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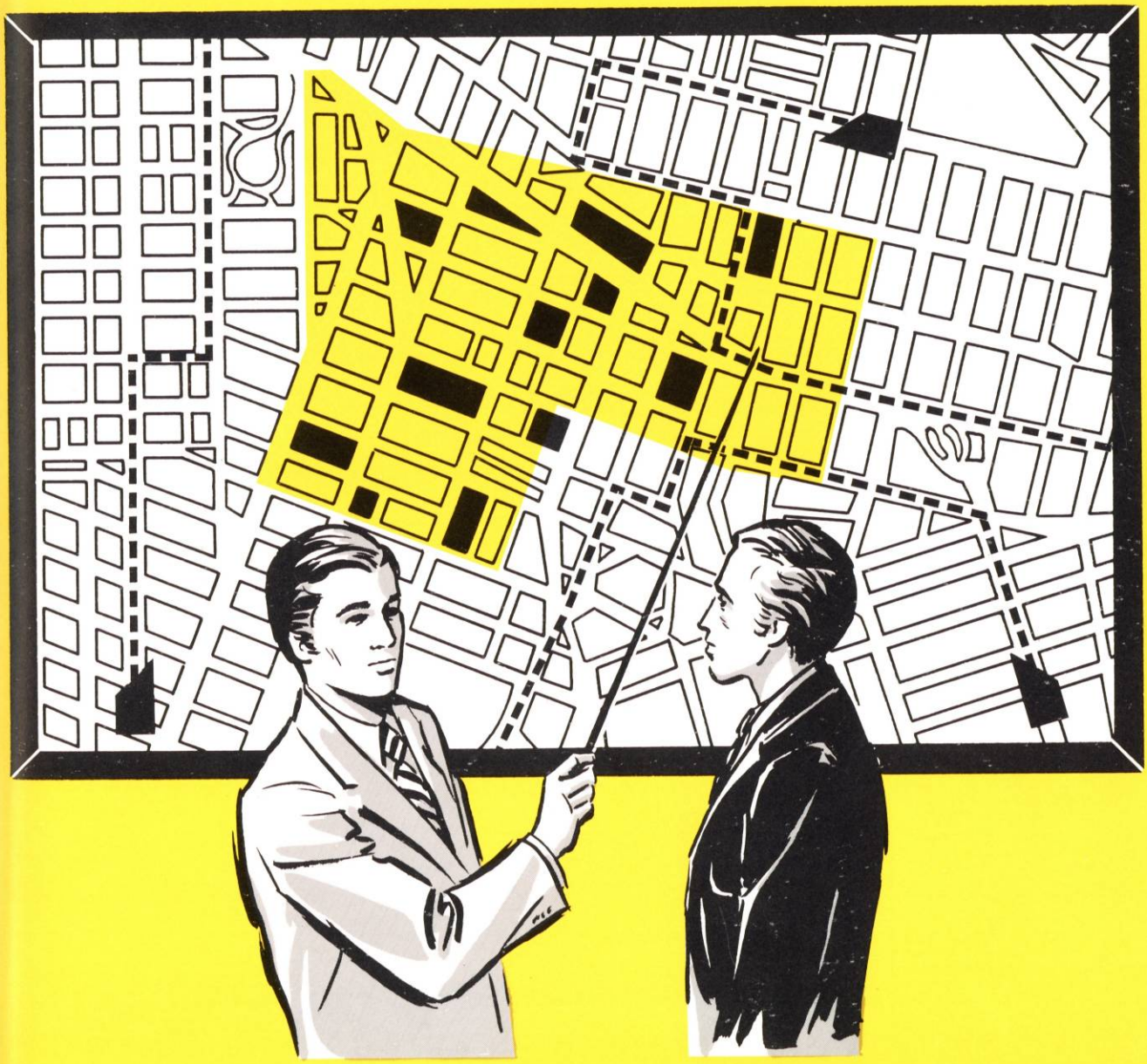
American Institute of Certified Public Accountants

management adviser
January-February, 1974

Slowing Tax Rises Through PPBS

Harold I. Steinberg and James D. Carney



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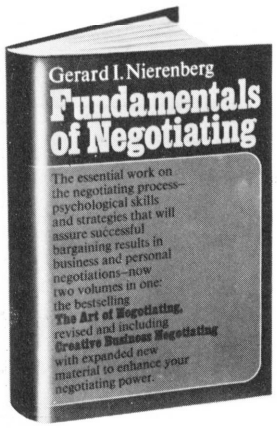

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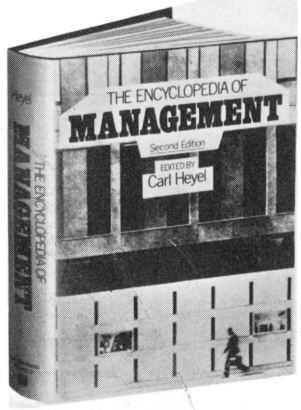

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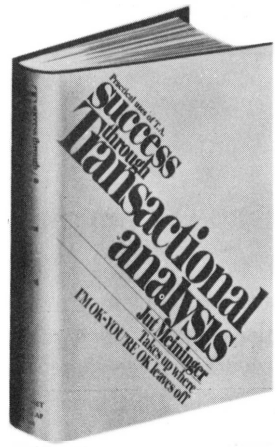

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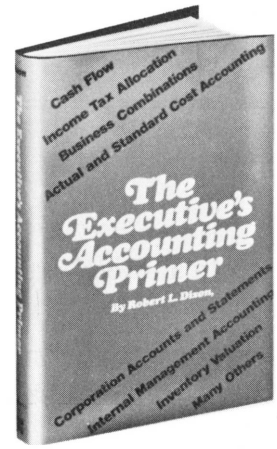

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January-February, 1974

management adviser

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Personal Information Stored in Computer Files Should Be Severely Limited, Law Professor Advises Conference

No one has the right to say, "The computer made me do it," Alan F. Westin, professor of law and government at Columbia University, told the Fourth Annual Conference of Human Resources Systems Users, November 12 in New York.

Dr. Westin, a member of the National Academy of Sciences research team that for three years studied how organizations are using computers to process information about people (see M/A, July-August '73, pp. 57-59), said that if society chooses to use the computer to store information about people it must have clearer rules of privacy, secrecy, and materiality for these files.

