in the government's files contradicts—had left the Communist Party. According to the author, he closed this chapter of his life not with a bang and hardly with a whimper: he simply came to perceive that cellular politics had lost its appeal to the wretched of the Brooklyn College earth and that it was likely to be a burden to his own slowly improving career. The terms of disengagement—a gradual weaning, not an explosive break—allowed Novikoff to become (in Hannah Arendt's terms) a "former Communist," remaining emotionally bonded to old associates and despising tattling, rather than an "ex-Communist," regarding non-defectors as sunk in evil and exposing them to save the world. And doubtless there were many more of the former than those familiar with Whittaker Chambers's epiphanies and Elizabeth Bentley's divulgations would suspect.

At the same time, there is something missing from this account of tempests confined to agit-teapots and of a disentanglement effortlessly achieved. In a book-long disquisition on the subject of American Communism, Holmes mentions the name of Stalin only once and the egregious handiwork of Stalinism not at all; the rigged trials and purges in Moscow, the anti-Trotsky plottings of the Comintern, and the bloody Communist-led civil war within the Spanish Civil War might have taken place on another planet. Not looking for signs of intellectual surrender to the Machiavellian twists of Russian foreign policy, Holmes ignores the fact that Novikoff, in contrast to a good many who entered the Party about when he did, did not bolt in 1939 when the Soviet Union signed a nonaggression pact with Nazi Germany that sealed the fate of most of democratic Europe and the Jews. Finally, although he reveals that Novikoff, in concert with his confederates, had falsely sworn that he was not a Communist in a New York legislative investigation held before the war, Holmes does not draw a connection between chorused lying and Party discipline, or between the fear of a charge of previous perjury and the decision to be close-mouthed in the next bout with the prying state. Once again, it would appear, a scholar of the New Left finds it difficult to grasp the full mental universe of the Old.

But even if that mentality were fully grasped, it would not justify the government's overreach. The story of the state's persecutory conduct as told by Holmes comes to this: for 15 years prior to the Vermont dénouement and for 20 years thereafter, through periods of relationships between the United States and the Soviet Union that ran from moderately warm to icy cold, and despite the absence of anything on the record to suggest sabotage or espionage and the presence of much that attested to his basic loyalty, Novikoff was subjected to hugger-mugger harassments by the state that included his rejection for a military commission, the striking of his name from a publication supported by federal funds, and the termination of government consultantships. An honorary degree conferred on Novikoff by a pentitent FBI would have been in order.

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An establishment that figured in the Novikoff case. Among the items presented as evidence in the Senate Internal Security Subcommittee hearings were a catalog from the Jefferson School in New York, identified by the subcommittee as a Communist training school, listing courses Novikoff taught there and "a listing of books available for purchase from the Communist-sponsored Workers Bookshop in New York City" that included Novikoff's *From Head to Foot: Our Bodies and How They Work* (Progress Books, 1947). [From *Stalking the Academic Communist*]

A Developmental Model

Molecular Biology of *Dictyostelium* Development. ALAN R. KIMMEL, Ed. Liss, New York, 1989. xvi, 483 pp., + illus. $80. *Developmental Genetics*, vol. 9, no. 4/5 (1988). From a symposium, Airlie, VA, Nov. 1987.

Ever since 1935, when the late K. B. Raper scooped the first specimen of *Dictyostelium discoideum* from a North Carolina forest floor, biologists have been intrigued by the life cycle of this little amoeboid organism. In their natural environment, these cells are independent organisms that feed on bacteria in forest detritus and divide by binary fission. When food becomes scarce, the amoebae enter one of two developmental cycles. In the asexual life cycle (the process most familiar to students of freshman biology and most studied by dictyophiles), the amoebae synchronously aggregate into mounds of about 100,000 cells, differentiate into prestalk and prespore cell types, and form a motile multicellular slug that migrates toward light and an agreeable temperature. The final stages of differentiation are accompanied by elegant morphological changes that culminate in the formation of a fruiting body consisting of dormant spores held aloft by dead cellulose-coated stalk cells. In addition to their usefulness as a relatively simple developmental model, the ease with which large quantities of the amoebae can be grown and fractionated has made *Dictyostelium* a system of choice for the study of complex cellular processes (such as chemotaxis and cell-cell adhesion) that benefit from a multidisciplinary approach.

In this book, fittingly dedicated to Raper, Alan Kimmel has organized 40 contributions from a 1987 meeting at Airlie, Virginia, into a cohesive text that covers the biochemistry, genetics, and molecular biology of development in *Dictyostelium discoideum* and related species.

The first section deals with the molecular biology of signal transduction during starva-

tion-induced aggregation. Topics treated include the structure and expression of the cell-surface receptor for external cAMP (the aggregation-inducing chemotactic factor), guanosine triphosphate–binding proteins that may play a role in transmembrane signaling, and the biochemistry of the cytoplasmic cAMP-dependent protein kinase. The chapter on the extracellular phosphodiesterase (PDE) and PDE inhibitor protein that, together, regulate the levels of external cAMP clearly exemplifies the potential of this system for multidisciplinary approaches to biological questions. This chapter summarizes the biochemistry of these proteins, reviews the structure and developmental regulation of the PDE gene, explores the developmental consequences of PDE overexpression, and describes the rescue of a mutant phenotype by transformation with the PDE gene on an extrachromosomal vector.

In the second section of the book, we learn about the regulation of gene expression during spore germination, the prestarvation response, early developmental events, and prestalk and prespore cell differentiation. External cAMP acting through its cell surface receptor plays a key role in triggering differentiation; both *cis*- and *trans*-acting factors are involved in signal transduction to the nucleus. Guanine-rich sequences analogous to the SP1 binding sites of higher eukaryotes are important promoter elements of many developmentally regulated genes. Other contributions review DNA repair, the properties of the multicopy *Dictyostelium* nuclear plasmids, and available integrative and extrachromosomal vectors.

