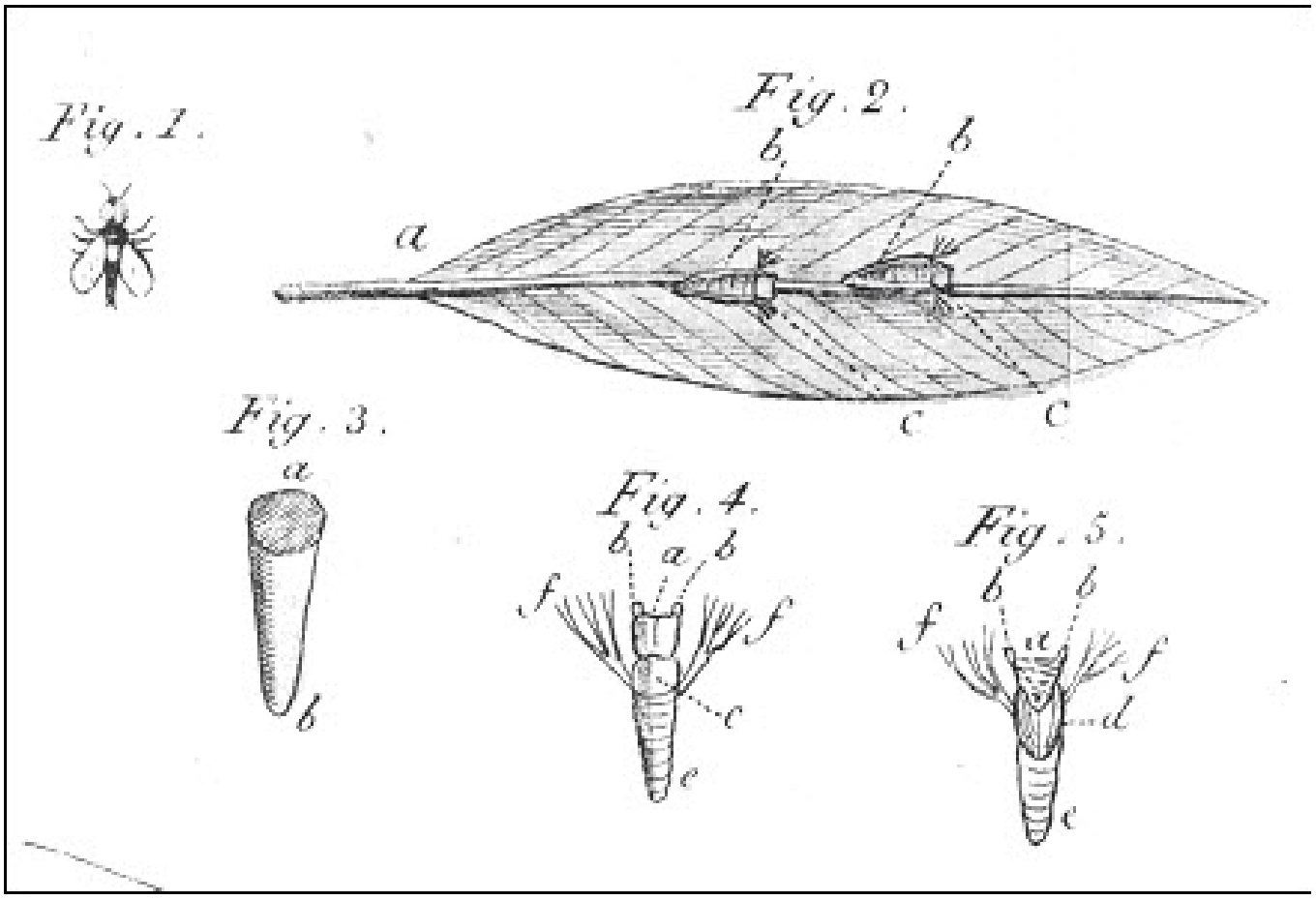
The British Simuliid Group Bulletin

Number 32 July 2009



NATURAL HISTORY MUSEUM

THE BRITISH SIMULIID GROUP BULLETIN

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*Cover Image: The earliest illustration of the blackfly pupa. From: Beschreibung der Atlasmücke und ihrer Puppe (Tipula Sericea.) Schriften der Berlinischen Gesellschaft naturforschender Freunde **5**: 254-259, (1784) by Otto Fabricius*

