stashed there for lack of alternatives, who would do better at boarding school.

At present the greatest obstacle to getting rid of large institutions is the prison establishment, a formidable force that has been in place since incarceration replaced more violent forms of retribution. But even if the political obstacles were overcome, the core problem remains: how to identify the "heavies," the violent intractable offenders who are dangerous to themselves or others, and what to do with them. In Massachusetts just about everyone, from the most fed-up judge to the emotionally involved social worker, believes the system suffers from the absence of sophisticated means to evaluate the personalities and needs of offenders, particularly those who are chronically violent. Diagnostic centers exist in every state, but they generally tend to deteriorate into holding tanks, and even when specific needs are identified services do not exist to meet them.

It is clear, to most people, that some children benefit from a closed, highly structured setting, but at present no one knows who they are. All the experts are sure of is that a benign setting, whether or not it includes a specific therapeutic program, is better than a punitive one, and until that is incorporated into the national consciousness there is no time, place, or money for further refinements.

Attempts to deal constructively with delinquents are also confused by uncertainty over just what the role of juvenile corrections should be. As with other reforms that were originally heralded as humane, the concept of juvenile court being *parens patriae* (the state acting as parent) has gone sour. This role effectively means that troublesome children are sucked into the same system as rapists, armed robbers, and murderers. The setup is particularly inappropriate for girls, the vast majority of whom are committed for status offenses and prostitution. (There has been very little increase in violence among females, despite all the publicity given the Squeaky Frommes of the country.) The ridiculousness of such a situation has been recognized in some states, such as New York with its PINS (People in Need of Services) program and Massachusetts with its CHINS (Children in Need of Services) programs, which were designed to siphon off the status offenders and those guilty of minor violations and relieve them of the stigma of being committed to the juvenile justice system.

The problem, though, is that if juvenile corrections limits its attention only to the "heavies," the system runs the danger of looking more and more like the adult corrections system.

LaMar T. Empey, a sociologist at the University of Southern California, believes that this country is at a "watershed" period in its treatment of juvenile offenders. He sees a movement toward a "new concept of childhood." The concept that has prevailed in the courts over the last century, since the juvenile justice system was separated from the adult, was influenced by Freudian psychology—that a child is not responsible for his behavior and therefore the child, rather than the crime, should be the issue. Now, ironically, the movement for children's rights and the assertion that children should not be denied due process also implies that a child should be held responsible for his behavior. This concept, along with the fact that more and more children are committing grown-up crimes means, in his opinion, that an increasing number of juveniles are going to end up in adult confinement.

Because of conflicting national trends it is dangerous to speculate on the future of juvenile corrections. Robert Vinter of the University of Michigan, who heads the LEAA-funded National Assessment of Juvenile Corrections, agrees with other observers that the future shape of things will be determined by politics rather than by any new research findings. De-institutionalization, though, is moving very slowly. The project estimates that, as of 1974, only 18 percent of juveniles committed to state corrections are in community-based programs.

Meanwhile, Massachusetts is hanging in there, committed to its new routine, which has the support of Governor Sargent's successor, Michael Dukakis. Supporters of the system believe that eventually it will show concrete results in the form of reduced recidivism, fewer angry children, and therefore ultimately fewer children who will turn into adult criminals. Will the experiment persuade other states to follow suit? The Harvard evaluators believe that the process of "conflict and change," as they call it, can happen elsewhere, although the change in Massachusetts owes its abruptness to a clash between an unusually conservative and patronage-laden bureaucracy and an unusually aggressive innovator, who had just enough support from the top to promote his designs. Miller believes that other states will turn to de-institutionalization chiefly for economic reasons, and changes may come catastrophically, as systems crumble under their own financial weight.

Massachusetts has been the object of intense interest by other states. "States that want to go the de-institutionalization route quote Massachusetts extensively," says Jack Calhoun, and states that do not, cite Massachusetts' problems. "It's like the Bible—you can find anything you want in it." Bill Wolfe, founder of the Community Advancement Program, Inc., a network of nonresidential treatment programs, has no doubt that the revolution will be vindicated. Already, he says, "other systems seem incredibly archaic compared to Massachusetts. . . . We're now arguing about things they'll be arguing about years from now."

