

RANDOM

Pulse Generator

letters

Silencing dissidence in the US

Frank von Hippel's appeal (April, page 9) for the defense of Andrei Sakharov by cutting off scientific exchange with the Soviet Union to protest his arrest this January arouses conflicting emotions in me. In the hope of keeping contacts open and widening the debate, I would like to discuss this problem from a different perspective. It is a complicated question of my admiration for Sakharov and my condemnation of his arrest, as well as a question of dissidence at home and US policy on the Soviet Union and nuclear weapons.

Although it sounds somewhat adolescent, to me Sakharov is a hero, especially as an advocate of human rights and an opponent of nuclear weapons. With him, I condemn all nuclear weapons, repressive regimes and invasions of one country by another. I condemn his arrest and want his release, yet I cannot sign the cutoff petition although I have signed petitions of support for Soviet scientists in the past. In this case, I feel that the use that has been made of Sakharov by the Carter administration does make his arrest a political question. A massive boycott drive could backfire by poisoning future relations and may already be pointless as our government is in the process of cutting off all contact (April, page 104). On the other hand, I agree with von Hippel that it must be made clear to the Russians that Sakharov has not been forgotten. That might be an easier task if communications between individuals remain possible.

In the last ten years I have often wondered when Andrei Sakharov would be arrested, and his bravery and integrity in the face of such a threat for over twenty years is remarkable. His recently acquired international stature may have delayed his arrest; however, recognition of the importance of his contributions (largely unknown in the West before 1968) to the Soviet state by the Soviet government and scientific community (this spring the Academy of Sciences declined to discuss his removal from membership) has probably been more important. I do not think there are any scientists of equal stature in our country's nuclear weapons program who have turned as completely or

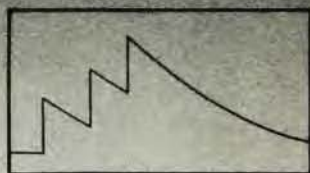
significantly against nuclear weapons and government policy as he did, even though the threat to their lives was less.

Andrei Sakharov, Frank von Hippel and I value dissent and dissidents for much the same reasons, and we are all aware of the very dangerous situation in the Soviet Union for dissidents. Yet in the past year two examples of a problem of dissidence have surfaced in the US in relation to the two topics most often dealt with by Sakharov in his writings: the threat to freedom of thought and expression and the threat of nuclear war. The first example is the recent Supreme Court ruling in connection with the book *Decent Interval* by Frank Snepp. Snepp only loses his profits, but the message for future writers on related topics is one of censorship or worse. Just what did Snepp really reveal? Nothing but how the US acted in Vietnam, evidently no secret to the Vietnamese. It is similar to the *Pentagon Papers* case of 1971 (but with a disturbingly different outcome) in that the North Vietnamese cannot have failed to know what the US was doing to them, the citizens of most foreign countries could read about the war in detail, and only the American public was being kept ignorant. That was certainly attempted censorship.

The second example, which is of more relevance to physicists, is the *Progressive* affair in which that magazine published an article entitled "The H-bomb secret—to know how is to ask why" after the government had suppressed publication for six months. I suspect that very few of the magazine's critics have ever read the issue (November 1979) containing that article. I have, and found very little to surprise me as a plasma physicist who has studied lasers and shock waves. It is simply an insult to the American people for our government to claim that this article was a recipe for an H-bomb. Actual production of such weapons is a complex industrial operation, not a backyard project as the public has been led to believe. The *Progressive* did a fine job of figuring out just what the H-bomb secret really is. It is something anyone can easily grasp—



MODEL DB-2



Random mode showing pileup

At last—a true random pulse generator to simulate live sources! The Model DB-2 provides monoenergetic pulses at both random and periodic rates exceeding 100 kHz.

With the Model DB-2 you can—

- 1) Adjust pole-zero compensation for best resolution.
- 2) Evaluate your baseline restorer.
- 3) Test your pileup rejector.
- 4) Measure counting loss in your scaler.

