

## New Jersey "Chicken Trial": Verdict for Science

Scientists may not be wholly the masters of their own fates these days, but in performing the function dearest to organized professions and trades—training apprentices—they have been allowed a pretty free hand. The National Science Foundation has supported curriculum reform projects in physics, mathematics, and biology that represent efforts by the present generation of scientists to shape the coming generation. Textbooks, materials, and precepts produced by the various curriculum reform groups have won notable acceptance in secondary schools across the country. But it seems that not all citizens are happy with the way science education is going, at least in the field of biology. The problem now is not doctrine (although the right of teachers to teach evolution is still being contested in the South) but experimentation. In a case decided 2 weeks ago in a New Jersey lower court, the Society for the Prevention of Cruelty to Animals (SPCA) challenged the right of high schools to permit students to experiment on live animals. From the point of view of science, the case was happily resolved: the SPCA position was overruled. But the case is worth looking at, first, because, if SPCA finances permit, it will be appealed, and second, because it reveals something of the difference in values that separates scientists from other segments of society.

The case itself is not the stuff of which melodrama is made. The experiment that sparked it was performed by Barry Fugere, at the time a 17-year-old junior in the East Orange High School. (He is now a premedical student at Drew University.) Fugere was an excellent student who ultimately graduated eight in a class of 404. He became interested in cancer research because of some outside reading during his sophomore-year introductory biology course. As his sophomore year drew to a close, he approached his teacher, Donald Robertshaw, asking for permission to conduct an experiment involv-

ing injection of live chickens with Rous sarcoma virus. Robertshaw gave him a substantial reading assignment for the summer, and when school reopened in the fall questioned him on his familiarity with the material and with the procedures to be followed. Satisfied that Fugere was competent to undertake the project, Robertshaw gave him permission.

Fugere obtained the virus from a culture collection in Washington, D.C., bought four chickens, and—after a delay of a few months because he was ill—injected the chickens with the virus. That was in January 1964. Two of the chickens shortly began to develop tumors, and in March one chicken tore open its tumor and began to bleed. On the teacher's advice, Fugere put the bleeding chicken to death by ether. The tumor in the second chicken continued to grow and to spread until the middle of March, when the chicken died. The other two chickens never developed any sign of cancer.

During the experiment the student was responsible for the care and feeding of the chickens (he had fashioned their cages), kept regular notes on his observations, and stayed in close contact with his teacher. He later prepared slides from the dead chickens and studied their remains.

The healthy chickens, along with details of the experiment, were entered in the Newark Science Fair in April, at the suggestion of another teacher. The project won honorable mention in Newark and first prize at a later fair in East Orange.

Not all viewers of the fair, however, were pleased. At the Newark fair, Fugere's project came to the attention of an official of the American Humane Association (AHA), whose representatives, it seems, go about from fair to fair seeking out precisely such experiments. Civil proceedings were instituted by the SPCA (with the AHA entering the case as *amicus curiae*) against the East Orange Board of Education. The New Jersey Science Teachers Associa-

tion and the National Society for Medical Research (NSMR) were permitted to intervene as codefendants with the school board. Argument was heard in early March, 1966.

SPCA lawyer Nicholas Martini made two principal charges. The first was that experimentation on live animals by high school students was prohibited by state law; the second was that the procedure followed by Fugere constituted "unnecessary cruelty" to the chickens and therefore fell under the prohibition of a related anticruelty statute. Defense lawyers Edward Stanton (attorney for the school board) and Frank L. Bate, of the New Jersey firm of Shanley and Fisher (attorney for NSMR) argued that high school experimentation was not prohibited, and that in any case, given the educational value of the experiment and the manner in which it was conducted, it was not cruel. The judge supported the defendants on both points.

The New Jersey statute in question was adopted around 1880. It says that a person is guilty of cruelty to animals who shall "overdrive, overload, drive when overloaded, overwork, torture, torment, deprive of necessary sustenance, unnecessarily or cruelly beat or otherwise abuse, or needlessly mutilate or kill a living animal or creature" or who shall "inflict unnecessary cruelty upon a living animal or creature of which he has charge either as owner or otherwise, or unnecessarily fail to provide it with proper food, drink, shelter or protection from the weather." According to memoranda published by NSMR, this portion of the statute is similar to definitions of cruelty used in other states. But New Jersey's law has a second feature, paralleled in only about ten states, that is an attempted hedge against antivivisectionist interpretation of the law. That clause says that nothing in the anticruelty law shall be construed to prohibit or interfere with "properly conducted scientific experiments performed under the authority of the state department of health. That department may authorize the conduct of such experiments or investigations by agricultural stations and schools maintained by the state or federal government, or by medical societies, universities, colleges and philanthropic institutions incorporated or authorized to do business in this state and having among their corporate purposes investigation into the causes, nature, prevention and cure of diseases in men and animals."

