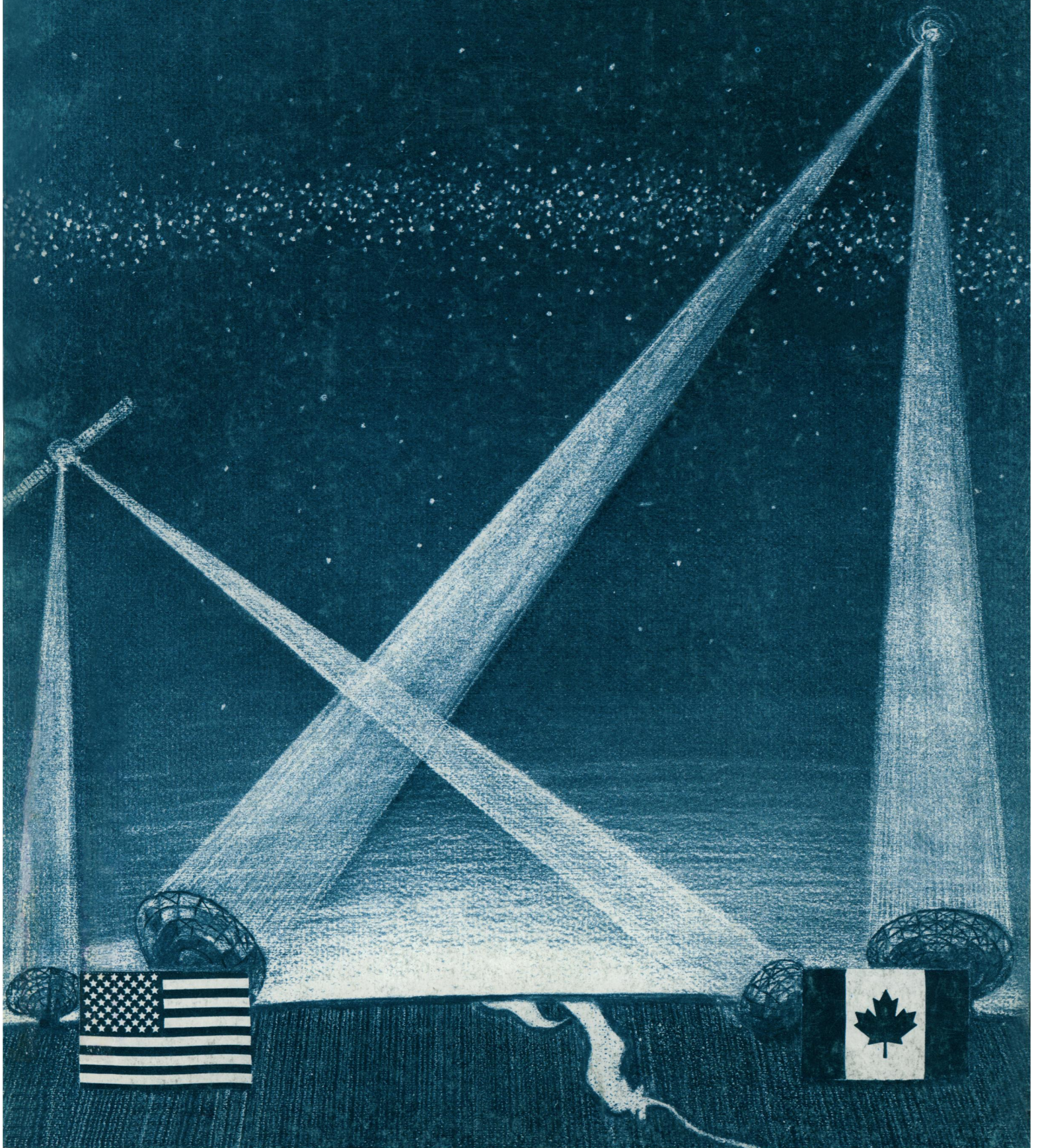


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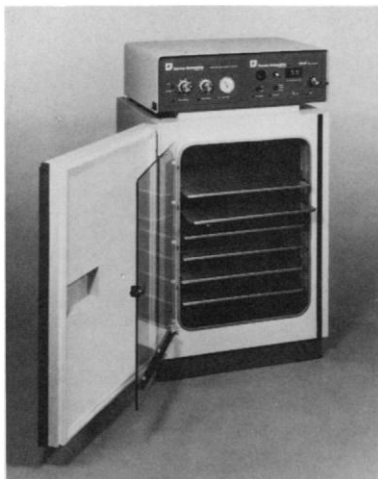
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<i>10 Largest U.S. Companies:</i>						
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Equitable	187.00	343.50	754.00	163.50	297.50	677.50
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Massachusetts Mutual	196.00	337.50	737.00	184.50	313.00	683.00
Metropolitan	188.50	347.00	779.50	162.50	267.00	565.00
New York Life	189.00	337.50	751.00	171.00	281.00	602.00
Northwestern Mutual	163.00	300.00	684.00	147.00	264.00	592.00
Prudential	164.00	300.00	592.00	146.00	242.00	462.00
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Mean Cost for 10 Companies	192.75	340.05	749.80	176.25	286.70	616.10

*Based on 1977 premium rates and dividend scales, adjusted for interest (4%) to recognize the time value of money; dividends not guaranteed.

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TIAA The College World's Insurance Association

21 October 1977

Volume 198, No. 4314

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COVER

Schematic impression of the Satellite Very-Long-Baseline Interferometer System. Two radio telescopes at widely separated locations are interconnected by a communications satellite, to permit real-time correlation of radio waves received at the two instruments from cosmic sources. See page 289 [Artwork by J. W. Johnson, professor emeritus, San Jose State University, San Jose, California]

