Italian firm promotes optical biophysics

While the U.S. government and research institutions have so far ignored Lyndon LaRouche's call to make optical biophysics the centerpiece of a scientific crash program against AIDS, some U.S. allies are more far-sighted.

Last year, the Japanese government announced a new multi billion-dollar program of basic biological research, and teams of Japanese industrial scientists toured biophysics laboratories all over the world as part of a strategy to make Japan the world leader in biotechnology.

Europe has gotten the message, too. The Italian industrial giant Montedison assembled a group of leading researchers in optical biophysics "to verify the level achieved in 'physical-analytical' methods that can be applied to living organisms such as bacteria, cells, and tissues," in the words of Montedison president Mario Schimberni. Although the explicit topic was not AIDS research per se, but "Biophysical Methods in Medical Research and Biotechnology," the Montedison symposium, held in Milan on June 23-24, followed closely the tracks laid out in a two-part series in *EIR* (Vol. 14, Nos. 10-11) on the role of optical biophysics in finding a cure for AIDS.

In opening the conference, Schimberni announced that his company is starting a project to develop "advanced analytical equipment" which would combine optical biophysics instrumentation with state-of-the-art computer technology. "Once this instrument has been developed," he said, "it will be able to contribute to the experimental verification of biological models which are the expression of a new multidisciplinary science: 'theoretical medicine.'"

The conference was chaired by Nobel Prize winner in medicine, Prof. Renato Dulbecco of the Salk Institute in California, who began by building a bridge between his field, molecular biology, and the often undervalued field of biophysics. "After all," Dulbecco declared, "molecular biology itself is based on physics." He was referring to such techniques as electron microscopy, radioactive tracers, and x-ray diffraction which laid the basis for discovery of the structure of DNA and modern genetic engineering. But "we should not look at a cell as just a bag of molecules or a bag of anything," Dulbecco stressed. Instead, new techniques presented at the conference make it possible to define the state of a cell or tissue *as a whole*. This would be important, Dulbecco remarked, because "we will not be able to solve the AIDS problem with our present [molecular biology] techniques."

The conference proceeded to an intensive review of the science and technology of optical biophysics, with presentations by some of the world's pioneers in this field. Chuck Gregg of Los Alamos presented the multiparameter light-scattering technique for identifying viruses and bacteria. James Fraser of M.D. Anderson Hospital, Texas, reviewed the remarkable capabilities of nuclear magnetic resonance spectroscopy, tomography, and related techniques for the study and treatment of disease processes. Fritz Popp of the Technology Center in Kaiserslautern, West Germany presented one of the most revolutionary fields of biophysics, the study of the "laser-like" ultraweak light emission produced by all living cells. Herbert Klima of the Atominstitut in Vienna described how he is applying the measurement of cell photon emission to monitor the functioning of the human immune system. Sidney Webb of British Columbia, Canada, an early pioneer of laser applications to biology, described the theoretical and practical importance of microwave and laser Raman spectroscopy of living cells.

Ulrich Seydel of the Borstel Research Institute, West Germany presented a remarkable instrument called a "laser microprobe mass spectrometer," which makes it possible to carry out an instantaneous chemical analysis of a single bacterial or other cell. The relevance of these advanced biophysical techniques to the fight against AIDS was developed by Jonathan Tennenbaum, director of the Fusion Energy Foundation in Europe, from Wiesbaden, West Germany. Professor Bergamini, one of Italy's leading AIDS researchers, underlined the urgent need for scientific breakthroughs in AIDS treatment by presenting the latest statistics on the disastrous spread of AIDS worldwide and in Italy in particular.

The second day of the conference was devoted mostly to discussion of the advanced computer hardware and software needed to transform the huge mass of data produced by biophysical instruments, into information which a doctor could used, for example, to determine the state of a patient's liver. It was proposed that special "pattern recognition" techniques could be employed to allow computers to identify different areas of the biological "phase space." This could eventually lead to a new generation of diagnostic equipment for hospitals and clinics.

The Montedison conference is an encouraging sign that, at least in Europe, the revolutionary potential of optical biophysics has been recognized and steps are being taken to realize that potential. This comes as a breath of fresh air after the mammoth Third International AIDS Conference in Washington in June, which amounted to little more than an expensive display of political censorship and scientific mediocrity. Certainly, the Milan conference offered more hope for the millions already infected by the deadly AIDS virus.