ing parties to litigation may grow increasingly attractive. One frequently suggested option is a panel of experts, who meet and reach conclusions about the research outside the adversary environment of the courtroom. Chesler, Sanders, and Kalmuss discovered that their respondents had mixed reactions to the expert panel alternative. Interestingly, lawyers were opposed to expert panels for hearings on whether civil rights laws had been violated, but were more willing to support them for hearings about remedies for legal violations. At the remedy stage, expert panels may be ideally suited to construct a compromise plan that is satisfactory to all the major players who, following adversary litigation, must develop new ways to work together. This dichotomy in the perceived usefulness of expert panels suggests the circumstances in which they may be most valuable and deserves greater attention.

The book raises important questions about the phenomenon of expert witnessing within the context of a controversial social movement. Do comparable attorney recruitment and preparation strategies, and similar tensions between scientific norms and adversary roles, characterize the experiences of scientific experts appearing in less politicized cases? The generalizability of the experiences of the desegregation experts must be tested by future researchers, but the meticulous and insightful exploration of the phenomenon in *Social Science in Court* provides an excellent foundation.

VALERIE P. HANS
Department of Psychology and Division of Criminal Justice, University of Delaware, Newark, DE 19716

Insect Sociobiology

The Genetics of Social Evolution. MICHAEL D. BREED and ROBERT E. PAGE, JR., Eds. Westview, Boulder, CO, 1989. viii, 213 pp., illus. Paper, $36.50. Westview Studies in Insect Biology. Based on a conference, Dec. 1987.

Time was that worker honeybees were thought of as interchangeable little automata, identical within a colony except for a change with age of the set of tasks responded to. No more. Time was that social insect colonies were regarded as "superorganisms," analogous to the bodies of single animals in the devotion of their constituent members to the common good. No more. Both views have fallen decisively under the weight of both empirical and theoretical studies. As the number of bee and ant pictures on the recent covers of international journals attests, the evolutionary study of social insects is coming to grips more and more with the unraveling of the predictions of hypotheses now decades old and the pleasant discovery of unanticipated phenomena such as genetical bases for behavioral specialization in honeybees.

This book, accordingly, based loosely on a symposium but molded into a unitary form, is about the interaction of genetics and evolution with sociality. The focus is narrower than the title: it is restricted not only to eusocial insects (those with a reproductive division of labor) but to the Hymenoptera (bees, ants, and wasps). Nevertheless, this group is in many ways the core group for sociobiological studies, and the focus actually achieved makes for an effective and exciting book.

After an introduction by Breed to the concepts and questions of the field, the book turns quickly to the recent finding that

honeybee workers tend to be genetic specialists and not perfectly interchangeable. Prominent in this field are the groups of Page (who contribute two chapters to the book) and Moritz. Page has shown that the high level of genetic variation in honeybee colonies resulting from the queen's mating many times is associated with genetic differentiation between performers of various tasks. Moritz has demonstrated high heritabilities for various social behaviors and an increase of group efficiency with the appropriate genetic structure. Now Page and coworkers present the first elements of a theory relating worker task specialization to colony fitness. Not surprisingly, these elements are incomplete: I am not sure whose fitness is being maximized (queens'? workers'?), and I wonder if additive effects are really more plausible than multiplicative ones in the combination of the numerous factors.

The theme of colony-level selection is continued by Owen, who treats it as a form of mating-type selection and finds that the likelihood of polymorphic equilibria is strongly affected by such parameters as the extent of reproduction by workers (which often can and do lay eggs). He also notes evidence for variation of colony characteristics in natural populations of various social insects, variation that could open the way for serious studies of social evolution in organisms other than honeybees. The question of the nature of the colony organization being selected for is given further zest by behavioral modeling that suggests the possibility of a colony memory outliving any one generation. Thus a link is established to the cultural evolution studies lavished on humans and other vertebrates.

The importance of male haploidy in the evolution of eusocial behavior is the question for Strassmann and Queller, who contribute two chapters based on that classical system for insect sociobiology, *Polistes* paper wasps. An impressive data set, gathered with sweat (and no doubt tears—the wasps can sting) in the hot Texas sun is used in combination with the results of others to test various predictions based on male-haploid effects on relatedness in kin selection models. The authors conclude that most of the hypotheses fail the tests, but this seems to be more because the data are so far insufficient than because predicted trends are definitely not there. The conclusion that eusociality is maintained because single females cannot raise broods avoids the question of how the remote solitary ancestors of such species came to take up group living in the first place. Certainly, however, the evolution of eusociality is better studied in insects with primitive social systems, such as *Polistes*, and it is right to call for more data of the kind that Strassmann's group is collecting, which involves both genetic structure and the costs and benefits of sociality.

