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INTRODUCTION

The biology of social insects is today a large, well-defined, high-profile discipline within ethology and evolutionary biology. It has its own conferences, and several journals are devoted entirely or in large part to its subject matter. The present situation of our discipline is closely bound up with the foundation of its organizing body, the International Union for the Study of Social Insects (IUSSI), half a century ago. My purpose here is to examine the circumstances in which the IUSSI was founded and to comment on its early development. Earlier summary remarks on this subject have come from Anon. (1952), Kloft (1996, 1998), Noirot (1985), and Passera (1985).

An examination of this question is instructive, as the general situation of insect sociobiology in our time is quite different from that in the founding period of the IUSSI. This is seen in three conspicuous ways:

1. It is now a very much larger enterprise in terms of overall research activity. To speak of "explosive" growth is no exaggeration.
2. Social-insect studies have emerged as a prominent part of ethology and evolutionary biology. This is readily seen in recent textbooks of either parent discipline.
3. Collaborative studies are now much more likely to cross national or even continental boundaries. Data to illustrate this trend are given below.

A good illustration of these differences is seen in the inaugural issue of the IUSSI's journal, *Insectes Sociaux*, in 1954. It opened with an editorial justification for the establishment of a journal devoted to the study of social insects. Today, such a statement seems absurdly unnecessary.

BACKGROUND TO THE IUSSI

What constitutes a scientific discipline and how new disciplines are formed is a subject of ongoing discussion (e.g. Allen 1976, McCormmach 1971, Smocovitis 1996), and it seems unlikely that any one model can fit all branches of science exactly. However, the key element for the emergence of any new discipline is plainly a critical mass of dedicated researchers with a common understanding of the central problems facing their common domain and a determination to promote this domain and communicate its results.

By the early 20th century, a far-seeing entomologist might have predicted a distinct, coherent science of social insects. From about 1880 there was a marked

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increase in publications on the ecology and nesting biology of a diversity of social insects, with the beginnings of theoretical discussions. This was especially seen in the *Biologisches Centralblatt* and other German journals. However, what was lacking was a theoretical framework to unite those groups that we now know as social insects. A substantial general treatment had appeared as part of the first textbook of general entomology (Kirby & Spence 1815 and later editions), but it had little triggering effect at the time. It remained for William M. Wheeler (1923, 1928) to lay the foundation for what could already then have been called insect sociobiology. Maidl's (1934) large, thorough book came at an inopportune time for German science and had too little impact.

As earlier authors have noted, the IUSSI grew out of discussions at the 1951 international entomological congress in Amsterdam. However, this was not among the congress's planned agenda, and no hint of such deliberations is found in the two volumes of proceedings. It is not even evident that there was any prior consultation among those mainly involved in advancing the idea. It all seems to have happened quite informally.

Nonetheless, the time was clearly very suitable for such an initiative. Following a lull through the inter-war period and up to the end of World War II, social-insect studies had shown a remarkable flowering. Already in 1946, the literature shows an upsurge in publications from a variety of centers.

Furthermore, there was a noted diversification in taxonomic focus. As noted by West-Eberhard (1977), the study of social insects has by no means been free of bias toward taxa well represented in the north temperate zone. This is perhaps most clearly seen in the social wasps and termites, in which the bulk of species are found in the swarm-founding Polistinae and higher termites (Termitidae), respectively, yet these largely tropical groups received little attention at first. In the years following World War II, there was a clear move away from this imbalance, as seen especially in the work of O.W. Richards on neotropical polistines and Pierre-Paul Grassé and Charles Noirot on African higher termites. In a similar fashion, Shôichi F. Sakagami's group did much to advance the study of neotropical stingless bees (Meliponini).

This post-war flowering of research activity gave rise in turn to a coalescence of effort, as scientists enjoyed greater freedom to travel and communicate. In 1950, for example, France's National Center for Scientific Research (CNRS) organized a major meeting on the "Structure and Physiology of Animal Societies", including papers on social insects by Karl von Frisch, Grassé, Theodore C. Schneirla and several others. Similarly, the 1952 meeting of the British Association for the Advancement of Science (BAAS) included a special session on the behavior of social insects, with papers by Colin G. Butler, C. Ronald Ribbands, John H. Sudd and others.

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ESTABLISHMENT OF THE IUSSI

The IUSSI unambiguously has two fathers. Pierre-Paul Grassé (1885-1985) of the University of Paris worked mainly on higher termites, although he wrote prolifically on broader questions in biology and edited the multi-volume *Traité de Zoologie*. Karl Gösswald (1907-1996) at the University of Würzburg in Germany studied ant ecology, with emphasis on the *Formica rufa* species-group. Each of them established a substantial working group, which remained active over a long period.