There are three questions that must be decided about personnel files, the attorney told the personnel officers. First, what information should be stored in a computerized file?

Syndrome to be avoided

He warned against the "Dump-it-in: It-can't-do-any-harm" syndrome. The administrator should "look with a jealous eye at what information should go into the file at all," he said. Any information that is not necessary for personnel administration should be wiped out. After the decision to hire a job candidate is made, his background should be shredded.

In one corporation, executives were given a list of questions that were under consideration for a personnel file. The executives were asked which questions they resented answering. In several cases questions that seemed innocuous to the file designers, were found objectionable by the executives.

As little personal data as possible should be kept on file, Dr. Westin advised. "Not only is it cost-effective, but privacy-respective," he said.

A second issue to be considered is what rules of data confidentiality should exist inside and outside the organization?

Taking what he called a "civil libertarian point of view," the attorney said that it is advisable for

people to have access to files kept on them; otherwise fear about being controlled by unknown evaluations and judgments is created. As for sharing information with outside organizations, he said it is time for reexamination of the policy of sharing with others so they will share with you. For outside sharing, you must have rules on who has access, what kind of information is given out, what are the liabilities, and what notification should be given to the individuals involved. This has to be decided on an area by area, case by case basis.

Individuals' rights

Finally, what rights of access should an individual have to review files kept on him? In this respect, Dr. Westin maintains that computerized personnel records are better than manual records because annual printouts can be made and the individual asked for corrections on his record. When the desired corrections are made, a new printout can be immediately produced and it affords the individual a feeling of security about the accuracy of his file.

Dr. Westin was asked what he thought of the Health, Education and Welfare study on recordkeeping. He said that he agreed with the study that the use of the Social Security number should be inhibited and many corporations feel the same way. The Mutual of Omaha issues unique employee and policyholder numbers because they feel that it gives them one more level of control of their files, he reported.

According to the HEW recommendations, a person would not have to submit his Social Security number for purposes other than those of the Social Security system. In this way, the computer allows people to make individualized choices that manual systems don't, Dr. Westin explained. For instance, individuals could specify whether or not they wanted their names added to mailing lists. That way people who enjoy getting mail and are good prospects for direct mail advertisers would be served and individuals who are annoyed with what they consider junk mail would not be bothered.

Five Reasons for Erosion of Foreman's Authority Cited

The role of the foreman has been eroded in the organizational structure, John A. Patton told the National Machine Tool Builders' Association, October 11.

"The foreman today is being held responsible for functions over which he no longer has any real authority or control," observed Mr. Patton, president of Patton Consultants, Inc., Des Plaines, Ill. "For some time he has not been able to hire and fire and set production standards. He cannot transfer employees, adjust the wage inequities of his men, promote deserving men, develop better machines, methods, and processes, or plan the work of his department with anything approaching complete freedom of action. All these matters for which he is completely or partially responsible have now become involved with other persons and groups, or they have become matters of company policy and union agreement.

"He is hedged in on all sides with cost standards, production standards, quality standards, standard methods and procedures, specifications, rules, regulations, policies, laws, contracts and agreements, and most of those are formulated without benefit of his participation," the consultant said.

Since the performance of the foreman can affect productivity, product quality, and profit, management should carefully scrutinize its relationships with foremen, Mr. Patton advises. He has found that five factors affect their performance.

First, there are not substantial pay differentials between workers and foremen in many organizations. Mr. Patton said, "In over 60 per cent of companies today, the skilled employees in his department take home equal to or more pay than the foreman . . . Also, in too many companies the management has a policy of tying the compensation differential of the foreman to the unionized personnel by maintaining a 15 to 20 per cent increment . . . Frankly, it puts the foreman in the frame of mind that his well-being is tied in with the union rather than with the management of his company," the consultant said.

Second, staff specialists usually hinder rather than help the foreman do a more effective job because they treat him like the "little man that wasn't there," Mr. Patton said.

Third, foremen do not feel they are part of management and management does not try to convince them that they are. Mr. Patton commented, "I have witnessed companies where sincere attempts have been made to keep the foremen informed on a constant and continuous basis. In spite of this sincerity, I have never found a company in all my years in the consulting field where all the foremen felt they were fully informed and really part of management."

Fourth, a high percentage of foreman training is not tailored to the company or the man nor is it fitted to actual shop situations.

Fifth, the criteria used for selecting foremen are unrelated to those used for selecting effective supervisors, Mr. Patton said. The correlation between a good producer and a capable foreman is purely coincidental, he observed.

"The effective supervisor, both in terms of production and morale is the one who tends to see his job primarily in terms of human problems, the management and support of people, as contrasted with the individual who may see his job primarily in terms of rules, procedures, technical efficiency, and direct pressure for productivity. If you, as management, can convince your foremen that you have their

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interests at heart, and mean it, you will bring about more effective supervision than any incentive you could create," Mr. Patton told the machine tool builders.

In another recent speaking engagement, Mr. Patton told the 37th Annual Industrial Engineering and Management Clinic, "Those consultants who will not assume responsibility for results should base their charges on a price per pound of manual produced for the client."

The consultant was making some observations on the profession based on his 30 years in the field.

He said industrial engineers "Talk too much with a Harvard accent; spend too much time on computation to the third decimal place rather than working to gain wholehearted acceptance by first-line supervision; still haven't learned that personal involvement and participation will remove many of the obstacles on the way to obtain results; should insist on accountability standards for everyone from the janitor to the president; and ought to face up to unpleasant tasks and turn the disadvantage into an advantage."

Checkless Society Is At Least 5-10 Years Away, ABA Told

Roughly one per cent of the gross national product, or $10 billion per year, is spent on processing checks and using money, the American Bankers Association reports. Electronic funds transfer systems may help the situation, but it will take at least five to ten years just to stop the growth of paper checks and cash transactions in our economy, an ABA spokesman said.

The average check is processed in ten "hands on" steps and the processing cost runs about $0.16 per check, said Dr. William Ford, director of the American Bankers Association research and planning. He cited industry estimates that forecast total check volume to be above 40 billion by 1980.