The price is \$1515. For more information on this and other BNC pulse generators, phone (415) 527-1121 or write:



Berkeley Nucleonics Corp.
1198 Tenth St.
Berkeley, Ca. 94710

NORLAND INSTRUMENTS / INO-TECH, INC.

FT. ATKINSON, WISCONSIN



MULTICHANNEL ANALYZERS SIGNAL AVERAGING SYSTEMS

IT-5300
1024 CHANNEL
LOW-COST-COMPACT MCA
Multiple region of interest
integration



IT-5400
4096 CHANNEL
MODULAR MCA

Four nim slots adapt the IT-5400
to specific applications.



**IT-5410
Series**
Nuclear ADC's
with speed
to 200 MHz

IT-5430
Microprocessor-
based data
processor with
auto-program



IT-5440
4 input
mixer-router



IT-5460
Two-input
Signal Averager

IT-5470
Two-input
Hi-performance
Multichannel
Scaler



NORLAND
CORPORATION



NORLAND INSTRUMENTS / INO-TECH, INC.

NORLAND DRIVE · FORT ATKINSON, WI 53538 · U.S.A. · TEL. (414) 563-8456 · TELEX 26-5448
· A SUBSIDIARY OF CORDIS CORPORATION ·

Circle No. 11 on Reader Service Card

letters

the immense amount of money, equipment and effort spent by our government on the planning and preparation of nuclear war without any informed public debate ever having been held on the consequences of this activity since it began over thirty-five years ago. Secrets of a very nontechnical sort are the problem. Until our people stare the government down on this matter how can we ever hope to end the threat of nuclear war? That certainly is a topic for all people (including physicists) to join in, and it is the matter of most intense concern to Andrei Sakharov. Information (that is, dissidence at this stage) will have to be a critical part of ending the danger of nuclear war. We are in danger of silencing a dissident. The *Progressive* may go out of business over the affair, surely a delight to a government interested in protecting itself from criticism. Furthermore, there is now a bill by Rep. Paul N. McCloskey before the Committee on Interior and Insular Affairs of the US Congress to extend criminal penalties to private individuals who independently derive and publish "restricted data" (July, page 9). The demands placed on the scientific community in the US by this law would be severe and extend beyond the censorship of publications. This type of law, I believe, is convergence with the Soviet Union in the wrong direction for us.

While I completely condemn Sakharov's arrest and desire his immediate release, I find it difficult to separate the circumstances of his arrest from the evolution of US policy over the last three and a half years. In that sense it may not be appropriate to view his arrest as a discontinuity despite his extraordinary significance as an individual. During the 1976 campaign, candidate Carter expressed his great concern over nuclear weapons. Yet, given that the Soviet Union is the major party with which we must come to an agreement to prevent nuclear destruction, the commitment of this administration to preventing nuclear war is somewhat doubtful as it moves closer to the militarist lobby (which has been very active since about the beginning of the 1976 presidential campaign). For example, the major domestic enticement to gain passage of the unimpressive SALT II agreement seems to have been the MX missile system which will surely cause more rockets to be aimed to us. On 14 December 1978, we could read on page ten of *The New York Times* how the President was stepping up the drive to win support for the arms treaty and on page nine how the new ACDA chief, a general, saw a need to "modernize" our nuclear arsenal. A fox in the chicken

coop, if I ever saw one. The administration's emphasis on nonproliferation seems odd given the vast, rapidly increasing nuclear proliferation by the US and USSR. It has been demonstrated repeatedly that the secret of nuclear weapons has gotten out of the Manhattan district, but maybe that fact has not reached the White House. Some clearer thinking is needed on nonproliferation.

