THE British Simuliid Group Bulletin

Number 26 – July 2006

NATURAL HISTORY MUSEUM

THE BRITISH SIMULIID GROUP

The British Simuliid Group (BSG) is an informal gathering of scientists of any discipline, from many countries, who have an interest in the Simuliidae. The group's members include entomologists, parasitologists, environmentalists, ecologists and medics, with interests in ecology, bionomics, taxonomy, cytotaxonomy, disease transmission, freshwater biology etc. Our aim is to assemble as diverse a group as possible in order to encourage a wide interchange of ideas and information.

At present the BSG has about 130 members in the UK, Europe, Africa, Australia, New Zealand and the Americas. Membership is FREE - if you're not already a member of the BSG all you have to do is give us your name and postal and e-mail addresses.

Annual meetings have been held at different locations in the UK since 1978. Abstracts of papers presented are published in our Bulletin which is sent to all members of the group.

The Group also runs an electronic news list with the name "**Simuliidae**" which is now on **JISCmail** To join "**Simuliidae**" send the following command as one line of text in an e-mail message without subject heading- **join simuliidae *your-firstname lastname***
to: **jiscmail@jiscmail.ac.uk**

Membership of "Simuliidae" does not automatically make you a member of the BSG. You have to join each separately. The Simuliidae list owners are the Hon. Secretary and the Editor of the Bulletin.

Recent back numbers of the Bulletin can be viewed on the World Wide Web at URL:
http://www.blackfly.org.uk

Inquiries about the Group and its activities should be made to John Davies: address inside back cover and e-mail ***daviesjb@liverpool.ac.uk***

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The **British Simuliid Group Bulletin**

The British Simuliid Group Bulletin is an informal publication intended to disseminate information about the Simuliidae. It is published twice each year and is distributed free to all members of the British Simuliid Group.

Content covers papers presented at the Group's Annual Meeting, which is usually held in September, short research notes, notices and accounts of meetings, and articles of anecdotal or general interest that would not normally be found in international journals. Geographical cover is world-wide, and is not restricted to the British Isles. Reports of research carried out by graduates, young scientists and newcomers to the subject are particularly encouraged. It is an ideal medium for offering new ideas and stimulating discussion because of the very short interval between acceptance and publication.

The Bulletin's editor is John B. Davies, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool, L3 5QA, UK. E-mail: *daviesjb@liverpool.ac.uk*

Notes for Contributors

To avoid copy-typing, the editor (address above) would prefer to receive contributions on disc or by e-mail, or typerwitten. Details as follows:-

1. Via conventional mail on IBM PC formatted 720Kb or 1.4Mb 3.5 inch diskettes, as unmodified word processor files (most common DOS or Windows word processor formats are acceptable) or as RTF, PDF, ASCII or DOS text files (We usually have to change pagination and heading format, anyway). Mark the disc with the format, word processor name and file name(s). Complicated tables and figures can be accepted as separate graphics files (not OLE embedded, please!) but we may ask for a hard copy as a check that all detail has been retained. Remember that figures should have legends and small detail drawn large enough to be visible when reduced to 100mm by 70mm. Diskettes will be returned on request.

2. By electronic mail via the Internet. Send your file in MSWord .DOC or in .RTF or .PDF format or as an ASCII file (also known as DOS or txt File), and email it either as part of the message or preferably as an attachment to:

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If neither of the above methods are available, then post to me printed copy on A4 paper (210x297 mm), single spaced, ready for scanning. Heading styles as in the Bulletin.

Format for References is flexible. Please refer to the Bulletin for the form appropriate to your article. Scientific Communications should quote the full title and journal name, but Notes and Abstracts may optionally omit titles and show only the abbreviated journal name.

THE BRITISH SIMULIID GROUP BULLETIN No. 24 July 2005

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FROM THE EDITOR

This 26th number is concerned with people rather than Simuliids. We have articles on Herbert Dalmat and Evelyn Cheesman, both remarkable characters in their own ways whose stories make interesting reading. We also announce the sad news of the passing of Brian Duke.

John Davies

MEETINGS

The next Annual Meeting of the British Simuliid Group

There was such a poor response to the request issued in the 25th *Bulletin* for views as to whether we should hold a meeting in 2006, that it was concluded that the British Membership had no strong feelings on the matter, and therefore no plans have been made for a meeting this year. Members are reminded that a *Simuliidae* Symposium is being held in Novi Sad in September 2006 (see below).

We now need to decide upon a venue and time for a meeting in 2007. If you have any offers, suggestions or ideas, please contact John Davies.

Reminder

2nd International Simuliidae Symposium

3rd- 6th of September 2006
Novi Sad, Serbia and Montenegro

To be held at the Faculty of Agriculture
Department for Environmental and Plant Protection,
Laboratory of Medical and Veterinary Entomology

Trg Dositeja Obradovica 8
21000 Novi Sad
Serbia and Montenegro

For the latest information contact
The meetings web site at: http://polj.ns.ac.yu or more specifically http://polj.ns.ac.yu/english/news.htm
Aleksandra Ignjatovic Cupina
E-mail: cupinas@polj.ns.ac.yu or by mail at the above address
Or visit the blackflies web site at http://www.blackflies.org.uk and follow the link to "What's on"

B. O. L. Duke

Just a few days before going to the press news was received concerning the sudden death of Brian Duke on 3 June 2006 at his home in Lancaster, U.K.