FROM THE EDITOR

This number contains a mixed bag. Sadly, we have obituaries of two eminent simuliidologists Eugenie Kachvoryan and Alexandre Fain, aged 66 and 97 respectively, and both remarkable characters in different ways. Also in a nostalgic vein, Steve Smith gives his reminiscences of the historic black fly meeting in
Algonquin Park, Ontario, Canada, 1962, which reflected the growing interest in all group photograph, at least 14 (possibly more) are no longer with us. I have posted a copy of the meeting report, provided by Steve, on the web at http://www.simulium.org.uk, where it can be read on screen or downloaded.

More mini-biographies of people behind some Afrotropical species names have been provided by Roger Crosskey. Roger is currently concentrating on the Afrotropical species, so anyone who would like to contribute to biographies of people from other regions, please send them to me for later publication. Please keep to the format already established.

Now that we are able to print a limited number of colour photographs (thanks to John Day), I propose to start another theme titled "Simuliid Sights" (the pun on sites and sights is intended!). The first photograph in this series is shown as Plate 2, taken on a recent cruise up the River Danube. I would like to members to contribute photographs of sites of particular interest to simuliidology. For example: dramatic breeding sites, dams and barrages, type localities, sites supporting unusual species, and sites of special historical or ecological importance or of an unusual nature, (such as pupae of *S. adersi* attached to roots subject to wave action in Lake Victoria).

John B. Davies

MEETINGS

30th Meeting of the British Simuliid Group
18th September 2009

Register your interest in attending

Simuliidologists are invited to register interest in attending the 30th meeting of the British Simuliid Group which is being organised by the Natural History Museum, and it is hoped to hold it in the newly built entomology building (called Darwin Centre II) on Friday 18th September 2009; 10:00-16:00h. There will be no charge for attending the meeting, although there will be a small charge for lunch (which will be provided in the Museum). On the evening of Thursday 17th there will be an informal á la carte meal in a nearby restaurant for anybody (partners/spouses/etc are welcome) who wants to come.

People who might want to attend are asked to register their interest in writing or by email to:

Rory Post
Department of Entomology
The Natural History Museum
Cromwell Road
London SW7 5BD
r.post@nhm.ac.uk
+44 (0)207 942 5593

The format will be the same as usual, a series of talks and posters. Please contact Rory Post with offers of presentations. Length of talks is flexible, and the presenter should say how long he/she wants up to a maximum of 30 minutes (including discussion).

A notice with the programme will appear in due course on www.blackfly.org.uk. Follow the link under "meetings" or "notices".

IN MEMORIAM

Eugenie Ashotovna Kachvoryan
(2 March 1942 – 6 December 2008)

Peter H. Adler[1] & Doreen Werner[2]

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On 6th December of the past year, the simuliid community lost one of its most dedicated workers, Eugenie A. Kachvoryan (Fig. 1). Born and raised in Tbilisi of the Georgian SSR, Dr. Kachvoryan completed her undergraduate education in Yerevan, Armenia, in 1968. She settled permanently in Yerevan in 1970 and spent most of her professional career there, from 1968 to 1997, working at the Institute of Zoology. She took a leave of absence to conduct post-graduate work with Professor Lidiya Chubareva at the Zoological Institute in Leningrad (now St. Petersburg), Russia, from 1970 to 1973. In 1997, she moved to the Institute of Molecular Biology in Yerevan where she was Head of the Science Group for the next 11 years.

In 1978, Eugenie Kachvoryan successfully defended her doctoral thesis at the Ukrainian SSR's Institute of Zoology in Kiev. Her doctoral research focused on the cytogenetics, ecology, and morphology of closely related species in the *Simulium vernum* species group in Armenia. The subjects of her investigation – *S. fontium*, *S. garniense*, and *S. zakhariense* – were among her favorite black flies, and she produced about 10 papers on their cytology and morphology. During a career that spanned nearly 35 years, she authored or coauthored about 60 papers on the Simuliidae, including descriptions of four new species, all of which continue to be recognized as valid species. One species of simuliid, *Simulium kachvorjanae* – a member of the *S. venustum* group – was named in her honor in 1991.