The Carter administration can be viewed as a period of increasing hostility toward the Soviet Union. The policy conflicts (diplomacy and negotiation versus militarization) behind the recent resignation of Cyrus Vance as Secretary of State demonstrate this, regardless of the reasons for the hostility, and merit some consideration. Along with the lack of will to negotiate a strong SALT II treaty and support it before the US public, the administration's human-rights campaign of 1977 is perhaps the most disturbing example of this policy evolution. At that time the "strategically important" repressive regimes in South Korea and the Philippines (Chile and Uruguay, too?) were exempted while the Russians got most of the US government's criticism. Criticism is warranted, but the lack of evenhandedness, in the light of what could reasonably be expected from this policy, laid our government wide open to charges of hypocrisy. This aspect of the policy was noted all over the world, and the charge has certainly been made by the Soviet press and forms an important component of Soviet public and official attitudes about Sakharov. The correspondence between Sakharov and Carter comes up sadly often in the Russian press. Given his constant aid to political prisoners everywhere, I trust Sakharov's purpose in that correspondence; I can't say the same for Carter's, given his recent foreign and domestic actions. At that point Sakharov becomes directly involved in the US-USSR struggles. Furthermore, to come back to the question of laws and dissidents, what would this country do to someone in Sakharov's position (that is, a former leading nuclear weapons designer) who began seeing a lot of Russians? The Russian people have been given a rather vivid, if propagandistic, description of our laws in such matters in an article published in *Novoye Vremya*, 1 February 1980, page 22—published in English as *New Times*—and we ourselves know how and why these laws work. I hope, but wouldn't bet, that international attention will protect Sakharov from their Soviet equivalents. (Incidentally, the treatment of Sakharov himself in the *Novoye Vremya* article is utterly offensive.)

Sakharov's arrest and the harassment of his defenders is certainly some-

LAKE SHORE CRYOTRONICS

is

The Answer

For all of your
CRYOGENIC NEEDS!



Full Range Cryogenic Thermometers/Controllers DRC-7C & DRC-70C

DRC-7C

- 1 to 400K Range • 1K Resolution*
- Recorder Output & Optional BCD Input/Output • Interchangeable Sensors
- Solid State Construction & Reliability
- 0.5K or Better Controllability*
- 0 to 50 Watt Heater Output

DRC-70C

- * 0.1K Resolution
- * 0.1K or Better Controllability

Models DRC-7C & DRC-70C offer the convenience of Direct temperature readout and set point selection in Kelvin units with a choice of readout resolution and controllability.

The unique design and the use of completely interchangeable sensors alleviates the necessity of instrument recalibration when sensors are changed, thus allowing one to dedicate a sensor, but not the instrument to a specific system.

The full range capability of these instruments, coupled with 0 to 46 watts of heater power make the DRC-7C and DRC-70C the ideal solution to a multitude of temperature control problems.

For details and literature write,
call, or telex

 Lake Shore
Cryotronics, Inc.

64 East Walnut St., Westerville, Ohio 43081
(614) 891-2243 Telex: 24-5415 Cryotron WTVL

Western Sales and Service
4422 Macdonald Ave., Suite 5
Richmond, CA 94805 (415) 237-9914

