

## *Disciplines merge at Coventry*

An intensive effort to raze the barriers that compartmentalize science has begun in the School of Molecular Sciences at the University of Warwick in Coventry, England. There, Malcolm Clark heads a department of about 20 instructors engaged in teaching and study of phenomena at the molecular level. Clark conceives this field as a single broad discipline lying between physics and biology. "The present divisions," he says "such as chemical physics and theoretical, physical inorganic, organic chemistry and biochemistry, are rapidly losing their relevance. Moreover in their continuance lies the danger that mere differences of emphasis may harden into sharp distinctions bearing no relation to the natural world."

Most of Clark's students have studied physics, chemistry and mathematics in school. In their first year at Warwick they continue to receive instruction in these subjects. Their physics course deals with the behavior of matter in the extended state, the properties of matter being considered at the submolecular level. Chemistry pays particular emphasis to atomic structure, thermodynamics, kinetics and general physical chemistry. Mathematics is concerned with differential equations, partial differentiation and complex numbers. In the second year, instruction in physics will be replaced partly by crystallography and biochemistry while chemistry and math will continue. During the third year the student will choose from a wide variety of options.

"Our primary aim," says Clark "is to produce in students an attitude of mind leading to a confident, critical appraisal of chemical and biochemical situations. Instead of cramming more and more into the syllabus, we intend to make sure that what is taught forms a coherent picture and is really absorbed by the student [until] he can apply it creatively."

Despite its auspicious start, Clark has some reservations concerning the

school's future. "Some of those engaged in giving courses," he says "have been brought up in the classical modes from which we ourselves have to escape. . . . Though I am trying hard to live up to [the ideals of the school] I suspect that the centralized system of research administration in the United Kingdom, together with the weight of tradition, will prevent my realizing my aims."

## *Prize for new physics course*

E. F. Beall of the University of Maryland has won a thousand-dollar regents' prize from his state for "building up a new introductory course in physics."

With the help of other faculty, particularly G. B. Yodh, Beall has tried to develop a one-semester course that presents an integrated view of physics to the general student. The only course prerequisite is algebra and the only requirement that the student not be majoring in any science. Kinematics, dynamics, energy, waves and quantum mechanics are treated sequentially without calculus or trigonometry. "I go to great lengths," says Beall "to put the material within the grasp of the students, but I insist that they understand it in a real sense, and not just be able to plug in numbers to equations. On exams I usually ask questions that can be answered concisely in words."

Is he satisfied with the course? Beall observes that he has not been able to capture class interest until the course reaches quantum mechanics, and by that time many students are alienated. Consequently, next term he is going to cover more modern physics at the basic level. This course will include energy and momentum from the two-body collision viewpoint, special relativity, wave-particle duality, quantum mechanics of free particles, and validity ranges for classical, relativistic and quantum physics. "I will attempt," Beall adds, "to convey our understanding of the simplest physical problem: that of a par-

ticle moving in a force-free region. It seems to me that this problem contains most of the interesting results of modern physics. It can also be described without higher mathematics. After that, we will consider the details, that is, what happens when forces are put in and the problem gets complicated. I hope as well to lecture in terms of electrons, mesons, etc., rather than billiard balls, and to discuss some problems in my own field (high energy) as illustrations of the basic force-free problem."

As for the textbook problem, Beall will use a very elementary book, (Beiser, *The Mainstream of Physics*) mainly as a reference volume and encourage the students to take good notes.

## *Taxing fellowships*

The Internal Revenue Service is considering new rules that would define, with greater precision, the difference between nontaxable scholarships and fellowships on the one hand, and taxable gross income from services rendered on the other hand. Section 117 of the Internal Revenue Code provides that scholarship or fellowship awards are at least partly excludable from gross income. In recent years, however, there has been a great increase in the number of ambiguous situations not specifically spelled out under Section 117. The problem in such cases, according to IRS chief counsel Mitchell Rogovin, is to distinguish true scholarships and fellowships from payments that are in fact compensation for services performed.

Although it is not now clear exactly what the proposed amendments will entail, they undoubtedly will require the taxing of certain fellowships and scholarships not currently taxable. The Revenue Service makes it clear, however, that the new rules will apply only to amounts received some time after the regulations are published as a notice of proposed rule-making in the Federal Register. This time-interval will enable interested