Brian's main interest was in the filarial diseases with onchocerciasis and loa loa predominating. Whilst not a member of our Group, his work will be well known to members whose interests include the habits of *Simulium damnosum* and *S. ochraceum* and their involvement in the transmission of onchocerciasis in Africa and Central America. Between 1962 and 1975 he published as senior author about 20 papers on the entomological aspects of the disease. He was particularly intrigued by the puzzling association between vector species and cytospecies and their varying ability to transmit onchocerciasis in different bioclimatic areas, a study that became known under the general heading of "Onchocerca-Simulium Complexes". These culminated in an experiment where a person infected with the Guatemalan strain of onchocerciasis was invited to the Cameroon to see to what degree *S. damnosum* could be infected. His work formed the basis for many subsequent studies by other workers. He was also the originator of the term "Annual Transmission Potential" or ATP. His entomological work was but a small fraction of his output, most of which involved clinical, pathological and epidemiological aspects of the filarial diseases

and their treatment. Brian continued to be scientifically active to the end.

John B. Davies

ARTICLES

A Tribute to Herbert T. Dalmat (1919-1986)

John B. Davies , *Liverpool School of Tropical Medicine, Liverpool, U.K.*

When I left Nigeria in 1962 after a spell supervising the Abuja Simulium Control Unit, to undertake research into pestiferous *Culicoides* in Jamaica and later the potential vectors of virus and other infectious agents of man and animals in Trinidad, West Indies, I thought that my *Simulium* collecting days might be over. It was only when I started collecting biting insects in the forest and near mountain streams of Trinidad that I met them again and discovered how difficult the identification of neotropical simuliids was - a great difference from the comparatively straightforward African species, most of which had been well studied. The problem was that at that time species descriptions of South American simuliids appeared to be found only in scattered papers written in English, Spanish and Portuguese and some of the descriptions were very old and incomplete.

It was some time before I discovered in the laboratory's library (mis-catalogued under "Smithsonian") a thick volume entitled "The Black Flies (Diptera, Simuliidae) of Guatemala and their role as vectors of onchocerciasis" by Herbert T. Dalmat, published in April 1955. Although not strictly relevant to the island of Trinidad and the adjacent Venezuelan land mass the association with onchocerciasis grabbed my attention immediately and it became my first reference source from then on. It also contained usable keys to many of the species that I encountered.

Since it is now slightly over 20 years since Dalmat's death, and 51 years since the publication of his major work this seems a auspicious time to recognize his achievements.

Herbert Dalmat ("Herb" to his friends) and his colleagues produced a wide

ranging "Bible of *Simulium* and onchocerciasis" whose scope is quite staggering considering that they started very nearly from scratch. Although since 1915 many distinguished workers had investigated various aspects of the disease and its vectors, notably in Mexico, no-one had carried out what is now referred to as an integrated study of the disease, its possible vectors and their ecology. This is what Dalmat and company set out to do during almost six years of field work, 1947 to 1953, and reported upon in a single volume of 425 pages, including many figures and photographs.

In his introduction Dalmat wrote:

> "It is the purpose of the present study to give as complete an account as possible of the Simuliidae of Guatemala, so that their role in the transmission of onchocerciasis can more easily be appreciated. It has been felt advisable to give first a general discussion of the importance of this group of flies, and to present epidemiological factors in Guatemala that may be involved in the transmission of the disease. Then follows the body of the paper, which includes the taxonomy, ecology, and distribution of all species that have been collected in Guatemala, with special reference to the principal anthropophilic species. The biting habits, resting places, flight range, longevity, and attempts to colonise those pieces that most commonly attack human beings are discussed in detail. It is hoped that this information will serve as a firm foundation upon which can be developed an efficient program of control of the vectors of onchocerciasis."

It was not an idle claim. Apart from surveying the country, recording the distribution of the species found, describing those that were new to science, and re-describing those he found and building keys for their identification, Herb was obviously fascinated by the variety of species and habitats. Together with his colleagues he classified the streams and rivers and cross-referenced river type with species. He was obviously puzzled by finding the three suspected vector species in just about every department of the country, and not just in the limited onchocerciasis zones (the concept of cytospecies with differing habits and vectorial capacities did not get going until the mid 1960s). They carried out extensive studies on the host preferences of the animal-biting species, desperately tried to colonise them, and made the first successful mark-recapture trials with any Simuliid species. The last have with time taken on the aspect of a classic experiment.

Herb. Dalmat catching blackflies landing on a volunteer in Guatemala
(Photo. RC Collins)

In the first of two trials they stained and released 19,580 female blackflies, and of 18,707 collected in the days following 9 *S. ochraceum*, 8 *S. metallicum* and 4 *S. callidum* had been stained and were recovered between 2.1 to 7.4 miles (3.4 to 11.9 km) from the release point, one *S. metallicum* had travelled 3.8 miles (6.1 km) over heavily indented terrain in less than 24 hours. Encouraged by these results a second experiment in which over 52,000 flies were released resulted in the recapture of 1 *S. ochraceum* and 30 *S. metallicum* over distances between 1 to 9.7 miles (1.6 to 15.6 km). In these and other release studies they established unexpected maximum longevities of 27 days for *S. ochraceum*, 85 days for *S. metallicum* and 20 days for *S. callidum*. They also investigated the resting sites of adults and the development of *O. volvulus* in the vectors.