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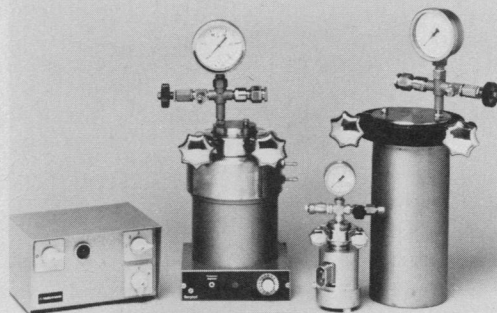
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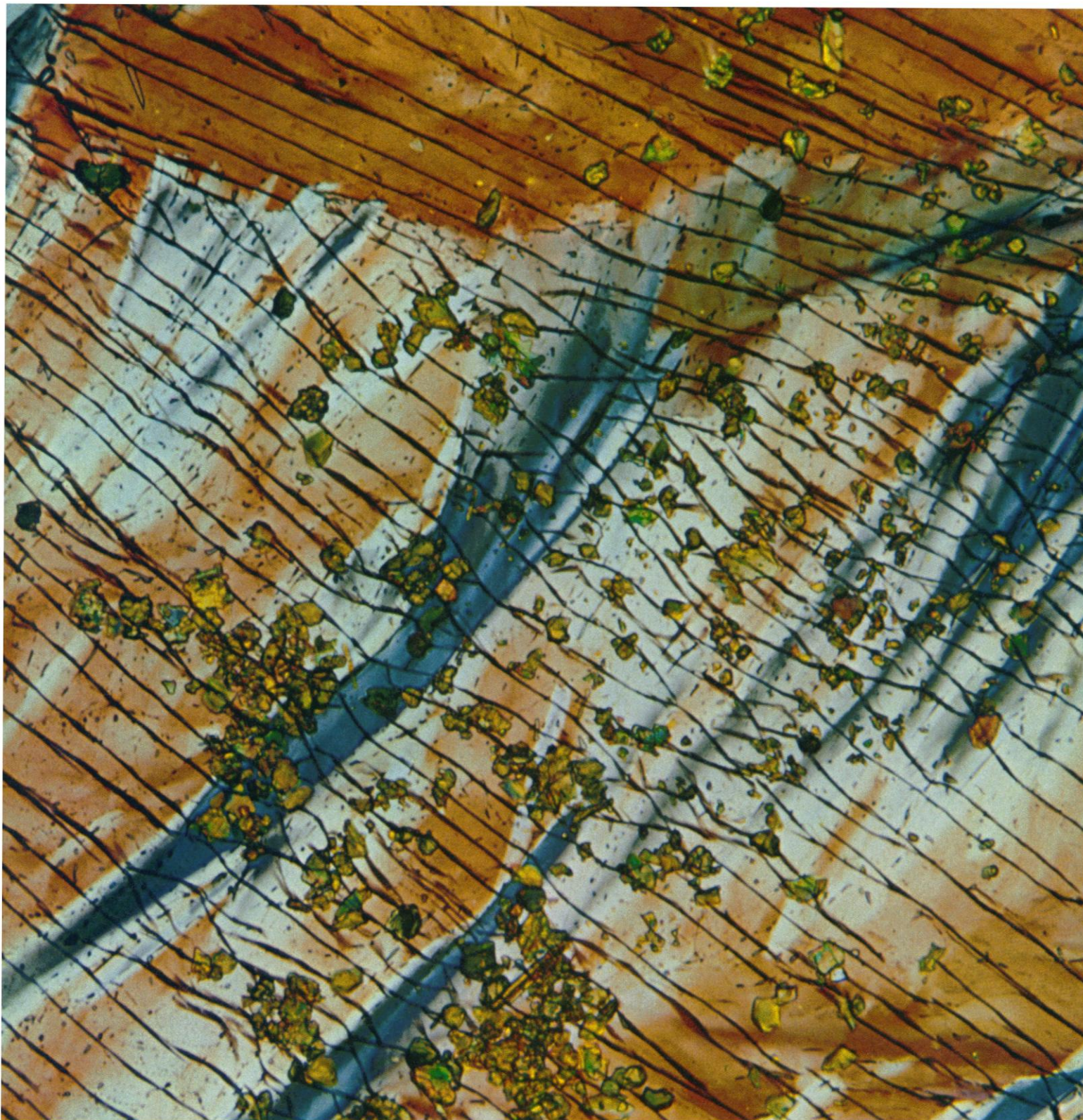
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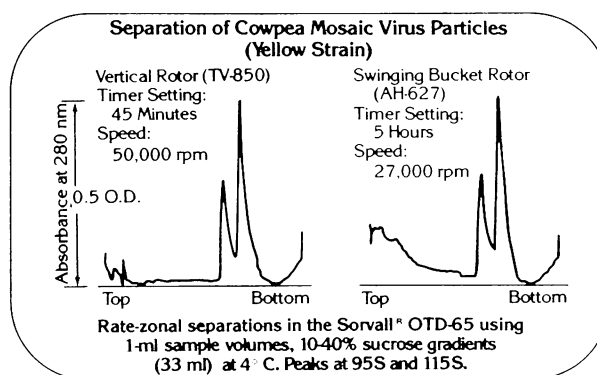
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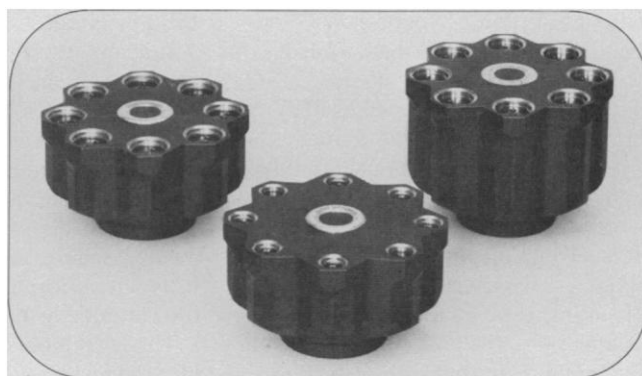
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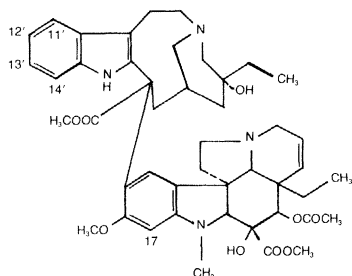
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Institution periodically review government economic policy. A similar independent institute should be established to serve as a "watchdog" of the government's projects and programs affecting the national scientific and health research effort.

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*Johns Hopkins University,
Baltimore, Maryland 21218*

ABRAHAM M. LILIENFELD
*School of Hygiene and Public Health,
Johns Hopkins University,
Baltimore, Maryland 21205*

Concerning Y. Orlov and A. Sharansky

The following letter to A. P. Alexandrov, president of the Soviet Academy of Sciences, was signed by us and 145 of our colleagues. It concerns physicist Yuri Orlov and mathematician Anatoly Sharansky. Both are being held in Lefortovo Prison in Moscow. Orlov is charged with making anti-Soviet statements regarding the implementation of the Helsinki agreement. Sharansky has been held incommunicado without charge for more than 7 months following his application to emigrate. It is thought that he is to be charged with treason.

