

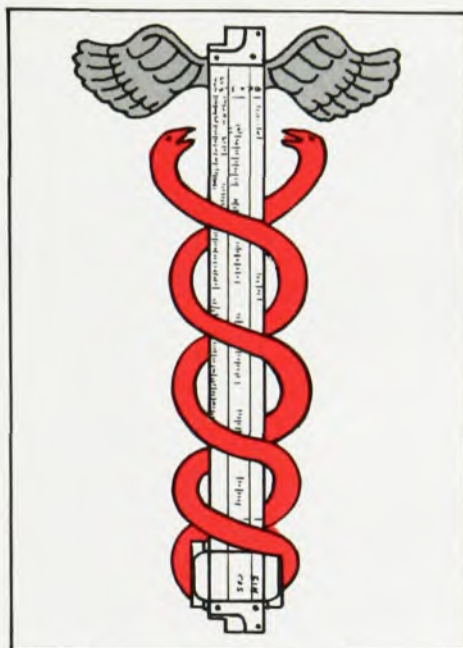
Physicists in medicine

The article by Gordon Brownell and Robert Shalek, "Nuclear Physics in Medicine," (August, page 32) was an excellent summary of some of the interesting and rewarding work being accomplished by physicists in medicine. That this article appears in the same issue with the letter from Richard L. Smith of the American Physicists Association (page 13) leads me to suggest that physicists should take a moment to consider medical physics as a career that can be rewarding scientifically and beneficial to society.

Brownell and Shalek call attention to the American Association of Physicists in Medicine toward the end of their article. Further word on the activities of this Association may be in order. The AAPM was founded in 1958 to promote the application of physics to medicine and biology, to encourage interest and training in medical physics and related fields, and to prepare and to disseminate technical information in medical physics and related fields.

The work of medical physicists described by Brownell and Shalek in the nuclear field extends into the diagnostic and therapeutic x-ray fields as well, as stated briefly in the article. Members of AAPM participate in the teaching of medical physics to associates at the professional and paraprofessional level in radiologic sciences as well as conduct independent research related to applications of physics to medicine. The purposes of AAPM reflect these diverse activities including encouraging interest and training in medical physics and related fields. Currently the association is studying the type of training necessary for scientists from other areas of physics wishing to enter this profession.

Research activities of AAPM members and others in medical physics include the types of nuclear-instrumentation techniques mentioned by Brownell and Shalek and extend into the estimation of the patient radiation dose from various diagnostic and therapeutic applications. The achievement of the desired dose delivered to the biological area of interest for therapeutic purposes is a field of continuous interest for research. The possible role of heavy particles in radiotherapy is being studied.



Obtaining the maximum diagnostic information from radiologic techniques with the lowest possible patient radiation dose is another field of direct concern. The use of computers is becoming widespread. Applications of the entire electromagnetic spectrum to medicine are of immediate interest and include the techniques of infrared detection. The use of ultrasonic radiation in medical applications is also increasing.

The American Association of Physicists in Medicine is an Affiliate Member of the American Institute of Physics, which publishes for the Association its *Quarterly Bulletin*. This publication supplements *Physics in Medicine and Biology*, the official journal of the AAPM and the Hospital Physicists' Association (of the UK) and the Canadian counterpart.

The article by Brownell and Shalek concluded with some indication of the possible future growth of medical physics. As stated, doctoral programs designed for medical physics and medical engineering are only now emerging. It may well be that currently trained physicists at the doctoral level will be interested in contributing to medical physics. Again, information on this opportunity should be available in the near future from the joint AAPM and

American College of Radiology Committee on Manpower Needs in Medical Physics. The committee is also considering the overall role of physicists in medicine including their professional responsibilities.

I would encourage readers interested in the activities of AAPM to contact the Administrative Secretary, AAPM, at the American Institute of Physics for further details.

A pamphlet, "The Medical Physicist," is available and includes a list of university programs in medical physics and biophysics.

PETER R. ALMOND
President
American Association of Physicists in
Medicine

Beware the new left

I would like to comment on four items on closely related topics, all of which appeared in your October issue. They are: John S. Rigden's article, "Reshaping the Image of Physics" (page 48), the account of the bombings at the University of Wisconsin (page 73), the numerous letters on the present employment situation (pages 9, 11, 13) and the editorial: "The Fall Elections Need You" (page 92).

First, I shall make a few general observations. Physicists are coming to realize that the radicals of the New Left are motivated largely by fear and hatred of science and technology. It has been customary to attribute this antipathy to the presumed role of technology in the arms race, environmental pollution, and the "dehumanization" of society. Alas, even physicists are quite prepared to accept their guilt *a priori*. I suggest, however, that much of the disaffection of radicals stems from their feelings of personal inadequacy in coping with a world shaped by science and technology. On the typical US campus, one finds three categories of students: "vocational" students (for example, majors in Hotel Administration); scientists and engineers, and the others. Consider an event such as the Apollo 11 moon landing or the proposed construction of a nuclear power reactor. The hotel-administration major feels no basic obligation to himself or others to under-

The Devil made us do it!

Our new



High Voltage

CPS-100...