In the Guatemala studies, Dalmat was assisted by many Guatemalans, and some American scientists. One of these, his assistant entomologist Arden Lea, has written the following note specifically for this account.

> "In 1947, Dr. Dalmat was commissioned in the U.S. Public Health Service and went immediately to Guatemala where he initiated a new research program on Onchocerciasis for the U. S. National Institutes of Health, in collaboration with the Pan American Sanitary Bureau (WHO) and the government of Guatemala. I joined the Project in 1951 as an assistant

entomologist.

In thinking back to those days, the one word that personified Herb is "enthusiastic". His enthusiasm about life in Guatemala, the people, their language and culture, the beauty of the country, and his research, was infectious. He cared about the young Guatemalan men who worked for the Project in the laboratory and in the field. He motivated them to take correspondence courses to improve themselves. (One man later earned a Ph.D.)
Herb enjoyed cooking almost as much as bargaining with vendors in the markets, consequently he did much of the cooking at Yepocapa, the site of the fieldwork and where we lived during the week.

Fortunately for me upon arrival, Herb took me on a series of collecting trips that gave me a wonderful geographical tour of the country. He was especially meticulous in his record- keeping of the larval habitats on these trips and made every effort to obtain newly emerged adults, so that he had all three stages on which to base his taxonomic descriptions.

Along with his taxonomic research, Herb worked for nearly three years to develop a colony of at least one vector species of simuliids, so that the parasitologist would have uninfected flies for his experiments. Promising leads failed to induce the blackflies to mate even in room-size cages, and it was another 30 years before even a non-vector species of *Simulium* was colonized.

Herb was a devoted family man always anxious to return to Guatemala City for weekends with his wife, Ethel, and their two sons, both born in Guatemala. Saturdays were always busy with correspondence in the office, making sure vehicles were repaired for the coming week of field work, and shopping for supplies for the lab and for home.
When funding for the oncho project ended, he considered staying in Guatemala to farm, but fortunately, considering the ensuing political turmoil, he didn't. It was with great reluctance that Herb and his family returned to NIH and Washington in 1953 for a new assignment."

He is also remembered by Eliese S. Cutler, who with her husband were close friends and neighbours in Guatemala City. She writes:

"We met the Dalmats in early 1947 shortly after their marriage. Herb was a commissioned officer in the United States Public Health Service and was assigned by NIH (not the Smithsonian) to the study of oncho in Guatemala. I

am somewhat fuzzy about the details of how he arrived there. I think Herb had recently received adegree (MS?) from city College, New York City, and responded to some sort of recruitment by USPHS for an investigative job in the "wilds" of Guatemala for an unmarried scientist. He was accepted but had recently met Ethel and after a whirlwind courtship they were married. The PHS was not pleased but Herb persuaded them that he could be both married and a scientist in the field. My husband, a physician with the USPHS, worked in Guatemala City at 5000 ft. altitude and Herb's work was on the Pacific slope some 1000 to 1500 ft. lower in the rain forest. He commuted to Yepocapa by jeep during the week returning to Guatemala City on weekends. Ethel remained in the city and worried about his safety. So our relationship was essentially social. But we formed a very close friendship which lasted over fifty years.

A group of us visited Yepocapa twice. These visits were a lot of fun - sort of an exotic outing in somewhat primitive conditions. Herb drove us all through his little empire delighting in explaining his work. He became extremely knowledgeable about the local flora and fauna. One memorable occasion we danced the night away with a wonderful marimba band. Herb was a tireless worker who took part in the village life of Yepocapa learning to speak fluent Spanish and encouraging his local workers to pursue more education. In one case – (Anofre)*, I do not remember his last name -Herb was most instrumental for many years in his (Anofre's) pursuit of advanced degrees. It is my impression that Herb identified several new species of blackfly one of which he named after his wife, Ethel**.

My husband (deceased 2 years ago) and I remember Herb as a tireless worker, an utterly honest pursuer of truth and a warm and loving friend."

.

Roger Crosskey of the Natural History Museum, London, also has vivid memories of Dalmat, and writes:

"Arden Lea speaks in his recollections of how Herb enjoyed cooking and I can testify to that from my experience on the very first day I met him. It was in 1958. I was working on onchocerciasis vector control in Nigeria at

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[*Onofre Ochoa. Who remained very active in the blackfly field until his death in the summer of 2003.

**The name *S. (Haerlea) ethelae*, Dalmat 1950, is still valid (see below), another species *S. (Hearlea) dalmati* was named after him by Vargas & Diás Najára, 1948. JBD]

this time but was away from home for a while on a W.H.O. Travelling Fellowship, intended for me to meet the various personalities working on simuliid research and control in New World countries. Herb had been gone from Guatemala for five years by now but I got W.H.O.'s approval to break my journey at Washington so as to meet him and learn of his Guatemalan experiences at first hand. After visiting Canada and spending several days with Hugo Jamnback at Albany (New York), during which we visited the Adirondacks and I saw Hugo received by a 'fan-club' for his successful blackfly control there, I turned up on a Friday afternoon at Herb's office in the National Institutes of Health at Bethesda. In the hospitable way of Americans, Herb promptly invited me to have a family meal at the Dalmat home that same evening. I was impressed: Ethel was not yet home from work, and whereas I would have sat around until my wife came in and took care of the cooking. Herb simply got on with matters - I could tell, here was a natural cook! Particularly impressive was the speed at which the steaks were done. It was only later that I realised why - the magic of the microwave cooker. In 1958 this was an unknown device in Britain and by no means in every household in the U.S.A. - though contrary to what some folk have tried to tell me it did exist.