Check handling costs can be cut by at least 50 per cent through the use of electronic money, feasibility studies show. But for the immediate future, the nation seems not to be moving toward the checkless society but, more accurately, toward the "less check, less cash society," Dr. Ford stated.

Banks, S&Ls, work on problem

"Both banks and thrift institutions are now committing substantial resources to the design and development of electronic funds transfer system (EFTS) components," Dr. Ford said. "A good portion of EFTS' elements are already in place. Many major U.S. corporations now regularly move funds and transmit financial messages over the 'Bank Wire'—an electronic network connecting 240 banks in 74 cities. The Federal Reserve has also increased its capacity to transfer funds electronically by means of the so-called 'Fed Wire.' During 1972, 9.5 million transactions—involving $17.9 trillion—were channeled through this system."

The Federal Government is using EFTS experimentally to pay some U.S. Air Force personnel (see M/A, November-December, 1973, p. 12).

In Seattle, a bank's customers can use its computer to pay their bills, calculate their household budget, or make notations of special payments for tax purposes. The customers are charged $6.50 per month for the service and can dial the computer via a push button phone, the ABA reports.

A savings fund society in Wilmington, Del., enables its customers to pay bills with a special "money card" that authorizes immediate transfer from their accounts to the merchants' bank accounts. In Columbus, Ohio, a bank is developing a system that would use a money card to transfer funds right at point-of-sale terminals.

The American Bankers Association also reports that automated clearing houses, for transactions among banks in a given area, are already operating in Georgia and California and are under development in other states.

"Only after consumer confidence has been gained and the host of legal and regulatory impediments are overcome in the field of EFTS can we begin to talk about the 'checkless society,' " Dr. Ford stated.

Western City Replaces Radios in Patrol Cars With Teleprinters

Everything's up to date in Orange County: Last issue we told you about the county's faciliites management arrangement (see p. 8), this issue we report on one of its communities' police communications system.

Electronics cuts response time

Huntington Beach, Calif., has installed readout teleprinters in all of its patrol cars. Under the old manual dispatching system using radio voice only, it took a policeman 50 seconds to receive, copy down, and acknowledge a dispatch message. A policeman using the teleprinter system can read and acknowledge a message in seven seconds, Huntington Beach reports.

Upon receiving a call for assistance, the communications operator types the response address on a video terminal and requests an address file search to be performed by the system's computer. In three seconds the computer verifies the validity of the address and supplies geographical identification codes. The computer will also return a printed list of known police and fire hazards at the location.

From his patrol car, the policeman can request the records check be made on a person or a vehicle. Huntington Beach says this has led to higher apprehension rates and increased officer safety.

By December, 1974, the community plans to add a vehicle loca-

tor service to its system. This will graphically indicate the location of all police units within a quarter-mile radius and indicate their availability and the priority of all calls requiring police response. It is expected this addition will reduce response time to emergency calls and make more effective use of police personnel.

The police communications and control system was designed and manufactured by Motorola Communications and Electronics, Inc.

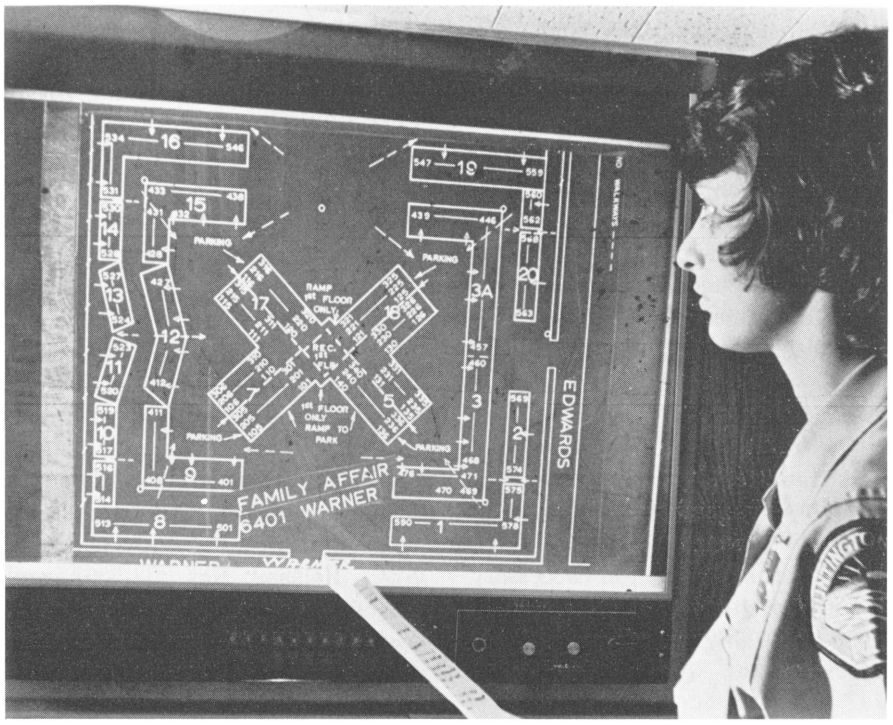
An alarm system is also tied into the computer, so that once an alarm is tripped a notice is teleprinted to all police field units. If a business owner has a special alarm audio-monitoring device, when the alarm is tripped the communications center will monitor all voices and noise within the establishment. An associated random access microfilm file is under development which will give the dispatcher maps of all escape routes and specific building diagrams.

There is a computer interface between Huntington Beach's police and fire departments which allows the proper agency to respond to a call made to either one.

For emergency situations, Huntington Beach has support units of a three-man K-9 squad, a five-man Special Enforcement Detail, a two-man bomb squad, and a new 35-man mobile field command unit. Everything is, indeed, up to date in Huntington Beach.

"Huntington Beach's population increased 100 per cent between 1965 and 1973," said Mayor Jerry A. Matney. "We were faced with a huge need for increased police and fire protection, as well as numerous other services, but without an adequate tax base. Businessmen seeking new sites naturally consider such protection when making decisons as to where to locate and our new command and control system has already helped to attract several new firms to Huntington Beach."

Huntington Beach may be the security-minded businessman's second choice—after Fort Knox.



System also permits visual images to be displayed to assist in identifying exact apartment locations.