During the economically tough years that followed the breakup of the Soviet Union, Dr. Kachvoryan continued to conduct her research, and began preparing grant proposals, most of them involving international collaborations, to fund her work and maintain her laboratory group. Nearly all of her proposals were successful. While the cytogenetics of the Simuliidae received the major focus throughout her career, she also conducted morphometric studies of simuliids,

investigated pollution in Armenia's rivers, such as the Hrazdan River, and established the non-governmental organization "Aquafauna".

Fig. 1. Eugenie Ashotovna Kachvoryan (1942-2008).

Those in the simuliid community fortunate enough to have known and worked with Eugenie will remember her not only as a dedicated and capable researcher, but also as a kind-hearted and personable individual who provided superb hospitality to her colleagues during research visits to Armenia. She was the consummate hostess, treating her guests royally, and planning culturally and scientifically rewarding expeditions throughout Armenia.

Eugenie Kachvoryan was among the last of the active simuliid cytogeneticists in the former Soviet Union. Although her passing leaves a void in simuliid research in the Caucasus, her legacy is etched in the 70 or more papers that she left to the scientific community. She is survived by her two daughters Karine V. Harutyunova and Maria V. Harutyunova, both living in Yerevan.

Note: A more detailed paper on the life and work of Eugenie Kachvoryan, including a list of her publications, will appear elsewhere.

Alexandre Fain
(1912 – 2009)

Pierre Elsen

Champ des Buissons 32, B1325 Chaumont-Gistoux, Belgium

Professor Alexandre Fain was not a member of our Simuliid Group, but members will know him from his descriptions of many new species of African simuliids as well as his works on blackfly-borne filariases (Plate 1).

Working first as a young physician in Central Africa just before the Second World War (1939), he had to deal with all manner of medical problems, applying as best he could the theoretical knowledge on human parasitology and medical entomology that he had learnt at the Institute for Tropical Medicine in Antwerp (ITMA). This is how simuliid flies became one of the subjects in a large and eclectic range that he studied (see below). At that time when he was frequently prospecting in the bush he needed to hunt in order to feed his African staff. When cutting up the "trophies", he found many parasitic worms and mites as well as biting insects. In this way he progressively added animal parasitology to his medical activities, concentrating during his spare time on systematic study of the parasites and insects, describing many new species, simuliids amongst them. Apart from the lectures he received at the ITMA, he had no formal schooling in that field of research and taught himself through the literature.

Alexandre Marie Alphonse Jean Fain was born in Malines (Belgium) on the 9th of August 1912 and died in his 97th year at home in Wolume-Saint-Lambert (Brussels) on the 4th of January 2009. In 1938 he graduated as Doctor in medicine (surgery and confinement) as well as a Licentiate in physical training, both from the University of Louvain. The following year he obtained the Diploma of the ITMA and went the same year to the Belgian Congo and Rwanda where, he worked as a Government physician. He began his career in the Region of Banningville where he had his surgery and was in charge of the tracking down and treatment of sleeping sickness. He later became Director of Medical Laboratories, first in Kinshasa (the former Leopoldville) where he worked with Marcel Wanson (1904-1954) and his staff, and later in Astrida (now Butare, Rwanda).

In 1957, the post of Head of the Laboratory of Medical Zoology at the ITM Antwerp fell vacant and Fain was asked to return to Belgium in order to take charge; soon after he was confirmed in the Chair of Medical Zoology (Entomology and Helminthology). He was a Member of the Royal Academy of Medicine of Belgium, the Royal Academy for Overseas Sciences and many other national and international scientific societies. He founded the Belgian Society of Parasitology and was from 1964, the Belgian Delegate to the World Federation of Parasitology. In 1971 he was appointed to the chair of Animal Parasitology at the Catholic University of Louvain with the title of Ordinary Professor. In 1973 WHO appointed him to the expert panel for parasitic diseases.