On the Sunday the Dalmat family took me on a wonderful trip out of Washington to Skyline Drive, the northern end of the Blue Ridge Parkway. The fall day (October 12 to be exact) was sunny and crisp and quite perfect. However, all the world and his wife had taken a trip to see the fall colours and the traffic coming home astonished me. The I-66 to Front Royal at the north end of Skyline Drive didn't exist then and the return to Washington was a nose-to-tail crawl of those giant 1950s American cars with their grinning chromium faces and high-raised tail fins - brands unseen in England except on cigarette cards and with evocative names, Pontiac and Studebaker, Oldsmobile and Packard, Chrysler and Dodge. During this day out Herb and I conceived the idea that he might join me for the week I was going to be in Guatemala. Herb relished the thought of being back in his beloved Guatemala and I looked forward to having such a knowledgeable and Spanish-speaking companion. It was not to be. While Herb could have got leave of absence from N.I.H., money was the stumbling block. It was worth a try, but my telexed appeal to Nigeria for funds (not easy to explain to the authorities in a few words) fell on deaf ears. But there was an immediate reply. Alas, I don't have the text, but the general thread was 'what does Crosskey think he's up to and who the hell is Dalmat?'.

We kept in touch from 1958 onwards as the years passed but Herb was

almost never in England. It was therefore a privilege for us when he was able to visit our home in London in December 1978 as this gave Peggy the chance to meet him and for me to see Herb again almost exactly twenty years after first meeting him in Washington. A well-known hallmark of Herb was his talkativeness and this was on display during his visit. He was a great raconteur with, apparently, total recall of events. We were fascinated by his tangential digressions from his main theme, long enough to make one wonder if he would ever find his way back, but he always managed to pick up the main story at just the point where he had left it! If chance had permitted we would have liked to hear more from him of his early days, his upbringing in New York and his recollections of Guatemala - such a different place from *our* tropical experience in the north of Nigeria."

On leaving Guatemala in 1953, Herb turned his enthusiasm to virology at the National Institutes of Health, Bethesda, Maryland, working with arboviruses and Shope's virus-induced fibromas, for which he obtained a PhD from George Washington University. Unusually for a simuliidologist, he never returned to active work on these insects, and in 1960 he made the transition to Public Health Administration until 1980 when he retired to work as a private consultant. Amongst these activities he was appointed to the WHO Scientific Advisory Panel on Onchocerciasis Control. I have always regretted not having the chance to discuss his work with him, although I did meet him fleetingly round the coffee dispenser at PAHO headquarters in 1974.

In order to help his successors, Herb deposited a considerable collection of reference material in the United States National Museum of Natural History. Peter Adler confirms that this collection was incorporated into the general simuliid collection by Alan Stone in the early 1970s, and is now located in the Smithsonian's Museum Support Center in Suitland, Maryland. I saw small sub-set of his collection in Guatemala in 1996 in the care of Jack Schuster at the Universidad del Valle, Guatemala City, but have not been able to confirm its present existence or location.

Born in New York City on June 5 1919, Herbert Theodore Dalmat died in Daytona Beach, Florida on June 27 1986. A detailed obituary written by Colvin Gibson, who was the parasitologist of the Guatemala project, published in Tropical Medicine and Hygiene News, August 1986, concludes with the words:

"Herb Dalmat was more than a respected medical entomologist, more than an internationally recognized consultant in international health and tropical diseases. He was also a champion of the underprivileged people of the third

world. He will be remembered with warmth and love not only by his family and by those of us who knew him as colleague and friend, but also by numerous ordinary people in Latin America and elsewhere whose feet he started on the ladder to success."

Publication List – H.T.Dalmat

A list of the *Simulium*-related papers gleaned from literature searches. I suspect that it is not complete.

Dalmat, HT. 1949. Some species of Simuliidae from Guatemala. *Ann Entomol Soc Am.* 42*:* 538-53.

Dalmat, HT. 1950a. Induced oviposition of *Simulium* flies by exposure to CO_2. *Public Health Rep.* 65(16): 545-546.

Dalmat, HT. 1950b. New species of Simuliidae (Diptera) from Guatemala –2 *Ann Entomol Soc Am.* 43(1): 137-151.

Dalmat, HT. 1950c. Studies on the flight range of certain Simuliidae, with the use of aniline dye markers. *Ann Entomol Soc Am* 43(4): 537-545.

Dalmat, HT. 1951. Notes on the Simuliidae (Diptera) of Guatemala, including descriptions of three new species. *Ann Entomol Soc Am.* 44(1): 31-58.

Dalmat, HT. 1952a. Longevity and further flight range studies on the blackflies (Diptera: Simuliidae), with the use of aniline dye markers. *Ann Entomol Soc Am.* 45: 23-37.

Dalmat, HT, 1952b . Descriptions of two new species of *Simulium* (Diptera: Simuliidae) from Guatemala. *Ann Entomol Soc Am.* 45(2): 339-347.

