class problem rather than a race problem.

One participant in the conference is Jerrold T. Zacharias, professor of physics at M.I.T. and a prime mover in the project for reform of the high school physics curriculum. Zacharias is known to be concerned with the long-term problem of developing engineers and scientists in greater numbers from among the underprivileged and to be interested in work to develop teaching materials for elementary and secondary schools to overcome fundamental problems of communication and perception which handicap youngsters from limited backgrounds.

There also seem to be signs of a reappraisal of the historic policy on admission in the best graduate schools, which might be described as one of exacting impartiality. There is no inclination to lower standards in order to admit Negroes, but there is apparently a growing feeling that the universities have a responsibility to help more Negroes to qualify.

The American Council on Education will sponsor a meeting, on 18 and 19 October, of presidents of Negro and integrated institutions, which is to be devoted to the problems of the Negro in higher education. One purpose of the meeting is simply to gather information, which, as everybody says, is sadly lacking. A side effect may well be the strengthening of a working relationship between Negro and white college presidents, who, observers say, have formed two distinct groups whose relations in the past have been friendly but remote.

On the agenda for discussion are such proposals as those for making fellowships and assistantships more readily available to promising Negroes and a program of faculty exchanges between Negro and integrated colleges.

Underlying these developments is a feeling, now being manifested in many areas of American life, that special efforts should be made in behalf of Negroes to compensate for discrimination and neglect in the past.

While the problem has been on the conscience of the universities and foundations and there have been projects in their files for some time, a sense of urgency has precipitated major action only recently. And there is no question that this sense of urgency which has penetrated the cloisters of graduate education has been inspired by events on the campus of Ol' Miss and on the streets of Birmingham and points north.—JOHN WALSH

Krebiozen: FDA, NIH Still on Trail of Anticancer Drug; and Congress on Trail of Agencies

The race to see whether the controversial anticancer drug Krebiozen would be tested before it was banned or banned before it was tested drew to a close about 2 months ago. On 7 June, Stevan Durovic, Krebiozen's discoverer and chief sponsor, filed an application for continued distribution of Krebiozen as an experimental drug. Five weeks later, on 12 July, he suddenly withdrew the application. Durovic's action was mainly a matter of beating the Food and Drug Administration to the draw. As in the Old West, the FDA had signaled its opponent, in a variety of ways, that it was already reaching for the gun, and that rejection of the application was imminent. Durovic merely fired first.

Withdrawal of the application automatically made Krebiozen's distribution in interstate commerce illegal. The drug has been banned, and it has not yet been given the government-sponsored test which its supporters have long been seeking. But although the threatened ban was the focus of greatest tension when the 12-year controversy raged into the open again in early June, the ban itself has done little to resolve the principal issues involved. Krebiozen continues to receive a good deal of attention from the Food and Drug Administration, from the National Institutes of Health, and from Congress (*Science*, 21 June, 28 June, 5 July).

Even the 125 or so cancer patients who are currently taking Krebiozen and believe themselves dependent on it, who have formed emergency Krebiozen committees throughout the country, and who have three times solemnly demonstrated before the White House begging for a Presidential dispensation to forestall a cutoff of the drug, seem in the main to have circumvented the ban in a variety of ways. Some patients had a 1- or 2-month supply of Krebiozen on hand when the ban took effect; others have moved to Illinois where the drug is produced, to receive it without violation of the ban on interstate distribution.

One of the Krebiozen patients, George Friedman, whose wife Laine was a key organizer of the Krebiozen supporters, moved to Illinois and died shortly afterward—a victim, the drug's supporters say, of overexcitement and fear. Friedman had been on Krebiozen for 2½ years (and was on it when he died), after having been given a few months to live by his New York doctors. An ugly note was the refusal of the New York *Times* to print a death notice which requested that contributions be sent to the Krebiozen Research Foundation. The *Times* later retracted, after a Boston columnist had picked up the story. Up until now, no other deaths among Krebiozen patients have been reported.

