

Kerr told the House committee, "confidence in the U.S. stockpile, in our best judgment, would degrade. Entire weapons systems would have to be deleted from the force structure, systems for which we now see no adequate alternative. . . ."

"Not only are these statements which undercut the President's policy," Senator Edward Kennedy said the following day, "but they amount to a gross misrepresentation of the implications of a comprehensive test ban for our national security. The fact is that a CTB can be achieved without any significant degradation of our nuclear weapons stockpile."

Kennedy's confidence in disputing Kerr, a 10-year veteran of Los Alamos, rested on the senator's possession of a letter from some equally experienced physicists who state that the continued operability of the nuclear stockpile can be assured without future nuclear testing. They are Norris Bradbury, former director of the Los Alamos Scientific Laboratory, J. Carson Mark, head of its theoretical division from 1947 to 1973, and IBM physicist Richard Garwin, a defense analyst who has been a consultant to the laboratory since 1950. The letter was also endorsed by physicist Hans Bethe, a senior adviser on nuclear weapons technology.

The Bradbury-Mark-Garwin letter, released by the Federation of American

Scientists, is part of the counteroffensive by test ban supporters. Kerr, too, does not speak in a political vacuum; he represents the views of the two nuclear weapon design establishments, the Los Alamos Scientific Laboratory and the Lawrence Livermore Laboratory. Both are supported by the Department of Energy and both receive a substantial portion of their funds for the purposes that would be suspended or diminished by a comprehensive test ban.

Though the laboratories are interested parties, they also have legitimate worries in that it is they who have the responsibility for certifying that the warheads will work. When random sampling of the stockpile turns up a problem, the solution is often one that has been validated by previous tests, Kerr told the House committee. But "in cases where the needed correction cannot be certified on the basis of past tests, a very critical evaluation must be made which, occasionally, results in a decision that an additional test is required if the weapon is to be returned to the active inventory. In all such cases, without the test or tests required, certification of the weapon, at least as we have known it until now, would be impossible."

Bradbury, Garwin, and Mark, on the other hand, state in their letter that it "has been rare to the point of nonexistence" for a problem raised by stockpile inspection to require a nuclear test

for its resolution. When such problems arise in the future, they can be approached by remanufacturing the part to original specifications or by replacing the nuclear explosive by one previously accepted for stockpile.

The Bradbury-Garwin-Mark letter is disputed by Robert D. Thorn, head of the weapons program at Los Alamos. None of the authors, he says, has detailed knowledge of nuclear stockpile problems or is familiar with the increasing sophistication of the last 10 years. Remanufacture is not always possible because materials become unavailable. "Try to buy a 1952 Chevrolet," says Thorn. Asked for examples of unavailable materials, Thorn says that some adhesives have been declared carcinogenic and other materials of a classified nature have disappeared from the market.

Thorn is concerned that he would lose his most valuable people if a comprehensive test ban made it impossible for them to test their designs. He agrees that a ban would freeze the Soviets into a position of inferiority in warhead sophistication, but only if the ban were observed. "Everybody here believes there ought to be an arms control of some sort, but the test ban treaty doesn't mean anything." Thorn believes the Russians would be able to conduct clandestine tests, whether underground, escaping seismic detection, or in deep space, such as by missions to Mars.—NICHOLAS WADE

California Court Is Forum for Latest Round in IQ Debate

Anyone who decides to get embroiled in the IQ debate soon finds him or herself in a bottomless morass in which the only way to get a toehold is ultimately to fall back on personal convictions. The IQ debate is intensely polarized. On the one side are those who think the tests are altogether worthless, or at best only relevant for white, middle-class subjects. On the other are those who believe they constitute the most accurate measure of learning ability yet devised.

No one has been able to come up with an unassailable explanation for why blacks get lower IQ scores, on average, than whites. The issues, only tenuously

related to points of law, are too complex to be resolved in court. But court is where they are being debated these days.

In California, a federal judge is expected to rule shortly on the first major trial related to intelligence testing. It focuses on what is now the hottest area in the IQ controversy: the use of tests, usually in elementary school, for diagnosis and placement of children in classes for the mildly mentally retarded.* In California the label is EMR, or "educable mentally retarded." The particular test at issue is the individually administered Wechsler Intelligence Scale for Children (WISC, the most commonly used IQ test

along with the Stanford-Binet). The children at issue are blacks, who are over-represented in these classes, according to their proportion in the general population, by about 3 to 1 in comparison to whites. The EMR children, as opposed to the "trainable mentally retarded," a level lower, have IQ's ranging from 50 to 70.