Dalmat, HT. 1953. Simuliidae (Diptera) of Guatemala. Description of *Simulium (Dyarella) ardeni*, n. sp. and *Simulium (Lanea) jacobsi*, n. sp. *Ann Entomol Soc Am.* 46(1): 35-42.

Dalmat, HT, Gibson CL, 1953. A study of flight range and longevity of blackflies (Diptera: Simuliidae) infected with *Onchocerca volvulus*. *Ann Entomol Soc Am* 45: 605-12.

Dalmat, HT, 1954. Ecology of simuliid vectors of onchocerciasis in Guatemala. *Am Med Nat 52*: 175-96.

Dalmat, HT, 1955. Onchocerciasis. *Nurs Outlook 3*: 25-35.

Dalmat, HT, 1955. The black-flies (Diptera, Simuliidae) of Guatemala and their role as vectors of onchocerciasis. *Smithsonian Miscellaneous Collections.* 125, 425pp.

Dalmat, HT, 1956. The black-flies (Diptera: Simuliidae) of Guatemala and their role as vectors of onchocerciasis. *Ann Parasitol Hum Comp 31*: 312.

Dalmat, HT, 1956. Proposed determination under the plenary powers of the authorship of and of the original reference for, the name 'Filaria volvulus'

(Class Nematoda) and proposed validation under the same powers of the emendation from 'volvulas' to 'volvulus' of the specific name of this species. *Bull Zool Nomenclature 12*: 86-89.

Dalmat, HT, 1966. Control of simuliids and onchocerciasis in Guatemala. *Bol San Guatem 36*: 105-10.

Burch, TA, Aguilar, GC, Barrera, M, Dalmat, HT, 1955. Pilot project of a campaign of medical treatment of onchocerciasis based on the administration of sodium suramin (USP XIII)-II-treatment and subsequent observation. *Bull Ofic Sanit Panam 38*: 141-47.

Gibson, CL, Dalmat, HT, 1952. Three new potential intermediate hosts of human onchocerciasis in Guatemala. *Am J Trop Med Hyg 1*: 848-51.

Lea, AO, and Dalmat, HT. 1954. Screening studies of chemicals for larval control of blackflies in Guatemala. *J. Econ Entomol.* 47: 135-141.

Lea, AO, and Dalmat, HT. 1955. Field studies on larval control of blackflies in Guatemala. *J. Econ Entomol.* 48:274-278.

Lea, AO, and Dalmat, HT. 1956. Control of the larvae and females of blackflies in Guatemala. *Bol. Org. Sanit. Panam.* 41: 430-447.

Blackflies described by H.T. Dalmat

All his species were described from Guatemala. Names are given alphabetically and are in the form used in the 1955 Smithsonian monograph. Validity and invalidity comments apply to the current situation (2006).

Cnephia aguirrei Dalmat, 1949
Valid, as *Tlalocomyia aguirrei* Dalmat, 1949

Simulium (Byssodon) benjamini Dalmat, 1952
Valid, as *Simulium* (? subgenus) *benjamini* Dalmat, 1952

Simulium (Dyarella) acatenangoensis Dalmat, 1951
Invalid, synonym of *Simulium (Hemicnetha) paynei* Vargas, 1942

Simulium (Dyarella) ardeni Dalmat, 1953
Invalid, synonym of *Simulium (Hemicnetha) yepocapense* Dalmat, 1949

Simulium (Dyarella) yepocapensis Dalmat, 1949
Valid, as *Simulium (Hemicnetha) yepocapense* Dalmat, 1949

Simulium (Hearlea) burchi Dalmat, 1951
Valid, as *Simulium (Hemicnetha) burchi* Dalmat, 1951

Simulium (Hearlea) delatorrei Dalmat, 1950
Valid, as *Simulium (Hemicnetha) delatorrei* Dalmat, 1950

Simulium (Hearlea) ethelae Dalmat, 1950
Valid, as *Simulium (Hemicnetha) ethelae* Dalmat, 1950

Simulium (Hearlea) microbranchium Dalmat, 1949
Valid, as *Simulium (Hemicnetha) microbranchium* Dalmat, 1949

Simulium (Hearlea) nigricornis Dalmat, 1950
Valid, as *Simulium (Hemicnetha) nigricorne* Dalmat, 1950

Simulium (Lanea) colvini Dalmat, 1952
Invalid, synonym of *Simulium (Psilopelmia) samboni* Jennings, 1915

Simulium (Lanea) jacobsi Dalmat, 1953
Valid, as *Simulium (Psilopelmia) jacobsi* Dalmat, 1953

Simulium (Simulium) kompi Dalmat, 1951
Valid, as *Simulium (Aspathia) kompi* Dalmat, 1951

Lucy Evelyn Cheesman and the 'Scourge of the Pacific'.

Doug Craig, *Department of Biological Sciences, University of Alberta, Edmonton, T6G 2E9 CANADA. d.craig@ualberta.ca*

I had thought to commence this little article on Evelyn Cheesman with something along the lines of 'standing on the shoulders of giants'. She was, however, a diminutive person, so perhaps 'walking in the shoes of giants' might be better. Indeed, in decades of working on Pacific Simuliidae, my wanderings crossed her older paths many times. Let me be quick to add that there are many places she went, that I would never ever venture by myself, as she did.