The third section provides an overview of some of the cytoskeletal and cell-surface changes occurring during development. Highlights of this section include a report that conventional myosin (myosin II) can associate with cytoplasmic vesicles, evidence that actin filament cross-linking and severing proteins are conserved from *Dictyostelium* to *Homo sapiens*, and chapters on the proteins and oligosaccharides involved in cell-cell adhesion. The volume concludes with a broad-ranging section on patterning that contains discussions of cell differentiation–inducing factors other than cAMP, a comparison of high-frequency switching in yeast and *Dictyostelium*, and a model for the generation of spatial patterns in the related organism *Polysphondylium pallidum*.

This volume captures a large fraction of the excitement generated by work presented at the 1987 conference and is the most up-to-date book available on development in *Dictyostelium*—at least until the publication of the proceedings volume from the second Airlie House conference, to be held in late 1989. As such, it deserves a place in every laboratory studying *Dictyostelium*. Also, the clarity of most of the chapters, which mainly are short reviews of published and ongoing work, make the volume an appropriate adjunct for a graduate course in developmental biology.

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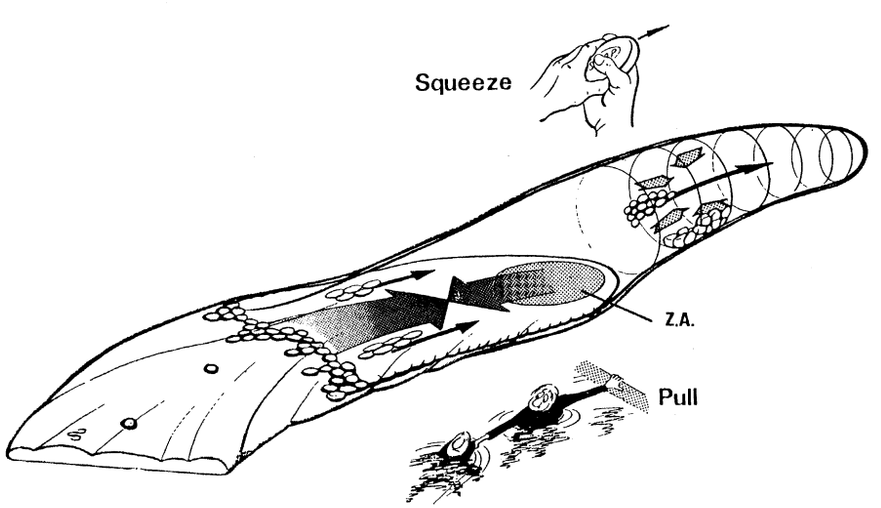

"The squeeze-pull model: forces within the [*Dictyostelium discoideum*] slug causing cell movement. This slug has been drawn in an attitude typically adopted, when the nose . . . is being protruded while the tail . . . is being drawn forward. Solid black arrows indicate cell movement; broad, shaded arrows indicate forces affecting cell movement. The squeeze-pull model asserts that nose protrusion is brought about by the circumferential contraction of a peripheral girdle of cells that squeeze interior cells forward towards the zone of adhesion (Z.A.), where the slug gains traction on the substratum (refer to illustration of the pool rescue). To simplify, only those forces leading to the propulsion of cells have been drawn." [From E. Breen and K. Williams, "Movement of the *Dictyostelium discoideum* slug" in *Molecular Biology of* Dictyostelium *Development*]

Reconnaissance in Tibet

The Geological Evolution of Tibet. Report of the 1985 Royal Society–Academia Sinica Geotraverse of the Qinghai-Xizang Plateau. The Royal Society, London, 1988. iv, 413 pp., illus., + microfiches and maps in pocket. £101.50.

Since the 1970 publication of a classic paper by John Dewey and Jack Bird exploring the relationships between plate tectonics and mountain building, the Himalayas and Tibet have been regarded as the "type" example of an orogen formed by the collision of two continents. Dozens of papers written over the last 20 years, largely based on geophysical studies, have promoted general theories of collisional orogenesis derived from the Himalayan model. The preeminence of the Himalayas and Tibet in the geophysics literature is ironic in light of the fact that the basic geology of the region is so poorly known. The physiography of the region makes fieldwork there unusually difficult—much of the Tibetan Plateau lies at elevations in excess of 5000 meters, and roads are scarce—and political instabilities have plagued the "roof of the world" since before geology emerged as a scholarly discipline. As a consequence, most geologic research in the Himalayas and Tibet has been reconnaissance. Often logistically connected with early climbing expeditions to the world's highest mountains or with exploratory travels through uncharted regions, published accounts of these studies make exciting reading. Unfortunately, the paucity of systematic studies of the Himalayas and Tibet invites rampant extrapolation of observations in a relatively few areas to the region as a whole, giving the mistaken impression that this orogen is geologically simple compared to better-studied examples like the western Alps or the Appalachians.

For these reasons, I approached *The Geological Evolution of Tibet* with some trepidation. This book evolved from a two-month field excursion, sponsored by Academia Sinica in China and the Royal Society in Great Britain, across central and northern Tibet in 1985. The traverse closely followed the new road linking the capital city of Lhasa with Golmud, some 1300 kilometers to the north, revealing a geologic cross-section through the predominant northwest-southeast structural grain of the Tibetan Plateau. Twenty-five geologists participated, representing a wide range of geologic subdisciplines. The results of their field research and follow-up laboratory studies are described in the 14 papers contained in the volume.

Although I had expected these papers to be rather sketchy, I found many to be reasonably thorough given the nature of the