In discussions at the 1951 entomological congress, Grassé and Gösswald found that they and several others present were very much dissatisfied with the status of insect sociobiology. They left with a determination to found sections of a professional society in their respective countries, which were to serve as the nucleus for an International Union for the Study of Social Insects (the name seems already to have been chosen). Developments followed as planned, and with admirable rapidity, so that the period of national sections gave way to the international society in less than a year.

The founding meeting in Paris on 13-14 June 1952 is customarily regarded as the first international congress of the IUSSI. The minutes of the business meeting and subsequent reports manifest an exemplary, conscious spirit of internationalism. As an example, Grassé's unopposed candidacy as president was moved by Gösswald, and one of Grassé's first acts in the chair was to propose Karl von Frisch as honorary president. Gösswald's politics were probably an important contributing factor in this (W. Kirchner, pers. comm.). While few of his German colleagues actively supported their government's aggressive policies in the war and before, Gösswald stood out by his open opposition, so that he was regarded by Grassé and other French colleagues as a friendly figure.

It was also noted at the founding meeting that not all national groups were represented at the meeting -- in fact, 2/3 of the participants were from France, and all others were from western Europe -- so that all decisions were to be considered provisional, pending proper consultation. Documents from the period, thus, give no hint of any jockeying for national advantage among delegates drawn from countries that had so recently been at war. This factor undoubtedly strengthened the new organization. Apparently by prior agreement, Gösswald immediately followed Grassé as IUSSI president, and the second international congress took place in Würzburg in 1955.

EARLY ORGANIZATION AND COMPOSITION

Immediately with the foundation of the IUSSI, the French Section began publication of a research and information bulletin, which amounted to four issues in 1952-53. The bulletin accepted notices and research reports in five languages and was explicitly transitional in intent. Its purpose was to give rise to a more broadly-based professional journal, and *Insectes Sociaux* was duly inaugurated in 1954. As stated

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in its first pages, this journal was not only for the communication of research results. Rather, it was intended as an organizing force for the new society and through it for the development of insect sociobiology.

The IUSSI quickly showed a strong organizational hand as joint sponsor of two sessions on "Evolution of Social Life in Insects" and "Social Construction in Insects" in the 1956 international entomological congress. These gave us the now classic papers of Evans (1958) and Michener (1958), among others. This increased visibility has been a feature of succeeding international congresses. A review of the proceedings of the various international congresses shows a sharp break between the ninth (Amsterdam 1951) and tenth (Montreal 1956) in the treatment of social insects. The ninth congress, like its predecessors, had relatively few papers on social insects, and these were scattered among several sections. In contrast, insect sociobiology had a much more prominent presence at the tenth congress, and it was organized into a section on "Behaviour, Including Social Insects". Succeeding congresses have largely maintained this trend. It seems plain that this shift was a result both of the IUSSI's participation and of the factors that brought the IUSSI into being.

Table 1. Geographic distribution of IUSSI membership in 1957 and first authors of research papers in vols. 1-6 (1954-1959) of *Insectes sociaux*.

| | Number of IUSSI memberships | Papers in <i>Insectes Sociaux</i> |
|----------------------|-----------------------------|-----------------------------------|
| USA | 76 | 31 |
| Germany | 69 | 33 |
| France | 64 | 49 |
| Italy | 30 | 3 |
| Great Britain | 27 | 33 |
| Japan | 20 | 4 |
| Brazil | 17 | 2 |
| Benelux | 11 | 10 |
| Other western Europe | 19 | 7 |
| Eastern Europe | 4 | 1 |
| Others | 9 | 3 |
| Total | 346 | 176 |

The key factor in the relative strength of national/regional sections was of course the level of scientific activity in their respective territories. As in any society or discipline, this is closely correlated with the number of practitioners. Except in the

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poorest countries or those with tight currency restrictions, individual membership in the IUSSI has always been easily accessible. The membership lists for 1954, 1955 and 1957 in the first volumes of *Insectes Sociaux* can thus serve as a reasonable index of relative national activity. With a steadily rising membership from 228 to 346, the lists show that France, Germany and the USA each accounted for 20-23% of individual members in these early years (Table 1). Other countries with substantial representation were Brazil, Great Britain, Italy and Japan.

Although numbers of members is a key factor in the relative strength of the sections, it is plainly not the only one. At the foundation of the IUSSI, national or regional sections existed in Brazil, Israel, the USA and 10 European countries, and the Japanese section was formed the following year. However, not all sections were equally solidly based, and some showed no real existence.

This is illustrated by the early history of the Japanese Section. Although Japanese colleagues continued their memberships in the IUSSI, the section fell into abeyance within a few years of its 1953 founding. The key factor appears to have been one of personality. Early in its history, leadership of the section fell to Shôichi F. Sakagami (1927-1996) of Hokkaido University. Sakagami was an outstanding researcher, who developed an impressive group of students and other collaborators, but he had little appetite for organizational work, so that development of the IUSSI in Japan was never among his priorities. Organization of a strong section was left to a later generation, in large part of Sakagami's students.