I first became aware of Cheesman when I collected my first *Simulium cheesmanae* in Tahiti in 1970. This is one of the largest black flies in the world and is stunning in orange and yellow. Flying slowly, it is relatively easy to collect and since it is quite an avid biter of humans, is well represented in collections. Indeed, it is the only substantiated human-biting black fly on Tahiti, but is not a problem – most people there have never seen one. The same cannot be said for *Simulium buissoni*, the infamous 'Nono' of Nuku Hiva of the Marquesas, that has been referred to as the 'scourge of the Pacific'. More, however, of that later.

Roger Crosskey also helped to pique my interest in Cheesman by showing me a

recollection that she had dictated to him in the 1960's about being bitten by black flies when she was in Vanuatu, or the New Hebrides, as they were called then. And that is the main thrust of these few pages - Cheesman's stories of being bitten by black flies. But, there are other stories to recount as well.

Photo. 1 Newspaper photograph of Evelyn Cheesman circa 1924

Born Lucy Evelyn Cheesman in 1881 into a farming family in Kent, there were few careers for a woman of her social standing, so she became a governess. She had wanted to be a veterinarian, but at age 29 when the family for whom she worked let her go, there was no way at that time for a woman to enter such a career. After the First World War, Evelyn took a job as curator of the insect house at the Regent's Park Zoo. By all accounts she turned that into a major attraction. During this part of her life she also took courses in entomology and wrote two books about insects. These were the first of more than twenty books that she wrote during her life time. Most of which have received fulsome praise. Evelyn's first foray into the Pacific came in 1924 when she was offered a position with the St. George Expedition. Taking a leave of absence from the zoo, she apparently arrived in Tahiti with 10 pounds in her pocket, only to find a generous gift of 100 pounds from her brother - a substantial sum of money for those days. After some frustration with the St. George expedition, Evelyn struck out on her

own - the first of eight voyages and a lifetime of traveling, collecting insects and writing books about it all.

Photographs of Evelyn appear to be few and far between. Oddly however, one of her books I acquired had an attached newspaper picture of her just prior to the Polynesian trip (Photo. 1). She looks very young, but was in fact in her early forties. There is another of her from elsewhere, in field clothing when she was in the New Guinea area (Photo. 2). In that she looks ready for anything and quite formidable. There is another picture of her dressed in what is passed off as field gear, as the frontispiece of 'Things Worth While' (Cheesman 1957) and when she was much older (Photo. 3), it does not, however, have the impact of that earlier. image

Lucy Evelyn Cheesman

Photo 2. In the field. 1930's

Photo. 3. Evelyn Cheesman. Late 1950's when she must have been over 70 years of age.

"Islands Near the Sun: off the beaten track in the fair, far Society Islands" (Cheesman 1927) is the first of the books on her expeditions and in it she describes a trip up a river, that was then referred to as 'La Mission' and just east of Papeete. It is now known as the Hamuta Valley. Evelyn encountered clouds of large adults of a new species of black fly. She notes they were slow flying and easy to keep off. Oddly there is no direct mention of them biting. These would no

doubt have been *Simulium exasperans*, or possibly *Simulium tahitiense*, the most numerous of Tahitian simuliids. Not known to bite humans, they certainly congregate and in large numbers. I have found, however, that they lose interest rapidly and are more of a nuisance than anything else. Attempting to collect larvae of Anthomyidae, the adults of which were frequenting a waterfall, she took a bit of filamentous alga, *Spirogyra*, and placed it in a vial of alcohol. That revealed black fly larvae of minute size. These were likely of *S. oviceps*, amongst the smallest of black flies and of interest because of the odd shaped head and small labral fans of the larvae. I often wonder if there is a vial somewhere with that material still?

Venturing further a field, Evelyn went by ferry to Raiatea. She had been quite seriously ill from cigatura, caused by eating 'poisonous' fish. This resulted in massive boils on her legs and she had to be treated by the local doctor when she arrived. Still, formidable person that she was, she managed to climb part way up to the Temahani Plateau. While she notes that there were many streams flowing from the heights, she did not recover any simuliids. She did write, however, that the insects appeared different to those on Tahiti. And, that certainly applies to the simuliids. When they were discovered in the 1970's and later, the majority of species were found to be endemic, with the others common across the Society Islands.

Back in Tahiti, she visited the famous and mysterious Lake Vaihiria, home of the eel god. Before the modern road was installed and the whole area severely modified for hydro power, getting to the lake was a major effort requiring scrambling up vertical jungle-covered rock faces. I know that because I did it twice. The 30 odd crossings of the Vaihiria River added to the experience too. But Evelyn mentioned no black flies, which is a little odd since they occur in all the running water up that route.

Collecting in the Hitiaa area, and climbing high up above what is probably now called the Mahatearo River, Cheesman noted that there were innumerable small black simuliids that didn't bite. Apart from the wide-ranging, blood-seeking *S. cheesemanae*, most other Tahitian black flies do not occur more than a few meters away from running water. She, however, noted that there were little streams everywhere. It is probable that the species involved was either *S. oviceps*, or *S. malardei*. Black flies are mentioned again when they occurred in vast numbers while she was crossing the Tautira River on the smaller part of Tahiti, Tahiti-iti. These would, again, have been *S. tahitiense*. Similarly, again, there is no mention of them biting. In all, full agreement with observations made since her sojourn there.

