

# The Piper and the Physicist

by Jenijoy La Belle

*When Blake wrote "sweet science reigns," he was not envisioning Caltech.*

In 1969 I began teaching literature at the California Institute of Technology, a university whose primary purpose is to train scientists and engineers. When Blake wrote "sweet science reigns," he was not envisioning Caltech. There is nothing very sweet about the institution, although I did hope to bring some playful joy into scientific lives through the *Songs of Innocence* and thereby to extend the students' horizons. Since the late sixties and early seventies were, in most schools, a period of great experimentation, I initially tried to go along with the trend and create courses on Blake that would appeal to the students' interests. I went around campus putting up posters of Urizen reaching down with his dividers (Caltechers love instruments) and tried to lure pupils into the Blake circle through references to geometry.

I yearned to be able to speak in the seventies as T. R. Henn had in the forties when he gave his Cambridge "Lectures on Poetry designed (in the Main) for Science Students," published in his *The Apple and the Spectroscope*. Henn's basic approach was to convert the language of poetic metaphor into supposedly homologous structures in science. For instance, in his discussion of imagery, he cites Burns's simile "My love is like a red red rose," and then suggests: "If we look at the problem in terms of a valve, we have the girl and the rose represented by anode and cathode respectively. What in fact has happened is that certain particles of meaning, or electrons, have streamed across from the rose and attached themselves to the girl." This analogy seemed remarkably silly to me, but I was still convinced

that if I could talk in scientific terminology like an updated Henn and could somehow work the "invisible worm" and "howling storm" of Blake's "The Sick Rose" into an electrical system, I could have the students (anode) eating out of my hand (cathode).

When Donald Ault's *Visionary Physics* appeared in 1974, I was delighted. I decided I would steal his subtitle and call my course Blake's Response to Newton. Ault's book would be required reading. The students would see the volume in the bookstore and immediately be attracted by the dust jacket of Blake's face (in psychedelic blue) with his left eye removed from its socket and replaced by the tiny head of Sir Isaac (in psychedelic orange). Perhaps I would team-teach the course with someone from the department of physics. All the students would flock to my class, thousands of little boys and girls raising their innocent hands.

Of course, at this point, I hadn't even opened the book. But I purchased two copies, started to read one, and took the other to my colleague Richard P. Feynman, one of the world's greatest theoretical physicists and an admirer of Blake (his favorite poem being "Fair Elenor"). Soon after, "away the vapour flew." Feynman valiantly struggled with the book for several days; then, somewhat baffled, he returned it to me and said, "I don't know what this is, but it isn't physics." Several students, whom I had also engaged as samplers of Ault, had similar responses. A few more experiences of this kind, both in and out of the classroom, disabused me of any naive notion about getting

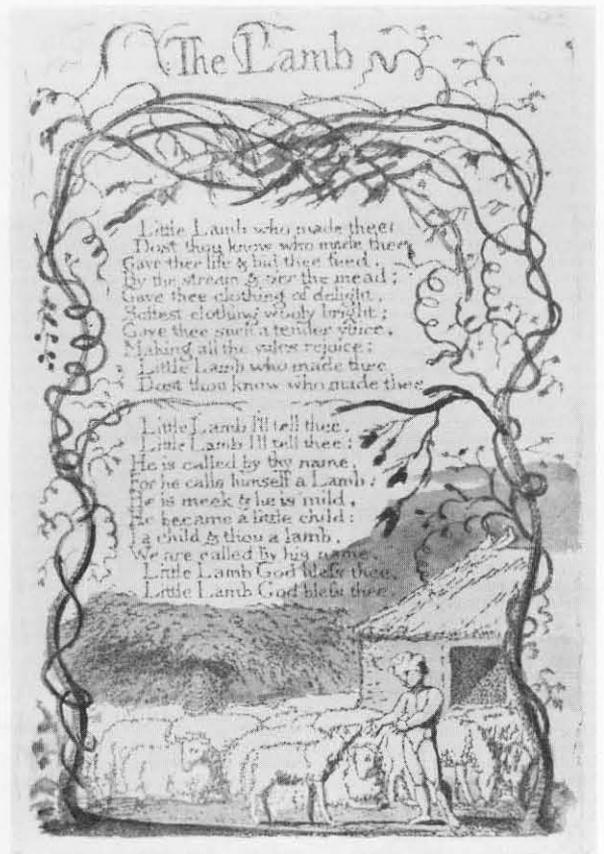
**William Blake's "The Ancient of Days," 1794.**

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scientists interested in Blake directly through science. Ault's book is as much literary criticism as history of science, and neither field is much closer to the interests of scientists than poetry itself. Indeed, I found that Teachers were willing to approach poetry recreationally, as a pleasant diversion from the real business of life. What they found most peculiar was taking poetry seriously (particularly examples such as *Songs of Innocence*) and as central rather than peripheral to anyone's academic career.

