10. B. S. Blumberg, B. J. S. Gerstley, D. A. Hungerford, W. T. London, A. I. Sutnick, *Ann. Intern. Med.* **66**, 924 (1967).
11. W. T. London, A. I. Sutnick, B. S. Blumberg, *ibid.* **70**, 55 (1969).
12. K. Okochi and S. Murakami, *Vox Sang.* **15**, 374 (1968).
13. ———, K. Ninomiya, M. Kaneko, *ibid.* **18**, 289 (1970).
14. A. Vierucci, A. M. Bianchini, G. Morgese, F. Bagnoli, G. Messina, *Pediatr. Int.* **18** (No. 4), (1968).
15. A. M. Prince, *Proc. Natl. Acad. Sci. U.S.A.* **60**, 814 (1968).
16. D. J. Gocke and N. B. Kavey, *Lancet* **1969-I**, 1055 (1969).
17. J. R. Senior, A. I. Sutnick, E. Goeser, W. T. London, M. D. Dahlke, B. S. Blumberg, *Am. J. Med. Sci.* **267**, 171 (1974).
18. W. S. Robinson and L. I. Lutwick, *N. Engl. J. Med.* **295**, 1168 (1976).
19. M. E. Bayer, B. S. Blumberg, B. Werner, *Nature (London)* **218**, 1057 (1968).
20. H. J. Alter and B. S. Blumberg, *Blood* **27** (No. 3), 297 (1966).
21. D. S. Dane, C. H. Cameron, M. Briggs, *Lancet* **1970-I**, 695 (1970).
22. J. Summers, A. O'Connell, I. Millman, *Proc. Natl. Acad. Sci. U.S.A.* **72**, 4597 (1975).
23. B. S. Blumberg and I. Millman, *Vaccine Against Viral Hepatitis and Process, U.S. Patent Office No. 3,636,191* (1972).
24. W. T. London, J. S. Drew, E. D. Lustbader, B. G. Werner, B. S. Blumberg, *Kidney Int.*, in press.
25. E. D. Lustbader, W. T. London, B. S. Blumberg, *Proc. Natl. Acad. Sci. U.S.A.* **73**, 955 (1976).
26. R. H. Purcell and J. L. Gerin, *Am. J. Med. Sci.* **270**, 395 (1975); M. R. Hilleman, E. B. Buynak, R. R. Roehm, A. A. Tytell, A. V. Bertland, S. P. Lampson, *ibid.* **270**, 401 (1975); P. Maupas, P. Coursaget, A. Goudeau, J. Drucker, P. Bagros, *Lancet* **1976-I**, 1367 (1976); E. B. Buynak, R. R. Roehm, A. A. Tytell, A. U. Bertland, G. P. Lampson, M. R. Hilleman, *J. Am. Med. Assoc.* **235**, 2832 (1976); S. Krugman, J. P. Giles, J. Hammond, *ibid.* **217**, 41 (1971); T. H. Maugh II, *Science* **188**, 137 (1975).
27. B. S. Blumberg, in *Viral Hepatitis and Blood Transfusion*, G. N. Vyas, H. A. Perkins, R. Schmid, Eds. (Grune & Stratton, New York, 1972), pp. 63–83.
28. C. P. Patterson, K. M. Boyer, J. E. Maynard, P. C. Kelly, *J. Am. Med. Assoc.* **230**, 854 (1974).
29. B. S. Blumberg, W. T. London, E. D. Lustbader, J. S. Drew, B. G. Werner, in *Hépatite a Virus B et Hémodialyse* (Flammarion, Paris, 1975), pp. 175–183.
30. W. T. London, J. S. Drew, B. S. Blumberg, R. A. Grossman, P. S. Lyons, *N. Engl. J. Med.* **296**, 241 (1977).
31. J. E. Hesser, J. Economidou, B. S. Blumberg, *Hum. Biol.* **47**, 415 (1975).