—CONSTANCE HOLDEN

Public Participation in Science: Still in Need of Definition

Science today is facing the equivalent of the Protestant Reformation, according to University of Chicago philosopher Stephen Toulmin. Likening the scientific establishment to the 16th-century Church, Toulmin observes that the people are tired of being shut out of science's "ecclesiastical courts" and are demanding to be let in. The scientist "priest," he predicts, is going to be overthrown.

Harvard psychiatrist Gerald L. Klerman shares Toulmin's view that the relationship between science and society is threatened and describes the problem by a different analogy. "The contract between the biomedical community and the public has broken down, and we are trying to renegotiate it," he says, adding that one difficulty the community faces in this process is that it is not sure with whom it is negotiating. "It is not clear

who the public is," Klerman maintains, inasmuch as it can be defined in more than one way. Furthermore, the "negotiating" biomedical community itself is split along different lines and includes those who still believe that the public has no business getting involved in science at all. As philosopher Hans Jonas of the New School for Social Research in New York says, "Scientific inquiry claims untrammeled freedom for itself."

Toulmin, Klerman, and Jonas were among a group of approximately 50 carefully selected participants at a recent conference, Biomedical Research and the Public, held in the seclusion of Airlie House in the Virginia hunt country outside of Washington, D.C. The meeting was cosponsored by the Institute of Society, Ethics and the Life Sciences of Hastings-on-Hudson, New York, and by Case Western Reserve University Medical School, but, as Willard Gaylin of the institute pointed out, the real hosts were Senators Edward M. Kennedy (D–Mass.) and Jacob K. Javits (R–N.Y.) who last fall had asked Gaylin and Case Western Reserve dean Frederick C. Robbins to organize the conference.*

The senators and members of their staffs had been disturbed by their perceptions of great tension between the scientific community and Congress and the public, as well as within the community itself. "As legislators who have long been concerned with national health problems, and particularly the support of basic biomedical research, we find disquieting both the tone and direction of some of the current discussion about the public role in the establishment of science policy," Kennedy and Javits wrote in their letter proposing the conference. "There are suggestions that the scientists may not appreciate adequately the public interest and its role in decision-making," they said with masterful understatement, while acknowledging on the other side that "the public may not adequately understand the scientist."

The social attitudes that fostered the consumer movement several years ago now are being extended to science, and it seems certain that the movement for public participation in science is gaining strength. It is particularly noteworthy that a good bit of the initiative in this movement comes from the Senate, which is willing to consider legislation in this area. Indeed, the fact that Kennedy and Javits were behind the Airlie House conference gave it an aura of importance it otherwise might not have had. The senators were clearly asking the biomedical community for advice, in advance of any legislation, and Kennedy, for his part, actually spent a full evening and morning at the meeting.

Dialogue Has Begun

The Airlie House conference brought together scientists and nonscientists to do a number of things that Kennedy and Javits proposed. Individuals with opposing, or at least different, points of view would talk "quietly" together, initiate a continuing "dialogue," and "identify the nature of the problems . . . and the direction in which some solutions might be found." It is probable that, as a result of the conference, a "dialogue" was begun, which may or may not turn out to be worth listening to, but it is hard to say for sure that much else happened.

Part of the problem lay in the format of the meeting. Virtually every moment was packed with "informal" remarks by speakers and respondents, each of whom gave a little speech. Most questions from the floor also constituted little speeches, and before long one had the feeling that science had finally learned to clone the droning voice. As too often happens at meetings designed to bring diverse groups together, a number of individuals said intelligent and interesting things but in a random way so that, in the end, no one had had much chance to talk *to* the other.