Much the same can be said of Leo Pardi (1915-1990) of the University of Florence, the leading figure in Italian insect sociobiology after the retirement of Carlo Jucci early in the life of IUSSI. In contrast to Grassé, who had a flair for the grand expression and scientific gesture, Sakagami and Pardi were rather self-effacing men. In their papers, one finds a clear view of the larger implications of their results, but there is a decided reserve about promoting their conclusions and a positive distaste for controversy.

The leader in Brazil, Warwick E. Kerr (b. 1922), had (and has) formidable organizational abilities. However, these were directed much more to the broader management of Brazilian biology, so that that country's vigorous insect sociobiology played little role in the early years of the IUSSI.

In order to round out the list of dominant research groups in the founding period, let us mention those headed by Rémy Chauvin (b. 1913) of the Bures-sur-Yvette beekeeping laboratory in France, Michael V. Brian (1919-1990) of the Furzebrook Research Station in England, Alfred E. Emerson (1896-1976) of the University of Chicago in the USA, and Charles D. Michener (b. 1918) of the University of Kansas in the USA. The North American Section parallels the Japanese and Italian sections in its developmental history. Although a section was recognized in the early period, this quickly fell into inactivity and was not re-founded until about 25 years later, after which it has shown continuous strength. The evident reason is that none of the leading figures in the early period was especially drawn to IUSSI organizing.

Differences are also seen in the degree to which colleagues from different countries and regions embraced the IUSSI's journal as a publishing outlet. As seen

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in Table 1, the three dominant membership countries contributed 65% of the papers in the initial volumes of *Insectes Sociaux* (with an unexplained drop in papers from Germany after vol. 3). However, there were some striking departures from proportional representation. Great Britain contributed a disproportionately large fraction of papers, while Brazil, Italy and Japan were only marginally represented. This presumably had to do with the existence of strong national entomological journals in these latter countries, together with a disinclination to publish in English, French or German, the IUSSI's standard languages at that time. The journal has seen a distinct geographic broadening since those early years.

Another useful contrast is in the fractions of multi-author papers in *Insectes Sociaux* whose authors come from more than one country. For volumes 1-12, this fraction was just 7% (3/42), while in recent years it has been around 21%. Thus, as expected insect sociobiology has partaken of the overall internationalization of science of recent decades.

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REFERENCES

- Allen, D.E. 1976. *The Naturalist in Britain, a Social History*. 2nd ed. Princeton: Princeton Univ. Press 270 pp.
- Anon. 1952. (On the origin of the IUSSI.) *Bulletin de la Section Française de l'Union Internationale pour l'Etude des Insectes Sociaux*. (1):1-3.
- Evans, H.E. 1958. The evolution of social life in wasps. *Proceedings of the Tenth International Congress of Entomology, Montreal 1956* 2:449-57.
- Kirby, W. & W. Spence 1815. *An Introduction to Entomology, or Elements of the Natural History of Insects*. 1st ed. Vol. 1. London: Longman, Hurst, Rees, Orme, and Brown 512 pp.
- Kloft, W.J. 1996. Karl Gösswald *26.01.1907 +02.04.1996. *Verhandlungen der Deutschen Zoologischen Gesellschaft* 89:239-40.
- Kloft, W.J. 1998. In memoriam Karl Gösswald (1907-1996). *Insectes Sociaux* 45:112.
- Maidl, F. 1934. *Lebensgewohnheiten und Instinkte der staatenbildenden Insekten*. Vienna: Fritz Wagner 823 pp.
- McCormach, R. 1971. Editor's foreword. *Historical Studies in the Physical Sciences* 3:ix-xxiv.
- Michener, C.D. 1958. The evolution of social behavior in bees. *Proceedings of the Tenth International Congress of Entomology, Montreal 1956* 2:441-47.

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Noirot, C. 1985. A la mémoire du professor Pierre-Paul Grassé. *Insectes Sociaux* 32:331-334.

Passera, L. 1985. (Obituary of P-P. Grassé). *Actes et Colloques Insectes Sociaux* 3:3-6

Smocovitis, V.B. 1996. *Unifying Biology: The Evolutionary Synthesis and Evolutionary Biology*. Princeton: Princeton Univ. Press 230 pp.

West-Eberhard, M.J. 1977. The establishment of reproductive dominance in social wasp colonies. *Proceedings of the Eighth International Congress of the IUSSI, Wageningen* 223-27.

Wheeler, W.M. 1923. *Social Life Among the Insects*. New York: Harcourt, Brace 375 pp.

Wheeler, W.M. 1928. *The Social Insects: Their Origin and Evolution*. London: Kegan, Paul, Trubner 378 pp.