The undersigned, writing as individual scientists and engineers, wish to express our concern about the situations of physicist Yuri Orlov and mathematician Anatoly Sharansky. We assign great importance to the benefits of scientific and technological cooperation between the citizens of our two countries. We share with our colleagues in the Soviet Union the hope that our growing international fraternity will serve as a powerful force for peace and friendship in the world. However, the present situation of Orlov and Sharansky suggests a regression to the conditions of twenty-five years ago, which will inevitably create major new barriers to the cooperation which we have achieved since those times. The implementation of the Helsinki agreement will be hindered severely by the legal accusations being made against two Soviet scientists who question the effectiveness of that implementation. In particular, the charge of treason against Sharansky will have a chilling effect on future international cooperation between scientists and engineers. We respectfully request that you use your good offices with the judicial authorities to obtain the dismissal of charges against Orlov and Sharansky.

For identification, the undersigned are scientists and engineers at Argonne National Laboratory, Argonne, Illinois.

LLOYD G. HYMAN
JOSEPH J. KATZ, TIMOTHY O'CONNOR
MURRAY PESHKIN, G. ROY RINGO
*Argonne National Laboratory,
Argonne, Illinois 60439*

Cancer Congress in Argentina

A group of scientists and physicians, deeply concerned about reports of political repression, torture, and executions in Argentina and about the implications of participating in the 12th International Cancer Congress in Buenos Aires, have drafted the following statement:

The undersigned physicians and scientists engaged in cancer research and patient care are deeply concerned by the flagrant abrogation of human rights in Argentina, the country in which the 12th International Cancer Congress is scheduled to be held on October 5-12, 1978 at Buenos Aires. Recent reports [Nicholas Wade, *Science* **194**, 1397 (1976): "Repression in Argentina: Scientists caught up in tide of terror"] leave little doubt that scientists, physicians, professors, journalists, intellectuals, and other citizens have been arrested, imprisoned without benefit of habeas corpus, often tortured, and sometimes executed without trial. We cannot in good conscience condone such actions, nor can we participate in an International Cancer Congress however worthy its cause, if it is held in Argentina. To prevent the adverse impact which such a boycott might well have on the international effort against cancer, we call upon the officers of the International Union Against Cancer (UICC) to convene in emergency session for the purpose of considering an alternate venue for the 12th International Cancer Congress in 1978.

We invite U.S. scientists and physicians who share these views to join us in signing this petition. Copies will be made available on request to Dr. Henry Rappaport, City of Hope National Medical Center, 1500 East Duarte Road, Duarte, California 91010.

We understand that similar actions are now under way in Canada and France. We hope that colleagues in all the countries which are signatories of the Helsinki declaration of human rights will join in this protest.

DAVID BALTIMORE
*Center for Cancer Research,
Massachusetts Institute of Technology,
Cambridge 02139*

EMIL FREI III
*Sidney Farber Cancer Institute,
44 Binney Street,
Boston, Massachusetts 02115*

HENRY S. KAPLAN
*Department of Radiology,
Cancer Biology Research Laboratory,
Stanford University Medical Center,
Stanford, California 94305*

HENRY RAPPAPORT
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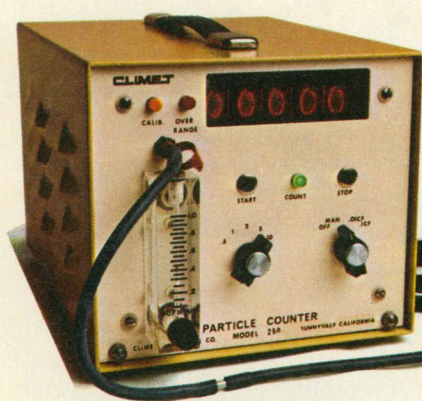
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This Stay-Clean™ laminar flow system



reduced
the
animals'
airborne
contamination



from 1,000,000 particles
per cubic foot to 0
particles in minutes.*

(Isn't your research worth that protection?)