Another persistent problem in the "public participation in science" movement, which is clearly here to stay, is that no one is quite sure what it is. It is entirely possible that the methodology, if you will, of public participation in science is every bit as difficult to grasp as the methodology of the most complex research. And so, given the nature of the problem of definition and the range of "purposes" outlined in the Kennedy-Javits letter, there were almost as many opinions about what the conference was meant to achieve as there were participants, who were, roughly speaking, one-fifth scientists, one-fifth lawyers and leaders of public interest groups, one-fifth philosophers of varying stripes, one-fifth congressional staff, and one-fifth journalists. Some emphasized the "dialogue" part of the meeting, some wanted to concentrate on identification of problems and solutions. Very few went away completely satisfied.

There are a number of reasons that members of the Senate see a "growing strain" between biomedical science and the public, but nothing brought evidence of that strain closer to the surface than a hearing last spring on the question of recombinant DNA and the potential for creating new forms of life by joining genes from one species to another (*Science*, 20 June 1975). The issue at that hearing was simply this: Was the public involved in decision-making about research with recombinant DNA or was it not? Gaylin and Halsted Holman of Stanford University School of Medicine argued that the public had been left out. Stanley Cohen, also of Stanford, and Donald Brown of the Carnegie Institution of Washington (located in Baltimore) took the opposite position. The senators were persuaded, or perhaps they believed from the outset, that the public had been left out of the decision-making even though everything the scientific community had said or done about recombinant DNA had been in full public view, and had, in fact, been initiated by researchers in the field who foresaw possible hazards from their work and voluntarily adhered to a moratorium until those hazards could be assessed.

The whole matter of recombinant DNA brought to the fore a number of questions that are illustrative of those Congress is asking itself about several areas of biomedical research (and other fields of science, too). Can the public comprehend the science involved sufficiently well to make useful judgments about it? Can it assess the benefits or the hazards that a given piece of research might produce? Does it have a right to set priorities about work that is supported by public money?

The liberal answer to each of these questions is a resounding "Yes." Senator Javits put it concisely in remarks prepared for the Airlie House conference where he spoke one day at lunch. Said Javits: "The decisions with respect to the future of biomedical research, the determination of priorities, the weighing of the nonquantifiable social costs and benefits of medical technology—these decisions are in fact political because they involve the entire body politic including, of course, the research community itself. A scientist is no more trained to decide finally the moral and political implications of his or her work than the public—and its elected representatives—is trained to decide finally on scientific methodologies."

With that Javits got to the heart of at least one part of the problem. Many scientists who resist the notion of public involvement—in the form of open committee meetings and lay representation on advisory bodies, for instance—seem convinced that lay persons want to tell them *how* to do experiments. A common

*The conference was supported by a grant from the New York Foundation.

refrain about recombinant DNA, often heard from exceedingly competent researchers, goes something like this: Even *I* cannot understand this terribly sophisticated, complicated work, so how can you expect the public to understand it? The answer, of course, is that the scientists *can* understand it, even though they may lack the technical competence to carry out certain experiments themselves, and that the public can make sense out of it too.

During the course of the 2½-day conference a number of examples of ways in which the public can, or does, participate in science policy-making were brought up—put on the record, so to speak, but not scrutinized. Government regulation, legislation, and litigation were all laid before the group as examples of the least ideal but most common forms of public involvement. The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, which several months ago issued guidelines on fetal experimentation, was discussed as a successful example of the "commission approach" to getting public input, which seems to be particularly popular these days. And the existent practice of having lay persons on federal advisory bodies was cited as a concept that could be pushed further. A notably enthusiastic advocate of public participation in this forum was Bertram Brown, director of the National Institute of Mental Health, who described how nonscientists were functioning usefully on *initial* grant review committees at his institute. His comments sent shivers through a few conservative spines.

Agenda for Responsive Science

One of the more imaginative notions mentioned at the conference came from Nobel laureate David Baltimore of the Massachusetts Institute of Technology. Baltimore, defending on the one hand the idea that the best new ideas come from researchers left to their own thoughts, suggested on the other that one outcome of the meeting could be encouragement of the writing of an "agenda for responsive science." One would gather a group of nonscientists—members of labor unions, citizens groups, welfare recipients, and the like—and ask them to try to identify problems that researchers should be working on. It is possible, Baltimore speculated, that the public might have some good ideas, although he also guessed that most of what they would want is already being studied.