The case awaiting a ruling is that of Larry P. *et al.* v. Wilson Riles *et al.* Larry P. is a pseudonym for one of a group of six black children allegedly misplaced in EMR classes on the basis of IQ tests. Wilson Riles is the state superintendent of public instruction, who is also black.

Larry P. v. Riles has been simmering for a long time. The case was initiated by some San Francisco Bay Area black psychologists in 1971. It finally came to trial

*General IQ testing in schools around the country has been on the wane in recent years and some states have outlawed the tests altogether. However, individually administered tests, which are regarded as more reliable than group tests, are still heavily relied on for diagnosing children who are suspected of being retarded or of suffering from various other learning disabilities.

in October 1977 and dragged on for 6 months, producing 10,000 pages of testimony from more than 50 witnesses.

In 1971, in response to the suit, judge Robert Peckham ordered a moratorium on the use of IQ tests in determining EMR placement in San Francisco. In 1974 he extended the ban statewide. Now he has to decide whether to make it permanent. Whatever he does, the case almost certainly will be appealed, and many observers believe it has a good chance of reaching the Supreme Court.

The trial had the defense in a ticklish position. As Judge Peckham said at one point, "I don't think I have ever had a case where this has happened quite this way, where there seems to be another force in the case; that the named clients come and they make their position clear but there seems to be some other force that directs their defense."

He referred, of course, to the question of racial differences in intelligence. The state made an explicit decision not to pursue a genetic line of defense, which left it with the argument that environmental and social deprivation account for the problem. Since all groups of low socioeconomic status score lower than the upper classes, the idea that IQ is environmentally determined has a lot going for it. But some psychologists say it is not sufficient to explain everything in view of the fact that blacks and whites of comparable socioeconomic status still exhibit the same differential in IQ scores.

As the defense lawyer, state deputy attorney general Joanne Condas, noted, if the court proceeded from the a priori position that all people were equal in intellectual endowment, "then we're in a bit of difficulty." She pleaded for the court to take an "agnostic posture" on whether there are innate racial differences in IQ—for, after all, it would be impossible even to research the question properly as long as social and economic inequities persist.

Lawyers for the children tried to force the defense to take a stand one way or the other, since either would put it in a seriously weakened position. If it argued for the existence of innate differences in intelligence between races, it would be in a morally undesirable as well as scientifically indefensible position. If it rejected the genetic explanation altogether, it would be forced to acknowledge that the tests could be deficient.

The arguments made were the same ones that have been heard over and over. Witnesses for the plaintiffs talked of the destructiveness of labeling a child retarded who really was not. They said that the tests fail to measure important

qualities such as creativity, motivation, and character. They emphasized the cultural plurality of the United States. Asa Hilliard, dean of education at San Francisco State, said that cultural differences were not confined to verbal comprehension, that different groups organize visual perceptions differently, that the social values inherent in the tests are by no means standard throughout the country, and that the "general information" portion of the test is completely arbitrary because everyone has a different fund of general information.

Leon Kamin of Princeton, who does not think IQ tests have improved appreciably since the days when they were used to show that most immigrants were retarded, said that the tests clearly reflect preconceptions about abilities in various groups. Tests were standardized to conform to preconceptions that males and females do not differ in intelligence, he said. But "they do not have a preconception that races and social classes are equal in intelligence."

Sociologist Jane Mercer, of the University of California at Riverside, told the court that the IQ tests on trial were "Anglocentric" and would look quite different if they reflected cultural pluralism. She also contended that the only reason IQ scores are highly correlated with the results of achievement tests is that both kinds of tests measure the same thing. She said she had not been able to locate any studies where IQ scores on the WISC had been correlated with teacher grades or ratings in elementary school.

Validity Defended

Witnesses at the trial who defended the tests contended that they are just as valid for blacks as for whites in detecting intellectual abilities and predicting school performance. Questioning whether IQ tests measure anything worth measuring—the central issue, in the opinion of many—"is one of the silliest arguments ever advanced," says psychologist Lloyd G. Humphreys of the University of Illinois. Although inferior black performance on the verbal portions of IQ tests has been defended on the basis of linguistic differences between cultures, Humphreys dismissed that argument on the ground that black-white differences persist in items dealing with abstract figures and indeed "anything to do with symbolic reasoning."

