import from Germany in the 1920s and '30s. It was a strong critique of behaviorism and introspectionism, though Gestalters used introspection as a method.

Finally, the interview with Herbert Simon (Carnegie-Mellon) is enlightening. Simon, trained as an economist and management specialist, has profoundly influenced psychology without any formal training in the field. His comments are wise and judicious as befits a Nobel laureate. Simon is responsible for the interest in artificial intelligence, now an important aspect of cognitive psychology. He has developed computer programs for problem-solving and for playing chess and has been a leader in the emergence of a new academic field called "cognitive sciences," which may absorb cognitive psychology as it combines psychology, linguistics, philosophy, and computer science.

Baars has written an interesting and useful book on selected aspects of experimental psychology over the past 80 years. I would not again teach a course in the history of psychology without referring to this book. He writes well. He paints the demarcation between behaviorism and cognitive psychology too sharply. It has been said that cognitive psychology is a disguised S-R formulation with some fancy talk between the S and R. And should the author believe that the history of psychology is linear I would point out that there is discussion again of connectionism among cognitive psychologists, reminiscent of the associationism of behaviorism.

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Carbonate Complexes

Reef Diagenesis. J. H. SCHROEDER and B. H. PURSER, Eds. Springer-Verlag, New York, 1986. x, 455 pp., illus. $59. Based on a symposium, Papeete, Tahiti, 1985.

In compiling this collection of 19 papers Schroeder and Purser have done carbonate geology a truly valuable service. Most of the papers are case studies describing ordered diagenetic sequences in specific reef complexes; thus taken together they offer a comprehensive view of reef alteration. They include diagenetic studies of many of the best-known depositional reef facies models in various parts of the world and adequately encompass the span of geologic time.

Two papers are special studies: one on details of fabric control of coral diagenesis (B. R. Constantz) and another on the hydrology of Eniwetok and Davies Reef in the Australian Great Barrier Reef (R. W. Buddemeier and J. A. Oberdorfer). The latter is particularly important because so few hydrodynamic studies are available. It reports that fabric variation in reefs makes for high but variable permeability. Sea water penetrates well into these two modern reef masses. The Ghyben-Herzberg freshwater lens is thin and irregular despite the exposed reef mass at Eniwetok. The study also reports that microbial activity affects internal water chemistry throughout reef masses, a diagenetic control often not considered.

Very useful general descriptive accounts of Neogene diagenesis are given in papers on submarine cements in the Great Barrier Reef (J. F. Marshall); peripheral cementation and dolomitization by mixing of marine and fresh water in reefs of Mururoa Atoll, French Polynesia (D. M. Aissaoui, D. Buigues, and B. H. Purser); and diagenesis in Pleistocene coral reefs in the Red Sea (W. C. Dullo) and in Miocene reefs in the Gulf of Suez (D. M. Aissaoui *et al.*). Older reefs — Paleocene coral knobs of southern Egypt— are also discussed (J. H. Schroeder). The Cretaceous is well represented by papers on northern Spain's Albian reefs in the tectonically active Cantabrian basin (J. Reitner) and rudist reefs in Tunisia (A. M. Rabet *et al.*).

A major paper by P. Enos reviews work on the Cretaceous of the Valles Platform in central Mexico and is followed by studies of the southern German Jurassic sponge-algal reefs in Schwabia and Franconia (R. Koch and M. Schorr) and the Triassic Wetterstein limestone of Bavaria (R. Henrich and H. Zankl). For the Paleozoic, two Upper Permian examples are included: the Zechstein-Magnesian limestone of northeastern England (M. E. Tucker and N. T. J. Hollingworth) and aragonitic sponges from the Djebel Tebaga of southern Tunisia (M. Scherer). A paper on micrite diagenesis in the Carboniferous Waulsortian (J. Miller) is followed by two on Upper Devonian reefs: the subsurface Nisku of Alberta, Canada (H.-G. Machel) and the Canning Basin of western Australia (C. Kerans, N. F. Hurley, and P. E. Playford). Two Silurian reef studies complete the case histories: a subsurface study of northern Michigan basin pinnacle reefs (K. R. Cercone and K. C. Lohmann) and a study of the Klinteberg formation in the Baltic Gotlandian (P. Frykman).

The reviews are admirably summarized by the editors, both of whom contributed to some of the case histories. They list seven reasons why diagenesis is so prominent in reefs, most important that reefs are high-standing barrier-forming masses with great internal porosity and metastable mineralogy consisting of aragonite and are organic-rich. The summary points out that hydrodynamic models of reefs (indeed of all carbonate masses) need intensive additional study and calls attention to tidal movements, thermal convection, and wave surge as reasons for surficial cementation on windward sides of reefs and for the strong internal penetration of marine waters, the latter offering an additional explanation of dolomitization. The majority of the studies show that the depth of the Ghyben-Herzberg lens is controlled by surface outcrop exposures and internal inhomogeneity and that its general thinness diminishes the influence of mixing-zone dolomitization. Incidentally, 14 out of 19 of the reported examples include dolomitization, much of which is associated with solution and therefore may originate in mixing zones. Evaporites are involved in the stratigraphic sequences in only two of the 19 examples.

The studies show that early marine cementation is pervasive but that meteoric cementation is also present in all the reefs studied. These cements are volumetrically important and serve to stabilize the reef mass. Later burial diagenesis (compaction, pressure solution, and cementation) is generally porosity-destructive. The editors have included several useful cartoons of suggested water masses and their flow paths in reefs. In their conclusions, they urge more careful plotting of the geographic variations in diagenetic effects within individual reef bodies. I strongly recommend this book to both specialists and students interested in carbonate rocks.

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Invertebrate Immunology

Hemocytic and Humoral Immunity in Arthropods. AYODHYA P. GUPTA, Ed. Wiley-Interscience, New York, 1986. xiv, 535 pp., illus. $59.95.

Within the field of comparative immunology much of the growing body of research has dealt with arthropods. This volume on the subject consists of 20 chapters by 32 authors. The first seven chapters pertain to cell-mediated immunity and the next ten are concerned with humoral factors. The final three chapters deal with techniques.

The chapters vary in quality and scope. The lead chapter, by A. P. Gupta, is a comprehensive and thought-provoking analysis of the structure and functions of arthropod immunocytes and their similarities to vertebrate B and T cells. Similarly, the contribution by A. Vey and P. Götz is an in-depth review of the antifungal defense