Illinois, however, is the last fortress of the patients, and an action taken by Illinois Governor Otto Kerner shortly after the interstate ban went into effect has them understandably nervous. A law already on the books in that state permits it to reject any

FDA Finding

Last weekend the Food and Drug Administration issued a report stating that samples of Krebiozen provided by Stevan Durovic had been identified as the amino acid derivative creatine, which is available from meat in the ordinary diet. The report noted that the "chemical was tested sometime ago against animal tumors in the routine cancer chemotherapy screening program of the National Cancer Institute" and "was found to be ineffective even in very high doses."

In Chicago, Andrew Ivy, who is a chief advocate of thorough testing of Krebiozen on human cancer patients, was reported to have said that Krebiozen is not creatine and to have called the government findings ridiculous.

According to FDA, the identification was made on the basis of an infrared spectrogram supplied by Durovic, infrared spectrograms made by the National Cancer Institute from small samples of Krebiozen provided by Durovic in September 1961, and analyses of a small vial of material furnished by Durovic in July. Scientists and technicians from other federal agencies and universities were called in to work with FDA staff members on the analyses, using infrared spectrophotometry, x-ray diffraction, and crystallographic and mass spectrographic techniques.

According to the FDA statement, the agency is "continuing its investigations of all the facts regarding 'Krebiozen.'"

drug not approved by the federal government for interstate shipment, and Kerner has been under some pressure both from newspapers and from the Illinois Medical Society to invoke it in the case of Krebiozen. He has temporized by appointing a nine-man committee, composed chiefly of medical experts, to undertake a "controlled scientific study" of Krebiozen, as a preliminary to making a decision. But there is no doubt that Krebiozen's last territorial bastion is under assault.

In Washington, however, the battle over Krebiozen is continuing on three fronts—legal, political, and scientific.

The legal case against Krebiozen, like the ban on the drug, was triggered by an act of Stevan Durovic, with the support of Krebiozen's most distinguished scientific supporter, Andrew C. Ivy. For about 6 months the Food and Drug Administration has been assiduously gathering information on the manufacture and distribution of Krebiozen, with a view toward bringing its sponsors into court. Durovic, however, precipitated action himself by seeking a court injunction against the FDA investigation, which he claimed had reached the level of harassment. The forum for the charges is thus a federal court in Chicago; the form, a suit for injunction filed by Durovic against the government. A preliminary motion was denied in July, but the case is continuing.

The FDA believes, as it has believed for some months, that it has unearthed some very suspicious facts about the production of Krebiozen, facts that FDA officials suggest may put the drug's sponsors permanently out of business. This may indeed be the case, but although the charges and evidence introduced so far underline what has long been known—that Krebiozen was hardly a model scientific or business enterprise—they have thrown little light on the scientific dispute.

FDA's charges are in some measure trivial, revolving around Durovic's supposed lapse from "current good manufacturing practice" both in the preliminary treatment of the horses from whose blood Krebiozen is obtained and in subsequent preparation of the material itself. Another charge calls attention to "an apparent discrepancy between the Krebiozen powder claimed to have been produced and ampules purchased by Durovic." The implication that Durovic has a lot of empty ampules to account for is also a hint, contained in the FDA brief, that he has distributed more "Krebiozen" than he actually had. The FDA claims, too, that Krebiozen cost Durovic about 8 cents an ampule to produce, and wonders why he was distributing it in return for "contributions" of up to $9.50 an ampule. There is also a running dispute over whether Ivy and Durovic have cooperated with the FDA inspectors, and whether the amount of Krebiozen that has now been turned over to them is an adequate sample on which to perform chemical tests.

Durovic denies that anyone has ever made money from Krebiozen. He points out that the drug was given free for 6 years, insisting that he went into debt a few years ago to finance production of another batch, and that contributions have come only from patients able to pay and have never covered the costs of production. Durovic also points out that the charge of excess ampules is an ancient one, similar charges having been made and dismissed when the Illinois legislature investigated Krebiozen in 1953–1954, and he claims that FDA's calculation of the amount of Krebiozen produced is in error.

On this level, and in an extremely hostile atmosphere, the Krebiozen case is continuing in court, but the court action seems unlikely ever to be conclusive, at least with respect to the merits of Krebiozen as a treatment for cancer. FDA's prestige, however, vis-à-vis both the scientific community and certain of the President's science advisers who have disapproved of its handling of Krebiozen, is heavily involved in making its case stand up.

