Industrial Laboratories: Wither Basic Research?

Since October, four of the largest corporations in the United States have made major slashes in the staffs or changes in direction of their basic research laboratories. The laboratories themselves are among the leading industrial research laboratories in the country.

So far, the actual fraction of scientists who will lose their jobs is small, and company spokesmen adamantly maintain that they are still in the business of basic research. But if other companies follow this trend, it could spell the decline, in large degree, of basic research in U.S. industry for a long time to come.

The four companies and their laboratories are: U.S. Steel Corporation's Edgar C. Bain Laboratory for Fundamental Research in Monroeville, Pennsylvania; RCA's David Sarnoff Research Center in Princeton, New Jersey; Shell Oil Company's Emeryville Research Center in Emeryville, California; and Ford Motor Company's Scientific Research Staff at the Research and Engineering Center in Dearborn, Michigan.

The percentage of scientists laid off in three labs is about 30 percent—small compared to the dramatically high numbers of technical personnel who have been felled by layoffs in the aerospace industry. These new cases are accompanied by various company reorganizations that minimize the role of basic research. The reorganizations usually involve the early retirement or resignations of top science officials and company managers. Vice presidents for research seem to be a vanishing species—they are often replaced by vice presidents for organization or vice presidents for technology—or, they are not replaced at all.

The motives for these moves by the giant corporations include the obvious one of short-term economics. Also, basic research labs have critics within the companies themselves. They say the labs are often supported by company profits. Profits are now down and must be increased. Hence basic research can go.

Spokesmen at U.S. Steel's Bain Laboratory say the company has no intention of eliminating basic research, and that it will continue there. However, in October, 30 percent of the Bain laboratory's personnel were given notice of dismissal. This reduced the staff from 121 to 85. U.S. Steel officials are eager to point out that overall research staff cuts are from 7 to 10 percent; but this figure is an average from the 30 percent cut in the Bain Laboratory and about a 5 percent cutback in the personnel of the development-oriented 1400-man Applied Research Laboratory, also in Monroeville.

The director of the Bain Laboratory, Lawrence S. Darken, age 62, retired this fall also, although the retirement age is 65. U.S. Steel's vice president for fundamental research, Oscar T. Marzke, is due to retire in about a year, and then, spokesmen say, "there will be administrative changes" in the conduct of the Bain Laboratory.

However, others close to the scene at U.S. Steel believe that the Bain Laboratory will be merged with the Applied Research Laboratory, and the current remaining research teams dismembered. Officially, the changes so far have put 35 physicists, metallurgists, and chemists on the streets looking for jobs. But rumor has it that those who remain are also job-hunting.

The U.S. Steel cuts are said to have "shocked" the metallurgical science community, all the more so because Bain Laboratory is the only one of its kind sponsored by the steel industry. The other, smaller steel companies, such as Bethlehem Steel Corporation, have never afforded themselves the luxury of a large fundamental research lab with a separate administrative structure. Bethlehem Steel spokesmen say they anticipate no cuts on the order of magnitude of U.S. Steel's.

RCA announced in mid-September that it would no longer remain in the general-purpose computer field. (This decision has already put an estimated 6000 employees—marketing men to engineers—out of work). Separate from the computer decision, but motivated by the same economic pressures, RCA's most fundamental research lab, the 1350-man Sarnoff laboratory, cut its staff by 68 on 19 November. Thirty-five of those laid off were among the 340 professional scientists there. Eight laboratory divisions have been consolidated into six; one which has now disbanded performed semiconductor device research, and the other did digital systems research. A middle level of management was eliminated, with two vice presidents accepting different jobs. A third, Fred Rosi, vice president for materials and device research, left—apparently over a policy dispute on the importance of basic research. One company officer who remains, says, "It would be unrealistic for anyone to pretend that the level of basic research that we have had in the past can continue." He estimates that "basic and exploratory" research overall is reduced by about 25 percent.

Shell Oil Company has been centralizing most of its management, marketing, production, and, now, research, operations in Houston, Texas. Hence, Shell announced in October that by the summer of 1972, operations at the 1000-man Emeryville Research Center (ERC) would be phased out. There are 350 scientists now employed at ERC, and approximately 220 posts open for them in Houston.

Now, Shell managers must deal with the Association of Industrial Scientists (AIS), an AFL-CIO bargaining agent for the scientific professionals at Emeryville. AIS is trying to stop the Houston move; it is trying to negotiate with Shell for adequate pension arrangements and benefits for employees who leave ERC. An AIS spokesman, Stephen H. Garnett, described their situation. "The people here came to work for Shell in the mid-1960's when things were good. Many had offers both from Shell and from aerospace companies. What they balanced then was, on the one hand, the job security of working at Shell. On the other hand were the salaries—up to 30 percent higher—offered by the aerospace company with the possibility that in a few years there would be no more jobs. So they took the lower pay, but they didn't get the job security."