Contact us direct, or our representatives

In Europe: Cryophysics

Oxford, England
(865) 722824

Geneva, Switzerland
(22) 329520

Darmstadt, W. Germany
(6151) 74081

Versailles, France
(1) 9506578

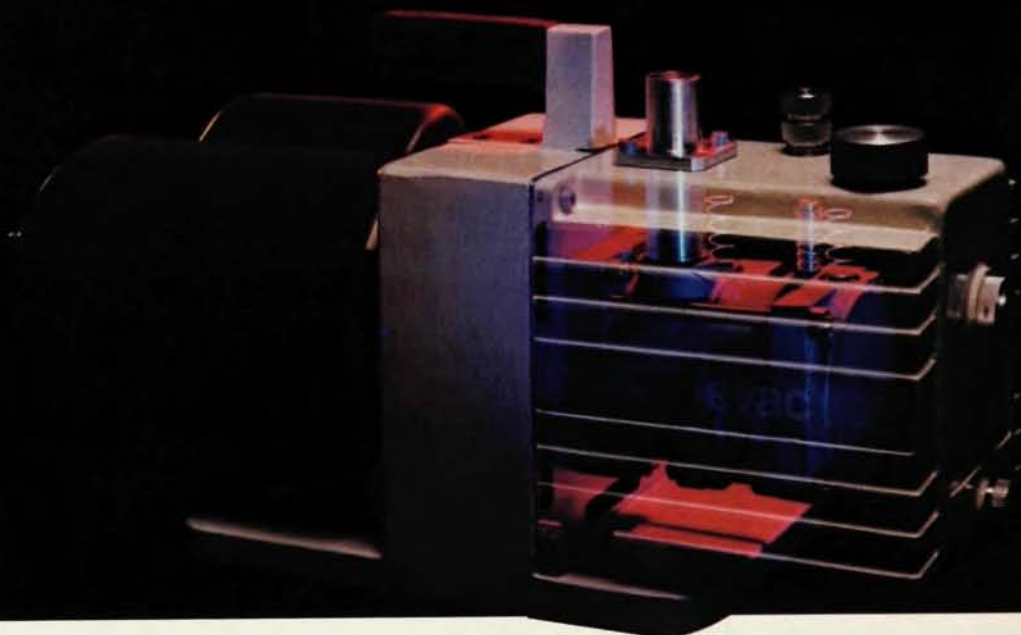
In Japan:

Niko Glass Co. Ltd.
(03) 503-2787

Circle No. 12 on Reader Service Card

When you are the new kid on the block
you'd better be more than just good.

Introducing **evac**TM Varian's compact mechanical vacuum pump



This new series of direct drive pumps will improve your productivity.

How do we know?

They've been field tested for over a million hours and keep winning in head-to-head evaluation with other rotary pumps.

They deliver more pumping speed in the critical range where it counts — 1 Torr to 0.1 Torr — since they're designed with an optimized flow path.

The lubrication system keeps oil flowing without clogging in the toughest applications and also prevents oil suck-back.

With fewer moving parts, evac pumps perform with greater reliability. They're also easy to service.

These Varian-designed and manufactured pumps are stocked in our four Distribution Centers for fast delivery. To order, call: CA (415) 966-1110; IL (312) 480-0300; MA (617) 935-5185; NM (505) 344-8807, or your local Varian sales office.

Want to know more? Ask to see a short movie. You buy the best from Varian.

☐ I'd like to see the movie.

Call me: _____
phone

name _____

company _____

address _____

city _____ state _____ zip _____

Mail to: Varian MS-D105, Palo Alto, CA 94303



varian

Booths #83, #84, #93, & #94 A.V.S. Show

Circle No. 13 on Reader Service Card

Let me tell you
about evac pumps.

Let's make a date
to show the movie,
"New Kid on the Block."



letters

thing one might discuss with a visiting Russian should one appear (but the exchanges are over!). The scientific exchange program between the US and USSR has been one of the most visible aspects of detente to the American physics community. A legacy from the Nixon administration, this program had taken many years to reach the level it had attained last year and was a more solid achievement in American-Soviet relations than any step taken by the Carter administration. Two years ago (long before the Soviet takeover in Afghanistan) it was clear that the exchanges were in jeopardy. There is doubt about the technical gains from many parts of the program, but the exchange of people could be of great diplomatic value in increasing mutual understanding and would have been more so had it expanded. (My feeling is that this value of the exchanges was limited by their formality and by excessive maneuvering over who should participate that resulted in delegations whose members were often determined by other than scientific relevance.) Personal contact and experience beat newspapers for learning about other countries and the scientific visitors from the USSR come from a relatively important class there. Conversely, the

visibility of the Soviet Union to concerned foreign visitors is itself is valuable insurance for dissidents. These visitors are now fewer. As Aleksandr Lerner, a Soviet activist for Jewish emigration, noted recently, the Olympic spectators would not be interested in dissidents anyway. The extremely strained relations between the US and USSR now make *sustained* protests by physicists difficult, both because of the absence of personal contact by large numbers of people and because of the Soviet government's evident determination to resist outside influences. We should not reduce further the possibility of communication with Russians who may share our concerns.

