

# Politics and Science Clash on African AIDS

*Some Africans boycotted a scientific meeting on African AIDS; heterosexual contact is implicated in the spread of the disease*

*Brussels.* Not a single case of acquired immune deficiency syndrome (AIDS) has officially been reported from central Africa. Yet, according to a mass of evidence presented at a 2-day meeting here,\* the incidence of the disease is rising sharply in some countries and the retrovirus that is widely believed to be the prime cause of AIDS has spread to an alarming extent in some regions.

The discrepancy between the official picture of the disease and the portrait emerging from clinical and epidemiological studies reflects deep political sensitivity, at times resulting in censorship. Some African governments apparently fear that adverse publicity about AIDS could discourage tourism and seriously disrupt their economies.

Such sentiments left an unfortunate mark on the meeting. At the last moment, several African researchers and some of their European coworkers canceled their presentations. Some 50 Africans who did attend issued a statement that the papers presented "did not show any conclusive evidence that AIDS originated in Africa." And at an extraordinary press conference at the conclusion of the meeting, David Serwadda, a Ugandan researcher, berated the Western media for "conveying out of all proportion what is happening in Africa."

This political sensitivity is clearly hampering efforts to make sense of the complex puzzle of how, and to what extent, the disease and the AIDS virus are spreading in Africa. However, some elements are clear. In contrast to the United States, where AIDS has so far been confined largely to homosexuals and intravenous drug users, the disease appears to be spreading in Africa largely through heterosexual contact. It afflicts men and women in roughly equal numbers and, because the virus can be passed on to children before birth, more children in Africa are coming down with the disease.

Because the disease pattern appears to be so different, understanding African AIDS could be extremely important not only for Africa itself but also for the rest

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## The War on AIDS

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*This is the fifth article on a series about research on AIDS.† Next: research on therapeutic agents and vaccines.*

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of the world. "If we are concerned about the public health of the peoples in Africa and all over the world, we cannot pretend that AIDS is not there," said Robin Weiss of the Institute of Cancer Research in London, at the opening of the meeting.

In spite of the lack of official reporting of AIDS in central Africa, it is clear that the disease is appearing in many countries. One early indication was the diagnosis of AIDS among Africans who had moved to Europe or were referred to

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## Political sensitivity is hampering efforts to understand the spread of AIDS in Africa.

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European hospitals for treatment. According to Nathan Clumeck of Saint Pierre University Hospital in Brussels, some 12 percent of European AIDS cases are in fact African patients from 21 different countries.

In addition, new cases of AIDS or diseases that appear to be related to AIDS are showing up at an increasing rate in hospitals in parts of Africa. For example, Daniel Zagury of the Université Pierre et Marie Curie in Paris, reported that antibodies to the AIDS virus were detected in 60 of 117 patients hospitalized at the University Clinic in Kinshasa, Zaire, early this year. Some of the patients met all the currently accepted criteria for AIDS itself, while others were suffering from conditions such as intestinal disorders, pneumonia, dermatitis, and a variety of cancers.

Another paper, scheduled for presentation by a group from the same clinic in Kinshasa but which was withdrawn, reported that 93 patients with AIDS were seen there between October 1983 and December 1984.

Similarly, in a paper that was delivered, Anne Bayley of the University of Zambia School of Medicine in Lusaka reported finding a new form of Kaposi's sarcoma among some patients in 1983. It tends to afflict younger people than the classic form of the disease does, and it is far more aggressive and generally fatal. She saw 13 patients with atypical Kaposi's sarcoma in 1983, 22 in 1984, and 19 in the first 4 months of 1985 alone. Antibodies to the AIDS virus were detected in 91 percent of the patients with this aggressive form of the disease but in only 24 percent of those with the endemic form.

Many cases of what is known locally as "slim disease" have been reported recently from Uganda. Characterized by severe weight loss, it is generally indistinguishable from AIDS. A paper recently published in *The Lancet* by Serwadda and collaborators from Zambia and Britain reported that AIDS virus antibodies were detected in 63 of 71 slim disease patients in Uganda and noted that "an epidemic of [AIDS] is spreading in neighboring Rwanda and Zaire."