The first question in what became popularly known as the "chicken trial" was whether the exceptions cited in the statute were meant to be comprehensive. The SPCA said the list was comprehensive, and that institutions not enumerated could not legally perform experiments. If high schools wanted to experiment, Martini said, they should get the legislature to amend the statute. And he argued that in any case experiments designed to further the education of a single student did not qualify as the medically oriented professional experimentation the statute cites.

If the SPCA were right, New Jersey would be in bad shape, for among the nonenumerated institutions are the drug companies on which the state's economic well-being in large measure rests. Some companies have fashioned "nonprofit" research facilities, in part to meet this problem, but whether these institutions, which funnel all their data back to a single commercial sponsor, would meet the definition of "philanthropic institutions" is an open question. And the SPCA's position brought another embarrassment into the open when it was revealed that, of the hundreds of institutions and individuals performing animal research, only 26 had in fact received "authorization" from the health department. (Authorization for Rutgers, the state university, was pending at the time of the trial.) If the SPCA were right, individual doctors, veterinarians, and scientists might all have to apply for authorization, and—given the reference to "corporate purposes"—their eligibility would be questionable. It was clear that the SPCA had turned over a stone that no one had looked under for some time.

Buoyed in part by the arguments of the defense, Judge Charles S. Barrett, Jr., gave the statute the opposite interpretation. ". . . All entities other than those capable of obtaining authorization from the State Department of Health and who have been authorized by said Department may conduct living animal experiments, if they do not needlessly mutilate or kill or inflict unnecessary cruelty" on the animals. That verdict made it unnecessary for him to decide whether the public schools could be characterized as "schools maintained by the state and federal government," as the defense claimed they could be.

It did leave him, nonetheless, with the problem of determining whether Fugere's experiment was cruel. And it

was here that this rather salty judge, most of whose working hours appear to be spent dealing with local felons, found himself confronted with a number of distinguished witnesses discoursing on the purpose of education and the nature of pain. Defense witnesses included Arnold B. Grobman, dean of the college of arts and sciences at Rutgers and former director of the Biological Sciences Curriculum Studies; Paul F. Brandwein, director of research at Harcourt, Brace & World, director of Pinchot Institute for Conservation Studies, and a member of the BSCS steering committee; Bentley Glass, academic vice president and professor of biology at the State University of New York, Stony Brook, and former head of the BSCS group; and Bertram D. Cohen, professor of psychology at Rutgers. The witness list also included two state officials, Oscar Sussman, chairman of the Department of Veterinary Medicine of the State Department of Health, and Richard Scheetz, an official of the State Board of Education.

#### "Unnecessary" Cruelty

The SPCA argued that, in addition to being legally "cruel" because it was performed by a prohibited institution, Fugere's experiment was substantively cruel in that it hurt the chickens. The key word in the cruelty argument is "unnecessary." If the experiment had been undertaken to advance science, the SPCA, presumably, would not have objected. But it was an experiment that has been done many times before. Its purpose was to advance the education of a single student. To the SPCA's way of thinking, that educational purpose is not sufficient to justify the discomfort of the chickens. The SPCA also tried to show that the experiment had been done poorly—that the student's notes were inadequate, that the inoculation of the chickens had been too long delayed, that the teacher himself was unfamiliar with cancer research, and that these defects supported its claim that the whole project was purposeless, therefore wanton, therefore cruel.

The SPCA leaned heavily on the testimony of its own expert witnesses. One, Robert M. Frey, professor of biology at Plymouth State College, University of New Hampshire, said he believed that too early exposure to work with live animals frightened students away from careers in science, and that work from models, films, and slides

was more desirable. At Plymouth, he said, animal experimentation was not permitted until the junior year. A second witness, James T. Mehorter, professor of psychology at Montclair State College, testified that premature animal experimentation would harm the young students themselves.

While the SPCA attacked high school experimentation in general and the chicken experiment in particular, defense witnesses were unanimous in stressing that the use of living animals is essential for, among other things, motivating students to follow scientific careers, developing familiarity with the techniques of science, and even developing a sense of responsibility for and sympathy with living creatures. So many of the witnesses had links with BSCS that it sometimes seemed that BSCS, and not the Board of Education, was on trial. Fugere's experiment did not, in fact, come from a BSCS manual, but, as the witnesses pointed out, it might well have: it represented precisely the kind of activity BSCS is designed to encourage. Although they did not say so publicly, some BSCS witnesses felt that the teacher's unfamiliarity with the specific work was a plus for the system: it takes a good teacher to encourage a student to go beyond the bounds of the teacher's own experience. If Fugere made mistakes, that was probably beneficial, rather than harmful, to his education. Models, charts, and slides have a place, the witnesses said, but—a phrase often repeated during the trial—"biology is the study of *life*." Mechanical aids cannot replace actual experience. "I have always thought 'science' should be a verb," Brandwein told the judge: "I science, you science, he sciences." Science is not rote, the witnesses said, but process. A student has to "do" in order to learn.