For the Management Consultant—

Environmental Management Major Challenge to CPAs in Coming Decade, Gaede Tells MAS Meeting

During the next decade, environmental management affords perhaps the major opportunity for client services in which all CPAs can participate, William G. Gaede, Touche Ross & Co., told AICPA members attending the management advisory services (MAS) technical session at this year's annual meeting, October 16 in Atlanta.

"Environmental management," the process of regulating man-made pollution with the goal of reducing and eventually eliminating it, has become the responsibility of Federal, state, and local government and the concern of most of the CPA's clients, Mr. Gaede, chairman of the AICPA's MAS environmental accounting subcommittee explained.

Even if the accountant doesn't specialize in this area, to serve his client, environmental laws must become part of his body of knowledge, just as tax laws are. Most of the CPA's clients in the private sector "are subject to some provisions of these statutes or their corresponding state and local ordinances with resulting costs and pricing consequences for these enterprises," Mr. Gaede said.

CPAs must keep informed

There are certain pieces of Federal legislation that are "imperative to be aware of and conversant with in terms of serving your clients," he told the CPAs. These include: SEC Release No. 5386 which requires issuing corporations to disclose the material effects that compliance with environmental laws may have on them and their subsidaries' capital expenditures, earnings, and competitive position; and the Federal Tax Reform Act of 1969 which established tax in-

centives for capital expenditures associated with pollution control.

A survey conducted last year by the environmental accounting subcommittee found that firms that were working on environmental engagements often needed more than traditional CPA skills, the subcommittee's chairman said. For certain engagements non-accounting skills were called for. The larger firms hired the necessary talent and the smaller ones established working relationships with other experts.

How one local firm did it

Mr. Gaede described how a local firm with a staff of about 30 professionals became involved in this area, to the point where today it accounts for more than ten per cent of its billings, while four years ago it wasn't in the area at all.

First, the firm subscribed to environmental reporting services and quarterlies. (A list of these can be found in *The Journal of Accountancy*, July, 1973, pp. 90-91.) It also became involved in community affairs, including citizen boards and commissions, Mr. Gaede explained. One of the benefits of this involvement was the firm's development of contacts with related professionals also working in the same area, including civil engineers, landscape architects, and attorneys.

The firm "became aware of what the local political situation was," in terms of what were the targets of environmental concern. Concurrently, the CPAs familiarized themselves with state and local statutes covering environmental practices and control.

Finally, the firm adopted a basic service strategy to take on work that could be done with traditional CPA skills or where their CPA skills were the key element. The firm maintained an active relationship with related professionals who could be called on to provide specialized skills needed for specific engagements.

"Why not take advantage of this opportunity for client services. If you don't, someone else will," Mr. Gaede told the CPAs.

The session covered another area of service gaining new emphasis, thanks to the February 2, 1973, SEC Release Nos. 33-5362 and 34-9984. Forecasting and budgeting techniques were discussed by George L. Bernstein, Laventhol Krekstein Horwath & Horwath.

The February release requires that a company which chooses to disclose projections of future economic performance in its financial reports must have been "a reporting company for a reasonable period of time and that it had a history of earnings and of internal budgeting."

Mr. Bernstein advised, "If your clients do not have such a history they had darn well better get cracking on that in order to disclose any projections of future economic performance."

Forecasting sales

The first thing, and in the judgment of some the most difficult task, is to forecast sales, Mr. Bernstein said. This can be done with either noncausal techniques, techniques which are extrapolations of historical sales records and assume existing patterns will continue into the future, or causal techniques, which identify and measure forces that have caused the time series to behave in a certain way in past years. Judgmental approaches to forecasting are then used to complement the quantitative methodologies.

Although the bulk of the operating budget can be constructed once sales are forecast, there are uncertainties that affect the net income figure, Mr. Bernstein noted. A variety of assumptions related to both the internal and external environment affect the estimate of the net income, the CPA explained. To help management understand the cost dynamics of a particular company a variety of management accounting concepts are useful including direct costing, responsibility reporting, and variance analysis.

Interpreting forecasts

When asked by a member of the audience where the greatest research effort involving forecasting is needed, Mr. Bernstein replied that while the techniques of forecasting are known, reporting on precisely what the forecasts mean still needs to be studied.

In response to a question asked about small businesses attempting to utilize more complex forecasting techniques, Mr. Bernstein replied: "Each management must determine what the cost and benefit of each forecasting approach will be for their own internal needs . . . Certainly, this is an area where we in the profession can give the guidance in what the incremental benefit will be toward getting into some of the sophisticated techniques, the complex causal mathematical techniques, regression analysis techniques, the techniques used in computer simulation, etc."

A third portion of the MAS session was given to a discussion of minicomputers as business systems by Ralph McCormick, Geo. S. Olive & Co.

"Some people seem to feel that the on-line minicomputer is not suited for business data processing. Our experience and investigation have indicated that although it is not a panacea, it has wide appli-

cation in business data processing, and that in a number of cases, it offers solutions that are far superior to more traditional types of equipment.

"It is also very clear that most clients will need far more outside assistance in implementing these systems. And . . . these clients are likely to look first to their CPA to find this kind of help," Mr. McCormick said.

He was asked to give an example of a minicomputer on-line application and its costs. Mr. McCormick said that one company that manages 60 shopping centers in the Midwest uses a minicomputer at the purchase cost of about $33,000. This would be equivalent to approximately $950 per month on a five-year lease including maintenance. The company is using the mini to do expense distribution, general ledger, and statement preparation for each of the 60 corporations and is now in the process of putting its payroll and accounts receivable on the mini too.

The speaker was also asked if he considered an on-line IBM System/3 equivalent to a minicomputer. Mr. McCormick replied that while the System/3 does fit the definition of minicomputer as used by some, relatively equivalent equipment is available from minicomputer manufacturers, at costs that are frequently less than half of IBM's.

However, the speaker pointed out, these machines offer much less in the way of applications software, implementation support, and service, and this lack of vendor support accounts for much of the difference in equipment cost. He asserted that this shortcoming creates a need for a new and more difficult type of assistance from the CPA.

Mr. McCormick added that total costs include development and service costs and that the minicomputer is most attractive in applications where these requirements are minimal.

