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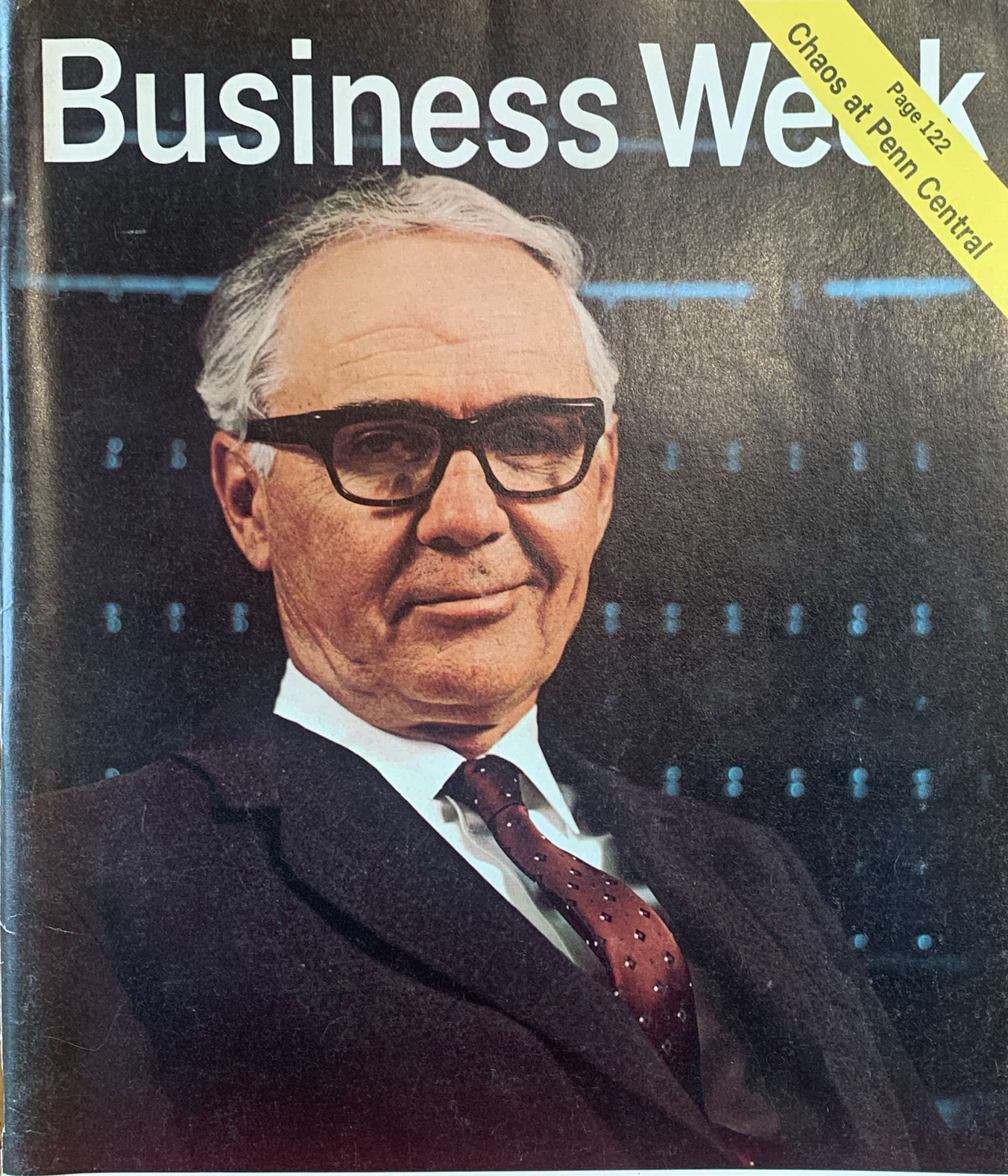
Chaos at Penn Central



William C. Norris, a hard-shelled chairman who relishes a fight

Control Data tackles the computer giant

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Computers

Control Data tackles the giant

With new equipment and a big bankroll, it's getting ready to take on IBM at marketing—where the giant is strongest

In the computer game, the way the big boys play it, table stakes can run to hundreds of millions of dollars, and it takes large amounts of technology, top-notch manufacturing, and a big, competent marketing staff to stay with the action. William C. Norris, chairman and president of Control Data Corp., isn't known for his smile, but he should be grinning from ear to ear: He's close to filling out a winning hand.