As to the meaning of the consolidation of research in Houston, and the personnel cuts at ERC, the AIS spokesman said, "We feel Shell's dedication to science has changed and is subject to question in the future."

So far, the situation at Ford seems different from that at other corpora-

tions since no personnel cuts from its most "basic" research branch—the Scientific Research Staff (SRS)—have been announced. Spokesmen there emphasize that there is now no plan that would involve layoffs of scientists at SRS.

However, W. Dale Compton, the new executive director of SRS, who replaced the retiring vice president for SRS, Michael Ference, Jr., in August, told *Science* that the next year would see a "reorientation" of some of the work of SRS. Citing the pressures on Ford from recent national legislation regulating auto emissions and vehicle safety, he said "the research staff is devoting greater effort to those areas," and he suggested that some hiring in different areas might occur. (Ford discloses neither the number of scientists in SRS nor its budget.) Compton said he believed that more fundamental research would be needed to solve the auto emissions and safety problems. However, it has been suggested by other sources that the company may simply decide to do the requisite engineering work to meet legislative requirements on the basis of what fundamentals are already known—rather than continuing extensive programs of basic research.

It appears that many of the closings, layoffs, dismemberments of scientific teams, reorganizations, and resignations of top managers in these companies are the result of some fairly bloody infighting within the companies themselves. One symptom of this was that the scientists interviewed—even those who had lost their jobs—did not want to be named or quoted. A further sign was that most of the company officials involved—including a director of one of the laboratories who survived the cuts—requested that they not be quoted.

The reason for this corporate tonguetiedness, explained another anonymous individual, is that a basic research laboratory housed by a giant corporation incurs a set of natural enemies. The predators include company officers who cannot see the merit of handing over a slice of the profits pie every year to scientists. Such laboratories, which the scientific community applauds as farsighted enterprises, are often looked on jealously by other divisions within their own companies. A company scientist does work which appears to the average businessman to have nothing to do with products and profits; the scientist may be paid better than his counterparts elsewhere in the corporate structure; he travels more, and in general, enjoys a great deal of independence and prestige.

Two of the laboratories were said by one source to have been "on knife edge for years." One can infer, then, given the drying up of corporate profits, that some of the basic research laboratories —like the prehistoric dinosaur—may be extinguished.

More striking, in view of the internecine warfare within company ranks which precedes these decisions, is the loyalty which the corporation nonetheless commands from its scientists. Some obviously are very bitter. Yet one scientist, out of work for a month, talked long and lovingly of his former employer's enlightened practices. Another scientist, still working in another corporation, described 13 years of service, ideal working conditions, and what he termed "absolute freedom" to do whatever research he wished. Then, the scientist said, his own job was about to be eliminated. What did he think of his employers now? His answer was nothing but praise; he called them "liberal," "broad-minded," and even termed one "my patron saint."—DEBORAH SHAPLEY

Higher Education: Reinforcement from the Carnegie Commission

Last week the Carnegie Commission on Higher Education released its latest report, "Institutional Aid: Federal Support to Colleges and Universities," at a press briefing in Washington. Since a higher education bill bearing a key institutional aid section is bogged down in Congress, the choice of the time and place for the briefing did not seem purely coincidental.

In its new report, the commission moved to "reaffirm" its earlier recommendation that federal funds be given to "institutions for general support of educational programs." It is, in fact, the third Carnegie Commission report on financing, and the major addition this time is an analysis of distribution of funds under various formulas in order to support the theoretical basis provided in previous reports. The dollar increases prescribed in the commission recommendations would be $1 billion for institutional aid and $1 billion for student aid, to raise total federal funds for higher education to about $7 billion.

The Carnegie Commission, known also as the Kerr Commission for its chairman and director Clark Kerr, former president of the University of California, is completing its fourth year of operation as a pathfinder for American higher education in the last quarter of the 20th century. Its creator was the Carnegie Foundation for the Advancement of Teaching, and it has been funded at a level of about $1 million a year, primarily by the Carnegie Corporation. A 5-year life for the commission was planned, but the term will be extended to the summer of 1973 to provide adequate time to prepare a final report and complete an extensive publications program.

So far, the commission has dealt primarily with finances and with problems of achieving equality of opportunity in higher education. Kerr said at the briefing that, as the commission worked to isolate major issues for the 1970's, it came to see its three top priorities as social justice, health manpower, and innovation and reform. As it comes to grips with problems of innovation and reform, the commission may encounter more dissent than it has up to now either inside or outside its ranks.

The commission's activities fall generally into two categories: (i) reports that express commission policy (there have been 11 of them so far and there are likely to be about 20 in all) and