Nothing much has changed up the Tautira River valley since Evelyn's visit. The valley is still one of the most pristine parts of Tahiti and well worth a visit. Expect to be surrounded by clouds of black flies, but not bitten.

At the end of the book is a synopsis of the insects found by her in her travels in Polynesia. She lists five species of 'sand-flies' for 'French Oceania', including two new ones. It is not immediately obvious to which species of Simuliidae she refers, since she named only *S. buissoni* Roubaud 1906 from the Marquesas, the infamous 'now-now' (sic). Between 1927 and 1933, Edwards described a number of Polynesian simuliid species, including the one dedicated to Evelyn.

And that is where the state of simuliids in Polynesian stood until the early 1970's. Then Gaston Pichon and Yves Séchan, ORSTOM medical entomologists centered in Papeete, began looking for simuliids in Polynesia at about the same time as did I. For them, the main impetus was the problem caused by *S. buissoni* in Nuku Hiva. For me, well, I was spurred on by a small sample of *S. oviceps* larvae collected by Brian Hocking in 1968.

Why was I so interested? Those were the days when the homologies of the labral fans of simuliid larvae were not well established and it was possible that the reduced fans of *S. oviceps* larvae might be primitively small, not secondarily reduced as others would have it. I made the 'mistake' of stopping over in Tahiti in 1970 to attempt to obtain first instar larvae of *S. oviceps* to see what they might shed on the matter (little as it turned out) and was subsequently invited to revise the taxonomy of Polynesian simuliids. That would be against the day when the "scourge of the Pacific" *S. buissoni* from Nuku Hiva, hopped on a plane at the recently built airport there and took a ride to Tahiti, and elsewhere. That has not happened, but it is still a possibility, and a serious one at that. As a result of that invitation and many subsequent visits to Polynesia, there are now known some 50 species of Simuliidae from those islands, with the majority on Tahiti. Many of these newer species are highly specialized for life in cascades, of which there are a plethora on Tahiti. A point that Cheesman describes again and again in her books.

Indeed, she came close, a number of times, of being killed by falling down cascades and tells one hair-raising story of having to spend the night on a log overhanging a cascade and certain death if she had fallen. She at least had the courage to admit to being violently ill after she got to safety. She notes a number of times the problems that slippery rocks caused in such places and I can only agree with her full heartedly.

In her second book, that also deals with her first foray into the Pacific, 'Hunting

Insects in the South Sea" (Cheesman 1932), Evelyn takes a different approach, one that she used successfully in her later books. She takes an incident, or observation, and considers it more philosophically, hence the discourse is not chronologically linear. But it is here that she deals with that infamous, 'scourge of the Pacific', *Simulium buissoni*, or 'no-no' as it is called presently. At the time she visited the Marquesas, the Tai-pi Valley (now termed Taipivai), on Nuku Hiva was uninhabited because of these insects. Indeed, recent work by French entomologists point to the biting rate by female *S. buissoni* being at world record levels, well in agreement with Cheesman's comments. The bites are serious and Evelyn commented about swollen limbs and bad sores for weeks afterwards. There is also a note about the adults flying out to boats in the harbour and forcing departure after a few hours.

Readers of her books were obviously fascinated with how a single woman could survive the conditions under which she seemed to thrive. So, her later books continued the successful format such as that above. Indeed, if it suited her purposes, she would repeat a story. So, in her later book, 'Things Worth While' (Cheesman 1957), she recounts the Taipivai Valley story again, but from a slightly different perspective.

All is not the same on Nuku Hiva as when Evelyn recorded her horror stories. There has been considerable human impact on many of the rivers and sedimentation appears to be having an effect on larval stages of the black fly. Further, ORSTOM along with others, made a concerted attempt in the early 1990's to eradicate *S. buissoni*. That was only partially successful. The biting rate, however, was reduced to zero for a few months. Certainly when I visited Nuku Hiva in 2002, simuliids were not a problem, just part of low-level, nuisance-biting along with mosquitoes and ceratopogonids. It was, however, also a period of drought.

Simulium buissoni was of sufficient problem that Cheesman comments about the famous book 'Typee' by Herman Melville (1846). The setting for that book was the Taipivai Valley, but not once did Melville mention black flies. I have searched Melville's book in vain for any mention of these insects, but there is nothing, yet his descriptions of the surroundings clearly indicate that he had experience of such a place. It does, however, make one wonder if Melville really was there?

The other place that Cheesman recorded problems with black flies was in Vanuatu. Evelyn spent a great deal of time in these islands, once in the 1930's and again, much later, at the end of her travels, in 1954. She published a very significant book 'Backwaters of the Savage South Seas' (Cheesman 1933) about

her experiences on Malekula. Her recollections about the reformed cannibal, King Ringpat were well received by her readers and make hair-raising reading even now-a-days. She clearly got on well with people, in large part, it appears by treating them fairly. In return she was treated with awe and was considered taboo, and in some places even a 'she devil' - to be left well alone. And she was!