With these hard-won lessons, I decided to build on a foundation of differences rather than (supposed) similarities. This approach was more strategic than honest, for I still clung to the notion of underlying similarities, but I would admit to them only after warning (and, I hope, intriguing) the class with the idea that what was to follow was strange, totally unlike what they would encounter in their other classes, and perhaps even a little dangerous.

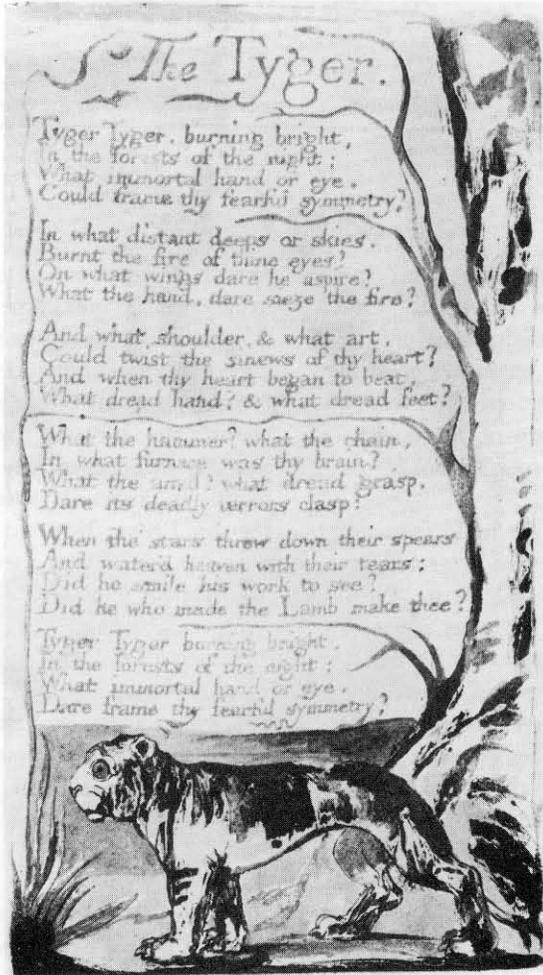
At a fairly early stage in their university work, Caltech's apprentice scientists encounter the notion of alternative models for the explanation of physical phenomena. I have frequently seen my faculty colleagues in the sciences solve a problem in mathematics or present an explanation of a subatomic event and then say, "Another way of solving this problem is . . ." or something to that effect. Even civil engineers have more than one way to bridge a river. In some cases, particularly in the more theoretically oriented fields, the instructor could not come to a conclusion about the one right or best way of finding a solution. And this sense of undecidability in-



creases as one approaches the frontiers of science.

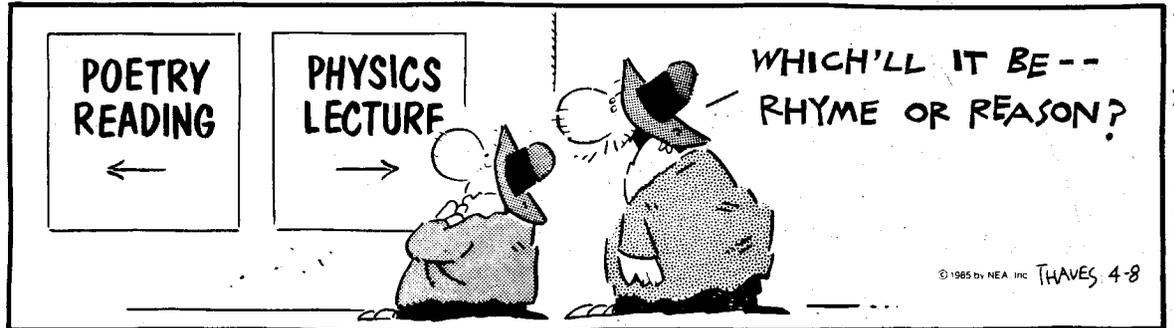
Here, then, was the portal through which I could introduce students to Blake. Not only do Blake's *Songs* provide an alternative range of thoughts and sensibilities to those promoted by science courses, they also prompt us to seek alternative perspectives as an intrinsic part of their structure. My opening gambit ("and now for something completely different") thus led into a detailed consideration of the poems themselves, stressing point of view and context as organizing principles for class discussion. This approach is hardly revolutionary, and there is nothing particularly "scientific" about it, but one can introduce it to science students quickly and efficiently and engage their attention in traditional literary activities in such a way that they no longer see them as trivial. To put the matter in Hennish terms, the "two contrary states of the human soul" and the study of the poems arranged according to those contraries exercise the same need for double perspective as does the scientific study of light—sometimes a wave, sometimes a particle. For instance, one might compare and contrast "The Divine Image" in *Innocence* with "A Divine Image" in *Experience*. In the first poem, Blake presents the human body as an image of four virtues and an embodiment of God. In the second poem, the anatomy lesson takes a different point of view and offers us a

