House convinced that federal funding should be limited to basic research and that commercialization was best handled by the market. "The contrast between its 1981 posture and the administration's 1987 response to the demonstration of the phenomena of high-temperature superconductivity, the formation of Sematech, or the 1988 development of standards and research programs for high-definition television is dramatic."

Mowery and Rosenberg do not consider why the Administration changed its view. It surely did not lose its faith in the market. Rather, other nations did not share that faith, and so the Administration had to face an international reality in which other nations subsidized commercial R&D and were not as open as the United States to sharing R&D results. Other nations engaged in what the authors call "scientific mercantisism." What then should the United States do? All the authors offer is an exhortation to continue efforts to persuade other nations of their folly. Perhaps the United States should be an island of virtue in a sea of vice. But then perhaps not.

MERTON J. PECK
Department of Economics,
Yale University,
New Haven, CT 06520

A Psychiatric Enterprise

Before It's Too Late. The Child Guidance Movement in the United States, 1922–1945. MARGO HORN. Temple University Press, Philadelphia, 1989. xii, 224 pp. $34.95. American Civilization.

In 1922, there were only four psychiatric clinics for children in the United States; by 1942, there were 60. In *Before It's Too Late*, Margo Horn, a historian at Stanford University, addresses this important development within American medicine.

Between 1925 and 1945, the child guidance movement emerged as a new form of psychiatric practice that reflected the ameliorative spirit of the Progressive Era and its basic faith that investments in children constituted sound social policy. Although child welfare programs were generated by many different kinds of Progressives—government bureaucrats, feminists, labor activists, educational and municipal reformers—Horn's monograph focuses on the activities of a single, influential philanthropic foundation, the Commonwealth Fund, and its role in fostering the formation of child guidance clinics and on the simultaneous development of the professions that made up the child guidance team: psychiatry, psychiatric social work, and psychology.

The most interesting and controversial subtext in this book is the story of professional—rather than children's—behavior. Despite her access to clinical case records from the archives of the Commonwealth Fund, Horn avoids the social history of childhood in the interwar years and says relatively little about changes in the situation of children, their problems, and their relationship to families. Instead, she focuses on the Fund's changing therapeutic mission and demonstrates, quite effectively, that the child guidance movement was shaped and driven by professional concerns and rivalries. Throughout Horn's account, the mental health professions exist in an uneasy alliance shaped by both status anxieties and gender politics. In this respect, Horn's book is a noteworthy contribution to our understanding of the evolution of the modern professions.

A number of critical transformations in the history of the Commonwealth Fund reveal the dynamics of "profession-making" in the 20th century. In the late 1920s, the Fund apparently shifted its emphasis from the prevention of juvenile delinquency to the treatment of the normal (or merely "malajusted") child—that is, a child who could be treated in an out-patient clinic within the community. According to Horn, the new orientation "resulted from the Fund's definition of its proper role in society as well as the emerging professional interests of psychiatrists" (p. 10).

Horn underscores psychiatry's problematic relationship to medicine in this period: psychiatrists were not widely accepted members of either the medical or the educational world. But psychiatry found a way to release itself from the heritage of the 19th-century asylum by establishing psychiatric wards in general hospitals and, eventually, lucrative private practices in the community. In the interwar years, the child guidance clinic provided the perfect niche. By making problem children the target population, psychiatrists screened out intractable problems and developed an increasingly middle-class clientele. Like all professional groups, psychiatry needed ways to demonstrate its efficacy and also improve its economic status.

In terms of therapeutics, there is a more unsettling story. According to Horn, child guidance actually had "little effective clinical technique" (p. 136); the early child guidance team, she says, used an amalgam of methods to help children. Yet, by 1930 an influential shift occurred from behaviorism (which emphasized changing the behavior of the parent or child) to psychotherapy (which focused on emotional and intrapsychic factors). This change was apparently motivated by professional concerns rather than research or progress in treatment outcomes. Horn rightly asks why child guidance professionals shifted away from "a behavioral approach that they recognized as ineffective to a more psychodynamic approach that was, by their own admission, even less effective" (p. 135). The answer, she says, has to do with the intellectual hegemony of Freudian ideas in the psychiatric profession at the time and with "the practical advantages" that a psychodynamic model offered psychiatry as a professional group. Horn argues that the new therapeutic stance—that is, dynamic psychotherapy—empowered psychiatrists at the same time as they became more passive (and less didactic) in their relationship with patients and also more competitive with non-medical colleagues on the child guidance team.

