Robert Seamans. Draper lab is said to have made a substantial initial contribution to the group.

According to Richard Claussen, a spokesman for the group, the campaign will emphasize the possible impact on high-technology industry in Cambridge if the measure were to become law. Claussen says the group is raising funds and hopes to conduct an intensive grassroots campaign. As for television and radio advertising, Claussen says that depends in part on how much money can be raised.

For its part, Mobilization for Survival intends to knock on virtually every door in Cambridge before the election, and it will use radio for most of its media campaign.

To become law, the resolution must be approved by at least one-third of the registered voters in Cambridge. Because only about half the voters generally turn out in a city election, this means that passage will require some two-thirds of the votes cast. Supporters of the resolution point out that 2 years ago, a nonbinding resolution declaring Cambridge a nuclear-free zone was approved by about 75 percent of those who voted. But this time the stakes are much higher because the resolution would actually shut down ongoing work, and the opposition will be fierce.

The outcome of the Cambridge battle will be watched closely elsewhere. According to Nuclear Free America, an organization based in Baltimore that acts as a clearinghouse for information on such initiatives, some 30 communities in the United States are in the process of collecting signatures or launching other legislative actions to declare their communities free from nuclear weapons. One such initiative is taking place in Berkeley, California.

According to John Stockwell, who is organizing the Berkeley drive, a petition seeking to place a proposal on the ballot in the city in November 1984 is now being circulated. Although modeled on the Cambridge resolution, its effect is less clear because there are no weapons facilities in the Berkeley city limits. The University of California does, however, provide administrative support for the Lawrence Livermore Lab and the Los Alamos National Lab from its offices on the Berkeley campus. According to Stockwell, the initiative would be aimed in part at severing the links between the university and the weapons labs.

—COLIN NORMAN

The DNA Double Helix Turns 30

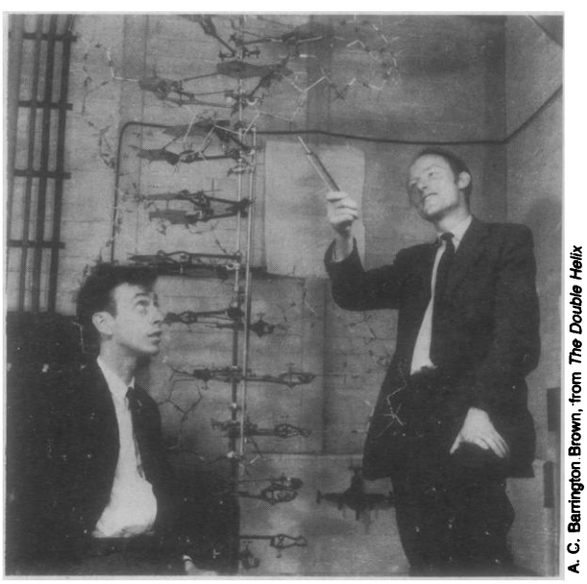
A celebration in Boston brought Watson and Crick together in a rare joint appearance

The discovery of the structure of the DNA double helix 30 years ago was marked in Boston last month by a rare appearance on the same stage of James D. Watson and Francis Crick, whose terse 1953 paper in *Nature* so coyly alluded to the possible biological significance of it all. With Watson still on the trail of things genetic while Crick has turned his attention to the mysteries of the brain, the Boston meeting was not so much a celebration as a congenial, rather traditional gathering of the most successful members of the molecular biology club.

Much of the time it was not unlike any other gathering of scientists who will themselves to sit uncomfortably for long periods in dimly lighted halls to watch slides and listen to the convoluted argot of their colleagues. Only occasionally did the participants deviate from this formula for some livelier reminiscing, wisecracking, and self-criticism.

The first of the year's double helix commemorations, which was held in Cambridge, England, where Watson and Crick developed their hypothesis, was notable mostly for Crick's absence and for Watson's characteristically cutting reflections on the genesis of modern genetics. In Boston Watson reflected, "This may be the last opportunity to see Francis and I as we were," noting that a planned film version of their scientific wizardry of 30 years ago would likely replace real memories (or rather, what's left of them) with cinematic myths. He speculates that such a film might feature Roger Moore, who sometimes plays James Bond, as Crick; Dudley Moore as Watson; and Watson as Linus Pauling, who was their major competitor in figuring out DNA's structure. A highly respected scientist in the audience suggested, not quite privately, that Woody Allen might be better suited than British comedian Moore to play the role of the young Jim Watson.