Norris, a gruff, hard-shelled electrical engineer from Sperry Rand Corp.'s Univac Div., founded CDC in 1957. Starting out as an independent in the industry, Norris and eight co-founders had nothing but technological prowess going for them. The 57-year-old executive has since developed a manufacturing dreadnought, recently acquired financial solidity, and is finally in position to build in one area he has tended to ignore—marketing. And that means taking on IBM.

In orbit. With 1968 revenues from computer sales, rentals, and services at $438-million, Control Data is a long way from catching up with $6.9-billion IBM. But it's definitely trying hard.

CDC's net profits from its computer business last year soared 37% to $19.6-million. Its acquisition of Commercial Credit Co. in August expanded gross assets tenfold to $3.9-billion, sweeping away some serious financial problems. And CDC widened its technical lead in supercomputers while snaring IBM's marketers in the uncertainties of a civil antitrust suit.

In contrast to a few years ago, when the company was beleaguered by shortages of cash and frustrated by having to pass up opportunities it could not afford to exploit, morale at CDC today is soaring. This is a vital consideration in an industry where employee turnover is high and the supply of brainpower sets limits on growth and performance.

Firm base. But creating a full-line computer manufacturing and service operation, as Norris has done, takes more than inventive and productive technical talent. Control Data started out with that, and has it in depth now. Senior Vice-President Seymour R. Cray, though seldom seen in public, has won worldwide recognition as the leading designer of supercomputers. There are others, too, such as Vice-President James E. Thornton, who has a team at work on a secret, government-financed project that may lead to a whole new breed of computers.

Through the years, Norris has backed his innovators with manufacturing facilities second only to IBM's. These plants not only wire up CDC's electronic monsters, but also are precision metalworking shops for building the complex peripheral equipment that shuffles papers and punch cards and reads, prints, and stores data on spinning disks and whirling tapes.

Such electromechanical hardware makes up more than half the dollar value of computing systems. Control Data's strength in this area enables it to sell about half its output at a healthy profit to competing computer makers, and the extra volume lowers unit costs for CDC's own product lines.

Money input. If the computer business were like most other manufacturing industries, CDC's development and manufacturing strength alone would probably assure its success. But, as many other companies lured into data processing have belatedly discovered, it's not that simple. Growth in computer manufacturing swallows money almost as fast as computers calculate.

A major reason for this financial anomaly is that most computers are leased instead of sold, and when shipments increase at the rate of, say, 30% annually, trying to get ahead in the profit column becomes a labor of Sisyphus. Debt to pay for production piles up faster than rental revenues, and the rock is at the bottom of the hill again.

To solve that problem, CDC acquired Commercial Credit, with its $3.4-billion in working assets. Says Norris: "Our biggest problem was financial—simply a constant need for cash. Commercial Credit's immediate resources can take care of it. We'd be doing a real good job if we could run them out of money." Control Data's vice-president for finance, Harold H. Hammer, thinks there should be more than enough money to spare (page 150).

Dragons. The final requirement for survival in the computer business is unique to the industry: slugging it out in the marketplace with IBM, which has the most

Man and machine: Seymour R. Cray and his 7600 have helped to extend Control Data's lead in supercomputers.

powerful marketing organization ever spawned by a corporation. One ratio alone shows the odds: IBM has 10 trained marketing men for every one of CDC's.

