

THE EIGHTH INTERNATIONAL CONGRESS OF MYRIAPODOLOGY, INSTITUTE OF ZOOLOGY,
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J.G. Blower

Nicholas House, Levens, Kendal, Cumbria LA8 8PE

As befits a Congress organised by Erwin Meyer and Konrad Thaler, the emphasis was on ecological studies; 66 papers and posters were presented, 41 of which (62%) were devoted to Ecology and Distribution (24), Detritivory (11) and Life histories (6); such a preponderance of field studies has not occurred previously. The remaining papers covered the more classical fields of Physiology (6), Morphology (6), Taxonomy (3), Palaeontology (3), Post-embryonic development (3), Embryology (2) and Onychophora (2).

The contributors came from 22 countries, in order of size of delegation: France (11), U.K. (9), Germany (6), U.S.S.R. (5), Austria (4), Hungary (4), Italy (3), Czechoslovakia, Greece, Rumania, Poland, Spain (2), New Zealand, Belgium, Denmark, Finland, Switzerland, India, Ivory Coast, Sweden, U.S.A. and Yugoslavia (1). There were others who just went to listen and confer.

Aspects of DISTRIBUTION and ECOLOGY applied to most European countries and Brazil and Australia. France, Switzerland, Hungary and Rumania dealt with millipedes only, Bulgaria, Yugoslavia, Italy and U.K. covered centipedes only. The French Millipede Survey (yes!) have published and proposed atlases of distribution by Departments; already Geoffroy has increased the 250 species listed in Demange's book (1980) by 10%; the record however goes to Ceuca (Rumania) who produced a list of 655 species of Balkan diplopods of which 495 are endemic to the area, probably the most diverse fauna in Europe, perhaps due to the extensive Karst country and many true troglobionts. British species (if we may refer to them thus) figured in many of the surveys: Korsos included C. latestriatus and B. superus in anthropogenic habitats in Hungary; Zapparoli had L. forficatus and Henia vesuviana (of course) in urban Rome; Wytwer listed L. crassipes, curtipes, mutabilit, Pachymerium ferrugineum and Schendyla nemorensis in Polish pine forests; Barber gave an impressive account of the habitat preferences which are emerging from our record cards; he and I were most interested to hear Zulka's fascinating account of east Austrian flood plains in which he mentioned Polydesmus denticulatus able to survive submersion for 75 days and Lamyctes fulvicornis the eggs of which survived two weeks; these two species were present only in the inundated areas; Lamyctes was present from June to October during which time it has a lightning period of development from eggs to adults; the rest of the year it passes in the egg stage when lower temperatures allows survival in the spring inundation; later in the year it climbs trees to avoid summer submersion; now we can see why we only encounter it in September! Lithobium forficatus and Julus scandinavius were also mentioned but these avoided the inundated areas.

On the other side of the world, Adis (Germany) described the survival strategy of Mestosoma hyalaecium (Paradoxosomatidae) from central Amazon flood plains; juveniles climb blades of grass as the water rises, mate and then move into the inundation forest, climb trees, feed in the lower canopy and also inside freshwater sponges above the water.

The subject of DETRITIVORY was introduced in an invited paper given by Crawford on Millipedes as model detritivores; he provided a useful overview of the field and (naturally) gave some time to the special problems of arid areas. Most of the contributions on litter feeding, humification and pedogenic processes came from eastern Europe which was the cradle of some pioneer studies in this field. Tajovsky and students (Czechoslovakia) dealt with litter feeding, pellet production and their decomposition in Glomeris hexasticha. Pobozny (Budapest) studied consumption of conifer litter in Hungary and found G. hexasticha to be the most active consumer. Karamaouna (Greece) found litter preference of Symphioiulus to account only partly for its aggregation in pin litter. Kokhia studied litter consumption in the forests of the Transcaucasus. Striganova fed Pachyiulus flavipes from the Crimea on oak litter. She found pellets to have seven times more free amino acids than the surrounding litter, ten times greater nitrate flux. Szabo (Hungary) studied the role of intestinal bacteria of millipedes; Brüggel (Austria) had a novel photometric method of measuring the time taken to pass through the alimentary canal of Ophiulus pilosus and Ommatoiulus sabulosus. The prize for the best presentation and most novel approach goes to Daniel Bourdanne (Ivory Coast) who has sampled moulting chambers of each stadium of Oxydesmus granulatus and estimated a production of 27.5 Kg/ h (= 2.75 g/m²); the chamber material had an enhanced texture, organic content, cation affinity and water holding capacity.

There were several incisive studies of LIFE CYCLES. Sahli described the variable incidence of juvenile to adult moults, MMJ's in Ommatoiulus sabulosus in the Maritime Alps, in good and bad years. He delivered his talk in impeccable English, spiced with his own brand of humour: when asked by the locals why he was busy collecting millipedes he explained he needed them to make an omelette!! As a reminder that language difficulty afflicts others besides the English, a questioner in discussion requested clarification!.

David (France) gave a thoughtful appraisal of what we know of life-history traits. Geoffroy (France) illustrated his account of activity cycles in Melogona gallica, Polydesmus angustus, Glomeris marginata and Allajulus nitidus with the excellence and clarity of visual aid we remember from Langford. Sahli had collaborated with Descamps and Gharib to study the effects of ecdysosteroids on the control of moulting in O. sabulosus. In addition to these French contributions Kofler (Austria) had an interesting poster on the life-cycle of Enantiulus nanus. Her figure for density, 895/m² must be a record. Stamou (Greece) indulged in mathematical modelling of life-history parameters in Glomeris.