Since no central African countries are keeping their own records of AIDS cases—let alone reporting them to the World Health Organization—it is impossible to know what the incidence is. Moreover, it is clear that many cases of AIDS are likely to be diagnosed as other diseases because the spectrum of opportunistic infections is different in Africa from that in the United States and Europe.

For example, *Pneumocystis carinii* pneumonia, a tell-tale marker of AIDS in western countries, seems to occur much less frequently in African AIDS patients, while skin diseases, cryptococcal meningitis, and a variety of intestinal complications appear more frequently. For this reason, there was general agreement at the meeting—supported by the statement of the African representatives—that the definition of AIDS used in the West needs to be broadened for use in Africa.

The extent to which the virus itself is spreading in Africa is also a topic of intense debate—on both political and scientific grounds. What is becoming increasingly clear, however, is that it has

\*International Symposium on African AIDS, Brussels, 22 and 23 November.

†Previous articles in this series were published in *Science*, 25 October, p. 418; 1 November, p. 518; 8 November, p. 640; and 29 November, p. 1018.

# Africa and the Origin of AIDS

Researchers have long believed that the retrovirus that has been implicated as the primary cause of AIDS originated in Africa. This suggestion rests in part on the fact that antibodies to the virus have been detected in frozen serum samples collected in Africa many years ago, and the disease appears to have spread more widely in some parts of the continent than it has in the West.

This theory has been strongly attacked on both scientific and political grounds, however. African governments have objected strenuously to any suggestion that the disease may have originated in their countries, and some African scientists have argued that searching for the origin of AIDS serves no useful purpose. A statement drafted by some 50 African scientists who attended the International Symposium on African AIDS in Brussels, said, for example, that AIDS "is a global problem and not an African problem alone. Therefore efforts directed [toward finding] an African association with AIDS do not contribute to future control programs."

Ironically, research presented at the meeting cast some doubts on the early serological data, while other findings greatly strengthened arguments for an African origin of the disease. Moreover, contrary to the idea that such studies serve no purpose, the findings could ultimately be extremely important in understanding the nature of AIDS.

The evidence in favor of an African origin came from groups headed by Max Essex of the Harvard School of Public Health, S. M'Boup of Dakar University in Senegal, and Francis Barin of the Hôpital Bretonneau in Tours, France. Essex presented data, recently published in *Science* (22 November, p. 951), that a retrovirus isolated from wild African

Green monkeys is very similar to the AIDS virus. The suspicion is that the virus may recently have crossed the species barrier and infected man. Essex has now obtained some intriguing evidence to support this suspicion.

Serum samples taken from prostitutes in Senegal were found to have been infected with the monkey virus itself, rather than the closely related AIDS virus. Antibodies to the monkey virus were found in 30 out of 289 samples tested. An interesting and hopeful aspect of this finding is that none of those who tested positive had any signs of AIDS or AIDS-related diseases. Similarly, African Green monkeys infected with the virus are healthy. A possible explanation is that the monkey virus itself may not be pathogenic but it may have mutated in man and acquired some destructive properties.

Essex also presented data that raise some interesting questions about serological investigations of AIDS in Africa. He has found that serum from only 53 percent of individuals in the United States who have antibodies to the AIDS virus react with proteins from the monkey virus, while almost 100 percent of serum samples from similar

antibody-positive Africans cross-react with the simian viral antigens. This suggests that strains of the virus causing AIDS in Africa are more closely related to the African Green monkey virus than are the strains causing AIDS in the United States.

Whether or not African and American strains really are different must await analysis of the precise genetic sequences of virus isolated from Africans. This is currently under way in several laboratories. Further genetic analysis of the African Green monkey virus, prior to cloning and sequencing, is also being conducted at Harvard and the National Cancer Institute, according to Essex.