IBM isn't the only dragon in the forest. Dozens of others in the industry are just as fierce. They range from multibillion-dollar conglomerates, which raise real fears of reciprocity pressures and below-cost sales gambits, to lean and brainy newcomers with rock-bottom prices that are trying to duplicate CDC's own pattern of success.

Despite all this competition, Control Data's top echelon gave its marketing efforts a low priority until very recently, at least partly because the company lacked the cash to expand in this direction. It has also been a question of style. Says one baffled East Coast customer of CDC: "They tend to come on with a pretty hayseed image sometimes."

Norris is no farmer—he's more like a tough Navy commander, which he was in World War II—but he has the plainsman's distrust of fancy trappings and Madison Avenue folderol. "My father raised mules in Nebraska," he says, "and he hated like hell to lose a nickel."

To market. For years, CDC did almost no advertising, and the occasional page it took in a professional publication was home-grown and dull. As a result, the company is still not very well known outside the scientific and data processing communities. But its biggest market is in engineering and scientific computer applications, and Norris is not sorry he concentrated on that area. It was one of IBM's weaker points, and CDC was able to outmaneuver its big competitor.

Control Data is unlikely to go on a wild image building spree as long as Norris is in charge. He's impatient with frills and romancing, wants to see hard performance and tough work plans with numbers on them. But the company is beefing up its marketing force. Robert D. Schmidt, vice-president for marketing, has set up groups to hit 22 major sales fronts, ranging from aircraft manufacturing to retailing. He is also increasing the number and size of customer and employee training facilities—activities that might look like frills but are absolutely necessary in the computer business.

Norris sees this thrust into commercial data processing as a continuation and vindication of his earlier long-term planning. "Ten years ago," he says, "we developed the strategy of large computers. It was clear to me that, in the long run, data processing was going to be more scientific than commercial. But IBM's attitude was: 'Who cares about the long-haired stuff?' Now, when the market for large computers is growing faster than any other segment, our adjustment is a lot less than theirs."

Targets. Norris' top sales targets now are the big computer-communications systems of large companies, scientific laboratories with problems that demand up to

How to marry money and computers

The solution to Control Data Corp.'s money problems was as simple as 1+1=$1-billion. Financial Vice-President Harold H. Hammer worked it out by the logic of mergers.

"We made a projection a year or so ago," recalls Hammer, that to finance growth "we would need $1-billion in the next 10 years or so just to cover equipment on lease. No one around CDC could count that high."

So Hammer and Chairman William Norris began to look for finance companies to acquire. Most were too small; the bigger ones all seemed to have too many problems, such as "bunched debt" that made them too dependent on the fortunes of one loan market—say, autos or housing.

Contact. "Then I began reading about Commercial Credit Co. in the newspapers," says Hammer. "It looked way too big, but it was being chased by Loew's." He called the finance company cold, introduced himself to its president, and "made sure he wasn't going to throw me out." Invited to Commercial Credit's Baltimore headquarters, Hammer suggested Norris come with him, since it was a "pretty big" deal, but Norris just said, "Go ahead, you've done it before."

A week later, the finance and computer companies had reached an agreement in principle: Control Data would be the surviving company; Commercial Credit's stockholders would get a package worth $65 a share. "When you move so fast," Hammer observes, "Wall Street thinks it is irresponsible. But you've got to move fast. If you take too long, pretty soon you start to argue over the venetian blinds. If you are too fussy, you don't make deals."

On tap. Hammer's next challenge was to divert $1-billion from Commercial Credit without disturbing its working assets, unnerving the financial community, and thereby threatening the finance company's credit position. Again, the solution was disarmingly simple.

Control Data has a long-established policy of plowing all profits into the business and paying no dividends. Commercial Credit paid out $18-million last year from its $25-million net; but no more. Now, Commercial Credit keeps its profits, and the $25-million a year can be channeled into its liquid asset base. At the standard ratio of 7½ to 1, that boosts lending power by nearly $200-million a year—more than enough to meet Control Data's needs without touching any other parts of the finance company's business. In addition, cash and liquid securities from the sale of 10 marginal subsidiaries give Commercial Credit "several hundred million dollars" in lending power.

