nice discussions. We will coauthor the part on Tachinidae for the new *Manual of Palearctic Diptera*. Vera Richter already contributed the first version of the general part, and I will write the key for the genera. Up to now I have studied 70 genera (mainly those Vera Richter brought with her) and made standardized notes on about 90 features for each genus (using dBASE program). The same still must be done for the remaining 340 genera. I hope I can finish the key by the end of 1994. After

the manuscript is written I will use the data also for a new dBASE key for the genera, which will be of more profitable use than conventional printed keys.

Jaromír Vaňhara writes: Thanks to German DAAD and WWF-Auen-Institute Rastatt I obtained a two month scholarship to spend June and July 1993 in the floodplains of the upper Rhine and the lower Elbe in Germany. Despite my mosquitological duties I had enough time to collect tachinids for my long-term study. I was also able during that time to visit Peter Tschorsnig in Stuttgart twice; Peter kindly revised my basic collection of Central European tachinids.

In my home study area in southern Moravian floodplain forests Prof. Rozkošný and I continued with our third year of collecting calyprate flies, including tachinids.

Ian White writes: One of my research interests is the development of computerised multiple entry key software that is sufficiently user friendly as to allow crop protection specialists to make some ID's of their own. While doing ID's of Tachinidae reared from tropical crop pests, it has struck me that the high reliance on chaetotaxy would make tachinids an ideal group for this computerized approach, if only to the generic level. I already have in my care a dataset (by Roger Crosskey) of 47 characters describing 39 tribes, which would form a good starting point. As my remaining research time is fully committed to work on fruit fly pests (Tephritidae) I would be pleased to hear from any tachinid specialist with a liking for computers, who might like to take a lead in developing a system for tachinids genera associated with major crop pests.

Monty Wood: Recently published by B. Sinclair, J. Cumming and M. Wood was a paper on the homology and phylogenetic implications of the male genitalia of the Lower Brachycera (1994, *Ent. Scand.* **24**), complete with detailed, color-coded illustrations. The three authors have in preparation a manuscript on the male genitalia of the Eremoneura (Empidoidea + Cyclorrhapha). Monty is also co-authoring with P. Adler and D. Currie a book about the black flies (Simuliidae) of North America, which should be completed in 1994. A book chapter by Monty on the tachinids of the Yukon (Canada) is in preparation. In fall of 1993 Monty visited Helsinki to curate the unsorted part of the tachinid collection of the Zoological Museum, then travelled to St. Petersburg to give a presentation entitled

"Relationships of parasitic flies (Diptera, Tachinidae) from Northern Europe, Siberia and Northern North America" in a symposium on *The Relations of the Insect Faunas of Siberia and Northern Europe*. Monty will be collecting flies in Chile from December 1993 to mid February 1994 and will travel to the Yukon for a brief black fly collecting trip (with D.C. Currie) in the summer.

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This section includes references to the Tachinidae that were published during the past year in addition to some post-1980 publications I had overlooked in my previous bibliographies. I thank Thomas Pape again this year for sending me some references I would have otherwise missed.

The entire bibliography of 1980-present titles, as contained in issues 1-7 of this newsletter, is available in the form of a WordPerfect 5.1 file to anyone interested. Please send a diskette on which I can copy the file. The bibliography is as complete as possible but it is not a definitive list.

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