Another aspect of the link with monkeys is that Essex together with researchers from the New England Regional Primate Research Center, has isolated a virus from macaques which were displaying many of the symptoms of

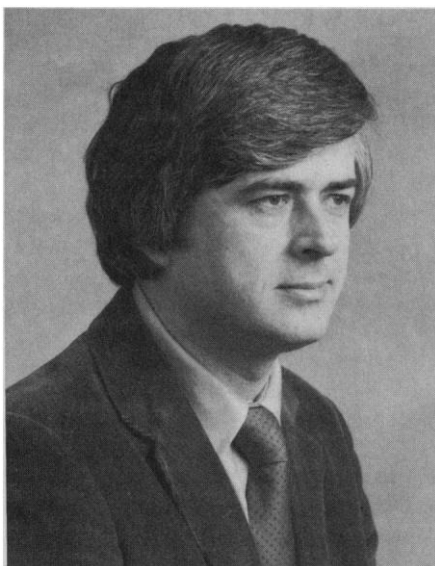
human AIDS. It is not known whether the macaque virus and the African Green monkey virus are identical, but experiments were recently begun to determine whether the Green monkey virus causes disease when injected into macaques. These investigations could result in a useful model for studying AIDS.

Although all this work is still somewhat preliminary, it could help throw light on what makes the AIDS virus so pathogenic. Moreover, if the Green monkey virus does not cause disease in either its original host or in people, it may provide some clues that will be helpful in research directed toward an AIDS vaccine.

While Essex's work supports the hypothesis that the AIDS virus originated in Africa, several scientists questioned the validity of earlier findings that antibodies to the AIDS

virus are present in stored serum samples originally collected several years ago. African sera tend to be "sticky," which means that antibody tests can give relatively high levels of false positives, and some investigators contend that this problem increases with the age of the serum. Richard Tedder of Middlesex Hospital in London, for example, suggested that some widely publicized findings of antibodies in remote tribes in both Africa and Latin America might be due to false positives, and he suggested that analysis of stored samples should be treated with special caution.

However, Guy de Thé of the Faculté de Médecine Alexis Garrel in Lyon, France, reported that antibodies were detected in 1 to 3 percent of serum samples collected from Uganda, Kenya, Tanzania, and the Ivory Coast in the early 1970's. These sera, he said, contained "something that is not stickiness." Juan Weiss of Emory University also reported finding antibodies to the AIDS virus in a serum sample collected in 1959 from Leopoldville (now Kinshasa). If correct, this would be the earliest evidence of the virus.—C.N.



**Max Essex**

*Work on African Green monkey virus has implications for research on AIDS vaccine.*

reached alarming levels in some urban areas of central Africa but has not yet spread much in southern Africa.

- In a paper scheduled for presentation by Françoise Brun-Vézinet of the Hôpital Claude Bernard in Paris, which was canceled at the last moment, 7 percent of serum samples collected from prostitutes in Kenya in 1980 contained antibodies to the AIDS virus; by 1984, the proportion had risen to 51 percent. Their male customers also showed an increase in infection. Only 1 percent of a sample of men attending a clinic for sexually transmitted diseases had antibodies to the virus in 1980; by 1984, the proportion had risen to 13 percent.

- A study of prostitutes in Butare, Rwanda, indicated that 29 of 33 tested in 1984 had antibodies to the virus, and 27 were showing symptoms of generalized lymphadenopathy. Seven out of 25 men treated for sexually transmitted diseases who admitted contact with prostitutes also tested positive. In comparison, 12 percent of female controls and 17 percent of male controls showed signs of infec-

tion. According to Philippe Van de Perre, of the Hôpital Saint Pierre, who presented the data, there was a high correlation between a history of infection by sexually transmitted agents and infection with the AIDS virus. Van de Perre and others found no correlation, however, with therapeutic injections, indicating that use of dirty needles may not currently be playing a major role in transmission of the disease. (A possible exception may be injections at clinics for sexually transmitted diseases.)