The moderator of the MAS technical session was Lowell A. Baker, Meaden & Moore, chairman of the MAS education and training committee.

For the Executive in Finance—

Charge-Back, Cost Center EDP Budgeting Debated At New York Meeting

Today two-thirds of the cost of running a data processing department are attributed to personnel expenses and one-third to equipment. Over the next decade, personnel will account for an even larger chunk of the pie and, consequently, to keep EDP costs in line, emphasis must be placed on improving programer productivity, said John H. Richards, manager, computing and telecommunications services, Weyerhaeuser Company. He spoke before The Conference Board's session on "Senior Management and the Data Processing Function," held November 26-27 in New York.

Despite the possible machine efficiencies of assembly language, to make the best use of its EDP staff's time, Weyerhaeuser is developing about 70 per cent of its programs in COBOL and the rest in FORTRAN, Mr. Richards said.

The company is also utilizing a report generator package from Computer Sciences Corporation called "COGENT." It simplifies design and coding; is well suited to small, quick, turnaround applications; saves people time and cost; and is generally as efficient of computer resources as COBOL is, Mr. Richards reported.

Another speaker, John A. Gosden, vice president of The Equitable Life Assurance Society of the United States, discussed the broad effects of EDP charge-backs [i.e., charging the user department for its utilization of the computer department's staff and equipment] in a large commercial environment with a high volume of regular jobs and a straightforward cost center concept for budgeting and control.

Mr. Gosden explained, "The following structure is a simplification of that used at Equitable and is typical of charge-back structures in industry:

- "There are two basic types of activity for which there are charges, development projects and running jobs;
- "Development projects have two main components, labor charges and computer charges for testing;
- "Running jobs have two major components, data entry charges, and computer charges."

Computer charges are the segment of the charging structure that has given rise to many alternatives and arguments, the EDP executive said.

Most organizations put system development costs in their expense budgets, which leads to limiting development because of expense controls. Also users concerned with cost-benefit analyses tend to look for early pay-offs to offset their development expenses, Mr. Gosden said. Pressure mounts for "phased implementation" and "creeping commitment."

Possible distortions

"A basic predicament in setting up charge-back schemes for computer charges is whether to use a detailed cost-recovery approach or a fair-pricing approach," he said. "Basically, the problem with a detailed cost-recovery approach is that it introduces distortions. For example, if a new machine is obtained and is lightly loaded, initially the early pioneers will pay a high rate; and as it becomes loaded, the rate will reduce and demand will increase when it is least needed.

"Further, a cost-allocation approach often introduces peculiarities into the charging policy that seem anomalous to the user. Since we expect people to 'game against' the charging policy, it makes sense to construct the detailed policy so

that a 'desired behavior' is obtained. If 'overall cost recovery' is also required, it can be obtained by an overall adjustment," Mr. Gosden said.

In his company, to keep from penalizing "early pioneers," charges are based on assuming all shared equipment is fully loaded. In one case where management wanted to expedite a change from tape to disc usage, it underpriced disc usage as an additional incentive.

Originally the company charged different rates depending upon three size ranges for core usage. The design review team found that program designers were trying to keep core sizes just beneath the price-change levels. For instance, if 200,000 bytes was the price change point, programers would design for 190,000 bytes. To prevent this, smaller steps for price changes were established.

"Although we try to keep our computer-charging formula simple, there have been occasions when some details are important," Mr. Gosden stated. "The most important case concerned the high overhead associated with short tests that require mounting and demounting of peripheral devices. We made sure that there were realistic charges for such handling. Combined with other incentives, we reduced unit costs of tests and decreased the proportion that needed setups from about 60 per cent to 30 per cent."

Equitable has a multiprograming situation so that if one program monopolizes a single resource it prevents others from being run. If a program is uniformly balanced, Mr. Gosden explained, it should utilize the same percentage of allocatable central processing unit, allocatable core, allocatable disc, etc., and, consequently, be fairly charged as that percentage of the desired hourly recovery rate. However, if the program makes unbalanced use of allocatable resources it inhibits program mixing and should compensate by paying higher charges.

"Arbitrarily we decided to double the marginal charge rate at about 33 per cent of a resource; this break-point also corresponds to the task resource profile bounds that we publish in our guidelines for designers. If a task uses an unbalanced set of resources, then it is obvious that to take the maximum of the proportions is an approach which also induces designers to balance resources. We arbitrarily mitigated this by taking 4/5 of the maximum and 1/5 of the next maximum. The values for EXCP [executive channel program] is an average measurement made dynamically in OS-360 for CPU usage due to supervisor calls," Mr. Gosden said. Some artificial simplicities are contained in the formula, such as one seven-track tape is equated to two nine-track tape units, he added.

This charge-back formula has been used by Equitable for the period 1972-4 and has motivated redesign efforts to reduce running costs of jobs. EDP management is becoming more concerned with the details of charge-back policies and the effects they have on designers and users and on attaining overall cost recovery objectives.

Mr. Gosden observed, "EDP management also seems to be building upon charging schemes to improve forecasting of loads and measuring capacity of systems and is beginning to experiment with cost/performance analysis of components of its EDP operations."

In conclusion, he said, "The recent emphasis on cost control has increased user pressure for faster return for current expenses and increased management's efforts to look for performance measures in EDP operations. The next initiative will be pressure from users for more charges based upon the user's unit of work, invoice, pay slip, payment, etc."

He recommended reading the November, 1973, *EDP Analyzer* on this topic.

One opponent of the charge-back system, for the data processing department, spoke up. Duane R. Borst, comptroller, Inland Steel, said that he opposed the method for several reasons. "People get vehement about being charged for things they don't feel they can control," Mr. Borst said. Also, some user departments begin feeling that they are such good customers of the data processing department that they demand their jobs be run on the computer immediately and even want to come down and run them themselves. Finally, he said, some organizations do not lend themselves to being meaningfully broken down into profit centers.

We have only been able to summarize one part of one session of a very interesting multi-session conference on "Senior Management and the Data Processing Function." Tapes and transcripts of the entire meeting are available to Conference Board associates in its library, 845 Third Avenue, New York City. The Board anticipates having a published version of the proceedings later this year.