Where arthropods were concerned, he was essentially a morphologist looking for new species and establishing the geographical distribution of the simuliid fauna in specific regions. He described also many new species of helminths, and investigated their medical implications. He published over 1000 works among which he was co-author of 103 and senior author of 32 monographs. He was a tireless worker, able to write several works on different subjects at the same time. In 1979 he achieved his maximum output of 45 works published in one year including a monograph of 158 pages! Who takes up the gauntlet now? During his career of 44 years the main field of his activities was concentrated on parasitic mites. For this he has been criticised on the grounds that they do not belong to the medical field. These unkind remarks do not take into account his many papers concerning scabies, dust mites causing bronchial asthma and mites of food products provoking allergies. However if we look at this amazing bibliography, it is evident that, even if mites concern four-fifths of his publications, the remaining 204 concerned helminthology (90 papers amongst which 28 on filariasis containing information on simuliids), simuliid flies 27, Pentastomida 10, other groups of insects 27, snails 5, rodents 3, protozoology 14, pathology 21 and various 7.

Plate 1. Professor Alexandre Fain (1912 – 2009).

His first two papers on simuliid flies and filariasis were published in 1947 and the subsequent 54 between then and 1989. He described or co-described 49 species and sub-species of *Simulium* all of them from Central Africa, and nearly all still considered valid. From 1964 to 1984, he went back each year for several weeks to the ex-Belgian Congo (now the Democratic Republic of the Congo) and Burundi to teach medical entomology and helminthology. He took the opportunity to combine these missions with field investigations on insects and parasites. Precise distributions and prevalences of human filariasis were established and new species of *Simulium* as well as Filaria were described from material sampled on these occasions. This allowed him, among other things, to discover for the first time that, in the absence of the *S. damnosum* and *S. neavei* complexes, the species *S. albivirgulatum* (which also seems to be a complex), which is very abundant in the forest zone of Central Congo, is also a good vector for *Onchocerca volvulus*.

Morphology and systematics formed a dominant part of his lectures, to the despair of his students. They complained that Prof. Fain was completely absorbed by his speciality (morphology) and almost totally neglected other aspects such as biology, ecology and control. He maintained that before studying and acting against a vector, one had first to know which species was involved. The lectures were therefore criticised, because they concentrated too much on this aspect. Unfortunately for doctors and nurses he resisted requests for adaptations. He was very dogmatic and complained that people interfered in the organisation of his lectures as well as in the choice of his researches.

On the other hand, Prof. Fain was, at different stages, interested in any subject that was brought up for discussion. To stay passive was impossible for him and he always had an argument to stimulate discussion. He was not restricted to his specialities and could plunge into discussion on any subject, scientific or not, and as different as archaeology, philosophy or the origin of life. A devout Christian, when discussing the latter, he would extend it to the origin of the universe, the reason for our existence and God as an explanation for everything. In all discussions, he listened to a speaker's argument but maintained his own ideas. When the arguments of speakers were different from his point of view, he always had a counter argument to support his position, which corresponded with what has been mentioned above concerning his lectures. This is maybe why, as a very suspicious man, when he had a possible new species to describe, he first attempted to examine all the specimens of related species in order to discover if the published descriptions were correct. "We may not believe what is published before having verified it on the original material even if it has been done by a well known specialist" he said me at that time!

He was an early riser and very late to bed. For example, during one of his African missions, we had to combine morning and evening blood samplings and their immediate staining among the natives for filariae study, and in the meantime

proceeding with samplings of their vectors. The latter was the opportunity to find new species, especially for simuliids. Systematics was a passion and the way he conducted it to sample material in the field was a real pleasure for people prospecting with him, especially for a young scientist such as I was at that time. On these occasions we received good practical teaching, discovering a fascinating world. Concerning simuliids, he was not afraid to go completely dressed into the flowing water, where we had to follow him. There, he had great delight in showing us where to look to find larvae and pupae, how to remove the latter from grasses and rocks without damaging them, how to recognise male and female pupae, how to breed the latter in tubes to obtain adult flies for further descriptions, etc...etc... This did not distract from his interest in other insects biting us at the time: tabanids, mosquitoes, culicoides and whatever else that he caught or asked us to catch with the same enthusiasm. Afterwards, happy and completely wet up to the thighs, we went back to the car, and on the way, sometimes before having a meal and going further with evening blood samplings, he would ask to stop in some villages because he wanted to sample some house dust in order to find mites responsible for bronchial asthma, or to examine the soil of huts for *Ornithodoros moubata*, or whatever else that could be interesting for medical purposes. Needless to say that after two weeks of this daily programme we were dead-beat, but happy.

