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phase—both at the same frequency and with the same laser source. This should give standing wave amplitude modulation along the beam at a frequency that is linearly related to our speed through space.

Indeed, an experiment that appears to operate on this principle has already been reported3 and its preliminary findings indicate a positive measure of light-speed anisotropy commensurate with motion through space at 378 km/sec. It is of course all too easy to discredit such claims in view of the overwhelming evidence supporting the theory of relativity. However, in deference to Michelson's conviction about the ether, as shared by Morley, 1987 is perhaps a time when we should be more open to such possibilities. Certainly, if the experiment just mentioned were to hold up at a time when the Michelson-Morley centennial is being celebrated, it would be a remarkable event in the history of physics.

### References

8/87

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H. ASPDEN University of Southampton Southampton, England

# Crystallography's Historical Struggles

It is unfortunate that the rigor we seek in our physics is often less evident when we discuss the history of our subject. A significant number of recent letters to the editor have been related to this matter. I refer particularly to the letter headed "Crystals and Nobels" that appeared in the February 1987 issue (page 9).

The author counts 21 Nobel Prize winners whose research has been associated with x rays and crystals, and then draws conclusions regarding the odds of crystallographers winning the award. This sleight of hand is revealed by the list that then follows, which suggests that Wilhelm Röntgen, Charles G. Barkla, Manne Siegbahn and Arthur H. Compton (among the physicists) can be regarded as crystallographers, simply because their prizewinning work concerned x rays.

Similarly, the chemistry award to Peter Debye in 1936 was for his contribution to the study of molecular structure through his investigations of gases. Apart from the award to

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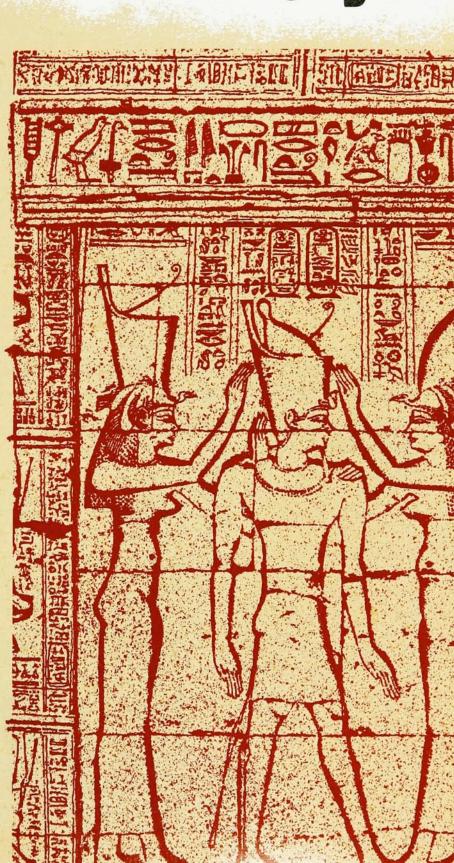
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Linus Pauling in 1954, therefore, there was no award to a crystallographer between that to the Braggs in 1915 (physics) and those to Max Perutz and John Kendrew (chemistry) and Francis Crick, James Watson and Maurice Wilkins (physiology or medicine) in 1962. There have been a number of recipients in chemistry since then.

The interdisciplinary nature of crystallography is notable, and the concluding remarks of the author on this subject are most pertinent. What is missing, however, is an understanding of the handicap that the interdisciplinary nature of the subject posed to its recognition, and of the struggle that was needed to overcome this

apparent millstone.

The hostile reception that partly accompanied Lawrence Bragg's tenure of the Cavendish chair at Cambridge University was related to the fact that many physicists did not think a crystallographer was a proper person to hold this prestigious position. Bragg took particular pleasure in the 1962 awards, not least because the lifetime struggles that he and his father had fought to gain adequate recognition of the discipline had at last borne fruit. British crystallographers had earlier received scant recognition in the ranks of the Royal Society, I am told, because there was no obvious committee through which their nominations for membership could be channeled.

The field in general, being interdisciplinary, had no "home." This was one of the underlying motives for the formation, in the late 1940s, of the International Union of Crystallography, and is one reason for its continued prosperity.

As the author of the letter suggested, a study of this story raises some most important questions regarding the rigid manner in which we divide science into boxes called physics, chemistry, biology and so on. Like so many historical studies, however, the story is one of struggle, disappointment, fortitude and intermittent success, rather than a smooth and heady progress to the warm sunshine at the top of the mountain.

JOHN JENKIN La Trobe University 5/87 Bundoora, Victoria, Australia

### Correction

February, page 57-In Alexander Zucker's remarks about the ceramics consortium, the cost was misstated because of a typographical error; it should have been given as \$250 000. ■

136