Baltimore's suggestion follows rather closely along the lines of a proposition that has come out of the labor unions. For example, in January, Leonard Woodcock, on behalf of several unions, testified before the President's Biomedical Research Panel. He said that the unions and other consumer groups could be helpful by "communicating to the biomedical research community areas in which research needs to be undertaken, or the results of previous research applied. . . ."

Not surprisingly, the most likely outcome of the Airlie House conference on biomedical research and the public will be another conference, or, perhaps, a working group to try to turn the dialogue that was begun into something useful. Conference organizer Gaylin contends that if you have 50 people in a group it is too much to hope for more than a dialogue, but that a task force of a dozen individuals could follow up productively. Robbins of Case Western Reserve agrees that a small group might be useful but only, he says, if it is created with a clear mandate to report to Congress or the Administration, not just to itself and a few interested friends.

—BARBARA J. CULLITON

APPOINTMENTS

F. Sheldon Hackney, former provost, Princeton University, to president, Tulane University. . . . **William A. Butts**, professor of history, Mississippi Valley State University, to president, Kentucky State University. . . . **Robert K. Dellenbach**, vice president of development, Alaska Methodist University, to president of the university. . . . **John E. Cantlon**, provost, Michigan State University, to vice president for research and graduate studies at the university. . . . **Charles A. Leone**, vice provost, Bowling Green State University, to vice president for academic affairs, University of Arkansas, Fayetteville. . . . **Joab L. Thomas**, vice president of student affairs, University of Alabama, to chancellor, North Carolina State University. . . . **William E. Kerstetter**, president, DePauw University, to chancellor at the university. . . . **Allen W. Mathies, Jr.**, interim dean, School of Medicine, University of Southern California, to dean of the school. . . . **Robert T. Wagner**, professor of physics, Northern Michigan University, to dean of science and mathematics, University of Southern Colorado. . . . **Gresham Riley**, provost, New College, to dean of arts and sciences, University of Richmond. . . . **Charles Derrickson**, acting dean, School of Applied Sciences and Technology, Morehead State University, to dean of the school. . . . **William J. Johnson**, professor of landscape architecture, University of Michigan, to dean, School of Natural Resources at the university. . . . **Robert M. Lewis**, director, division of laboratory animal sciences, School of Medicine, Tufts University, to chairman, veterinary pathology department, New York State College of Veterinary Medicine, Cornell University. . . . **John J. DeCosta**, associate professor of biology, West Virginia University, to chairman, biology department at the university. . . . **Eugene C. Gritton**, acting head, physical sciences department, The Rand Corporation, to head of the department. . . . **Jerome A. Eyer**, director of geologic research, Continental Oil Company, to chairman of geology and geophysics, University of Missouri, Rolla. . . . **John F. Bergner, Jr.**, dean, School of Health Sciences and Services, Western Carolina University, to chairman, allied health sciences department, Florida Technological University. . . . **John A. Schilling**, professor of surgery, University of Washington, to chairman of surgery at the university. . . . **Donald Campbell**, associate professor of education, Dartmouth College, to chairman of education, Bloomfield College.

RECENT DEATHS

Lewis K. Dahl, 60; professor of medicine, Health Sciences Center, State University of New York, Stony Brook; 26 November.

B. Baldwin Dansby, 96; president emeritus, Jackson State University; 20 November.

William W. Frye, 72; university professor, Texas Tech University; 3 December.

Robert W. Harrington, Jr., 64; ichthyologist, Florida Medical Entomology Laboratory; 14 November.

Daniel L. Harris, 60; professor of molecular biology, University of Texas, Dallas; 2 August.

Alton C. Murphy, 66; former associate professor of educational psychology, University of Texas, Austin; 30 November.

Lester W. Paul, 75; former chairman of radiology, University of Wisconsin, Madison; 30 November.

Ermine L. Potter, 91; former chairman of agriculture, Oregon State University; 19 November.

Louis Reed, 93; former professor of economics, University of Texas, Austin; 6 December.