Nadeen Lambert of the Berkeley School of Education said that the tests were only one part of the assessment process (rather than the main basis for relegating children to EMR classes, as

the plaintiffs contended), and that their elimination would rob teachers of an important tool for discovering abilities that might not otherwise be discerned. "There is much literature taking tests apart," she says, but "there is very little competent writing on the positive uses of test data."

One of the fundamental differences between the pro- and anti-testers appears to be the degree of homogeneity they perceive in American culture, not only between groups but between individuals. Hilliard, for example, said there are two types of questions that can be asked of a subject. The first type is "Do you know what I know?" The second type is "What is it that you know?" All IQ tests, he said, fell in the first category. On the face of it, this seems to be a telling criticism. But in the context of basic school-type learning, says Robert Gordon of Johns Hopkins University, this embodies a kind of "cultural relativism that would gut the educational enterprise if carried to its logical conclusion." If your goal is laying a base for future builders of bridges or curers of disease, "there is no relativistic criterion. Things just won't work."

One of the popular ways of demonstrating alleged cultural bias in tests is to point to silliness in specific items. One of these is the famous "fight item." In the WISC-R (R means revised: the test was renormed using a sample of children 11 percent of whom were black) the question is: "What is the thing to do if a boy/girl much smaller than yourself starts to fight with you?" A child gets two points if his answer has to do with negotiating with or ignoring the offender. One-point answers include telling him to stop or go away. A child who says he would hit back gets no points.

Critics of IQ tests say this is clearly a value question, and behavior that might be appropriate in Grosse Pointe might get you in trouble in Harlem, where active self-defense is necessary for survival. Lambert, however, argues that "tests include social behavior and values—they reflect a person acting intelligently."

A different sort of question, also attacked, is this one: "What is the similarity between salt and water?" Desirable answers are that they are necessary for life, or that they are both chemical compounds. Next come answers such as that both are used in cooking. No points are accorded for the observation that both pour, or both are in oceans. Anti-testers say, with some justification, that all the answers are equally correct.

Gordon, however, believes that the ranking makes sense. The zero-point an-

swers are "concrete, with no inference," whereas the good answers reflect an awareness of the functions and attributes of salt and water.

Arguing about culture in its own terms is slippery. But the pro-testers claim that lack of cultural bias is proved by the absence of item-group interaction. If an item is culturally biased, says Gordon, it will appear in a different place for different groups when individual items are ranked according to difficulty. Test-makers purportedly have eliminated items that rank differently according to race. It turns out that blacks, if anything,

are scoring better than whites on the famous fight item.

This information does not score with the anti-testers. Hilliard's answer to the item-group argument is that such statistical analysis gives no clues as to why testees give the answers they do.

Many people are trying to figure out how to get out of the double bind that IQ testing exemplifies. Some have grabbed onto the left- versus right-hemisphere model of brain functioning. The IQ tests are said to measure what have been labeled left-hemisphere properties: verbal, temporal, analytical, sequential abilities

(such as vocabulary and mathematics), whereas right-hemisphere capabilities—holistic, spatial, intuitive, nonverbal, and, by implication, the real seat of resourcefulness and creativity. Some have proposed that tests geared to right-hemisphere properties could make a truer distinction between ability and achievement. Creativity tests do in fact exist, but they do not seem to be contributing anything to do with the immediate problem, which is how to get everyone in on the basic skills necessary for successful functioning in the United States of today.

Briefing

New Smallpox Outbreak Leads Scientist to Suicide

The laboratory-associated case of smallpox that occurred in Birmingham, England, last month seems so far to be under control with no secondary cases having yet developed. But the incident has ended in tragedy for both Janet Parker, the laboratory photographer who contracted the disease, and Henry Bedson, the smallpox expert who headed the laboratory where she worked.

Parker, whose condition was reported to be improving, died in a Birmingham isolation hospital on 11 September. Her death was preceded by that of Bedson, who had been taken to hospital with throat wounds a few days after Parker's smallpox was diagnosed on 25 August (*Science*, 8 September). Bedson, aged 40, died of his wounds last week. "I am sorry to have misplaced the trust which so many of my friends and my colleagues have placed in me and my work," he said in a note made public after his death.

Compounding the tragedy is that it is not yet clear that Bedson did misplace any trust. An inquiry is still in progress to ascertain how Parker, who worked in a room on the floor above the smallpox laboratory, could have been exposed to the virus. Airborne transmission in such circumstances has been reported occasionally from hospitals but not in a laboratory. There is no air duct or other direct route connecting Parker's room and the laboratory.