If airborne microbial contamination can jeopardize your work in any way, consider our Stay-Clean™ system. It can protect your animals, your experiment, your investment, and your nervous system.

What is the Stay-Clean system?

Basically, a system which provides a flow of highly-filtered laminar flow air directed horizontally across an enclosed animal cage chamber.

Does it work?

Yes, the efficient filtering system greatly reduces airborne contaminants, be they microbial or non-viable particulate matter. All particulate matter 0.3 microns or larger is removed. And because the animals are "downstream" from the laminar flow source, the re-entry of ambient contaminants into the cage is prevented.

How is the Stay-Clean being used?

Generally speaking, whenever airborne contamination can jeopardize a colony or a research effort, ultra-clean laminar flow air can materially reduce such contamination. The Stay-Clean system is particularly useful in reducing colony-threaten-

ing cross-contamination.

Who's using the Stay-Clean now?

Small sample of users:

University of Notre Dame	Environmental Protection
Sloan-Kettering Institute	Agency
Wayne State University	M.I.T.
University of Cincinnati	University of Southern
University of Rochester	California
Albert Einstein College of	Pennsylvania State University
Medicine	University of Michigan
Union Carbide Corporation	New York University
National Naval Medical Center	Medical Center
University of Pittsburgh	University of Wisconsin
National Institutes of Health	University of Alabama
U.S. Department of Agriculture	Cornell University
Johns Hopkins School of	Medical Center
Medicine	Litton Bionetics
University of Missouri	Hoffman-La Roche

Why not let us know if you'd like to see one in operation in your area.

Special note to Stay-Clean owners:

We now offer a special continuing service/re-certification program that protects you after the initial 12 month warranty. Ask us about it.

Why is Lab Products "the leader in environmental protection for lab animals"?

Because we offer the widest selection of such products. Isosystem™, a simple, inexpensive housing system that can provide a protected micro-environment within any macro-environment. Enviro-Gard™ filter system: permanent filter bonnets (washable

and auto-clavable) to fit virtually all plastic cages. See-Through™ suspended cage systems: with special formed plenum filtering system. And, of course, the Stay-Clean laminar flow system herein described. *Please note:* The particle counter shown above is most useful for monitoring air purity and it, too, is available from us.

More information?

Write for our Stay-Clean brochure 2D2. And if you don't have our extensive catalog showing our *other* products and describing our custom fabrication, please request that also.

Lab Products Inc.,
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lab products
inc a **LaboMedic** company

Lab Products...not just
plastic cages, metal cages,
custom fabrication, laminar
flow systems, bedding,
automatic watering systems,
accessories...

* Depending upon room size, etc., this unit can reduce particle count of 100,000 to 1,000,000 particles per cubic foot to 0 particles per cubic foot 0.3 micron or larger in minutes.

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Soil and Coal: A Cost-Benefit Inquiry

The Secretary of Interior has proposed a moratorium on strip mining of "prime" agricultural land. Even though the recently passed strip-mining bill does not incorporate this specific proposal, its discussion raises some fundamental questions which should be of concern to conservationists, economists, and scientists generally, as well as to lawyers and politicians.

- Is society really faced with a choice between food and energy, or is this a false issue? More likely, the choice is between more coal and a loss of topsoil (permanent or temporary, depending on the degree of restoration).

- To make a rational rather than emotional choice, can one establish the short-term and long-term values to society of both soil and coal?

- Are these values properly expressed by the price of coal and farmland?

- If the market price does not fully express the long-term value of farmland to society, how should this value be determined?

- How much farmland would have to be diverted before its value rises?

- How is prime land defined, and why should a moratorium be limited to it?

- How can we identify and minimize any damaging side effects of mining?

Another set of questions is concerned with fair treatment of mining as one of the important uses of land.

- Does the proposal constitute a "taking" of property rights (in a constitutional sense) by depriving the landowner of mineral royalties?

- Why is there no comparable moratorium on other land uses that would divert farmland permanently, such as housing developments and highway construction?

- By the same token, should one not prohibit agricultural over-exploitation of land, which causes substantial soil loss by erosion and thereby represents mining of the soil?*

A third set of questions recognizes that the agricultural value of strip-mined land can be at least partially recovered with proper restoration measures.

- What is the right amount to spend on land restoration?