In any field situation, if an interesting arthropod caught his attention, it became a priority. This reminds me of two funny anecdotes. Once, in the forests of the Congo, when waiting for the landrover off the ferry, Prof. Fain was catching butterflies for a friend. But when trying with me to catch a splendid *Papilio zalmoxis* he suddenly disappeared before me, falling into a big grass-covered hole. I caught the butterfly over him. The situation was so surprising, the professor lying in a hole at the feet of his young assistant that everybody laughed!. Jumping out of the hole, he came to me asking "Oh, you got it! Give it me for Mr. X". Since I was myself, making a collection of butterflies I had to disappoint him: it was the only specimen of this species I ever caught. Naturally, during the rest of the journey, our four colleagues continually joked and teased us. On another occasion, when welcomed by a colleague at an African airport, he first gave him a smack on the shoulder, taking afterwards a crushed insect from the aforesaid shoulder and declaring quietly when showing the mortal remains: "It is an *Anopheles*!", then suddenly realising the situation: "Oh, Sorry! How do you do? Nice to meet you again". Incidentally the cavernicolous *Anopheles faini* was named for Fain by Dr. N. Leleup. Fain, among his other accomplishments, was a keen speleologist and an authority on caves and cave fauna in the Congo. James Kitzmiller (1982, in *Anopheline Names*) has written about how Leleup and Fain met unexpectedly while exploring a cave in Mount Hoyo.

When he retired in 1982, he continued his scientific researches on mites, going several times each week to the Institut Royal des Sciences Naturelles in Brussels, until two years ago when at 95 years old he had to stop because he was no longer able to drive! He passed away quietly at home where he lived amongst all his collections and souvenirs, staying mentally very clear when talking with visitors.

It is a pleasure to record the honours he received from his fellow countrymen. During his colonial career, he received the following decorations: Chevalier de l'Ordre Royal du Lion (1947), Médaille de l'Effort de Guerre Colonial 1940-45, (1948), Chevalier de l'Ordre de Léopold (1954), and after his return to Belgium the Grand Officier of the same order (1956), and Etoile de Service en Or, Congo Belge (1957). In 1977 he was also appointed Grand Officier de l'Ordre de la Couronne.

He is survived by his wife, Paulette Milcamps, two boys and one girl.

As a conclusion, we could repeat the little prayer that Father I. Van Wijnsberghe, who knew him very well, gave in his memory: "God, Creator of the little mites, give us help to recognise your greatness and our littleness".

A list of his *Simulium* related publications can be found in the following publication:

P. Elsen (1988): Liste des travaux sur les Simuliidae (Diptera) publiés par les auteurs belges. *Institut royal des Sciences naturelles de Belgique, Documents de Travail* N° 48, 21 pp. (D/1988/0339/02)

WHO WAS…?

Honorific names: some more mini-biographies

Afrotropical species:- **berneri**, Freeman (1954), **buckleyi** De Meillon (1944), **hargreavesi** Gibbins (1934), **hessei** Gibbins (1941), **schwetzi** Wanson (1947) and **vargasi** Grenier & Rageau (1949).

When species are named after individuals the persons are given honorific names, and the question readily comes to mind - "Who was...?". In the last *Bulletin* the idea was mooted of including mini-biographies from time to time which could help to provide answers. Here Roger Crosskey provides some more mini-biographies cast on similar lines to the examples given earlier (*Bulletin* 13: 6-8, 2009) and again involving persons of diverse nationality. References have been limited to a single most easily accessed source per person (this is often an obituary). A list of names already covered is given at the end of this piece.