... your best deal in **high voltage**:

Standard • One-knob continuously variable control (0 to 30 KV) • Output current is .5MA • Regulation of .001% • Low 200 MV p-p maximum ripple • Drift of .005% /hr • A compact half-rack size • Rugged epoxy encasing on all circuitry and front control panel • Economy priced at \$1725 (for either CPS-100P 0 to 30 KV model or CPS-100N 0 to -30 KV model)

Options • Remotely programmable at low potential • 5ppm/°C temperature coefficient • Double current • Get all the devilish details from Fred Martin: **CPS**, 722 East Evelyn Avenue, Sunnyvale, California 94086. Phone: (408) 738-0530.

a helluva power supply!

letters

stand the technologies involved. The science student has some grasp of the applicable principles, or hopes to acquire such knowledge. Those in the third group, by far the majority, have a problem. They don't have any feeling for the underlying technology but, since they are intellectuals and should be running the world (they are told this weekly by Congressmen, university presidents and professors), they are very upset by their lack of comprehension. They can choose either to learn about science or to lash out against science. Almost all select the second, easier alternative.

The bombing of research facilities in general was predictable. The University of Wisconsin happens to have been among the first. The US Army, not the University of Wisconsin Physics Department, was the innocent bystander. It is a myth to suppose that transferring research support from the Department of Defense to the National Science Foundation will make physicists beloved of campus militants.

As Rigden points out, physicists need to put a more accurate image across to nonscience students. This proposal is a long-range solution but is needed at the heart of the problem. The current employment crisis is, aside from its extremely unpleasant effects on individual physicists, a tragedy because the already small fraction of university graduates having *any* knowledge of physics will doubtless diminish, which is hardly conducive to building a "constituency" for science (unless some type of image-projecting courses are successfully implemented).

For the short term, physicists must stop agreeing so readily with the anti-science forces simply because such people are labeled "Liberal" or "Progressive." This tendency is especially pronounced among those in academic positions. American society, if not perfect, represents a fairly successful social organization. Physicists should bear in mind that many critics of science don't want to see research redirected but abolished—not for the greater good of humanity but for selfish emotional reasons. Clarion calls for "relevance" are often thinly veiled cries for research curtailment.

The editorial "The Fall Elections

Need You", I am afraid, might be interpreted as calling for the support of "Liberal" candidates in general—potentially a very dangerous course of action. The funding crisis facing physics is largely a result of the erosion of confidence in science caused by incessant attacks from the Left. Electing officials amenable to the views of "bearded, long-haired, alienated students" means choosing those likely to make research cuts for deeper psychological reasons than the cuts imposed by the present Administration. In other words, Spiro Agnew is to be preferred to Senator Mansfield.

GARY W. STUPIAN
Palos Verdes Estates, Calif.

Pro nuclear power

Kudos to Walter H. Jordan for his rational, "air-cleaning" approach to the problem of nuclear-power applications (May, page 32). It seems obvious that every possible precaution should be taken against the potential short-term and long-term hazards associated with nuclear-power stations. From firsthand experience with the nuclear-power critics, however, I have been made painfully aware that they will find no nuclear-power plant acceptable, no matter how thoroughly all the safety features have been incorporated into its design. It was a great relief, therefore, to see the objective analysis presented by Jordan appear in print.

T. J. MENNE
McDonnell Douglas
St. Louis, Missouri

Our experience in the Southwest strongly supports Jordan's thesis favoring nuclear power plants to minimize pollution. His critics are no doubt right when they urge less use of power, having a lower population, and so on, but these are not pragmatic alternatives that we can apply for immediate effect.

Our problem is that Western power companies have discovered a cheap way to burn hitherto unuseable coal and ship the power to distant population centers. Essential to this plan is the fact that the several governments, state and federal, have no effective laws against air pollution, for the method of burning is to grind up the coal, impurities and all, and blow it through the furnace, the ash

PHYSICS TODAY, a publication of the American Institute of Physics, Incorporated, is published at Mack Printing Company, Easton, Pa., USA. Editorial, circulation and advertising offices are at 335 East 45th Street, New York, N.Y. 10017, USA. Subscription rates: United States and possessions, Canada and Mexico: \$7.00 a year; airfreight countries (Europe, Middle East, North Africa): \$10.50; elsewhere: \$8.50. Copyright © 1970 by the American Institute of Physics. All rights reserved. Change of address: Provide at least six weeks advance notice. Send old and new addresses to Circulation Department. Please include address label from one of your recent issues.

CRYOGENIC Temperature Controller



Model 5301

Accurate temperature control in Research Dewars, Cryogenic Freezers, Tensile Cryostats for physics, chemistry, metallurgy and other scientific fields where the process, temperature and/or control requirements change frequently. System features control stability better than .01°K from below 0.3° to 320°K with less than one micro-watt power dissipation in the sensor. Three mode control: Proportional, rate and reset with internal parameter controls, allowing to tune the controller to thermal characteristics of the system. 100 watts output, short circuit proof, DC for minimum interference to other low level instrumentation.

artronix
INSTRUMENTATION

716 Hanley Industrial Court, St. Louis, Mo. 63144
Area Code 314 Phone 644-2456

PROGRAMMER



Model 5350

The Model 5350 Programmer is an electro-mechanical function generator, consisting of a digitally controlled servo-system driving a 10 turn potentiometer at a wide range of sweep rates. The Programmer finds application in the process control field with other instrumentation, whose output is controlled by a resistance or resistance ratio, such as powersupplies, magnetic generators, audio or RF oscillators as well as temperature, deposition-rate, vacuum and similar controllers.

artronix
INSTRUMENTATION

716 Hanley Industrial Court, St. Louis, Mo. 63144
Area Code Phone 644-2456