Other chapters address a variety of socially related evolutionary problems in exemplar species. Kukuk shows that relatedness is high enough within colonies of the primitively eusocial bee *Dialictus zephyrus* to make it plausible that kin selection maintains sociality in this species, while considerably advancing our knowledge of the genetics of natural populations of such bees. Mintzer shows that the cues used in colony recognition by acacia ant colonies must be polygenic rather than single-locus in inheritance. Ross presents a progress report of work on a dramatic evolutionary change taking place in introduced fire ant populations—from single- to multiple-queened colonies. Ward discusses speciation patterns in ants, finding little evidence that social organization affects the common pattern of allopatric speciation observed, while leaving open the possibility that socially parasitic species may undergo sympatric speciation.

So what are we left with from this set of current highlights? That the interaction of sociality with genetics and evolution is probably nowhere better studied than in the eusocial insects. Where a reasonable amount of money is available for collection of data, as in the honeybee case, startling findings, poorly anticipated by theory, emerge. The colony, once seen as an optimized entity, dissolves into a welter of conflicting cooperative and competitive activities, as seen clearly in one field not represented here, the study of sex allocation. Little else in the genetic biology of social insects escapes the influence of their sociality. And the way to understanding this sociality is clearly through genetics; epigenetic models, for example, logically devolve to genetic ones.

But what can insect sociobiology tell us about that of other organisms? It is a cliché that the body of theory is universally portable, but what about the empirical findings? Tempting though it is to recall the justification of their work given by some *Drosophila* students, that humans and flies share 40% of their loci, one really doubts that foraging genotypes in bees will have homologs in mammalian societies. On the other hand, study of eusocial insects should help better define the conditions to look for in other societies. Of course, those who regard the euosocial insects as one of the marvels of nature need no such encouragement to study them.

ROSS H. CROZIER
School of Biological Science, University of New South Wales, Kensington, NSW, Australia 2033

Platelets

Platelet Immunobiology. Molecular and Clinical Aspects. THOMAS J. KUNICKI and JAMES N. GEORGE, Eds. Lippincott, Philadelphia, 1989. xiv, 498 pp., illus. $85.

It wasn't many years ago that platelets were almost exclusively the domain of the hematologist. The little bags of cytoplasm were of little interest to other workers who sought to understand fundamental concepts of how "real" cells functioned. Platelets were held to be different. There was something special, almost mystical, about them and the way they had to be manipulated in the laboratory. Terms such as "viscous metamorphosis" and "release reaction" held the non-platelet expert at bay. Much has changed in recent years, with the platelet having served as a vehicle for major advances in understanding cellular function. Much of what we now know about arachidonic acid metabolites, phosphoinositide metabolites, and mechanisms of cellular adhesion have come from studies of platelets.

This volume addresses what is probably the most forbidding and arcane area of platelet science, immunobiology. Just the thought of platelet serology and platelet antigens with names like Bak^a, Yuk^b, or DUZO intimidates even many of us who work with platelets daily. This book could contain (and, in fact, does contain) some really esoteric stuff. Fortunately, the editors have adopted a broader perspective of what constitutes platelet immunobiology. The result is a volume that should appeal to an audience beyond the aficionados of platelet serology.

This book covers a lot of ground in 22 chapters. All the expected material is included. There are the predictable chapters dealing with an assortment of platelet antigens: isoantigens, alloantigens, autoantigens, and drug-dependent antigens. Other chapters address platelet IgG, Fc receptors, and the interactions of platelets with complement. By and large these are quite well done, don't get bogged down in serologic jargon, and serve to enlighten and inform. The chapter by Aster dealing with the immunologic thrombocytopenias is a jewel. It may well be the single best compendium of information on this topic currently available.

Several early chapters are devoted to the structural elements of platelet membranes including glycoproteins, glycolipids, and proteoglycans. This information is readily available elsewhere, but it serves as a scientific foundation for the remainder of the volume. A section of five chapters describing the application of antibody probes to the study of platelet biochemistry and molecular