Members are invited to contribute mini-biographies for any name they may know about. Please adhere to the existing format of about 12 lines, give or take a bit.

berneri Freeman (1954) - *Simulium*

Named (explicit) for Lewis Berner (1932-2004), American entomologist and aquatic biologist, born in Savannah, Georgia. He moved early in life to Gainesville in Florida and here his long academic life was spent at the University of Florida, where he earned his bachelor's (1937) and master's (1939) degrees and his doctorate (1941). He joined the faculty in 1946, after the Second World War, becoming professor of biological sciences in 1954 and professor emeritus in 1984. During the war he saw U.S. army service in the Philippines, formally retiring from the Army Reserve as a colonel in 1969. His entomological speciality was the Ephemeroptera, on which he published copiously. A notable early work was his monograph on the mayflies of Florida (1950). In 1950 he visited the Gold Coast (later called Ghana) and undertook a survey of medically important insects in the Volta River basin. It was then that he found the *Simulium* species that bears his name and which is phoretic on mayflies. Reference: *The Mayfly Newsletter* 13: 2 (2004)

buckleyi De Meillon (1944) - *Simulium*

Named (implicit) for John Joseph Cronin Buckley (1904-1972), Irish helminthologist, born in Dublin. His lifetime career was spent at the

London School of Hygiene and Tropical Medicine, to which he was first appointed in 1927 as helminthology demonstrator and from which he retired in 1967; his professorship in helminthology came in 1946. Among Buckley's research achievements were his separation of the *Brugia* species and demonstration in the Caribbean that *Culicoides furens* is a vector of *Mansonella ozzardi*. In the early 1940s Buckley carried out a helminthological survey of Northern Rhodesia (Zambia) and in 1940 began the investigations of onchocerciasis in Kenya by which entomologists best remember him, especially for his success in eradicating *S. neavei* from one of its Kenyan foci. He collected the original *Simulium buckleyi* material. Reference: *Journal of Helminthoiogry* 46 (2): i-xi, portrait (1972).

hargreavesi Gibbins (1934) - *Simulium*

Named (explicit) for Harry Hargreaves (1893 - ?), British entomologist. Hargreaves was one of many British colonial entomologists working in Africa in the inter-war period. In the 1920s and into the 1930s he was Government Entomologist with the Uganda Department of Agriculture. Shortly after the First World War he had been one of several entomologists sent from Britain to Washington to study American methods in insect control. The main economically important pests concerning him in Uganda were those of cotton and coffee. He collected the immatures of *S. hargreavesi* described by Gibbins but otherwise had little connection with blackflies. Hargreaves had no obituarist but a portrait in Howard (1931, *Smithsonian Miscellaneous Collections* 84, plate 36) shows him to have been much better-looking than the generality of entomologists!

hessei Gibbins (1941) - *Simulium*

Named (explicit) for Albert John Hesse (1895-1987), South African parasitologist and entomologist, born at Potchefstroom in the Transvaal. After attending various schools in Cape Province, Hesse graduated from Transvaal University College, Pretoria (1918). Pursuing his biological interests he relocated to Scotland and in 1922 received a Ph.D. in zoology and parasitology from Edinburgh University. Immediately upon his doctorate he was for a short while a helminthologist at London School of Tropical Medicine and an honorary assistant parasitologist for the London Zoo in Regent's Park. Returning to South Africa, Hesse took a position as an entomologist at the South African Museum in Cape Town, where he remained in continuous service for fifty years (1924-1974). He published on several orders of insects but the Bombyliidae (Diptera), on which he became an international authority, were his passion. Reference: *Journal of the Entomological Society of Southern Africa* (1989) 52: 333-336.

schwetzi Wanson (1947) - *Simulium*

Named (explicit) for Jacques Schwetz (1876-1957), Belgian parasitologis born near Vitebsk in White Russia and of Russian descent. Although from a family settled in Belgium, he did not become a Belgian citizen until 1935, by when he had devoted more than a quarter of a century to the Belgian colonial service. For seven of these years, running up to his formal retirement in 1934, he headed the laboratory at Stanleyville (now Kisangani). On leaving the Belgian Congo in 1934 he became professor of parasitology in Brussels. He first graduated in medicine from Lausanne (1902), later receiving a doctorate from the Université Libre de Bruxelles (1919). Schwetz's research took many directions, so while malariology is a major theme so also is his work of earlier years on *Glossina* and sleeping sickness. In post-retirement he turned to schistosomiasis, publishing extensively in this field. An enthusiastic traveller, he died of a heart attack while in California. Reference: *Annales de la Société Belge de Médecine Tropicale* (1957) 37: 335-337.