A feeling that the Food and Drug Administration was prejudiced against Krebiozen, and that its interests were remote from two major questions about the drug—whether it would be tested, and whether the patients would be allowed to receive it—led Senator Paul Douglas (D-Ill.) to try to persuade Congress to intervene. On 18 July, Douglas introduced a resolution calling for the National Institutes of Health to undertake immediately a "fair, impartial and controlled test" of Krebiozen, and forbidding the FDA to take any action on Krebiozen until such a test was completed. Douglas's strategy, in essence, is to persuade Ivy and Durovic to refile their application, then to prevent FDA from rejecting it before the results of an actual NIH test are known.

What is surprising about the Krebiozen resolution is not that Douglas introduced it, for he has been seeking a government test of Krebiozen for several years, but that the resolution has garnered such support. The resolution was cosponsored in the Senate by the late Estes Kefauver, by New Jersey Republican Clifford Case and New Jersey Democrat Harrison Williams, by William Proxmire (D–Wis.) and by Birch Bayh (D–Ind.). They were later joined by Ralph Yarborough (D–Tex.), Claiborne Pell (D–R.I.), Jacob Javits (R–N.Y.), and about seven others, and for a time it appeared that a majority of the Labor and Public Welfare Committee, to which the resolution was referred, might agree to call hearings, and that congressional action might be taken.

At the same time, several similar resolutions were introduced in the House and referred to the Interstate and Foreign Commerce Committee. In all, 23 congressmen who had not interested themselves in Krebiozen before spoke in favor of a test—a monumental tribute to the skill Krebiozen supporters seemed rapidly to acquire in lobbying for alleviation of their plight.

A typical explanation of the reasons for supporting the resolution came from Representative Otis Pike (D–N.Y.). In a letter to his constituents, Pike pointed out that when authorities such as Andrew Ivy and officials of the Food and Drug Administration, "whose credentials are at least equally impressive," disagree, "one can only stop looking for technical experts and start looking at troubled human beings." In supporting a resolution which would allow "those persons who are now being treated by Krebiozen and those suffering from terminal cancer, to continue to be treated by it until such time as it is adequately tested by the National Cancer Institute," Pike said, "I have either helped medical science or helped perpetrate a hoax, and it is a tragedy of our time that I haven't the slightest idea which it may be."

Nonetheless, despite the surprising degree of support, what the resolutions asked of Congress, in seeking continued distribution of Krebiozen without the approval, and against the wishes of the FDA, was in effect, though not perhaps technically, a suspension of the new drug laws passed last year. Congressional reluctance to make such an exception, and to risk permanently weakening the new laws, seems strong.

Senator Douglas, however, is continuing to press. During the Senate

debate on appropriations for the Department of Health, Education, and Welfare (of which both FDA and NIH are parts), Douglas needled Lister Hill (D–Ala.), floor manager for the HEW appropriations bill, with a recital of all the martyrs to medical orthodoxy who had been scorned and later proved right—including the British surgeon Joseph Lister, for whom Senator Hill is named. Hill, who is also chairman of the committee to which Douglas's resolution was referred, would not agree that the law should be bypassed, though he did indicate he thought Krebiozen should be tested.

At the moment, congressional action on the Krebiozen resoluton seems extremely unlikely. But if other, less coercive, avenues to a test for Krebiozen are blocked, or if the FDA receives and rejects a new application from the drug's sponsors before a test is made, Douglas will fall back on the resolution and try once more to get Congress to intervene.

In the last analysis, however, it is on the scientific front that Krebiozen must make its case, and it is here that the most important activity is currently going on. In early August, in accord with an agreement reached between the government and Ivy and Durovic over a year ago, when a National Cancer Institute review of Krebiozen case records was stalled because of insufficient data, the FDA turned over to NCI the records of 508 patients from the files of the Krebiozen Research Foundation, supplemented by additional clinical details furrowed out during the FDA investigation. The material included what Ivy felt were his 508 "best cases'; in each of them Krebiozen was claimed to have been effective in some measure.

