and shortages in the Midwest and South, particularly of engineers. But the employment situation for scientists and engineers in industry, where a large majority of them work, is beclouded.

The question of what happened to the casualties of the recession in the early 1970's bothers a lot of people. The aerospace industry has made a recovery, and some of the aerospace professionals laid off then have returned to work in the industry. What became of the displaced aerospace engineer who took up selling real estate or running the proverbial taco stand is not clear.

The American Institute of Aeronautics and Astronautics (AIAA), the leading aerospace professional organization, had a membership of 39,000, including 7000 students, before the slump. Membership reached a low of 22,000 (3200 students) and bottomed out last year. This year AIAA has 26,000 (3500 students) on the rolls.

AIAA officials say that the aerospace industry has had a comparatively smooth flight recently but that there have been reports of layoffs by McDonnell Douglas, Lockheed, and Martin Marietta, and that if the B-1 bomber program flags or the space shuttle project is attenuated much more, the effects on employment would be serious.

One basic lesson of the last decade is that government money—principally federal, but increasingly state and local—is a major variable in influencing employment of scientists and engineers. In the last decade there have been significant shifts in spending from military and space programs to urban, environmental, and transportation problems and, more recently, to energy projects. In the process, many professionals, particularly engineers, have found themselves to be obsolete or overpriced. Increasingly, companies have taken in young, recently graduated, relatively low-paid engineers figuratively through the front door, and pushed older, higher salaried engineers out through the back door.

This practice has been reinforced by another development. Government salaries in the last decade have risen rapidly while, at the same time, what the government pays contractors for research and analytical work has not risen proportionately. As a result, the government has been able to hire scientists, engineers, mathematicians, and economists who might previously have preferred to work for contractors. Because of inflation, a contractor working on a fixed-price federal contract with no provision allowing him to pass on rising costs, finds himself virtually compelled to substitute younger, cheaper professionals for higher salaried more experienced ones. This mechanism is representative of the submerged factors which are influencing employment of scientists and engineers.

The overriding question for scientists and engineers—as for everybody else these days—is whether the economy will come off the critical list and the threat of heavy unemployment will recede. Whether this happens or not, those concerned with professional manpower will continue to be faced with chronic problems—problems such as gathering adequate data and, more difficult and more important, modifying the Pavlovian responses which alternately generate too many and too few scientists and engineers for the jobs available.—JOHN WALSH

Minutes to Midnight for *Bulletin*?

Financial problems that have beset the *Bulletin of Atomic Scientists* for most of the magazine's 29-year life "have now reached the most critical point in its history," editor Samuel H. Day, Jr., reports in the *Bulletin*'s November issue. In an urgent appeal for funds, Day says the magazine needs donations or pledges of $41,000 to stay afloat past the end of this year and to carry out a mail campaign to build circulation.

By the third week in November the *Bulletin* had received commitments for $28,000, Day told *Science*. The December issue is on the presses, but publication in January is still in doubt.

The *Bulletin* is probably best known for the doomsday clock on its cover, its hands (currently set at 9 minutes to midnight) symbolizing the imminence of nuclear holocaust. Founded in 1945 by physicists Eugene Rabinowitch and Hyman H. Goldsmith, the magazine first circulated as a political affairs newsletter among scientists at the Chicago Metallurgical Laboratory. The *Bulletin* soon became an important forum for the project's leading scientists, as they sought passionately to turn nuclear energy to civilian control and to peaceful purposes. Among the magazine's original sponsors were J. Robert Oppenheimer, Albert Einstein, and Arthur H. Compton.

In 1965 historian Alice Kimball Smith wrote that the *Bulletin* was the "most enduring symbol" of the postwar political awakening of nuclear scientists. But its continued endurance now seems seriously in question.

In his editorial, editor Samuel Day says the *Bulletin*'s current problems are twofold. First, he says, inflationary pressures are driving up the cost of publication, especially for small magazines. At the same time, contributions that traditionally have provided the magazine with 15 to 20 percent of its revenues have fallen off. Day attributes this to general economic conditions and to a gradual attrition among a loyal but aging core of supporters. In addition, circulation has declined from a peak of around 27,000 in the late 1960's to about 18,000 now. Subscription revenue has fallen roughly in proportion.

The magazine's full-time staff now numbers four, including Day, who came to the *Bulletin* about a year ago. He formerly edited the *Inter-Mountain Observer*, a literate and feisty advocate newspaper that circulated mainly in Idaho until it succumbed last year to much the same kind of poverty that now afflicts the *Bulletin*.

Day nevertheless has great hopes for the *Bulletin*. Public debate on arms control and the peaceful uses of nuclear energy, the magazine's staple diet for nearly 30 years, is undergoing a revival. And Day says that recent promotional tests show an "immense hunger" for the kind of information and perspective the *Bulletin* can provide.

Beyond his immediate goal of keeping the *Bulletin* alive, however, he hopes to build a capital nest egg. "This has been a cliffhanging operation for so long," Day says. "People don't know from one month to the next whether they'll have a job. We want to put that beast to rest."—R.G.