vargasi Grenier & Rageau (1949) - *Simulium* (syn. of *hissetteum*)

Named (explicit) for Daniel Luis Vargas (1908-1994), Mexican physician and entomologist, born in Mexico City. Vargas graduated in medicine from the Mexican National University in 1929, seven years later obtaining the Master of Public Health qualification from Johns Hopkins University, Baltimore. Medical entomology allied to public health was the theme of his professional life and he was the longtime head of the Entomology Laboratory at the Instituto de Salubridad y Enfermedades Tropicales in Mexico City. *Culicoides*, phebotomines and fleas were all grist to his research mill but his specialist groups were the anopheline mosquitoes and New World Simuliidae. His monograph *Simulidos del Nuevo Mundo* (1945) was a major achievement, as also was his description or co-description of nearly fifty blackfly species in toto. Vargas's field knowledge of the biology of onchocerciasis vectors in Mexico led to his sometime membership of WHO'S Expert Committee on Onchocerciasis. Reference: Kitzmiller, 1982, *Anopheiine Names*: 555-556.

Names covered in Bulletin No. 31

noelleri Friederichs (1920)
schoutedeni Wanson, (1947)
tomosvaryi Enderlein (1921)
woodi De Meillon (1930)

SIMULIID SIGHTS

Photo: J.B.Davies

Plate 2. Looking upstream to the narrowest point of the "Iron Gate" gorges on the River Danube as it is today. Here the infamous rapids which were a serious hazard to shipping and formed the breeding sites of the pestiferous "Golubatz Fly" *Simulium colombaschense* (Fabricius, 1787) [type species of the genus *Simulium* Latreille] were submerged by some 30 meters by the construction of a hydroelectric dam further downstream in 1972.

[For more on the Golubatz Fly see *BSG Bulletin* No. 14, pp 15-16 (1990)]

NOTES, VIEWS AND CORRESPONDENCE

Algonquin Park 1962 recalled

Stephen M Smith

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As I work my way through my now-nearly-a-decade-long project to digitize the several thousand items on Tabanidae in my library (and, at the same time, update the nomenclature and place-name information), I occasionally come across an item of possible historical interest to the readers of this *Bulletin*.

I have sent to John Davies, for possible posting on the web site, a copy of Number VI of *The Simuliidologist's Newsletter*[1,2]. This was an executive summary of *The Third Conference on Black Flies (Diptera: Simuliidae)* held in Algonquin Park, Ontario, Canada, 14–16 September 1962. That summary provides a fascinating glimpse into what was on the minds of blackfly researchers nearly a half century ago.

I had the good fortune to attend this meeting at a critical juncture in my career. I was just half-way through a 4-year B.Sc. program at McMaster University in Hamilton and had just finished

my very first summer as a field assistant, working for Doug Davies and Monty Wood on population dynamics of larval blackflies in Algonquin Park.

The meeting hosted an impressive number of scientists, (Fig. 1) including, of course, a lot of Canadian researchers (*inter alia* Gord Bennett, Phil Corbet, Doug Davies, Anthony Downes, Bob Dunbar, Murray Fallis, Hartley Fredeen, Fred Ide, Don Oliver, Bob Peterson, Klaus Rothfels, Guy Shewell, Harold Welch, Al West and Monty Wood) but also a good smattering of both American (John Anderson, Gene DeFoliart, Hugo Jamnback, Kathryn Sommerman, Alan Stone) and international (René Le Berre, David Lewis, J.D.M. Marr, M. Ovazza) researchers. My recollection of the meeting is one of exhilarating congeniality.

The 60's were heady times in biting-fly research; there was a real sense of excitement and possibility. In Canada, research was underway at a dozen or more places across the country and there was good support — from the federal government, from the Defence Research Board and from Agriculture Canada (which was doing a lot of in-house research as well).

Fig.1. **BLACK-FLY CONFERENCE 1962 - Wildlife Research Station, Algonquin Park, ON, Canada**

1st row (sitting) from left to right: David Lewis, Douglas Marr, I.E. Kamitakahara, Helen Györkös, Kathryn Sommerman, Doug Peterson, Guy Shewell; Alan Stone, Arni Arnason.