In the scenario Horn presents, status concerns and intraprofessional rivalries called the cadence at the Commonwealth Fund. Although the child guidance clinic was based on the cooperative efforts of a team, the Fund clearly put its economic resources into fostering child psychiatry through fellowship and training programs—but only for the "right" people. In fact, the status concerns of psychiatry were played out in discriminatory policies that affected the development of the profession. Leaders in the child guidance movement openly stated their preference for white, Christian males and justified their bias in terms of what was "best" for the profession. Efforts to screen out low-status applicants—namely Jewish women—were "part of the specialty's sensitivity about its own professional status" (p. 126).

Predictably, gender politics were also part of the evolution of child psychiatry precisely because the closest "helping profession"—psychiatric social work—was already a feminized field. Some child psychiatrists in the movement made pointed efforts to differentiate themselves from psychiatric social workers who had actually begun their outpatient work with children as visiting teachers, a short-lived feature (1921–27) of the early Program for the Prevention of Delinquency. Here the author supplies an interesting and generally ignored piece of the early history of women in social work.

But when Horn calls the Commonwealth Fund a "conservative innovator," the reader is forced to ask why she has chosen such a benign label. In fact, her narrative and analysis say almost nothing about the Fund's role in stimulating innovation or creativity in child psychiatry. Although many notable psychiatrists are named here—among them Frederick Allen, Augusta F. Bronner, William Healey, Helen Langner, and George Stevenson—there is no substantive discus-

sion of their motivation or accomplishments. Were these men and women of any commitment? Did they have compelling interests in children or in certain psychopathologies? In Horn's hands, the Commonwealth Fund ultimately emerges as a self-aggrandizing organization dominated by concerns for psychiatric authority and anxious to serve a "gate-keeping" function. The reader is left wondering: Why did middle-class parents turn to such a self-interested group? And what good (if any) was achieved by child guidance? A fully developed social and cultural history of the child guidance movement, as well as the families and children it served, remains to be written.

JOAN JACOBS BRUMBERG
Department of Human Development and Family Studies, Cornell University, Ithaca, NY 14853–4601

Steroid Biology

Ecdysone. From Chemistry to Mode of Action. JAN KOOLMAN, Ed. Thieme, New York, 1989. xiv, 482 pp., illus. $160.

Popeye was on steroids. This would be the result of physicochemical and radioimmunological tests for detection of ecdysone and related steroids—the ecdysteroids. It is doubtful that the strength derived from a can of spinach can be attributed to steroids, because ecdysone is not an anabolic steroid in vertebrates (though instantaneous effects on the brachioradialis muscle have not been measured). There is no doubt, however, that the insect molting hormone 20-hydroxyecdysone and several other steroids are found in spinach leaves at concentrations commonly a thousandfold higher than are found in insects. The presence of polyhydroxylated steroids of the ecdysteroid family throughout the plant kingdom is interpreted as an ancient defense strategy against non-adapted insects or nematodes. Indeed, ingestion of ecdysteroids can disrupt insect growth and development, usually by promoting the synthesis of new cuticle at inopportune times in the molt cycle. Adapted insects, which are not affected by the high ecdysteroid content of their diet, have evolved gut detoxification enzymes that attack the molecule at the 3-hydroxyl position. That hydroxyl group, derived from the 2,3-epoxide of squalene epoxide, is common to a hundred or so phytoecdysteroids.