Good fit. Disparate as the merger partners may seem, they apparently fit together neatly. The finance company's commercial data processing services, which it may market through its 1,000 offices, will use Control Data equipment and feed customers to Cybernet if their problems warrant. In addition, Commercial Credit is converting to Control Data equipment, and CDC is buying its insurance from the finance company's subsidiaries.

After the merger, Hammer immediately wiped out a complicated line of revolving credit for $175-million that CDC had arranged with 13 banks. But even with his money supply virtually assured, Hammer was not content; he still wanted to see regular growth in profits from the computer business side.

This is a tough one, because of a variable and uncontrollable sales-lease mix. Customers may suddenly decide to buy their computers outright, or lease from a third party that buys the equipment. Thus the bottom line on the profit statement can fluctuate wildly.

Control Data amortizes its leased computers over a four-year period. The result is a huge cash flow deficit, which can increase indefinitely if the value of computers installed continues to rise every year at 30%, compounded annually.

Futures. Currently 70% of Control Data's equipment goes out on lease, producing a severe near-term drain, but promising a future profit bulge. Hammer thinks he has figured out a way to get a consistent 50-50 sales mix, using a technique similar to the "carve out" in selling future output of oil wells.

Instead of selling future oil, Hammer sells future revenues from computer leases at a discount to financial institutions (not Commercial Credit). This not only brings in immediate income, but protects CDC's title to the equipment, preserves its customer relationships, and leaves it with fully amortized computers after they have been on lease four years. Such residuaries, as Hammer calls them, are pure gravy, since the machines either continue earning rent or can be sold.

100 times the computer capacity available in today's largest machines, and the computer-based service and time-sharing networks.

CDC isn't giving up smaller customers, but Norris intends to avoid the trap of fighting IBM on its home ground with small to medium-sized equipment. His dodge is to give customers access to computer facilities through CDC's Cybernet computer service network, and charge them on a use basis.

Cybernet itself is hardly small business. Present customers range from small but prestigious Carleton College in Minnesota to Bell Telephone Laboratories. Some big users have run their billings to nearly $100,000 a month at times. A Bell Labs source says that for some jobs, the remote computing service from CDC 6600 supercomputers costs only one-third as much as running the problem on smaller computers on site.

For very small commercial customers, a market Control Data has never been in a position to serve, Commercial Credit has established a data processing service subsidiary. Donald S. Jones, president of the credit company, expects his concern's financial contacts with 25,000 customers to be a natural lead for supplying extra EDP management services.

Betting on bigness. For five years Control Data's big 6600s have been the largest computers available commercially. Norris won't say how many have been installed, but industry estimates put orders for the 6000-series machines at more than 100. Their prices can run to $10-million or more a system, and average $4-million. CDC is still adding to the 6000 series. The company also makes a medium-scale 3000 series. This line's considerable success is being crowned by having one unit star in a forthcoming science fiction movie called Colossus, in which computers rebel and try to take over the world.

For the future, Norris is betting heavily on even bigger computers than the 6000s. Seymour Cray's third major creation, the new 7600, is four or five times as powerful as his 6600, and will form the basis for a new family. For handling lots of little problems, such as those encountered in business EDP, the 7600 is expected to be as much as eight times faster than the 6600, while costing only about twice as much.

High marks. So far, the 7600 is turning in a much brighter early performance than the 6600 did. CDC delivered the first 7600 on time last February to the Livermore (Calif.) branch of the Lawrence Radiation Laboratory, operated by the University of California at Berkeley under contract to the Atomic Energy Commission. The computer industry was stunned when the 7600 was accepted as fully operational on Mar. 26. The first few 6600s, beset by delays in programming, sat around for many months before customers started paying rentals. That was a costly lesson for Control Data, and the 7600 was carefully designed to use most of the 6600's programming so it could go right to work.