2nd row (kneeling): Max Ovazza, René Le Berre, Gene DeFoliart, Mallampalli Rao, Harold Welch, Hugo Jamnback, Al West, Don Oliver, Steve Smith.

3rd row (standing): Hartley Fredeen, Klaus Rothfels, Doug Davies, Bob Dunbar, John Anderson, Anthony Downes, Murray Fallis, Monty Wood, Philip Corbet, Bob Peterson, Fred Ide, Ron Pilfrey.

Missing from the photograph are: Gordon Bennett, Dave Pengelly and E.F. Bond.

I made some important contacts that summer: I had already met Murray Fallis and Gord Bennett earlier that summer in Algonquin; Gord was soon to take a 2-yr leave from the Ontario Research Foundation to work in southeast Asia; Murray Fallis had approached me to fill-in for Gord the next summer — in the summer of 1962 I already had a summer job for 1963! I spent 2 exciting summers working for Dr Fallis — on *Leucocytozoon* in anseriform birds (transmitted by *Simulium rugglesi* and others), chemical attraction of "*Eusimulium euryadminiculum*" [=*Simulium annulus*] to loon-derived extracts, and biting periodicities of canopy-level, ornithophilic simuliids (some of that work is unpublished and may eventually turn up in the *Bulletin*!). I also met Phil Corbet, with whom I was later to do PDF studies on African *Toxorhynchites* and their possible use as a biological-control agent for the mosquito vectors of yellow fever in East Africa.

I have two quite special memories of fun moments from the meeting. Earlier in the summer of 1962 I had discovered the swarm sites of what was then known as *Eusimulium aureum* (possibly *S. bracteatum*) The swarms were atypical for simuliids — immense swarms, 50 m or more long, but of exceptionally low density, a single male per cubic meter of space, approximately. One could literally walk right through the swarm without perceiving it. I have a fond memory of Bob Dunbar, prostrate at the edge of the parking lot at the Algonquin research station, trying vainly to see the males!

I had also discovered spider-web-frequenting *Atrichopogon* (Ceratopogonidae), visiting prey trapped in the communal webs of tetragnathid spiders along the Madawaska River. This was a syndrome previously known only from Europe and I can still feel Tony Downes' exquisite excitement as I related the observations to him. Downes and I went on to collaborate a bit on insectivorous and pollenivorous ceratopogonids.

Sadly, the list of participants at this meeting has been much abbreviated by mortality events. And, the research interests displayed at the meeting have suffered much the same fate. Biting-fly research in Canada has reached an immense nadir, with scarcely any labs left anywhere. The whole-organism approach to research has been replaced by the hubris of the molecular biologists, promising biting-fly and vector-borne-disease solutions via engineered insects and vaccines — but with ever-receding 5- or 10-year time horizons and with little appreciation of the immense challenge of delivering high-tech solutions (even if we had them) to the developing world.

I think, in fairness, that much of the eclipse of whole-organism biting-fly research is a self-administered wound. Like the molecular biologists, we too promised much and failed to deliver.

I spent the last 2 decades of my career at the University of Waterloo teaching experimental design and statistical/data analysis to upper-level undergraduate and graduate students. With that as a perspective, I've done a lot of thinking about

biting-fly research and I now look back on that history with a sense of horror — decades of poor, unfocused observational and descriptive work, a plethora of uninspiring, unanchored, repetitious research.

Like most (all?) of the other participants at that meeting, the "scientific" training I received throughout my undergraduate and graduate careers was appallingly bad— I was *never* taught how to *do* science, because my mentors hadn't been taught that either and hadn't learned it on their own. It was only many years later that I read the then-nearly-contemporary, seminal paper[3] on how science was *supposed* to be done. All those years, all those meetings, all those papers — and I almost never heard a biting fly scientist say: "What are the prioritized hypotheses that could account for these observations and how could we *test* them?"

I think little has changed in the intervening half century. All over the world, biology departments spend a lot more time and effort teaching students *what* to think instead of *how* to think.

1. Readers can also request a copy from me directly: smith_sm@mac.com or smithsm@sciborg.uwaterloo.ca
2. Posted on the web at http://www.Simulium.org.uk. - JBD.
3. Platt, J.R. 1964. Strong inference. *Science*, **146**: 347–353.

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