Top Financial Officers' Pay Increased More in Recession Year Than in Prosperity, Survey Shows

In 1972 average total compensation for controllers rose 11.2 per cent, for treasurers 10.7 per cent, for top financial officers 10.5 per cent, and for chief executives 9.8 per cent, reports a survey recently published by the Financial Executives Institute.

The survey was conducted by Edwin S. Mruk and Donald R. Guerette, both with the New York management advisory services department of Arthur Young & Company. Questionnaires were sent to each of the companies represented in the Financial Executives Institute membership (each company has a minimum net worth of

$2,000,000). Over 1,000 companies replied, providing information on a total of 5,431 executives. Information asked for included 1971-1972 cash compensation data (base salary and bonus payments) for the chief executive and 13 financial and accounting management positions. The survey's findings are given in *Executive Compensation*, a 111 page report, priced at $25 and available from the Financial Executives Institute, 633 Third Avenue, New York, N.Y. 10017.

On a regional basis, for top management the largest average total rise in cash compensation, 11.9 per cent, occurred in the West. Top management executives in the Southwest received the smallest reported increase, 6.1 per cent.

How closely did these increases adhere to the 5.5 per cent guideline? Messrs. Mruk and Guerette point out the major portion of the overall increases in average total compensation can be attributed to increases in bonus levels.

COMPENSATION OF CONTROLLERS IN THE NORTHEAST

SALES VOLUME Millions of dollars	BONUS COMPANIES Average Base Salary	BONUS COMPANIES Average Bonus	BONUS COMPANIES Total Compensation	NON-BONUS COMPANIES Total Compensation
Under 5	0.0	0.0	0.0	0.0
5-10	24.0	2.5	26.5	22.8
10-25	21.0	2.8	23.9	23.1
25-50	26.7	3.6	30.3	28.9
50-100	26.9	3.3	30.2	27.4
100-200	33.2	7.9	41.1	33.1
200-500	38.9	7.3	46.2	37.0
500-1,000	42.8	8.2	51.1	47.0
1,000-2,000	46.1	12.1	58.1	52.1
2,000-5,000	61.0	21.6	82.6	81.0
5,000 and over	103.4	78.6	182.0	108.8
All levels	**36.5**	**9.0**	**45.5**	**35.5**

Companies reporting: 195; Percentage paying bonus: 59.0; Average bonus as a percentage of base salary: 24.7.

Reprinted from *Executive Compensation* by permission of the publisher, Financial Executives Institute.

Controls held increases down

The authors say it should be noted, "that while average base salaries for the positions surveyed increased by 5.9% in 1972, a year of improved business conditions, the average rate of base salary increase in 1970, a year of business decline, was 8.5%. Thus, the economic control guidelines appear to have had a significant influence upon salaries."

As for middle management, average total cash compensation increased by 9.3 per cent in the 1971-1972 period, the survey reports.

Middle management experienced the following percentage increases in total compensation 1971-72: top financial relations executives in bonus companies 15.3 per cent, in non-bonus 3.7 per cent; top financial analysis and profit planning executives 13.1 per cent in bonus companies and 10.1 per cent in non-bonus; top budget executives 11.0 per cent in bonus companies and 8.0 per cent in non-bonus; and cash management executives 12.0 per cent in bonus companies and 7.1 per cent in non-bonus. Other positions are listed in the study.

The FEI study includes an analysis of executive compensation on regional pay levels, and a comparison of top management compensation by industry.

Looking at top management compensation, the study states, "In 1972, Transportation Equipment was the highest-paying industry of all industries surveyed. In 1970, it was the sixth-highest-paying industry reporting. Chemicals and Petroleum continued to be the second-highest-paying industry, while Retail Sales has dropped from first in 1970 to third in 1972."

On the other end of the executive ladder, Abbott, Langer & Associates, Chicago management consultants, has completed a survey of starting salaries and recruiting ratios for inexperienced college graduates.

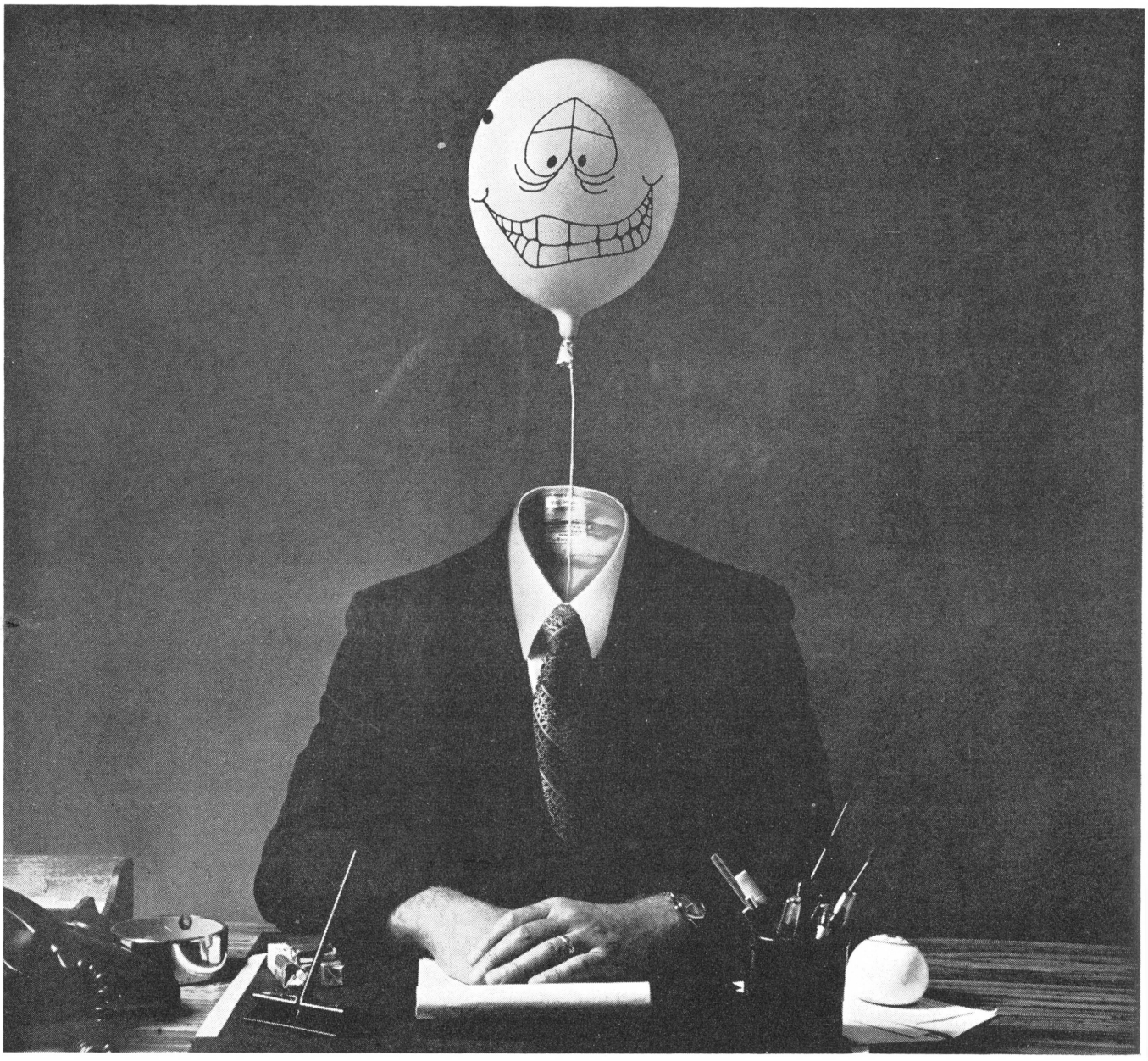
The firm's *1973 College Recruiting Report* can be obtained from its office at 135 South La Salle Street, Chicago, Ill. 60603, for $25.