I recall a story of one Russian exchange visitor who paid a visit to the family library after dinner in an American home. An hour and a half later it was time to take him and his colleagues back to their hotel so his host went in to get him. There he was, reading *Progress, Coexistence, and Intellectual Freedom*, by A. D. Sakharov. Host and guest said nothing about it, but perhaps that guest has a better idea of what Sakharov is talking about than his colleagues back home who have never been to see us.

DONALD H. McNEILL
Princeton
New Jersey

6/6/80

Truncated references

There is now a trend in articles on particle physics to list the references at the end of the paper only as Aardvark *et al.* Naturally this practice originates in the labor involved in citing fully the forty or so authors who are involved in some of the very large collaborations. One suspects that the practice is rapidly spreading to *all* experimental work in particle physics, but that is hard to tell because of the difficulty of recognizing such truncated references. However, I was recently able to verify that the limit of absurdity has indeed been reached: In a recent *Physical Review* article an old paper on which I was the first of *two* authors was referred to as Highland *et al.* All other experimental references, several with only three or four authors, were similarly truncated. On the other hand all theoretical references, one involving four authors, were given in full.

First I must confess to an ego problem—I take a modest enjoyment in seeing my name in print, if only in footnotes. This may be a failing, but I suspect it is a rather widespread one. The practice of truncation is sapping one of the minor satisfactions of physics research. Further, I really like to think of later authors (especially theo-

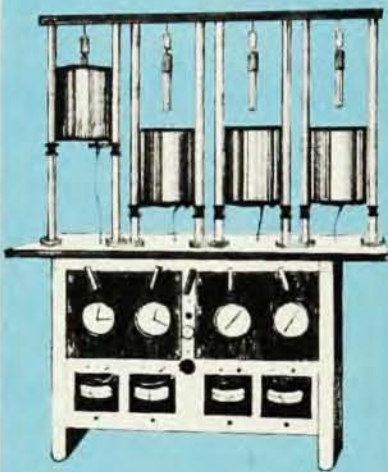
rists) working through at least once the full list of authors in their references. In so doing they briefly commemorate the individuals who contributed to the piece of work they are using, instead of quickly consigning everyone to the permanent anonymity of *et al.*, in which may be buried one, two or fifty people.

Putting aside psychological questions and class conflicts with theorists, there is also an information problem involved. The real experts on a subject may have the very page numbers memorized, but the rest of us tend to recognize articles by the combination of names involved. The first author may be either too well known or completely unknown; in either case, it is usually difficult to deduce much from his name alone. In a longer list different readers doubtless pick up on different names—those of friends or ex-colleagues—as the means by which they remember a piece of work, identify the laboratory where it originated, deduce the technique involved or generation of the experiment, and so on. All this helps one evaluate the weight of the evidence and determine whether the reference is one that should be looked up. This information is almost totally lost in the truncated references.

Do the AIP and APS journals have any editorial standards on this point?

continued on page 97

Crystal Clear



**Tem-Press
Hydrothermal
Systems
available to 900°C
60,000 psi**

Tem-Press manufactures hydrothermal research units designed for crystal synthesis and the investigation of solids, liquids and gases at simultaneously elevated temperatures and hydrostatic pressures. The systems, normally supplied as complete packaged units ready-to-operate with all necessary accessories and a detailed instruction manual, comprise combinations of pressure vessels, furnaces, pressure generator, and controls and gauges.

*specialists in high pressure / high temperature
research systems*

contact R. M. Shoff
Leco Corporation
Tem-Press Division
1526 William Street
State College, Pennsylvania 16801
Phone: 814-237-7531