32. J. S. Drew, W. T. London, B. S. Blumberg, V. Barrois, in preparation.
33. M. Payet, R. Camain, P. Pene, *Rev. Int. Hepatol.* **4**, 1 (1956).
34. J. N. P. Davies, *The Liver*, E. A. Gall and F. K. Mostofi, Eds. (Williams & Wilkins, Baltimore, 1973), pp. 361–369.
35. P. D. Steiner and J. N. P. Davies, *Br. J. Cancer* **11**, 523 (1957).
36. B. S. Blumberg, B. Larouzé, W. T. London, B. Werner, J. E. Hesser, I. Millman, G. Saimot, M. Payet, *Am. J. Pathol.* **81**, 669 (1975).
37. B. Larouzé, B. S. Blumberg, W. T. London, E. D. Lustbader, M. Sankale, M. Payet, *J. Natl. Cancer Inst.*, in press.
38. A. Ohbayashi, K. Okochi, M. Mayumi, *Gastroenterology* **62**, 618 (1972).
39. B. Larouzé, W. T. London, G. Saimot, B. G. Werner, E. D. Lustbader, M. Payet, B. S. Blumberg, *Lancet* **1976-II**, 534 (1976).
40. A. M. Prince, D. Metselaar, G. W. Kafuko, L. G. Mukwaya, C. M. Ling, L. R. Overby, *ibid.* **1972-II**, 247 (1972).
41. J. A. Smith, E. O. Ogunba, T. I. Francis, *Nature (London)* **237**, 231 (1970).
42. F. J. Muniz and D. W. Micks, *Mosq. News* **33**, 509 (1973).
43. B. S. Blumberg, W. Wills, I. Millman, W. T. London, *Res. Commun. Chem. Pathol. Pharmacol.* **6**, 719 (1973).
44. W. Wills, G. Saimot, C. Brochard, B. S. Blumberg, W. T. London, R. Dechene, I. Millman, *Am. J. Trop. Med.* **25**, 186 (1976).
45. M. M. Newkirk, A. E. R. Downe, J. B. Simon, *Gastroenterology* **69**, 982 (1975).
46. W. Wills, B. Larouzé, W. T. London, B. S. Blumberg, I. Millman, M. Pourtaghra, J. Coz, in *25th Annual Joint Meeting of the American Society of Tropical Medicine and Hygiene and the Royal Society of Tropical Medicine and Hygiene, Philadelphia, Pennsylvania, 3 to 5 November 1976*, abstr.
47. I. Millman, H. Hutanen, F. Merino, M. E. Bayer, B. S. Blumberg, *Res. Commun. Chem. Pathol. Pharmacol.* **2**, 667 (1971).
48. B. S. Blumberg, I. Millman, A. I. Sutnick, W. T. London, *J. Exp. Med.* **134**, 320 (1971).
49. W. T. London, A. I. Sutnick, I. Millman, V. Coyne, B. S. Blumberg, A. Vierucci, *Can. Med. Assoc. J.* **106**, 480 (1972).
50. B. Werner and W. T. London, *Ann. Intern. Med.* **83**, 113 (1975).
51. V. K. Raunio, W. T. London, A. I. Sutnick, I. Millman, B. S. Blumberg, *Proc. Soc. Exp. Biol. Med.* **134**, 548 (1970).
52. B. S. Blumberg, *Am. J. Clin. Pathol.* **65**, 848 (1976).
53. L. O. Magnius, *Clin. Exp. Immunol.* **20**, 209 (1975).
54. Supported by NIH grants CA-06551, RR-05539, and CA-06927 and by an appropriation from the Commonwealth of Pennsylvania.