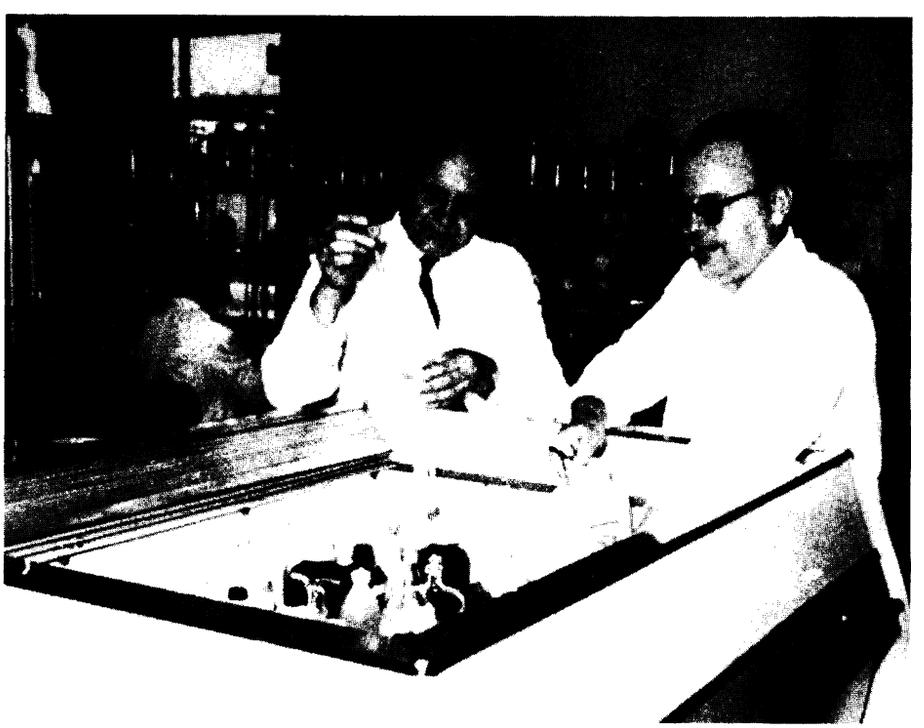
Ecdysone: From Chemistry to Mode of Action is a collection of 48 chapters by 77 contributors from around the world covering these and many other aspects of ecdysone biology. The volume was assembled to honor Peter Karlson, a pioneer in the field. Each chapter is a short review rather than a research contribution, and thus the collection serves as a convenient introduction to the field. The book has extensive illustrations, complete references (current through 1988), a useful collection of structural formulas for all ecdysteroids of plant and animal origin, and a comprehensive index. Overall, the scientific content is excellent and well balanced, and the book conveys the dynamism of an interdisciplinary field in full growth.

The book presents challenging ideas about the evolution of the ecdysone hormonal system, relating to the origin and widespread occurrence of ecdysteroids in invertebrates (Bückmann, Käuser) and to the primitive and derived functions of ecdysteroids (Hagedorn). Useful reviews of various model systems such as cell lines, imaginal disks, salivary glands, and epidermis give a coherent overview of what can be done and what remains to be done.

The book reflects the relatively small part played by molecular biology in ecdysteroid research. Molecular studies on the ecdysteroid receptor have been slow in coming (Pongs), and if we consider the total number of genes likely to be regulated by ecdysteroids in arthropods, it is clear that the analysis has only just begun (Lepesant). The insect model for steroid hormone action, launched in 1960 by Clever and Karlson's discovery of puff induction by ecdysone in *Chironomus tentans* polytene chromosomes, may now be overshaded by the detailed description of vertebrate steroid hormone receptor interactions with specific DNA sequences. Help is on the way with the recent cloning of a *Drosophila* ecdysteroid receptor.

But ecdysone is a steroid that deserves attention beyond its value as a "model steroid." For instance, the discovery of ecdysteroids associated with parasitic helminthes (Simon and Koolman) may lead to new epidemiological monitoring tools and raises the question whether ecdysteroids are hormones in all protostomes (Franke and Käuser). The evolution of steroids must result from changes in their biosynthetic enzymes. The cholesterol side-chain cleavage enzyme or cytochrome P450 XIA is an ancient enzyme that commits the product pregnenolone to the known steroid hormone pathway of vertebrates. It is tempting to suggest that the ancestor of cytochrome P450 XIA was a sterol side-chain hydroxylase that evolved into an enzyme such as ecdysone 20-monooxygenase in today's arthropods and that side-chain cleavage of 20*R*, 22*R*-dihydroxycholesterol was a catalytic specialization derived in chordates. A concerted search for the presence of the steroids and their biosynthetic enzymes in obscure animal phyla is as challenging if not as fashionable as the study of peptide hormone evolution and diversity.

RENÉ FEYEREISEN
Department of Entomology, Oregon State University, Corvallis, OR 97331



Peter Karlson and C. E. Sekeris at the cold box in Karlson's laboratory in Marburg. "The cold box . . . was the analogue of the Pnyx, the Athenian parliament. Most of the major decisions and planning of the experiments were taken there." [From *Ecdysone*]