spirit and rally around another, common cause—that of the apparent plight of physics in this country today—and help restore its image and its importance as the rightful "King of the Sciences," then this will be the tremendous step forward, a shot in the arm, that our field badly needs.

Thanks again to all of you.

FRED BELLAS
Wilkes College
Wilkes-Barre, Pennsylvania

Chemical pumping

I wish to make a brief comment concerning "Pumping by chemical means" by Theodore Tom (August 1972, page 32). Some work was done at the General Electric Research Laboratories in Schenectady, N.Y., on ionic pumps in the early 1950's. In particular, titanium and other materials were used for cathodes in Penning-type and other types of discharges ("Magnetron Type"). The importance of sputtering was recognized at that time.

Some of the results were reported by A. M. Gurewitsch and W. F. Westendorp in *The Review of Scientific Instruments* **25,** 389 (1954). A US patent relating to this work ("Ionic Vacuum Pump", No. 2 755 014) was issued on 17 July 1956.

Tom states (on page 36) that a problem in ionic vacuum pumps, namely the deterioration of pumping speeds at low pressures, has recently been solved by incorporation of an auxiliary ion source into the pump to maintain an adequate level of discharge. This enhances sputtering and consequently increases the pumping rate (reference 6: T. Tom, J. Vac. Sci. Technol. **9,** 383, 1972).

I wish to call attention to the fact that this problem was solved much earlier in our laboratory and a US patent ("Ionic Vacuum Pump," No. 2 858 972) was issued on 4 November 1958. The subject of this patent is the introduction of a "working gas" into the system in order to maintain a sufficient pumping rate. The working gas is finally removed by chemical gettering.

A. M. GUREWITSCH
General Electric Company
Zurich, Switzerland

Doppler versus Roemer

The naming of effects, laws, and equations in—frequently posthumous—honor of their originators must have a long history.[1] It does not necessarily help in understanding the effect, law or equation and sometimes it leads to confusion rather than clarity. To almost any novice in physics Messrs Faraday, Ampere, Coulomb, Gauss, Maxwell and so on are just names. It does not help, either, that they all have some unit named in their additional honor, usually the unit of a property that has little connection with their law, effect or equation. And who but an expert in the field can tell which is which among the Peltier, Seebeck, Thomson, Hall, Nernst, Ettingshausen and Righi-Leduc effects?

Truth in packaging requires that the label describes the content accurately—and, one hopes, that the same label always applies to the same package. In that respect there have been a few accidents: There are several "Euler Equations" in widely different fields; "Bernoulli's Principle" and "Bernoulli's Equation" are named, it seems, after two different members of this illustrious family;[2] the "Lorentz–Lorenz Relation" could equally well be the "Lorenz–Lorentz Relation"; there is a law variously known as "Boyle's Law" (in Anglo-Saxon countries), "Mariotte's Law" (in France), and "Boyle–Mariotte's Law" (in neutral countries); and some students are under the impression that the "Gay-Lussac Law" has two originators: Messrs Gay and Lussac.

Boyle's Law must be one of the few that were discovered deliberately. Witness this inscription on a wall on the south side of Oxford's High Street:

> In a house on this site
> between 1655 and 1668 lived
> ROBERT BOYLE
> Here he discovered BOYLE'S LAW
> and made an experiment with an
> AIR PUMP designed by his assistant
> ROBERT HOOKE
> Inventor, Scientist, and Architect
> who made a MICROSCOPE
> and thereby first identified
> the LIVING CELL

Of course, for the initiated, these names serve admirably as labels, as long as the correct label is applied. The "Search and Discovery" department of this February's issue contained an article (page 17) on "Hercules X-1: an x-ray binary system with a pulsar," which is a case in point and a demonstration that confusion is not limited to the novices. Mention is made of the Doppler shift of the 1.24-sec pulse and explained as follows: "To see this, it is helpful to think of the neutron star having a little clock that ticks every 1.2 sec. When the neutron star is at its maximum distance from us (behind HZ Herculis) the tick is delayed by the light travel time across the orbit. Similarly the tick comes early when the neutron star is closest to us." The Doppler shift this is not; call it—if you must call it anything—the "Roemer Effect." He seems to be singularly

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