

letters

journals, and also that we have received a strongly favorable response from authors, referees and others.

The financial situation is difficult for libraries everywhere, and the subscription (starting 1977) to *Communications on Physics* is being held as low as possible by the publishers.

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A UFO by any other name

I read with interest—and some amusement—the letter by Bruce Maccabee (March, page 90), “More Lights In the Sky”. With interest because Maccabee (and Rutledge, Epstein and Heaton) are calling attention to what may be a new phenomenon, and certainly a new empirical observation—with amusement because of the careful and obviously studied avoidance of the term UFO.

Yet what else is the letter about? After all, the U in UFO simply means unidentified, and the observations described certainly fit this definition of UFO.

The literature of UFO's is replete with similar descriptions—of lights not only unidentified to the original observer, but that remain unidentified even after competent scrutiny by persons like those associated with the Center for UFO Studies in Evanston, Illinois. The Center has associated with it scientists from various disciplines (anthropology, sociology, psychology—even psychiatry, as well as physics and astronomy—we don't know to whom these new empirical observations, akin perhaps to the first observations of the fall of meteorites, or of bacteria or of cosmic rays, belong—perhaps we should include a chaplain!)

At any rate, kooks and crackpots aside (and they do obscure the issue), considerably more attention is being accorded today to the UFO phenomenon by academically trained persons. And why? Because of the incontrovertible fact that UFO reports exist, they have persisted for at least a quarter of a century, they represent a world-wide phenomenon, and the majority of the reports that fit the above definition (that is, the content of the report must remain really puzzling after serious study) are made by as responsible persons as those described by Maccabee. Isn't it time for us to recognize that a new empirical phenomenon exists (is being reported) which, whether one calls it the UFO phenomenon or not, still deserves to be studied. The Center for UFO Studies will be happy to furnish readers of *PHYSICS TODAY* with information on the nature and quality of the surprisingly

extensive literature on the UFO phenomenon today.

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Role of small physics

W. A. Sibley's defense of small physics departments (August 1975, page 9) is a solid one, but it emphasizes only the conventional role physics plays in academic and industrial research. Also I believe Sibley is wrong about what constitutes critical mass for “excellent physics”: one professor and one graduate student or two cooperating professors can constitute a critical mass sometimes, at least if one will settle for sound continuing research and not insist on an explosion.

In addition several points are not discussed by Sibley. Physics departments exist for more reasons than to do “excellent physics” or even to “do” physics. I believe the ideas and methods of physics must be appreciated by those outside the field.

First, physics is not worthy of great support simply because it is physics. Sibley suggests physics should assist industry and this can be important. But the human and cultural drama inherent in physics are also important and should be as exciting to anyone interested in the achievements of man as any other subject. Unfortunately, physics is considered by the general public as either too difficult to understand or too dry to make the effort of understanding worthwhile. Another physical science, astronomy, with all its very real difficulty and inherent uncertainties, is considered fascinating by the layman because astronomers and observatories have made the effort to explain astronomy's excitement and speculations to the general public, whereas we physicists have been so wrapped up in “excellent physics” that we have made no real educational efforts at all on this level.

As long as we continue to isolate ourselves, the gap between physics and the layman will probably grow, and without the support—social and financial—of the layman, physics can in effect collapse. If we involve non-physicists in our excitement and listen to their responses, we may find how to join the intellectual society we depend on. I believe the struggles and human frailty of Oersted's and Faraday's discoveries are potentially as exciting as the struggle Shapley, Hubble, Wright and others had to understand the nature and scope of the galaxy and the extra galactic nebulae, a struggle still going on with quasars and black holes now on stage.

If we could explain these situations, our colleagues across the campus might alter their view of physics as a dusty monolithic nonhumanity of omniscience.

A second point is the importance of the

methods and concepts of physics to subjects outside the physical sciences. Physics is not deterministic (and therefore dull) truth, even though it is treated as such in some cases. But a real difference between physics and the social sciences is one of scale and time.

A basic problem is verification. When a colleague and I recently found ourselves in disagreement over certain fundamental characteristics of the magnetic field, we were able to set up an experiment and test it for inherent symmetries within an hour or so. A similarly fundamental concept in psychology or medicine or biology might take a decade of major effort to test, and one in political science or economics a hundred years or more. It is no wonder that the rest of academia looks upon us as a field apart.

However, recent developments in modelling theory permit a variety of evaluation of various concepts and interrelationships in the “soft sciences” to be conducted in hours rather than years or hundreds of years. There now is opportunity to try alternate worlds, a quasi verification akin to that of theoretical physics. But it is dangerous, and we, as physicists, more than most recognize the dangers inherent in the theoretical process. We know we can't really believe the results that come from theoretical modelling, even as we respect and use them. The System Dynamics model of Forrester, Meadows, et al has enabled “verification” in economics and political science to move into the same time domain as that of physics, and ideas like thermodynamics and general system behavior appear in these other sciences. It is important that physicists work closely with these other disciplines so that these techniques and ideas lead to knowledge and to intuition and not to confusion or even disaster.

These crucial points will not be addressed by having “real physics” done only by an autistic residue of forty institutions or even by having a few more institutions focus their energies in certain major research areas. The mission of physics also includes all the other aspects of a versatile program—aid to industry and government, responsibility to all students, responsibility to the other disciplines that rely or should rely on the methods and cautions developed by physics, and responsibility to carry the message of physics to society and society's concerns back to physics. Many an extinct species attests with its bones that excessive specialization of mission or capability or even of excessive size is not the way to ultimate success.

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More on monopoles

I must take issue with Daniel Zwanziger's statement in the April issue (page 83). In