With the danger period almost over, no secondary cases have so far occurred in England, even though 39 close and 196 casual contacts of the patient had been

identified. CDC smallpox expert Stanley Foster says he had expected a few secondary cases, although not too many because the time of year is unfavorable for smallpox transmission in temperate zones.

Parker's father, Frederick Witcomb, died in the same hospital the week before his daughter. Developing a fever, he had been admitted as a possible contact but his death was apparently due to a heart attack, not smallpox.

The Birmingham case posed the hazard of secondary outbreaks not only in England but also in the United States. A co-worker of Janet Parker traveled to North Dakota on 18 August, a week before Parker's smallpox was diagnosed.

The Center for Disease Control dispatched a smallpox expert to the farm where the co-worker was staying; she developed no symptoms and is now out of the danger period, thus averting a possible recrudescence of smallpox in North America.

Kennedy and Brezhnev Make Deal over Levich

Soviet academician and electrochemist Benjamin Levich is about to be allowed to emigrate from the Soviet Union through the good offices of Senator Edward Kennedy. So too are the members of 17 other Jewish families.

Kennedy announced this particular fruit of his 2-hour meeting with General Secretary Leonid Brezhnev earlier this month at a press conference held in the hearing room of his Senate health subcommittee. Flanked by representatives

of a dozen Jewish organizations, Kennedy told the assembled television cameras that the Soviet Union had "agreed to reconsider the cases" of the 18 families, and that he had "every expectation" they would be permitted to leave in the near future.

Kennedy seemed to have more on his mind than the 18 families and used the occasion to promote two of his other concerns, detente and disarmament. Tensions between the United States and the Soviet Union reached a peak this summer, he observed, but the recent downward spiral in relations "may be at an end."

"The most important message that I have brought back," Kennedy said, "is the genuine desire of General Secretary Brezhnev to move ahead on a variety of arms control limitations," such as SALT II and the comprehensive test-ban treaty. In a potshot at domestic opponents of such treaties, Kennedy quoted Brezhnev as being "troubled by what he at least interprets as confusing signals in some particular areas of policy." The Russians did not doubt Carter's own desire for arms limitations, the senator added.

Kennedy reported himself as having told Brezhnev, in so many words, that no arms agreement would get through the Senate unless the Russians showed greater concern for human rights. Brezhnev's undertaking to release the 18 families is perhaps a response to this concern, as well as a gesture to a man who, if today's polls were plebiscites, would be President. Another aim may be to prove that Kennedy's approach to human rights is more effective than Carter's.

The Committee of Concerned Scientists, which has campaigned for 6 years for Levich's release, was on hand to express its thanks to Kennedy.

Nicholas Wade

Humphreys and others say that no one has been able to devise an intelligence test that is correlated with school performance in which the racial differential is eradicated. Efforts to construct such tests, says James Ricks of the Psychological Corporation (producers of the WISC), have come out as "slightly bitter jokes or polemics" that have been built around the subjects' knowledge of black urban argot.

Sociologist Mercer has tried to find a way out of the double bind with the development of a new test called SOMPA, for System of Multicultural Pluralistic Assessment, which is now being marketed by the Psychological Corporation. The new test systematically weights in a child's social and cultural background in coming up with a score, which is called ELP, or estimated learning potential, instead of IQ. In addition to scores from the WISC-R, SOMPA includes the Bender Gestalt test and measures of physical dexterity and auditory and visual acuity. Also contributing to the score is an "adaptive behavior inventory," using information gained from interviews with parents.

SOMPA is obviously much more comprehensive than an IQ test alone. Its most notable use to date has been in Pueblo, Colorado, where a large number of minority children classified as mildly retarded were put back into regular classes. Gordon, however, attacks the test as a piece of "statistical legerdemain" that may well reduce the number of minority children classified as mildly mentally retarded, but may bring about a rebellion by teachers who are forced to deal with children they think should be in special classes.

Larry P. v. Riles clearly ranged far beyond the immediate question of whether the children had indeed been misclassified when they were assigned to EMR classes. Defense lawyer Condas thinks the answer to that is simple: they were not. Before the trial began, the psychologists who brought suit retested the six children (five boys and one girl, now in their teens)* with the WISC-R. They reported scores ranging from 17 to 38 points above the children's original scores, which put them safely out of the EMR range. The psychologists emphasized establishing rapport with the children and claimed to make allowances for nonstandard answers that nonetheless exhibited an intelligent approach. Condas, however, backed by Donald Ashhurst of the California Department of Education, who retested the children for the court last year, says that testing protocols and scoring procedures were vio-

lated to such an extent as to make the exercise meaningless.