The compatibility of the old and new machines gives the impression that the 7600 is simply a faster version of its immediate ancestor. But it seems to have some significant differences such as internal error checking circuitry. Other differences won't show up until CDC finishes some immensely complex system programming projects needed to take full advantage of the computer's special characteristics.

Superspeed. There is probably nothing short of living organisms that is quite as complex as a supercomputer. The 7600 has more than 3-million electronic components and over 30-million tiny magnetic cores in its central memory banks. Packed into one large piece of furniture—in Cray's distinctive design of walnut and blue glass panels—are a central processor and its court of a dozen or more smaller computers that feed it data and instructions and accept its answers. All the elements perform together at the mind-boggling tempo of 35-million data manipulations per second.

The 7600 system is so fast that even the phalanx of peripheral processors—smaller computers within the central processing unit box—can't be burdened with the comparatively slow-poke work of high-speed printers, magnetic tapes, card readers, or keyboard input terminals. Instead, these computers "talk" to thin free-standing pillars, also encased in blue glass and walnut, that contain six little computers each.

Progress. The 7600 shows how fantastically computers have developed in 20 years: Two of the little computers inside a pillar can do about as much computing as Univac I, the first large-scale commercial computer. The recollection that early market projections estimated six Univacs would saturate the market for computing brings a wry grin to Norris' face. Those six Univacs would be the equivalent of just two of the 7600's input-output terminals.

Control Data still has a long way to go before it gets the 7600 in production. The first model was assembled at Cray's 35-man lab in Chippewa Falls, Wis. The next few will be made there, too, with plenty of loving care. Committing the machine to standard production is an even bigger problem than tooling up for the 6600 was.

Military touch. CDC has set up a "war room" for the 7600 based on the techniques used at Boeing Co. to keep tabs on defense projects. Dozens of sliding plastic panels covered with charts and graphs of interlocking projects and their schedules are constantly updated, providing a visual display of status at all detail levels. Once a month, a total project review is held for William R. Keye, senior vice-president of operations, and other top executives. General managers analyze their areas of responsibility weekly, and working-level managers report changes daily. Slippages in time schedules show up on the charts in

red lines that stand out like lash marks.

In the programming effort alone, more than 25 major system projects are under way, some scheduled for completion in 1970, others in 1971 and 1972. "There will be a lot more on the chart eventually," says Ken Tiede, who heads the 7600 software development group.

Tiede is particularly excited about the blue-pillar control station. "It puts the intelligence out there to drive the peripherals," he says, "so the main computer can work on data, and not be dinking around with Teletypes and stuff."

The 7600 will be manufactured in Control Data's existing plants near Minneapolis, in space where the 6000s are now made. Production of the 6000s will continue—CDC added another supercomputer, the 6700, to the series this month—but at new plants.

R&D priority. Bringing the 7600 into production will significantly increase spending for what Norris calls "total technical effort"—work performed by scientists, engineers, programmers, and analysts in creating new products and services and supporting existing ones.

Skilled hand-wiring goes into Control Data's 7600 computers at Chippewa Lab.

Last year, CDC's technical effort consumed $120-million—60% of it for R&D and new products and 40% for support of existing products, such as programming maintenance. Research and product development alone took $39-million, more than the company grossed in 1961.

Such heavy commitments of revenues to technical projects will keep Control Data viable in product strength and production efficiency. Whether the same hard-nosed approach to marketing will work is still an open question. But a tough approach has paid off for Norris so far, and he isn't likely to change. Besides, like his father, Norris is a man who hates to waste a nickel.

Paroled into programming

Prisons are the new and unusual source of trained people to man the computers. Bonding the ex-convicts is a problem

A decade ago the then-fledgling business computer was occasionally condemned as a soulless "brain" that was going to throw a lot of real people out of work. For a time, a few white collars, indeed, were frayed by obsolescence, but lately the computer has been looking for more human help than it can find. People—with the brains for programming—have become the darlings of data processing managers everywhere.

