

letters

consciousness. The lack of money for fundamental research is only a symptom of a more deep-seated problem. The fault lies within ourselves and not with our politicians, who respond to us. We have built repressive forms of Imperial ego-serving, scientific-educational complexes along feudalistic lines. The scientific "warlord" system is collapsing under its own weight.

The great physicists of the early twentieth century have by and large failed to pass on their creative spark. This was perhaps caused by the upheaval of the Second World War, with the consequent prostitution of physics to the Satanic mills of the military and the corporations. Virtually all that remains today is a pious hero worship for the golden age of physics.

I find great fear and distrust of the intuitive creative spark among our ranks. Few if any of the great theoretical discoveries have been made by "linear" mathematical thinking but rather, by intuitive leaps of the imagination, with mathematics in a "mopping up" operation. Jeremy Bernstein writes:

"In reviewing Einstein's career, especially in the early years, one is continually struck by the difficulties his contemporaries had in fitting him into the normal spectrum of scientific achievement. By the time of the First World War every physicist realized Einstein was a creative genius but his work was viewed at the time as so unconventional that it is difficult to find a physicist who had fully digested and appreciated the totality of it. This was due in part, perhaps, to the deceptive simplicity of the early papers—results seemed to materialize out of 'thin air' rather than out of long chains of elaborate calculations..." J. Bernstein, *Einstein*, Viking, New York (1973), page 187.

The creative process is inherently unstable. The "disruptive" personality traits characteristic of creative genius are systematically repressed and discouraged by our educational institutions. Every physics graduate student of any imagination quickly learns this and is early introduced to the labels of "crackpot," "crazy ideas," and so on. He is told to work on "safe problems" and to develop a sense of "professional taste," which actually means that he should work on whatever ideas happen to be fashionable at the moment.

Our use of the term "speculation" in the pejorative sense, our fear of re-examining fundamental questions on the meaning of quantum mechanics (for instance, the widespread hostile emotional response to David Bohm's papers on hidden variables), our fraud of grading and teaching students according to fixed compartmentalized physics cur-

ricula, our distrust of imagination, intuition and analogical thinking, our exaggerated respect for mathematical technique at the expense of physical insight—all of these are inevitably leading to widespread professional despair and cynicism among the younger generation of physicists. These are facts that can only be ignored at great peril by the leaders of the physics establishment. The new generation of theoretical physicists are largely mathematical mandarins who have been professionally emasculated by their graduate training.

With this letter I announce the formation of a new physics *Ecclasia* (spiritual community), and I invite all who feel as I do to communicate with me on these matters.

JACK SARFATT
*International Centre for Theoretical Physics
Trieste, Italy*

Engineering and the public

To supplement the information published in your articles on "Public-Interest Science" in June, I would like to report that the Institute of Electrical and Electronics Engineers has formed a Committee on the Social Implications of Technology and a Committee on Man and Radiation. The latter group was formed to provide information on the biological effects of electromagnetic radiation that is readily understandable by a layman, but that is still factual, accurate and complete.

The IEEE has also joined with the other members of the Engineering Liaison Public Relations Committee (AACE, AIIE, ASAE, ASM, ASME, ASQC, ITE, NSPE, and SWE) in sponsoring a series of Public Affairs Involvement Workshops. These are one-day "teaching" sessions to explore ways that engineers can use their expertise in helping to solve local community problems. Three have already been held and two more will be scheduled this year.

MARTIN GITTEN
*Institute of Electrical and Electronics Engineers
New York, N.Y. □*

Is there something
you should be
advertising in
PHYSICS TODAY
"Information Exchange"?
see page 92

If you want
to hurt
the 240L RF
Power Amplifier



...you've got to do more
than short circuit its output.
As a matter of fact, this *brand new* instrument will deliver more than 40 watts of Class A linear power and up to 150 watts of CW and pulse power to any load impedance (from an open to a short circuit). Immune to load damage and unconditionally stable the 240L covers the frequency range of 20 KHz to 10 MHz with a flat 50 db gain. Completely *solid state* the 240L will faithfully reproduce input waveforms from any signal or function generator in its range.
If you need a transducer drive source for ultrasonics, RFI/EMI, biological research, electro or acousto optics the 240L was designed for you.

Solid state reliability is here at \$1450.00.
For further information or a demonstration contact ENI, 3000 Winton Road South, Rochester, New York 14623 (716) 473-6900 or TELEX 97-8283

ENI
The world's leader
in solid-state power amplifiers.

Circle No. 13 on Reader Service Card