NEWS AND COMMENT

Bakke Case: Question of Special Minority Admissions Programs

The preliminaries are ending for what many observers regard as the most important Supreme Court test of the principles of minority education since the 1954 Brown *v.* Board of Education decision, which ordered school desegregation. At issue is the special admissions program for minority students at the medical school of the University of California at Davis and, by implication, all preferential admissions programs for minorities in higher education.

In the current case, The Regents of the University of California *v.* Allan Bakke, the university is appealing a California state supreme court decision in favor of Bakke, who claimed that he was excluded from the Davis medical school because of a special minority admissions program that is constitutionally invalid. The specific complaint was that the program violates the equal protection clause of the Fourteenth Amendment.

The broad issue is that of "reverse discrimination," that is, of preferential treatment of minority students to compensate for the effects of past discrimination. (The groups usually included in this category are Blacks, Mexican-Americans, mainland Puerto Ricans, and Native Americans.)

Opponents of the special admissions programs argue that such programs amount to racial quotas and that they are illegal, unjust to those excluded, stigmatizing to those they assist, and racially divisive. Most of these opponents argue that the objectives of the special admissions programs are worthy but should be achieved by other means.

So intense has been the interest in the Bakke case that the Supreme Court, after docketing the case this spring, extended the usual period for the filing of friend-of-the-court briefs. More than 40 of the amicus curiae briefs had been submitted by the early-June deadline for briefs in support of the petitioner (the university). Briefs supporting the respondent (Bakke) will be accepted for 30 days after the deadline. The total number of briefs is expected finally to exceed the largest number in living memory—more than 50 in the case of Brown *v.* Board of Education.

The immediate context of the Bakke case is the effort of predominantly white professional schools to increase enrollment of minority students since the Civil Rights Act of 1964 prohibited discrimination on the basis of race, color, national origin, and sex in both public and private institutions of higher education. In the late 1960's, professional schools, which had low enrollments of minority students, almost universally instituted "affirmative action" programs to increase the number and percentage of students from minorities identified as suffering heaviest discrimination in the past.

Although such programs were implemented across the board at both the undergraduate and graduate levels, they were most conspicuous in the professional schools because of an unprecedented increase in competition for places. This was particularly true of medical and law schools and, to a lesser degree, of engineering schools. According to data published in a recent study of minority medical education* by Charles E. Odegaard, enrollment of selected minorities rose from 854 in 1968–69 to 4524 in 1975–76. In percentage terms, minority representation rose from 2.4 to 8.1

**Minorities in Medical Education* (Josiah Macy, Jr. Foundation, New York, 1977), $4.

percent of enrollment. The size of the increase is attributed primarily to special admissions programs which gave preference to minority applicants.

As competition for medical school places grew keener, the average Medical College Admissions Test (MCAT) score and grade point average (GPA) of successful applicants rose sharply. Minority applicants' quantitative credentials also grew steadily stronger, but, without special admissions programs, it is generally accepted that the representation of minorities would have been drastically smaller.

During this same period, the emphasis on science in academic preparation for medical school increased markedly. The Association of American Medical Colleges' (AAMC) amicus brief in support of the University of California notes that "stress on science skills has led to an unusually heavy reliance on numerical admissions criteria." One point made by critics of the admissions process is that objective criteria now in use predict the student's success in the first 2 years of medical school, which center on basic sciences, but do not necessarily indicate how the applicant will eventually operate as a physician.

Special admissions programs benefiting minority students began to draw objections in the early 1970's. A number of legal challenges against the programs have been mounted on grounds that they discriminated illegally against majority students, but the litigation has not produced a definitive answer on the underlying constitutional issue.

The Supreme Court nearly did rule on the issue in a case brought by law school applicant Marco DeFunis against the University of Washington law school. The Supreme Court in 1973 agreed to hear an appeal by DeFunis, who had won in the Washington state trial court and lost in the state supreme court. The case had been fully briefed, but the high court ruled the case moot because DeFunis has been admitted to law school by court order and was sure to be graduated by the time the Supreme Court could act on the case. This left the constitutional issue hanging.

The lines of argument on both sides in the Bakke case are to a considerable extent predictable because of the rehearsal of the DeFunis case. And the arguments are expected generally to follow the briefs on file.

One theme repeated frequently in the briefs supporting the minority admissions program is the educational merits of such programs. This argument is made strongly in a brief submitted in behalf of Columbia, Harvard, Stanford, and the University of Pennsylvania and supported by seven other private universities. (The Bakke case decision would be applicable directly to public institutions of higher education, but private universities consider themselves also vulnerable to a possible finding against minority admissions program.) The essentials of the argument are as follows:

▶ Selective institutions such as medical and law schools must deal with a pool of applicants much larger than can be accommodated. A portion of these applicants are preeminently qualified "superstars" who are almost summarily accepted. At the other end of the spectrum is another group whose credentials are so weak as to warrant prompt elimination.