With some 50,000 to 100,000 jobs to fill (the industry figures nearly every one of the 50,000 functioning computers in the U. S. could use an extra hand or two), companies are increasingly willing to scout anywhere—including the urban ghettos and prisons—for qualified talent. The lures are money (full-fledged programmers command about $12,000), job security, and a cheerful flexibility on hours and benefits.

A byproduct of the demand has been the burgeoning of independent training schools, called "body shops." Some have proved of such dubious value that the Data Processing Management Assn. this week was preparing to mail out 10,000 copies of a 48-page manual stating its standards for "accreditation." The DPMA hopes to clean up the schools through pressure from its 27,000 members, data processing managers who do much of the nation's computer hiring.

Second chance. For bright ghetto youngsters, the computer's hunger offers a chance at a respected career. For increasing numbers of others, however, it has become the source of that big second chance. Data processing departments draw more than their share of once-hopeful actors, would-be poets, out-of-trim dancers, and college-bred but dissident housewives. Perhaps nowhere is the second chance more gratefully grasped than in a scattering of U. S. prisons and penitentiaries where vocational training has leaped miles beyond painting license plates and now includes instruction in the programmer's art.

"Commencement" exercises were held recently at the California Institution for Men at Chino for 11 inmates, all in their mid-20s, who had completed a seven-month course in programming. In the pocket of one was the offer of a $575-a-month job, upon his parole, at a West Coast automotive plant.

"In three to five years he can double that figure," says Murray Chaban of the Electronic Computer Programming Institute, a private trainer of data processing personnel with about 100 schools in the U. S., Britain, and Mexico. ECPI conducted the behind-the-walls course at Chino, and has become something of a prison specialist.

Prison campuses. Inmates at New York's Sing Sing and at the state prisons in Lebanon, Ohio, and Luzerne, Pa., are enrolled in ECPI in-jail courses. A few trusted inmates of Iowa State Prison are allowed passes into town to attend an ECPI school, and the company is developing similar programs with state prison officials in Connecticut, New Jersey, and Minnesota. Other prisons, of course, have undertaken like programs without ECPI's help.

At Missouri Penitentiary, Jefferson City, where programmer training has been part of the curriculum since 1964, the results please Warden Ralph Swenson and the state of Missouri. From among his tutored inmates, Warden Swenson has built a staff of 10 programmers who feed programs to the computers of a variety of state agencies, work that might otherwise have to be farmed out commercially. Swenson takes equal pride in the half dozen who have been paroled, and have consistently been employed at salaries ranging from $7,200 to $12,000.

Misgivings. A certain amount of misgiving, of course, has attended the training of felons for a sometimes sensitive position as programmer. Mafia-hunters suspect them of being potential recruits for the syndicates, known to be computerizing their underworld activities. ECPI officials say this is ridiculous: "If the Mafia wants that kind of talent it will get it by training its own or knocking over a data processing company that has what it wants."

As for computerized thievery on, say, the company payroll, ECPI spokesmen point out, sadly, that their graduates do not immediately leap into jobs where they can do it. "They generally start out as console operators or trainees," says one. "By the time they're in a position to finagle a payroll, hopefully they're rehabilitated and making too much money to bother."

Prison credentials, nonetheless, are still not universally accepted in the industry, despite its need for skills. The most common complaint is expressed by a spokesman for a major computer manufacturer: "Bonding companies won't touch these guys with a 10-ft. pole." To which a spokesman for the Surety Assn. of America retorts: "Nonsense. That's an excuse employers use who don't want to get involved. Yes, blanket fidelity bonds do exclude anyone known to have committed a 'fraudulent or dishonest act,' but if a man's rehabilitation seems complete, the companies—maybe only to a limited amount—will bond them." **End**