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letters

available. Surely this is not comparable with the problems of fusion power, for which scientific feasibility, let alone technical feasibility and economic feasibility, is yet to be demonstrated.

I don't understand why people expect perfection from everything nuclear, or consider it necessary. We kill 10 000 people per year with air pollution, 1000 per year from coal-mine accidents and disease, 500 per year with asphyxiation by natural gas, 300 per year from fires started by leaking oil and gas, and 1200 per year by electrocution, all in the name of providing energy. We have never killed anyone with nuclear energy, and one of the points of my paper is that the potential hazards of nuclear waste are smaller than those from many other man-made substances. As in everything else, mistakes are always possible, but what is the justification for the special concern about nuclear waste?

BERNARD L. COHEN
University of Pittsburgh
Pittsburgh, Pennsylvania

Support for Russian Jews

I recently had the opportunity to speak with my Congressional Representative on an issue of concern to the American Institute of Physics: the plight of Russian Jews who wish to emigrate. I was told that, with rare exceptions, this is an issue of primary concern only to those Congressmen with large Jewish constituencies.

In other Congressional Districts, my Congressman suggests that constituents of all backgrounds, who believe in freedom of emigration for these Russian Jews, notify their Congressmen in no uncertain terms.

E. SACHER
Binghamton, New York

Rapid publication?

As a librarian I applaud the good sense behind the stand taken by N. P. Mermin and K. B. Wilson in the March issue (page 11). D. Caplin, D. Sherrington and R. Jacobs's defense was predictable, but two questions arise from their letter.

Firstly, they seem to imply that American referees consider European papers on grounds other than scientific. They also seem to imply that editors and referees of some European journals of national physical societies do the same. Is there really national bias in the refereeing and editing of journals? And are we to surmise from the nationality of Caplin, Sherrington and Jacobs that the bias has been against British papers?

Secondly, on the question of rapid publication, I did a quick survey of several

letters journals and letters sections in journals. Using all the papers from the latest issue in each case, I found the following figures for the average number of days from the date of receipt of the paper by the journal and the journal's arrival in our library:

<i>Communications on Physics</i>	81.6
<i>Lettere al Nuovo Cimento</i>	99.0
<i>Physics Letters A</i>	100.6
<i>Journal of Physics C</i> (Letters section)	104.1
<i>Nature</i>	111.1
<i>Physics Letters B</i>	124.3
<i>Applied Physics Letters</i>	144.0
<i>Journal of the Optical Society</i> of America (Letters section)	150.6
<i>Physical Review Letters</i>	155.2
<i>Journal of Chemical Physics</i> (Letters section)	165.5

From the slim evidence given here it would appear that *Communications on Physics* is at present leading the "rapid-production" race. But just what are the benefits to science of beating *Journal of Physics C* by 20 days, *Physics Letters B* by a further 20 days, and so on? If we agree that priority of discovery is safeguarded by the date-of-receipt device, then what indeed are the virtues of rapid publication?

Incidentally the low placing of the American journals on the above list is partly explained by the fact that our library is obliged to take out surface-mail instead of the more expensive air-freight subscriptions. That we have to make such economies indicates the climate in which we will consider a subscription to this new rapid-publication journal next year.

IAN MALLEY
University of Bristol
Bristol, UK

More on astrology

I am pleased to see that PHYSICS TODAY has reviewed the reprint booklet, *Objections to Astrology*, and I wish to thank Robert March for his kind comments (March, page 54). However, I would like to take issue with his statement that there is nothing in the book that astrology's "true believers" have not "heard (and dismissed) before."

There is much in the book that astrologers have not seen before: 1) The statement by 192 scientists disavowing astrology is the first such public position ever taken by the scientific community against the ancient "art." 2) Both Bok and Allport stress the psychological dangers of astrology as a form of escapism from reality. 3) All too rarely have astrologers seen their "art" described as a system of magic, and thus totally invalid in terms of modern science. 4) Finally, by associating the origins of astrology with

prehistoric man's seasonal time-keeping, my article suggests that astrology evolved as a societal mechanism by which the priests could control and manipulate their citizens.

Unfortunately, the psychological dangers of astrology have been almost totally unrecognized and virtually never studied, so there are few "hard data" to cite. In my forthcoming book for Prometheus Press, *Astrology Disproved*, I attempt to remedy this situation, as well as build on the case for the ancient "art" as a means by which the priests awed their citizens and convinced them to work together for the good of the state.

Indeed, there is much that is not generally recognized about astrology; some of the historical and psychological aspects are startling, if not frightening. The fact that astrology is becoming so popular today should alarm scientists and rational people in all walks of life, for it indicates that the ancient magic can still influence and manipulate "modern" minds.

LAWRENCE E. JEROME
Santa Clara, California

Highly charged quarks?

An article by the late Professor Heisenberg (March, page 32) discusses various approaches that are being pursued to determine the fundamental nature of matter.

Heisenberg criticizes the presently popular approach in theoretical particle physics, which is based on the well-known quark model. He states that, in his opinion, the quark hypothesis is not really taken seriously today by its proponents. Questions dealing with the statistics of quarks, the forces that keep them together, the reason why the quarks are never seen as free particles, the creation of pairs of quarks inside an elementary particle, are all left more or less undefined. If the quark hypothesis is really to be taken seriously, it is necessary to formulate precise mathematical assumptions for the quarks and for the forces that keep them together and to show, at least qualitatively, that all these assumptions reproduce the known features of particle physics.

This author would certainly not wish to disagree with the above. It may, however, be worthwhile to point out that attempts have been made in the past to construct modified quark theories that might satisfy Heisenberg's requirements. Perhaps the clearest or most precisely formulated of these are two theories published by Julian Schwinger and the author.^{1,2} They are similar but were proposed independently. In the former theory it is assumed that "quarks" are highly magnetically charged; in the latter they are assumed to be highly electrically charged. In both theories the Coulomb attraction between charges of opposite sign or polarity is taken to be the

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