

CONCLUDING REMARKS

As an outsider, a dipterist, I am perhaps an objective observer who can answer the question: How well deserved is your homage to Chaudoir? Briefly, I am envious of carabidologists and am thinking of changing fields. Naturally, the speakers at this symposium did an outstanding job. Why? Because they are carabid workers—their view always seems clearer than that of workers on other groups. Newton, when asked the source of his genius, replied that if he had seen further than others, it was by standing upon the shoulders of giants. Tonight, I learnt why carabidologists see better than others—they stand on the shoulders of giants, the first of whom was Chaudoir.

Why was Chaudoir a giant? Ball, Basilewsky, and Erwin have already told us why. And that carabidologists see further than others is illustrated in the papers by Noonan, Spence, and Evans. But I feel I can't shirk my responsibilities easily, just by glibly complimenting the participants at this symposium. Giant is a comparative term, and we are specialists in comparing. So, what can a dipterist say of Baron Maximilien de Chaudoir? His life was not unusual, but similar to that of many of the mid-19th century scientists. During this period, those who left a mark on entomology tended to be financially and educationally well endowed. One difference I see between Chaudoir and dipterists of his day is his early specialization in a single family of insects. Specialization in Diptera didn't really come until early in this century, Charles Paul Alexander (1889-1981, the crane fly specialist) being the obvious counterpart to Chaudoir.

Chaudoir's work is said to have been practical rather than theoretical, and his major legacy was his great collection. As a contemporary of Chaudoir, J. M. F. Bigot (1818-1893) must be mentioned. He was French, rich, educated, and amassed the greatest collection of Diptera of his time (and like Chaudoir's collection passing to Oberthür, Bigot's passed to Verrall, another collector of collections), but there the comparison ends. Bigot was a generalist and was apparently unable to master even the elementary descriptive tasks of a taxonomist. Osten Sacken said to Bigot "If all your publications could be suppressed, it would be a gain for science." Osten Sacken was another 19th century dipterist who should be compared to Chaudoir. Carl Robert Romanovich, Baron von der Osten Sacken (1828-1906) was a Russian nobleman of German descent and of a family with wealth and position, but he didn't amass great collections nor leave a significant body of systematic work. Osten Sacken had to spend his career negotiating peace between various warring dipterists and encouraging them to produce monographs, not petty criticism (vide his *Record*). I don't mean that there were not good dipterists during this period, only that none was able to accomplish *all* that Chaudoir did. So, while Chaudoir's work may be called practical and his only legacy a collection, these, in a comparative sense, are exceptional accomplishments.

The charge that Chaudoir's work was practical, not theoretical nor evolutionary, may reflect a lack of historical perspective. Ideas travel slowly. Chaudoir is castigated because his later work doesn't embrace "evolution," that is, Darwin's ideas. But is this unusual? Darwin's ideas were presented in 1859 and in English when Chaudoir was 43 and only 23 years before his last paper was published. Let us not forget that Hennig published his ideas first in the late 1940's, but they were not widely known until they were translated into

English in 1966 and not really appreciated until the 1970's. So, maybe we should forgive Chaudoir for not being aware of Darwin, if he wasn't. On the other hand, Chaudoir may have known of Darwin and his work but rejected the Darwinian view, not an unusual course for a French man of that time. When Erwin and others spoke of Chaudoir not being an evolutionist, they meant a Darwinian one. Ball mentioned the French tradition of Buffon, Cuvier, Latrielle, and Lamarck. If evolution is defined as modification with descent and evolutionary studies as those that search for the natural order which represents that descent, then Chaudoir and his French predecessors can be called evolutionists. Erwin demonstrated that Chaudoir detected natural order, the only problem being that that order was reversed. Chaudoir had the same order as Erwin but the polarity was inverted, due to the common problem of identifying the proper outgroup. Ball investigated Chaudoir's ability to identify natural groups. He showed that Chaudoir split polytypic taxa, assembled monotypic ones, detected morphoclines, identified central groups, and then connected them through intermediates. Kavanaugh and Nègre wondered why Chaudoir overlooked *Notiokasis*. Considering that Kavanaugh and Nègre were unable to precisely define the affinities of *Notiokasis*, should one criticize Chaudoir for his silence—especially as Basilewsky noted that Chaudoir didn't publish isolated descriptions of new taxa of unknown affinities? Spence revealed that Chaudoir's concepts of natural groups were correct for *Anatrichis*, *Oodinus*, and *Oodes*. In short, Chaudoir clearly searched for natural order and was frequently successful (his hypotheses congruent with modern ones). When Chaudoir was wrong, perhaps it was because he didn't have the knowledge of outgroups that is now available.

In conclusion, Chaudoir was a man who: Amassed a great sample of the now vanishing natural diversity (i.e., his beetle collection); specialized, producing monographs and revisions, not isolated descriptions; searched for natural order, not describing new taxa unless he knew their affinities; and corrected his own errors without hesitation. Those are characteristics of a giant, especially for 100 years ago, and are the ones we all should strive for even today.

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