On 12 August, a 22-man group of cancer experts, some from the regular NCI staff, others specially appointed by its director, Kenneth Endicott, began a review of the records, to determine whether the drug warranted an official NCI test. The review was conducted in great secrecy: the identity of reviewers was not made public, and they are reported to have been confined to a motel near NIH, in Bethesda, Maryland, until their work was completed, a week later. (Unsubstantiated rumors hold that there was disagreement among the experts.) When the study was finished, on 17 August, it was turned over to NIH statisticians for analysis of the data gathered. The completed report will next go to Endicott, who has not yet indicated what he will do with it. Senator Douglas, distrusting the secrecy of the NCI proceedings, has assembled duplicate copies of the records under study and is having an independent review made.

Even if the report vindicates the claims of Ivy and Durovic that Krebiozen has merit in the treatment of cancer, however, the FDA's legal case will continue. And if the experts report that Krebiozen is worthless, the drug's supporters will holler "bias" and "AMA domination," and look to an uneasy Congress to force a test. Thus, no matter when the report of the experts is released, or what it proves, it is not in itself the long-sought actual "test" of Krebiozen, and it is unlikely to bring the controversy to a final close.—ELINOR LANGER

Announcements

The National Academy of Sciences is accepting applications from scientists who wish to participate in the Soviet-American **exchange program** during the 1964–65 academic year. Applications, which are due by *25 October*, will be accepted only from American citizens with a doctorate or its equivalent at the time of the visit.

Programs which are open to general participation by scientists provide for ten visits of 1 month each to survey current research, and for six visits of 3 months each and 20 visits of 5 to 10 months each to conduct research. In addition, the agreement provides for 20 visits of 1 month each by "distinguished scientists, the majority of whom shall be members of the respective academies." This last group, which is for the purpose of lecturing, is not open for application. It is expected that half the visits will be arranged for the 1964–65 academic year, the remainder being reserved for the following academic year.

Participants receive transportation to and from the U.S.S.R. and a per diem allowance to cover meals. Also, those who participate for more than 3 months are reimbursed for loss of salary, but not for loss of consulting fees. Visitors for 5 to 10 months may receive additional support so that they can take their families with them.

(For application forms and additional information, write Foreign Secretary, National Academy of Sciences, Washington 25, D.C.)

Meeting Notes

Papers on **environmental data** collection simulation and laboratory management are invited for presentation at a meeting of the Institute of Environmental Sciences, 13–15 April, in Philadelphia, Pa. The program will emphasize translation of technological facts into information suitable for direct application. Abstracts of 200 words are required. Deadline: *1 October*. (Institute of Environmental Sciences, Technical Program Committee, 34 S. Main St., Mt. Prospect, Ill.)

A call for papers has been issued for the 1964 **electronic components** conference, scheduled 5–7 May in Washington, D.C. Papers may be on resistors, capacitors, connectors, printed wiring, thin film devices, microminiaturization, conductors and cables, or reliability and testing techniques. Three copies of a 500-word abstract are needed. Deadline for receipt of abstract: *1 November*. (J. J. Bohrer, International Resistance Co., 401 N. Broad St., Philadelphia, Pa.)

The High Voltage Engineering Corporation will sponsor a conference on **high voltage accelerators,** 11–13 November, in Boston. Approximately 20 papers will be delivered, covering accelerator design and technology, space physics, experimental techniques, research on nuclear structure and electrons, and research program techniques. Attendance at the conference is by invitation only. (J. F. Bromberger, High Voltage Engineering Corp., Burlington, Mass.)

Grants, Fellowships, and Awards

The Life Insurance Medical Research Fund offers grants to aid institutions in **cardiovascular research**. The awards are available as of 1 July 1964, for basic and clinical research on cardiovascular problems. Deadline for receipt of applications: *1 November*. (Scientific Director, Life Insurance Medical Research Fund, 1030 E. Lancaster Ave., Rosemont, Pa.)

College faculty members in the U.S. and Canada are invited to nominate candidates for the 1964–65 Woodrow Wilson fellowships for **potential college teachers**. Candidates may be college seniors or graduates with majors in natural sciences, mathematics, social