

## letters

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deflected, stopped, or identified by their charge. Calling a tandem a "molecular disintegrator" cannot hide the fact that it accomplishes the suppression by virtue of its high energy.

The long history of failure at low energy is in striking contrast to the quick successes of the seven groups that have now made sensitive measurements with multi-MeV machines. Litherland *et al* speculate that low-energy methods "could" or "would" work, but they never mention a specific low-energy technique. In fact the only alternative they suggest is a "small tandem accelerator"!

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6/26/79

## Straightening the record

I feel compelled to correct your footnote on electron monochromators in October (page 48). The 127° monochromator was originally conceived by Hughes and Rojansky<sup>1</sup> and then constructed by Hughes and McMillen.<sup>2</sup> Most papers subsequently published on this device were concerned with its refinements or the rehash of the original work. The group of workers at Laval University, being the most prolific publishers on this subject, have been mistakenly assumed by some to be its originator. I hope to put the record straight.

### References

1. A. L. Hughes, V. Rojansky, *Phys. Rev.* **34**, 284 (1929).
2. A. L. Hughes, J. H. McMillen, *Phys. Rev.* **34**, 291 (1929).

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10/25/79

## The Booth effect

High fluxes of D-T neutrons are of very great importance for the materials-testing program for fusion reactors and for use in the treatment of cancer. It is appropriate, therefore, that *PHYSICS TODAY* should have featured on its cover for April a photograph of a tritium-loaded metal target that produces sustained yields of D-T neutrons of exceptional intensity and stability under intense deuteron bombardment. But that is only part of a fascinating story.

More than ten years ago, Rex Booth of Livermore, the designer of the target, made the seminal observation<sup>1</sup> that a tritiated metal target bombarded by a mass-analyzed deuterium ion beam gave far larger total neutron output over its

useful life than when bombarded by an unanalyzed beam. This observation has proven to be the essential key to the attainment of levels of D-T neutron production now being attained, and which are of such great technical importance.

It is eminently appropriate that this observation should be designated the "Booth Effect."

The interpretation of this effect that is now generally accepted<sup>2,3</sup> is that the projectile ions supplant target tritium at the end of their range, and that the target ions at the end of the relatively short-ranged diatomic ions coincide pretty nearly with the layer from which the atomic ions produce their peak yield from the 110-keV resonance of the D-T reaction. Eliminating the diatomic ions from the target area impinged by the atomic ions therefore eliminates the principal source of tritium depletion for the peak-yielding target layer excited by the atomic projectiles, and prolongs the target life by a factor of ten or more.

### References

1. R. Booth, University of California Radiation Laboratory Report No. UCRL 70183, February 1967, and private communication.
2. R. Booth, H. H. Barschall, *Nucl. Inst. Meth.* **99**, 1 (1972).
3. J. H. Ormrod, *Can. J. Phys.* **52**, 1971 (1974).

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9/21/79

## Another vote for Esperanto

Attendance at the 17th General Assembly of the International Astronomical Union delayed my reaction to the Guest Comment (July, page 9) by B. A. Sherwood discussing the need for an international language.

The meeting however verified once more the correctness of the various points stressed by Sherwood and mainly the difficulties foreigners encounter with spoken English.

Originally French-speaking, I learned Esperanto when quite young and it has been a real window open onto the world (and not only to a restricted intelligentsia). As I am now mastering other languages, Esperanto is less important now; but I still use it as a working language with some astrophysicist colleagues (the papers are, however, published in English).

Although I am pessimistic on its future because of numerous unfounded prejudices and cultural "imperialism" of other languages, Esperanto has considerable advantages we should consider. Besides the ones already pointed out by Sherwood, I should like to add it is the most precise language I know, not only because of the extensive vocabulary, but also because of the many nuances it contains.

How efficiently it could be used for science, saving us the time we are compelled to spend in studying several foreign languages!

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10/3/79

## A legacy and a hope

A few weeks before his untimely death, Nathan Sanders Wall, a distinguished nuclear physicist from the University of Maryland, forwarded to the Committee of Concerned Scientists a letter pleading for action to help Soviet colleague Vladimir Kislik. The fact that this letter was directed to Wall reveals that even in the Ukraine his years of dedicated service to the cause of human rights is well known. Our Committee feels a special commitment to act on Sandy Wall's legacy to scientists to speak out on behalf of oppressed colleagues—particularly in the case of Vladimir Kislik.

We believe that the best way to effect this is to have our American colleagues read this letter for Kislik by a fellow scientist who was recently released from the Soviet Union.

Dear Dr. Wall,

I am writing to you at the request of my Kiev colleague Dr. Vladimir Samuilovich Kislik. Since all of his mail is opened by the KGB, and since I myself have now emigrated from the USSR, he asked me to write this letter to you.

At the present time Dr. Kislik's situation has significantly worsened. He has been summoned to the KGB a number of times in the course of 1979.

The essence of the matter is as follows: Although for the past six years he has not been permitted to work at his specialty, he has continued to publish the results of his activity in the international press. One of his recent works published abroad is on the evaporation of helium by irradiation of a certain type of construction steel. Naturally, both in the title of the article and in the article itself the specification number for this steel was mentioned. For a number of years this steel has not been on the secret list.

Earlier, when Dr. Kislik was still on the staff of the Nuclear Research Institute (NRI) of the Academy of Sciences of the Ukrainian SSR, he had intended to publish the results of this steel research. In accordance with Soviet regulations, he submitted the article for pre-publication clearance by an expert commission of the NRI. It was duly found to be free of classified material and was cleared for publication in the press. Dr. Kislik has a copy of this clearance decision signed