In all essentials Judge Barrett supported the defense conclusion that the educational value of the experiment took it out of the category of "unnecessary cruelty." The verdict, to put it simply, was for science and against the chickens. (The questions of whether the chickens felt pain, how much they felt, and how conscious they were of it were, happily, undecided, leaving future generations of students and philosophers free to debate pain, unimpeded by the judgments of the Essex County Court.) In his final paragraph Judge Barrett referred to the argument of the SPCA that a decision favorable to the

school board would leave science teachers to determine when experiments are justified, to weigh their individual judgments about pain and cruelty against the educational purpose of the experiment. "This indeed would place an awesome responsibility in the hands of our teachers," Barrett pointed out, "but then again the minds of our children are also placed in his hands."

Apart from the legal solution, which is open to reversal by a higher court, the chicken trial points up a number of elements in the relationship between scientists and the humane movement. One element is sheer political power. The New Jersey SPCA, for example, is not a private organization of little old ladies but a vigorous public agency—a "body politic"—certain of whose members are permitted to carry arms and make arrests. The SPCA has been opposed to high school animal experimentation for some time—its critics say it is opposed to all experimentation and would like to close down commercial

and university laboratories as well. Had the decision gone the other way, it might have been in a position to make its views felt. "Our chief error," New Jersey SPCA president Frank Tomasulo commented in a recent interview with *Science*, "was in deciding against a criminal trial. If there had been a jury, they'd have been with us all the way." This may very well be true. In New Jersey, as elsewhere, educational institutions have well-placed friends. But the humane movement has heavy, public support.

Another attitude revealed during the trial is a kind of discomfiture with the way the world is going and a feeling that many of its ills are somehow attributable to the progressive practices of scientists. In his closing argument, SPCA attorney Martini said: "They say . . . these animals are going to die, but maybe this is of some educational value. This student is going to learn just how this experiment is done and they learn by doing, so let's open

the door and let the students learn everything by doing. Let them learn sex by doing. Let them learn drinking by doing. Let them learn everything by doing."

A retired biology teacher in frequent attendance at the trial was interviewed by *Science* during a court recess. "I believe students should learn all they can," she commented, "but sometimes I think science is just getting a little too science-y." (She then confirmed the stereotype most scientists have of humane-movement supporters by remarking that she would have to stop spending all her time in court because "my dog will disown me if I don't get home.")

Whether these sentiments are a tribute to benign social diversity or indications of a basic cleavage is not clear. But it is clear that, while scientists are convinced that what they are doing is right, the public does not uniformly share that conviction.

—ELINOR LANGER

## Integration: Negro College Hires an Impatient Briton

Racial integration of faculty and student body is the most obvious, and where it can be achieved, probably the most effective single step to be taken in relieving the cultural and intellectual isolation that has characterized most, if not nearly all, of the some 120 Negro colleges in the United States. In some cases, however, part of the benefit of such integration may be produced by a process of strain and conflict painful to those who are a part of it.

Integration can serve as an irritant producing, in situations which perhaps have remained stable and quiescent for too long, restlessness and a more critical spirit of self-examination. The irritation is marked when the white newcomer to an all-Negro faculty displays an uncommon boldness, even rashness, in moving—for reasons often debatable—to upset the status quo.

Clearly, there is such irritation at Virginia State College, a predominantly Negro college at Petersburg, Vir-

ginia, which in the fall of 1964, for the first time since the beginning of Virginia's convulsive political struggles over integration in the 1950's, hired its first full-time white faculty member. The newcomer was J. Raymond Hodgkinson, a young Englishman (now 38) and physicist with degrees from Manchester University (bachelor's) and the University of London (Ph.D.).

Hodgkinson, a slender fair-haired man who is a poet, folk singer and guitarist, kayak-canoeist, and ardent sailor and traveler as well as a scientist, was hired to serve as head of the physics department, with rank of full professor. However, in addition to running the physics department and teaching, he has been an irrepressible gadfly, constantly goading the faculty and college administration to change their ways. The extent of his influence at V.S.C. is disputed, but the very vigor with which some of the college leaders depreciate his gadfly role suggests

that Hodgkinson has been stirring things up.

He has accused the administration of maintaining an authoritarian rule over the college and has reproached the faculty and student body for lethargy and submissiveness. He finds the atmosphere of campus assemblies stultifying and complains of the injection of religion—by the offering of prayers, for example—into required activities. He is in touch with a voluntary attorney for the American Civil Liberties Union and says he will file suit against the college if this should be necessary to bring "freedom of religion" to the campus.

He calls for major changes in the curriculum, and would reduce general studies requirements in order to allow science majors more time for work in science. He would make participation in the R.O.T.C. program, now mandatory for freshmen and sophomores, purely voluntary—a step which, in the judgment of some college officials, would undermine a program valued as a means of access to an officers corps which, historically, Negroes have found it hard to enter.

He deplores the slow pace of integration at the college, suggesting that the administration is not doing enough to recruit white students and to discourage the state from developing rival institutions in the Peters-