On the basis of over 8,000 inexperienced college graduates hired by survey participants during this past college recruiting year, the firm's managing consultant, Dr. Steven Langer, reported that technical graduates with B.S. and M.S. degrees showed the largest average increase in starting salaries: 4.6 per cent for B.S. graduates and 6.5 per cent for M.S. graduates. The average starting salary for B.S. graduates was $923 per month and for M.S. graduates $1,080 per month, the consulting firm found.

Abbott, Langer, observes that for the first time in many years, recipients of M.B.A. degrees showed little change in average starting salaries since the previous year. M.B.A. graduates averaged $951 per month, the firm reports.

Looking at the results of both surveys, the climb from the beginning M.B.A.'s $11,412 compensation up to the chief executive of a billion-dollar-plus organization's $249,500 seems long indeed.

Space problems have made it impossible to incorporate our feature "New Products and Services" in this issue. It will be resumed in our next issue.



High Blood Pressure Is a Joke.

. . . a *bad* joke. High blood pressure—doctors call it hypertension—is a silent, mysterious disease. It cripples and kills without warning. One in seven adult Americans has it, and half don't know it. There are no special symptoms, but when your blood pressure goes up and stays up, it's no laughing matter. Untreated, it can lead to heart attack, stroke and kidney failure. This year alone, 900,000 will die from these diseases. Your doctor can detect hypertension, and can usually control it. So get a checkup. And follow your doctor's orders. No one else can do it for you. Right? Meanwhile, the Heart Association is working hard to learn what causes hypertension and how it can be cured . . . to find people with high blood pressure and get them under treatment. We're doing it through research, education and community programs. Your contribution to the Heart Fund will keep us working. No joke.

For information about High Blood Pressure—ask your Heart Association.

Give Heart Fund

Contributed by the Publisher

Program budgeting systems can be adapted to municipal departments as disparate as public works and recreation. Here's how it was done in one township—

HALTING A RISE IN A TOWN'S TAX STRUCTURE THROUGH PPBS

by Harold I. Steinberg
Peat, Marwick, Mitchell & Co.

and James D. Carney
City of Yonkers, N.Y.

PPBS and program budgeting are two management systems that have been widely implemented in school districts in recent years (see MANAGEMENT ADVISER, "PPBS for a School District," March-April, 1972). The systems work well; the school districts are happy; the process seems far more effective than traditional school budgeting procedures have been.

Our firm has participated in many of these implementations, and one thing leads to another. Our colleagues and we had given long and serious thought to how these systems might work on a larger scale; in other words, what has to be done if we are concerned with a whole town or city budget rather than the somewhat limited and circumscribed area of a school district.

Concurrently, a suburb of a major metropolitan area was having some second thoughts about its budget. Budget requests from each of the departments kept rising every year, and the tax base, after all, had limitations. There was no immediate problem, but the Town Finance Board saw a point of no return approaching, a time when budget requests would outstrip tax revenues. What could they do about it?

The town, which had some knowledge of our work in school districts in a neighboring state, approached our firm as they did another large public accounting firm. Could we help?

We believed we could and so wrote a proposal letter, as did the other firm. After a short period, the town chose our group.

So we had to implement that which we had been formulating for some time. We had a whole modern municipality to work with. For our client—let's call it Anytown—while a suburb of a larger city, itself had more than 20,000 inhabitants, and it needed most of the services any city would require.

Anytown, like most towns, was a mixture at the governing and administrative level of professionals and laymen. Its governing body (see Chart on page 17) was the Town Meeting, composed completely of lay members. Also there were the Selectmen, and the Fi-

. . . we decided, with the town, to work with the four board-responsible departments . . .

nance Board, appointed by the Town Meeting Moderator. The Selectmen had charge of certain departments, such as Police, Fire, and Health. Other departments were responsible to their own elected boards, although their budgets were reviewed and commented upon by the Finance Board and subject to approval by the Town Meeting: Schools, Libraries, Public Works, and Recreation were examples.

Scope of project

Since we could begin the project with either the town's entire governmental structure or a portion of it, and the lines of authority were most direct between the elected boards and the top professionals in those departments, e.g., the Board of Public Works and the Commissioner of Public Works, we decided with the town to work with the four "Board-responsible" departments first. If we could get four boards of lay people and four professionals as disparate in nature and outlook as schools, libraries, public works, and recreation to learn the principles of program budgeting, they in turn could serve as an example for the remaining groups in the town. Following is a brief summary of some of our experiences during the first year.