▶ The institutions are left with a large middle group whose scores on quantitative criteria indicate that they will succeed in the academic program. The problem for the institutions is to pick those who will be admitted from this group. Admissions procedures vary from school to school, and most rely on a variety of "noncognitive" criteria to complement the criteria of MCAT scores and GPA's. But the schools admit that it is increasingly difficult to justify choices. Some medical schools have even moved to a lottery to select from this middle group.

▶ The aim of the admissions committees is to guarantee diversity in the entering class. In the last decade, the committees have, in effect, become race conscious. Because minorities tend to cluster at the bottom of the pool of candidates qualified to succeed academically, various weighting systems have been adopted to increase minority representation.

▶ The medical and law schools argue that the justification is an educational one. Graduates will work in a pluralistic society, that is, a multiracial society, and professionals exposed to diverse groups of people during their training will be better prepared to practice after completing training. The brief also asks that the court focus on the educational process and take into account the obligation of educators to produce the leaders of tomorrow.

The California state supreme court decision says that these are laudable objectives, but that they should be achieved by other means. In the decision, it suggests such alternatives as increasing the enrollment in medical schools, more aggressive recruitment efforts, and—most seriously advanced—taking into account the "disadvantaged" background of applicants in nonracial terms as a substitute for racial criteria.

Proponents of special admissions programs have closely examined these alternatives—particularly the use of the disadvantaged criterion—and reject them. The critics argue that data on the economically disadvantaged show that reliance on such status as a criterion would result in reduced enrollment of minorities. As the University of California brief puts it, "a preferential program for disadvantaged administered on a racially neutral basis would result in admission of a greater number of poor whites." This might be desirable, notes the brief, but it would happen at the expense of minority students.

Findings in a recently published study for the AAMC by staff member Bart Waldman indicate that

> an applicant's lower economic status alone results in a very slight, if any, competitive disadvantage because of lower performance in undergraduate work or on the MCAT. On the other hand, the variety of factors represented by minority racial status confers a far greater level of educational disadvantage, which results in lower GPA's and MCT scores and which is only slightly alleviated in the higher income minority group."

On the other side of the argument, critics of reverse discrimination emphasize the adverse effects of a double standard of admissions. This was done in a brief prepared for the Anti-Defamation League by B'Nai B'Rith for the DeFunis case by the late Alexander Bickel and University of Chicago law professor Philip B. Kurland. An often quoted portion reads as follows:

> For at least a generation the lesson of the great decisions of this Court and the lesson of contemporary history have been the same: discrimination on the basis of race is illegal, immoral, unconstitutional, inherently wrong and destructive of democratic society. Now this is to be unlearned and we are told that this is not a matter of fundamental principle but only a matter of whose ox is gored. Those for whom racial equality was demanded are now to be more equal than others. Having found support in the Constitution for equality, they now claim support for inequality under the same Constitution.

Another line of argument advanced by pro-Bakke partisans is that the minorities profiting from special admissions programs are not the only groups affected by discrimination. This point of view is described succinctly in an article by Larry M. Lavinsky in the April 1975 issue of the Columbia Law Review:

> The argument that a racial classification which discriminates against white people is not inherently suspect implies that the white majority is monolithic and so politically powerful as not to require the constitutional safeguards afforded minority racial groups. But the white majority is pluralistic, containing within itself a multitude of religious and ethnic minorities—Catholics, Jews, Italians, Irish,

Poles—and many others who are vulnerable to prejudice and who to this day suffer the effects of past discrimination. Such groups have only recently begun to enjoy the benefits of a free society and should not be exposed to new discriminatory bars, even if they are raised in the cause of compensation to certain racial minorities for past inequities.

Most of the pro-Bakke commentators seek to reconcile the goal of increasing the representation of minority students in professional education with the constitutional principle of equal opportunity for all citizens. In practical terms, this means finding a substitute for selection on the basis of race.

Developing and using more flexible criteria would be the task of educational institutions. For reasons separate from the Bakke case, professional schools have, for some time, made efforts to expand criteria for selection. Whatever the outcome of the case, it appears certain that Bakke will have spurred attempts to come to terms with such issues as culturally biased objective tests and with the need to develop better means of identifying ability and potential in minority students.