- A second study in Rwanda indicated that 10.5 percent of a sample of 258 blood donations contained antibodies to the AIDS virus. The rate of infection appears to be higher in urban than in rural areas; 17.5 percent of a sample of young adults living in Kigali tested positive, compared with 3 percent of young adults from a rural area.

- Chris Williams of the University of Ibadan, Nigeria, reported that 7 percent of Nigerian blood donations tested positive for AIDS virus antibodies, although he claimed that there is no evidence for

the disease itself is present in Nigeria.

Although there was little disagreement about the trends conveyed by these serological studies, there was considerable debate about how much weight should be put on the absolute numbers. One problem is that a relatively high rate of false positives occurs when African sera are tested by some of the commercially available kits. However, some researchers also reported high rates of false negatives. For example, Zagury said he isolated virus from 12 patients from Zaire who were producing no detectable antibodies, out of 84 tested.

Although the epidemiological picture is somewhat hazy, spread of the virus and the disease through heterosexual contact is clearly indicated. Even the statement by the African representatives acknowledged that "heterosexual promiscuity with multiple sexual partners is one of the high risk factors for AIDS and therefore the public should be informed." Many researchers believe the same message should be conveyed in the West.—COLIN NORMAN

## Summit Ends with Exchange Agreements

*A handful of scientific and cultural pacts substitute for progress on arms control in the superpowers' joint statement*

After a tough meeting with Mikhail Gorbachev shortly before the opening of the Geneva summit on 18 November, Secretary of State George Shultz predicted that the prospect of an agreement on arms control was extremely small. One reason, he told President Reagan, is that Gorbachev has clearly settled views about the topics at issue. "Well, we're very set on ours," was Reagan's reply, as he later confided to a group of foreign journalists.

Not surprisingly, about all that ultimately transpired at the summit was an exchange of the official U.S. and Soviet arms control positions, as well as the conclusion of a handful of agreements on scientific, academic, and cultural exchanges. Overall, the talks were described by Reagan as "constructive" and "worthwhile" and by Gorbachev as "very frank . . . very lively . . . [and] to a certain extent productive." The major achievement was an agreement to hold two additional summits, one in each country over the next 2 years, as well as more frequent meetings between senior government officials.

With regard to weapons, neither side backed off on the principal issue that divides them, the "Star Wars" missile shield officially known as the U.S. Strategic Defense Initiative (SDI). Specifically, Reagan emphasized the importance of continuing with a scientific quest for "nonnuclear defensive systems that would only threaten offensive missiles, not people," while Gorbachev reiterated that a reduction of offensive weapons could be negotiated only if "the door to unleashing an arms race in outer space [was] firmly slammed shut."

A vigorous disagreement about the number and type of weapons that should be dismantled was papered over by a joint declaration that "early progress" should be sought "in areas where there is common ground, including the principle of 50 percent reductions in the nuclear arms of the U.S. and the U.S.S.R. appropriately applied." Disagreements remain about whether "arms" are missiles or warheads, and about the categories of arms that should be subjected to limitation.

No agreements were reached about

continued compliance with the SALT II treaty signed in 1979, or about the precise meaning of certain provisions of SALT I relating to missile defense research, two issues that have proved highly fractious, both within the NATO alliance and in U.S.-Soviet relations. In addition, Gorbachev specifically rejected an interim U.S. proposal to allow military experts on both sides to visit each other's strategic defense laboratories. The purpose of the proposal, as Reagan explained in an address on 22 November, was to "permit Soviet experts to see firsthand that SDI does not involve offensive weapons," and to enable American scientists "to visit comparable facilities of the Soviet strategic defense program."

At a press conference in Geneva, Gorbachev said the idea was illogical and "unacceptable at this stage." The Soviet Union is indeed "prepared to open our laboratories to any sorts of verification or checks," he said, but only *after* an agreement is reached to "ban the extension of weapons to outer space." His response enabled some officials at Los