That book, of all that she wrote, is most difficult to obtain, but it is worth the effort to do so. Well illustrated, it shows a way of life that has, in great part, disappeared. Furthermore, there is nice clear map of the places she visited in Vanuatu – there is no question she got around. Malekula received the most attention and I was pleased to find on a pre-WWII map of the island, a 'Mount Evelyn' just north of the middle of the west side of the island. Now-a-days it is called 'Foulwoul', but one wonders if it was originally named after her. She did, in fact, spend considerable time in the vicinity. While in Vanuatu in 2004, I had occasion to think of her as I was driving along a terrible road down the east side of Malekula in a horrendously expensive rental truck. She commented about walking over the island from the west coast to catch a ferry at Port Stanley on the east coast. This was no big deal apparently, up hill and down dale through jungle was quite normal for her. How soft we modern-day explorers!

No mention, however, of black flies and perhaps not surprisingly. Those of Malekula and indeed of most of the rest of the archipelago just do not bite. Certainly, the local Ni-Vanuatu have no name(s) for black flies and are most surprised when they are shown the astronomical numbers of larvae in the water. But, there is one major exception – on the island of Aneityum!

A quick aside here. Cheesman spent considerable time in the New Guinea region, but the Second World War intervened and she returned to Britain. She was apparently invaluable in lecturing to troops who were to go to place she had visited, so over the period of the War she gave well over a thousand lectures. Some six other books relate to this period of her life – written in large part to support herself. It was towards the end of the war that she suffered an injury in a train accident. Luckily she recovered well enough to visit New Caledonia in 1949. Still in pain though, she thought to end such expeditions, but after some surgery, was well enough to make her last trip in 1954 to Vanuatu, when she was well over seventy. Evelyn died in 1969, at age 88.

When in Vanuatu, Evelyn spent two periods on the southern-most island of the archipelago, that of Aneityum. Her first during the 1930's expedition, the second – her last expedition. Both times she was plagued by black flies of almost unbelievable ferocity. In her last book, 'Time Well Spent' (Cheesman 1960) she writes as follows:-

"Even an infamous pest such as the tiny, biting black flies, *Simuleum* (sic) - sometimes known as buffalo gnats - are raised to a higher plane in one's estimation if they exhibit idiosyncrasies. It was even a compensation on Aneityum Island, where their irritating bites drove one nearly crazy all day long, to discover unexplained behaviour which was worth recording. These tiny black flies attack in clouds. Every hour of daylight one had to keep a hand free to brush them away from eyes, ears, neck and any exposed part where they raise blains and bumps. The first onslaught is usually on the ears, with an infuriating ping-ping! which people find worse than the bite. I cannot agree to this, as I used to be severely punished. During eight and a half months in camp, only on two days could I record that *Simuleum* had not been biting. Because of the abundance of surface water this species flourished all over the island, in the forest as well as on open land. But near the sea one was comparatively free of them.

They attack wherever one's skin is thin, a favourite place being the head. Only by smashing them can one prevent a bite. Then the corpses will be left entangled in one's hair. I not only cut my hair close to the head to facilitate killing them, but kept a mirror on the veranda to consult from time to time to rid myself of corpses. The one deterrent that I found efficient was thick smoke. If I stood near a bonfire none came to me, but that one cannot do for any length of time. It was an occasional luxury giving one the chance to think, if one did not mind coughing at the same time.

They appeared to be guided by scent and could be observed tracking one down like bloodhounds. With those in the same category must be included pig-ticks, loathsome creatures which found out any bough or log on which one was in the habit of sitting, and waited with endless patience for the next visit.

Simuleum, however, were certainly guided by sight as well as by smell. In the early morning they would come to the veranda immediately when I sat out there with my coffee, and evidently hunting for me they would be distracted by any shining object. I would watch them starting their tour coming up-wind, and they would first crawl over the metal tanks of my lamps (attracted I assume by reflected light), then the white china would engage their attention. When they had crawled over the sugar-basin and white cup they finally reached me and would hear the familiar ping-ping! I watched this take place nearly every day. As they arrived according to the direction of the wind they were evidently responding to scent. But I had not been handling the lamps even, if the scent could remain on these and the china, which does not seem possible. A more curious habit was the attraction to boiling liquids. They would crawl around the hot coffee-pot regardless of the heat, but it was surprising to see them settling by the score in

frying fat, in porridge, and in soup; the amount of food that they wasted by this suicidal tendency was disastrous when provisions were not abundant. And in that last case I cannot see what was the allure unless it was the reflected light on the surface. I was obliged to cover what I was cooking when possible, but I have known them to find a way through a small hole in a saucepan lid to hurl themselves on to slices of yam, although they seemed uninterested in potato. All this is worth noting in case some sort of research could be carried out on these lines."

What is this black fly? Well, I have looked at the adult material that she collected and it is certainly different from simuliids elsewhere in Vanuatu, but modern material will be required to see how it fits with the rest. In particular larvae and pupae are needed. I have been to Vanuatu twice, once in 1981 and more recently in 2004, but both times I have been able to only stare at Aneityum from the heights of the island of Tanna to the north. From there Aneityum looks like Bali Hai in the old movie South Pacific, and the siren song is strong. Much of that urge has to do with simuliids – I would dearly like to stand on the site of Evelyn's hut at Red Crest and experience the waves of black flies that descended on her. No doubt the flies would oblige me still…?

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Deaths

Sadly, the following death announcements have been received

Bruce Copeman of Townsville, Australia, on 16 January, 2006.

R. V. Peterson, of Provo, Utah, U.S.A. on 29 March 2006.