- Should the amount be related to the total value of the minerals extracted, or to the value (and price) of the land itself?

For example, prime wheat land in North Dakota sells for up to \$300 an acre. The value of the mined lignite may be as high as \$300,000 an acre. Depending on the degree of restoration, the cost may range from a few hundred to several thousand dollars per acre. A major mining company in New Mexico has been spending \$4000 to \$5000 per acre, on land selling for \$55 per acre, merely to speed up natural seeding and restoration. Some additional questions are raised by this discussion.

- Since costs rise very rapidly with the degree of restoration, how does one determine the optimum degree?

- Can the benefits from restoration exceed the original value of the land so as to justify these very high restoration costs?

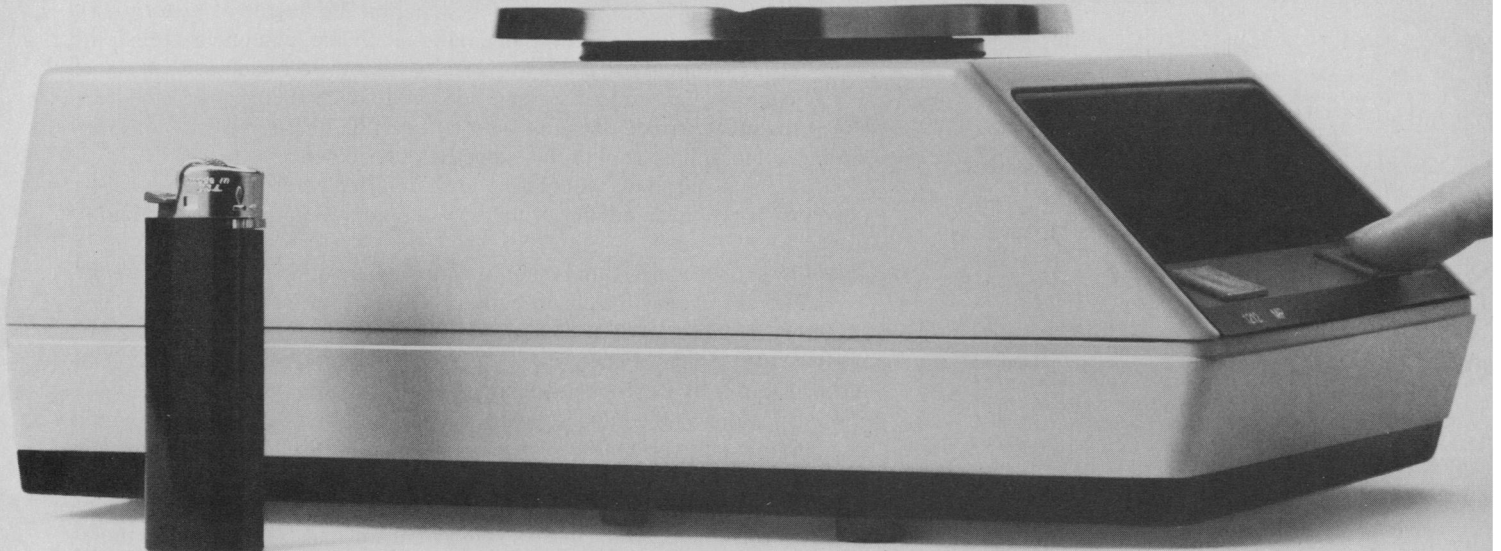
- What would be the best social use of the funds earmarked for restoration: restoration of strip-mined land in other areas; restoration of eroded farmland; or restoration of city slums?

This discussion has broader implications—for example, to the mining of minerals on public lands and even in national parks and wilderness areas. It is well to keep in mind that while coal mining disturbs more land than other mining activities, the areas involved can be quite small. As an example, if the total U.S. coal production, 600 million tons per year, were concentrated in the deep beds of Wyoming's Powder River Basin, the amount of land disturbed would be only 10 to 20 square miles a year. This example points to the need for guidelines that can be used to decide the circumstances under which a mineral deposit is more unique and valuable than a piece of farmland or of wilderness area.—S. FRED SINGER, *Department of Environmental Sciences, University of Virginia, Charlottesville 22903*

*C. H. M. van Bavel, *Science* 197, 213 (1977).

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