Two papers on POST-EMBRYONIC DEVELOPMENT were important for future life-history studies. Nguyen-Duy (Paris) described a new aid to the determination of stadia in Spirobolida; the apical sensory cones on the terminal antennomere of Anadenobolus martinique are added at each moult; there are four in early stadia and these are supplemented moulting until there are over 30 in adults; the later stadia do not always acquire new ocelli. Peitsalmi (Finland) had made a thorough analysis of the addition of ocelli into the field in Proteroiulus fuscus.

Dohle (Berlin) had new data on the post-embryonic development in the Sphaerotheriida (giant pills of the southern hemisphere) which enabled him to debate the possible ancestral number of segments in diplopods. Some striking sequences in the EMBRYOLOGY of Glomeris marginata were shown on film, accompanied by Mozart (Peruffo, Italy). Radl (Germany spoke of brood care in

Scolopendromorpha. I include this here in Embryology since we did not have any strictly behavioural studies.

In the area of PHYSIOLOGY there were notable contributions. When the judges were deliberating on the award to Bourdanne it should be leaked that another very close contender was Steve Hopkin with an arresting presentation on flue glands in Henia illustrated by superb photos and a fascinating insight into the way he disentangled electron scan and transmission pictures to solve the anatomy of the valves which enables the animal to wait until it feels his enemy before engaging him. No one has recently looked at the flue from the rear telopods of Lithobius but Fründ (Germany) has resourcefully obtained evidence of the attacks suffered by Lithobius by a careful study of wound scars. A contributor whose careful research and fine presentation we now take for granted is Descamps (France) who described the endocrine control of moulting and oocyte growth in Lithobius forficatus. The only reserve came from an after dinner speaker who wondered about the predation suffered by this centipede around Lille. Aided by Fabre and Baert, Descamps also reported on vitellogenetic agents in the haemolymph of Scolopendra, thus spreading the Lille predation further afield. Breaking new ground was an investigation of the immune defence reactions of myriapods. Xylander (Germany) investigated cellular and humoral components in the blood of Scolopendra, Lithobius and exotic juliforms. There were three interesting posters of sense organ anatomy revealed by TEM and SEM studies; receptors on the legs of Scutigera (Xylander), antennae of Polyxenus (Nguyen-Duy) and a photoreceptor in the brain of Lithobius (Navarro).

MORPHOLOGY of extant forms include an ultra-structural study of the cuticle of Ophiulus pilosus. Thorez, Compere and Goffinet (Belgium) found the inner epicuticle impregnated a very thin, hardly resolvable exocuticle; perhaps my refusal to separate the two in julids using light microscopy forty years ago may be excused. Two thought provoking discursive papers debated the concepts of segmentation and serial homology in myriapods (Minelli, Italy) and the size of millipedes (Eghoff, Denmark). Prunesco (Rumania) looked inside anopobiids and Scutigera and found similarities in the genital systems involving micro- and macrostestes suggesting two separate evolutionary pathways from scutigermorph to Lithobiomorph. FOSSILS of some of the earliest land animals were described by Jeram and Selden (U.K.) from siltstones of Upper Silurian date (15 million years earlier than the Rhynie; kampercarids were included by they question their terrestrial origin, but also included were multiarticulate tarsi and other parts remarkably like scutigermorph structures. A later fossil from the mid-Devonian of New York described as a scorpion was re-interpreted as an Eoarthropleura (Selden, U.K. and Shear, U.S.A.) . Mauriès demonstrated that Protosilvestri from the phosphorites of Quercy was not a callipodid but a cambalopsid.

TAXONOMY used to have the lion's share of space in Congress; at Innsbruck the three contributions made-up for their minority position by their quality. The doyen of Myriapodology, Dr Eason gave an invited lecture on the Taxonomy and geographical distribution of four sub-families of Lithobiidae and two of Henicopidae; his delivery was clear, authoritative and very well received. Our giovane signora (the nearest I can get to an antonym of doyen), Helen Read gave a précis of her recent paper on a cladistic analysis of the generic composition of the Cylindroiulini. This was well received, not only because of her clear presentation; there was an almost palpable feeling of relief in the theatre (not to mention the sotto voce shouts of Bravo from the U.K. and French contingents) on the realization that she had rescued most of the

species of Cylindroiulus (90% of our British species) from the genus Allajulus, not to mention her defence of Tachypodoiulus niger from a take-over bid. An excellent Swiss contribution by Pedroli-Cristen and Scholl had reduced a troublesome pair of craspedosomatids (Rhymogona supp.) to synonymy by establishing identical types and frequencies of alleles by electrophoresis.

Ruhberg (Germany) gave an invited lecture on ONYCHOPHORA. She reviewed the results of modern taxonomic methods applied to 'Peripatus', originally described as an aberrant mollusc, now an omnibus term for a group with 100 described species, and many others within the Peripatopsidae remain to be described. Walker (U.K.) described an exceptional African Peripatopsid in which females give birth to young throughout the year; unlike all others described, segmentation of the young embryos appears to be delayed until after elongation.