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Book review

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Traditional paleontology lives on

Neogene and Quaternary Mammals of the Palaearctic: Papers in Mammal Palaeontology Honoring Kazimierz Kowalski. Adam Nadachowski & Lars Werdelin (eds). — *Acta Zoologica Cracoviensia* 39 (1), 1996, 604 pp.

The reviewed volume contains proceedings of the International Conference held in Kraków on May 17–21, 1994, in tribute to half a century of scientific activities of Professor Kazimierz Kowalski, an eminent mammalogist, paleontologist and speleologist. A hundred and one scientists from 26 countries attended the conference, during which 39 lectures were given and 57 posters demonstrated. The reviewed volume contains 62 papers, most of which were presented during the conference, while some were sent by the individuals not-attending. The volume contains the introductory part with a biography of Kazimierz Kowalski (by Zdzisław Pucek), list of the jubilee's publications, list of taxonomic names honoring him and list of taxa proposed by him.

There was no special topic for the conference, except the one expressed by the title, but during the conference three panels took place: 'Evolutionary dynamics and classification of phyletic series' (organized by L. Martin and L. Werdelin), 'The *Allophaiomys* problem and early stages of *Microtus* evolution' (organized by J. Agusti) and 'Biostratigraphic and chronostratigraphic correlation of the Neogene and Quaternary mammal localities of the Palaearctic' (organized by R. Daams, O. Fejfar and E. Vangengeim). The themes of these panels are reflected in some of the articles published in the book.

The papers in the reviewed volume are arranged in alphabetical order of the first authors, and the papers on various sides of the Neogene and Quaternary mammal faunas of the Palaearctic are mixed together. The greatest number of articles (19) deal with systematics or descriptions of low rank taxa; almost as many (17) are surveys of regional faunas; twelve are on some aspects of mammal evolution during the Neogene and Quaternary; seven on biostratigraphy; while the remaining deal with paleoecology, taphonomy, new methodologies etc.

A brief browsing through the book shows the dominance of the papers on Rodentia. Out of 62 articles published in the volume, 28 deal with rodents (18 of which are confined exclusively to rodents, while remaining ten discuss other mammals as well). Other Neogene and Quaternary mammals discussed are Insectivora (4 papers), Lagomorpha (2), Mustelidae (1), Hyaenidae and Canidae (4), Ursidae (2), Suidae (2), Equidae (2), Rhinocerotidae (1) and *Mammuthus* (1). In addition Chiroptera, Bovidae, Cervidae, various Proboscidea, Primates, and others are mentioned in faunistic papers. Surveying the book reminds me of the ironical statement of the late great American paleontologist Professor Alfred Sherwood Romer, who said that papers on mammalian paleontology force him to believe that fossil mammals consisted exclusively of teeth and in some rare cases also of limbs. Tooth morphology dominates the book; the only papers on non-dental anatomy are

those of Kunst on 'Femoral morphology of some Quaternary bears' and of Semenov on 'Auditory bulla structure and relationships of the family Hyaenidae'. In addition the paper by von Koenigsvald *et al.* 'The Upper Pleistocene Tracksite Bottrop-Welheim (Germany)' describes 600 tracks of Pleistocene mammals, interpreted using biomechanical equations developed for dinosaur tracks.

Among 75 authors of the articles in the book, 64 are from Europe and the Asian part of Russia, 11 remaining from other continents, and five among the latter from USA. One may speculate that if a similar book would appear in USA, at least several papers would employ phylogenetic analysis, and as a result cladograms rather than drawings of teeth would prevail. It is interesting that the phylogenetic analysis that originated in Europe with the classical paper of Hennig (1950) made its brilliant career (in vertebrate paleontology) not in Europe, but in USA. This started after the appearance of the English translation of Hennig's books (1966) and was followed by numerous American books, articles and computer programs. Among 120 papers published in the two last volumes of the *Journal of Vertebrate Paleontology* (1995 and 1996), 34 articles employed the cladistic analysis, which is 28%. This contrasts with the reviewed volume in which only one paper by Semenov (cited above) made an attempt at cladistic analysis of the relationships among the aeluroid carnivorans and produced a hand-made cladogram. Is it a symptom of European conservatism?