Condas says that why these particular children were selected is a "mystery." She says Ashhurst found that only one of the six, on retesting, appeared to have the capability for independent living.

The psychologists who initiated the suit "went out on a limb," but at the time—1971—"it was a very fashionable limb." Now, she feels that new data on test validity have rendered many of the plaintiffs' arguments "out of date."

Condas believes a case could very well have been made over improper use of IQ testing, but this was not it. "The most unfortunate irony" of the whole thing, she adds, is that by bringing the case the plaintiffs forced an unprecedented amassing of evidence about IQ testing which shows that the pattern of inferior black performance is "consistent and pervasive."

It is hard to escape the conclusion that the IQ test controversy is obscuring much more difficult problems. After all, what would happen if they were eliminated? Judge Peckham noted with some distress at the trial that the disproportion of racial allocation to EMR classes was continuing even after his moratorium. Witnesses for the plaintiffs at the trial did not have any alternatives to offer. Hilliard, for example, told *Science* that "asking for an alternative to tests is like asking for an alternative to poison." After further questioning, he said "sophisticated teaching procedures" were the answer.

The pro-testers think that more rather than fewer children will be wrongly classified if tests are banned. Gordon, whose own way from an orphanage to professionalism was cleared with the help of IQ tests, says, "The IQ test has been the greatest finder of talented kids otherwise neglected and overlooked. It's possible the test keeps kids out of EMR classes rather than puts them in." He agrees that the question remains whether the placements are right, but says "I'd rather know more than less."

*Boys, by the way, outnumber girls in these classes by about five to one. "Nobody worries" about that fact, complains defense witness Nadeen Lambert. *Science* asked several people why it would not make more sense to launch a class action suit on behalf of boys—after all, the race business would then be eliminated, which would open the way to directly confronting the inadequacies of the educational system. Most people responded that that would be an irrelevant line to pursue because everyone knows boys are bigger behavioral problems than girls. Gordon added that there is evidence that boys, while possessing the same average IQ's as girls, have a greater IQ spread, as evidenced by the fact that there are more boys in homes for the retarded. Condas suggested that the problem is not that there are too many minorities in EMR classes, but too few whites—the implication being that the docile failers are less likely to be referred than the difficult to manage. But this did not apparently become an important issue in the trial.

Those who consider IQ tests useful believe they are being used as the scapegoat for all the frustrations attendant on the inability of school systems to turn out citizens capable of coping with modern society. As one psychologist says, "the fact that the tests can be defended doesn't meet the challenge."

But that is not going to stop the United States from staging more courtroom ordeals on the IQ test. The next major one is scheduled for Chicago. The plaintiffs are bringing suit on almost identical grounds, according to lawyer Jerrold Oppenheim. This case is on behalf of five black and Latin American children and their parents. The children in this case are called educable mentally handicapped instead of EMR. Oppenheim alleges that IQ tests are being used as the only determinant for placement and "we think the test has got to go." But he did not sound so sure that winning the case would solve anything at all.

—CONSTANCE HOLDEN

RECENT DEATHS

Herbert P. Brioda, 55; professor of physics, University of California, Santa Barbara; 9 April.

William C. Casey, 87; professor emeritus of sociology, Columbia University; 30 April.

Harold H. Cole, 81; professor emeritus of animal science, University of California, Davis; 28 May.

Vernet E. Eaton, 82; professor emeritus of physics, Wesleyan University; 18 May.

David R. Griffith, 47; professor of zoology, Iowa State University; 14 May.

Sherman W. Hartmann, 55; clinical professor of surgery, University of Southern California; 17 April.

Cleveland P. Hickman, 82; professor emeritus of zoology, De Pauw University; 23 April.

H. Lawrence Keil, 79; retired research chemist, Chicago Health Research Foundation; 10 April.

Allan T. Kenyon, 77; professor emeritus of medicine, University of Chicago; 26 May.

Moses Kunitz, 90; professor emeritus of biochemistry, Rockefeller University; 20 April.

Kirtley F. Mather, 90; professor emeritus of geology, Harvard University; 7 May.

Alexander P. Runciman, 54; professor of clinical psychology, California State University, Northridge; 2 April.