In much the same jovial vein, the organizers of the Boston meeting boasted at getting Crick and Watson together in the same room. That geographic success notwithstanding, little of the intellectual gulf between them seemed to be bridged by having them side by side. Watson still is an enthusiastic lobbyist for molecular biology, particularly genetics. Crick, by contrast, has left that subject behind and set his mind to studying the brain, discussions of which clearly animated him during the meeting. Powerful though the tools of molecular



A. C. Barrington Brown, from *The Double Helix*

Watson, Crick, and the structure that started a new discipline.

genetics may be, they do not seem adequate to the task of understanding the intricacies of the central nervous system. As Crick points out, these tools tend to furnish a "linear" understanding of problems, in the sense that the genetic code is linear. Whether they can furnish a deeper understanding of the brain—or, for that matter, of other puzzles such as differentiation and development—is another question altogether.

Like it or not, this doubt touches virtually all of the most intractable problems in biology, but is seldom considered anymore because the molecular biologists have enjoyed so many successes. For example, technicians now can sequence virtually any gene with ease, and the rush to popularize the appropriate techniques and cash in on them tends to obscure the inscrutability of the information often thereby produced. Undeniably, gene sequences often are, and will continue to be, useful. But, too often, simply knowing them is unenlightening.

"I want to dispel the impression that we know all there is to know," said Sidney Brenner, who is head of the Medical Research Council Laboratory for Molecular Biology in Cambridge, England, in one of the rare moments during the 3-day meeting when the current state of molecular biology was genuinely criticized. According to Brenner, there remains "a lot to find out" in the science of biology, which is not at a point where merely "applying things" can possibly solve all of the interesting problems. Properly understood, Brenner's message ought to discomfit some otherwise successful molecular biologists, many of whom now have jobs in the new biotechnology industry where the rush to find applications often replaces the search for understanding. Genetic engineering, upon which this industry depends, often seems to lack "the essence of design," Brenner, added. "Perhaps we're only 'genetic mechanics' today."

Jeffrey Fox

Thirty years on

"The last opportunity to see [us] as we were."

"Because experts are burdened with too much knowledge, they have done poorly at predicting the future in science," said Harvard molecular biologist Paul Doty during the Boston meeting. Though framed in a somewhat different context, his remark can be interpreted as a warning to those who have become too enthralled with the powerful tools now available to molecular biologists. Thus, even the best and the brightest of these scientists may be running the risk of stagnation by burdening themselves with too much of but one kind of data.

—JEFFREY L. FOX

Bell Labs—New Focus on the Bottom Line

Accustomed to a regulated life, how will the Labs do in the knock-down, drag-out world of competition?

The impending court-ordered breakup of the Bell system has stirred misgivings about the future of fundamental research at Bell Laboratories and the prospects for innovation in the U.S. telecommunications industry (*Science*, 23 September, p. 1267). But the Labs' product development and software engineering activities will have greater immediate influence on how AT&T fares as it moves from monopoly to the marketplace.

The hurly-burly of competition will force major changes both in the way that Bell Labs does its applied work and in its overall mission. When divestiture goes into effect separating the local telephone operating companies from AT&T, Bell Labs will lose its end-to-end responsibility for both technological innovation and network planning in the Bell system. Although Bell Labs' public image has been shaped primarily by its achievements in fundamental research, almost 90 percent of its technical staff has been occupied in providing a wide range of services—notably design and development of equipment, software engineering, and network planning—required to keep the huge and complex Bell system operating. After the breakup scheduled for 1 January, Bell Labs will serve as the R & D arm and Western Electric as the manufacturing arm, of the remaining AT&T companies.*

The traditional mission of Bell Labs and Western Electric was described by Bell Labs president Ian M. Ross in 1981 court testimony as "reducing operating costs and improving service" for the Bell system at large. Ross said that after the breakup, Western's mission would, perforce, be to maximize its profits.

To maximize profits, Bell Labs and Western Electric will have to compete successfully head to head with so-called general trade companies which have had to be nimble in the marketplace to survive. Past experience has not provided the Bell Labs–Western partnership strong preparation for the encounter. The partnership has been a unique one in which the R & D arm, Bell Labs, retained control for life over a product it had designed and developed. If problems arose, Bell Labs dealt with them. And with its responsibility for standard setting and network planning Bell Labs exercised unusual influence on the adoption of new technology and the pace of innovation over the whole system.

For all its merits, the Bell system has often been faulted for being slow to introduce new technology. Critics attribute this at least in part to AT&T's status as a regulated enterprise whose income has been tied to the rate base. What the company owns—plant and equipment—and its operating costs all figure into the rate base. Telephone equipment is traditionally amortized over a long period—regulatory agencies don't like quick write-offs. The Bell design strategy, so the argument goes, was influenced by the depreciation schedule and the fact that cost of expensive equipment could be recovered in the rate base. It was to the company's advantage, therefore, to design and manufacture reliable, long-lived equipment. This Bell Labs and Western Electric have done,

*Other AT&T subsidiaries will be AT&T Communications (long distance service), AT&T International (overseas operations), and AT&T Information Services (ATTIS, marketing equipment and services to business).