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body of cruel sins. One can also explore the contrast in tone as a way of complementing and underscoring the contrast in perspective. Blake has observed and made poetic use of the same object in two different ways, but neither poem is "truer" than the other in any scientific sense.

After pursuing conventional literary approaches to several poems in *Songs of Innocence* and their opposites in *Experience*, I often find it helpful to return to my initial leitmotiv—the differences between Blake and science, at least classical science. The latter has for several centuries stressed an absolute distinction between subject and object as a necessary prerequisite to the discovery of objective truth. This precept is tantamount to a kind of "purity" theory. The chemical sample or the organism must be untainted by other substances, much as the objective investigation must be untainted by the personality and prejudices of its investigator. The much heralded Heisenberg principle (it has almost become a cliché, even in certain kinds of literary studies) tends to break down the doctrine of noninterference, but in the vast majority of their studies my students are not encumbered by any philosophical doubts prompted by Heisenberg. Thus Blake provides a strong contrast to the theory of knowledge implicit in classical science. In *Songs of Innocence*, to know something is to be a part of it, and this participatory mode breaks down the subject-object dichotomy. The continual impulse toward a unity of being in *Innocence* questions—and thereby reveals—the epistemology that my students bring to class but of which they are generally unaware. The next pleasant shock that Blake's *Songs* can offer the interested scientist is the way in which the fall into *Experience* is both cause and consequence of a perspective instituting the split between subject and object. Even a brief comparison of the child's relation with the lamb and its creator in *Innocence* and the speaker's relation with the beast and its creator in "The Tyger" can bring this point home. In "The Lamb," the child, the animal, and Jesus all tend toward a single mode of being. The child identifies with the lamb and, through it, with the Christ child, thus gaining spiritual knowledge through identification with the object of observation. Although one may say that the speaker in "The Tyger" projects his or her psychological condition onto the beast, the terror with which the speaker beholds the tiger creates a pattern of dissociation between the human world and the material cosmos and its origins. A discussion of the two poems in these terms can lead a class of budding scientists to a consideration of the way they see the forces of



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nature. Do the students see humanity as one with nature, a part of all that we behold? Or does the objective world of science exist only through a suppression of the subjective or of the spiritual? After these heady questions, I have generally found it wise to return to the poems themselves, regrounding our speculations in the particulars of Blake's text.

The preceding represents the main features of my method of introducing the *Songs* to the young scientists at Caltech. Students frequently respond, however, to another property of Blake's poems. Many of them are engineering majors and thus have a primary interest in technology rather than in the outer reaches of theoretical science. They can respond to the notion of Blake as a craftsman—like many of them, a worker with metals and acids. A brief digression from purely literary concerns into the relief etching techniques Blake used to publish the *Songs* often attracts student interest. This topic also provides a method for introducing Blake's illustrations to the technologically oriented. All one needs in the way of materials are a blackboard and a piece of chalk for sketching a copper plate, seen face on and in cross section. It is then easy enough to show how Blake painted letters and designs onto his plates, just as one might paint watercolors on a piece of paper, and to contrast these processes with the conventional way of cutting lines through varnish on a plate. Most art-supply shops have etching tools and small zinc or copper plates, which can be used to flesh out an introduction to the technical aspects of the *Songs*.

I have now been teaching at Caltech for

almost 20 years; innocence has given way to experience. I have come to expect less of myself as a pseudoscientist but have found that I can expect more of my students as readers of Blake. I endeavor to introduce scientists to Blake's *Songs* in ways that preserve the intellectual seriousness that the students usually reserve for their chosen fields. By indicating a few points of contact of the sort I have discussed here between thought processes essential to science and those engaged in a reading of Blake's *Songs*, one can lead even students who think poetry trivial to take a different view. After that, science students at Caltech—and, I suspect, elsewhere—are capable of learning about and enjoying *Songs of Innocence and of Experience* without continued references to physics or chemistry. □

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