Which way the court will turn in the legal labyrinth of the Bakke case is unpredictable. Historically, the Supreme Court has been reluctant to rule on a constitutional issue if it has been possible to decide on a narrower issue in a case. It is possible that the court could again decline to address the issue of reverse discrimination directly. It has been argued, for example, that the court should not decide the broad question unless it can be determined that Allan Bakke would actually have been admitted to medical school except for the minority admissions program. The court might also opt for a narrowly based decision applicable specifically to the Davis program, which would not settle the broader question.

Most observers, however, feel that the court recognizes that reverse discrimination is an issue whose time has come and that a decision on fundamentals is required. It will be no easy decision. In Brown *v*. Board of Education, the finding that "separate cannot be equal" had the virtues of simplicity and compelling force. No similar, simple formulation is available in the Bakke case. In addition, the court must grapple with the argument that there is no firm, constitutional foundation for the preferential programs for minorities of the last decades.

On the other hand, the court must be conscious of the potentially profound impact on society if it reaches a decision that appears to reverse the flow of the law against racial discrimination. Such a decision would tend to confirm the suspicion still widely held among racial minorities and ethnic groups that the law protects minority rights so long as these do not interfere seriously with the interests of the majority.

The conflict of imperatives is a genuine and difficult one, and there is considerable irony in the fact that Bakke invokes the Fourteenth Amendment, which, after all, was a product of the Civil War and of the effort to undo the effects of slavery.—JOHN WALSH

Philip M. Boffey, a staff writer for the News and Comment section for more than 5 years, has resigned to take a position as a member of the editorial board of the *New York Times*. He will be based in New York and concentrate on issues involving science, technology, and medicine.

OTA: Daddario's Exit Heightens Strife over Kennedy Role

The surprise resignation of Emilio Q. Daddario from the Office of Technology Assessment (OTA) has triggered an urgent search for a successor. It has also made OTA board chairman, Senator Edward M. Kennedy (D–Mass.)—who is thought by some to have driven Daddario out—more vulnerable to accusations that he is trying to dominate the OTA. Some tricky navigation through the political crosscurrents will be required if Kennedy is to convince his critics that he wants OTA to retain its independence and its reputation for objectivity.

The OTA picture has been further complicated since Daddario's resignation by the resignation of two members of its congressional governing board: Representative Marjorie Holt (R–Md.) and Senator Richard Schweiker (R–Pa.) and by the contemplated resignation of Representative Olin E. Teague (D–Tex.).

Although Schweiker maintains that he is leaving in order to devote more time to committee duties, Holt and Teague have made it clear that they feel Kennedy, particularly through his representative on the OTA staff, Ellis Mottur, is trying to take over the organization and turn it into his personal committee. Holt, a conservative Republican, said in her goodbye letter to Kennedy that she perceived that OTA's role as an "unbiased, independent research arm of Congress is threatened. I have been unable to make a contribution in determining the direction of OTA and therefore feel I cannot continue as a member of the Technology Assessment Board."

She has made it clear that what she means is that "Senator Kennedy has taken over this office and made it his personal political vehicle." Says Holt, "It's become a one-man operation." She feels Kennedy has stacked the technology assessment advisory council (a group of 12 distinguished individuals who are supposed to advise the board) with his own selections and that he now wants it to be the determining voice in the selection of the new director.

The likely resignation of Teague adds considerable weight to these charges. Teague, after all, is the chairman of the House Science and Technology Committee, the committee that originated the OTA concept. Chairmanship of the board has alternated between Teague and Kennedy. Teague feels that management of OTA has become so unbalanced in favor of the Kennedy forces that he wants out. "Kennedy did a great job in his first 2 years as chairman," he told *Science*, but "now he's using the board for personal political purposes. . . . He wants to run the thing like a committee . . . if that's the way he's going to run the thing I don't want to have any part of it."

Teague is particularly bothered by the fact that the six senators on the board have their own representatives as staff members on OTA, whereas most of the House members don't. (Teague doesn't believe that people who serve as liaisons