It follows from the foregoing that most papers are faunistic and systematic, dealing sometimes with small scale phylogeny (species/genus level). Among the papers of more general interest, there are four that discuss evolution of some groups of mammals in respect to climatic changes. These are: Forsten 'Climate and the evolution of *Equus* (Perissodactyla, Equidae) in the Plio-Pleistocene of Eurasia', Montuire 'Rodents and climate II: Quantitative climatic estimates for Plio-Pleistocene faunas from Central Europe', Borodin 'Quaternary small mammal faunas from the west Siberian plane', and Motuzuko & Ivanov 'Holocene micromammal complexes of Belarus: A model of faunal development during Interglacial epochs'.

Werdelin & Turner's paper 'Turnover in the guild of larger carnivores in Eurasia across the Miocene-Pliocene boundary' discusses an interesting case of dramatic changes in the carnivoran fauna at the Miocene–Pliocene boundary, during which 92% species became extinct, the Hyaenidae being replaced by the Canidae. A somewhat similar problem, dealing with Carnivora, Suoidea, Equidae, Rhinocerotidae and Primates has been attacked in a report by Fortelius *et al.* 'Preliminary analysis of taxonomic diversity, turnover and provinciality in a subsample of large land mammals from the later Miocene of western Eurasia'. The authors make an attempt to interpret this faunistic turnover in paleoecological perspective.

Among the papers dealing with paleoecology and taphonomy perhaps the most comprehensive is the study by Semken & Graham 'Paleoecological and taphonomic patterns derived from correspondence analysis of zooarcheological and paleontological faunal samples, a case study from the North American prairie/forest ecotone', in which the authors analyzed faunal lists of 34 Holocene sites from Iowa, applying correspondence analysis.

The papers differ in methods applied. Many employ simple statistical methods, while others morphometric analysis. Most interesting from the point of view of methods utilized is the paper by Mezzabotta *et al.* on the evolution of the first lower molar in *Microtus* from the Pleistocene and Holocene of Sardinia and Corsica. The authors examined 198 teeth

from various sites by use of morphometric methods including multivariate techniques. In addition they studied the enamel microstructure. The analysis allowed the authors to recognize within the material studied two main groups, less and more derived, and to conclude that marked increase of evolutionary rate occurred at the end of Pleistocene, possibly due to environmental changes related to climatic factors.

Interesting and different from most papers in the book is the article by Martin "Tracking mammal body size distribution in the fossil record: a preliminary test of the 'rule of limiting similarity'." The author proposed a method, based on estimation of body mass in extinct species, to pursue the evolution of body size distribution in mammalian communities.

The editors of the volume no doubt made enormous and meticulous efforts in an attempt at editing 62 articles from various countries. I realize that in such a large volume complete unification is difficult to achieve and small editorial mistakes are inevitable. Still, in the 'Index of mammal taxa proposed by Kazimierz Kowalski' there is an insect taxon, and the one sentence abstract in the paper by Hír 'New results in the study of Hungarian Plio-Pleistocene cricetids' should be replaced by a more informative and less subjective one. The drawings apparently have not been processed by computer, as in several of them the original hand-written letterings and hatchings have been maintained. This is most striking is Fig. 1 in the paper by Markova 'Late Middle Pleistocene small mammal faunas from the Russian Plain...' where the author uses her own invention of a transcription of the Russian alphabet, not in accordance with the Guide to authors, published in the same volume. Some of the photographs are of a poor quality and a complete lack of stereo-photographs or SEM micrographs of teeth, commonly used nowadays in paleontological papers, is puzzling.

These are, however, minor mistakes. As a whole the book is an impressive piece of work by an international team. It furnishes a broad picture of the diversification of Neogene and Quaternary mammals of the Palaearctic, as well as of the work which is going on in different countries. It will remain a major reference book for all the students of the Late Tertiary and Quaternary mammals of the world.

Zofia Kielan-Jaworowska [zkielan@twarda.pan.pl], Instytut Paleobiologii PAN, PL-00-818 Warszawa, ul. Twarda 51/55, Poland.