We found in working with these departments that there were wide differences in the level of understanding of modern budgeting. Most were looking at expenditures first, and not necessarily to the purpose of the expenditure, discussing for hours the purchase of one additional typewriter rather than finding out why– or whether– the program in which the typewriter was to be used was indeed needed.

We, of course, suggested program budgeting, an entirely different approach. We knew that most ongoing programs would have to be maintained, at least until the community had a chance to evaluate the programs and their worth in terms of the money spent on them. On the other hand, something had to be done. Accordingly, we recommended that each department specify its programs, define the purpose of those programs, and suggest the appropriate levels of service for each–rather than seek an evaluation of the program's objectives or a detailed analysis of the line-by-line costs.

For example, we talked to recreation in terms of the usage of each of the activities and facilities. How many children joined the Touch Football League? How many people used the parks each day? At what costs? How many people availed themselves of the special bus tours to the nearby metropolis which included a visit to the museum at cut rates? The town did not have to pay for the museum, of course, but it did have to carry most of the overhead for arranging the transportation. How many people availed themselves of sports facilities right within the town?

In other words, a sort of cost-participation ratio was inaugurated as the basis for making budget recommendations. If it proved that a program cost $1,000 a year to administer, but only 20 citizens participated, obviously something was out of phase. The program was not providing sufficient value to the entire town. Other programs were obviously worth a good deal, so much so that those who participated would be willing to pay for the privilege. Night sports fell into this category. Adults, seeking a diversion from their jobs in the city, were already paying for admission to private tennis courts and for golf instruction at the country club in the town. Why shouldn't they pay a modest sum for the additional manpower required to operate the same program when it was sponsored by the town?

To take another example: public works. It was very different from recreation. Snow had to be removed when it fell; everyone would agree on that. But the schedule of snow removal could make a tremendous difference in the budget.

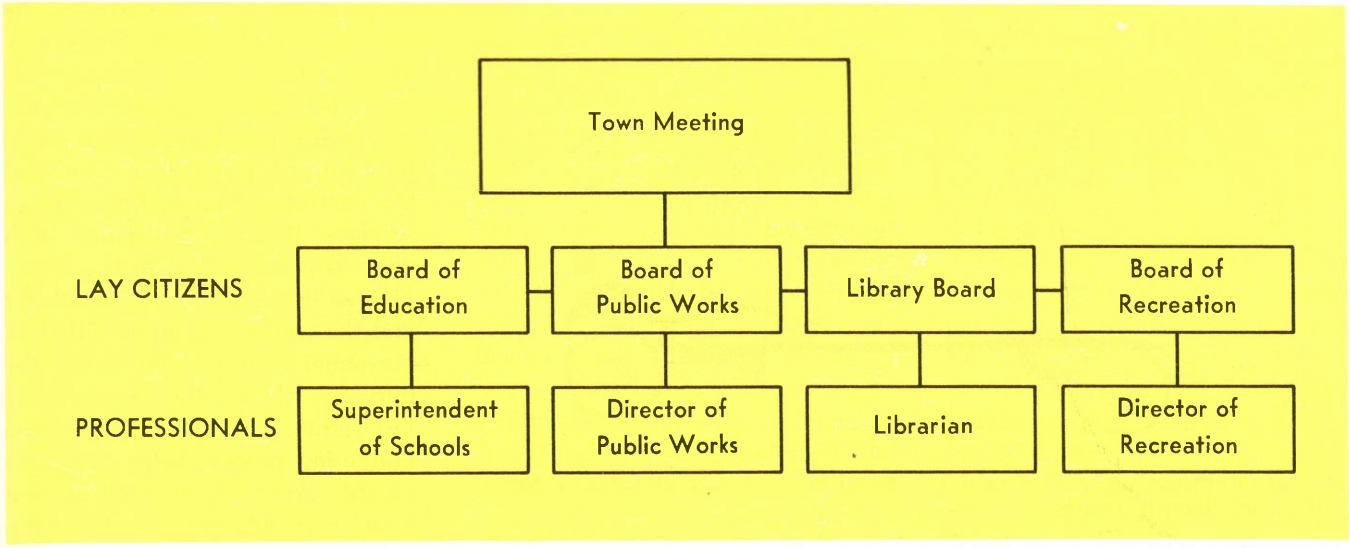
Basically, a community can follow two paths. It can schedule itself to move immediately and completely–and pay a considerable amount for this type of response. Or it can plan for snow removals on a staggered basis. Why not delay slightly before initiating operations–then clear the business districts first, then the school approaches, then the residential areas? That way less men and pieces of equipment would be needed and the cost would be lower than if everything was cleared immediately. Garbage collection can be speeded up immensely with a smaller work force if garbage is collected at curbside rather than at the householder's door.

Weighing alternatives

There are always choices to be made, alternatives to be weighed. The adequate service against the luxurious service, the snow being cleared immediately against the snow being cleared somewhat later.

Those choices are ultimately the citizens', but at least they know what it is they're deciding under a program budget. They were not simply voting for or against higher taxes without knowing what it would mean in terms of snow removal or garbage collection.

Similarly with libraries. Here we used a reversal of the technique we



used in recreation. Instead of taking a census of the people using the libraries we suggested a tally of those who did not. Why not? What could the libraries offer that would make them more useful and more valuable to a greater percentage of the townspeople? For libraries' costs do not rise as dramatically as their effectiveness when they serve a greater number of people. Most of the costs are fixed. The library is there and must be maintained; the staff too is already there. But such things as varying the book purchases to match newly discovered tastes can make a tremendous difference in the utilization of the library system.

Not that we did not find areas of absolute possible savings. The library, for example, had been paying for years for a security system for its books. Yet a glance through the records showed that evidences of loss or theft from the town's libraries had been relatively minor for years. Would it not be worth it to try to do with a slightly less stringent security system and instead devote the monies to additional book purchases? If losses shot upwards, the security could always be reinstalled.

These things sound almost painfully simple. But they are not done unless people are acclimated to program budgeting or a similar more up-to-date approach. And most people involved in governmental units simply are not. We were dealing with an entity that housed one of the nation's most prestigious institutions of higher learning, whose citizens commuted daily to one of the nation's most sophisticated cities. Yet in their capacity as citizens sitting on the town's boards and committees, they had never questioned why programs existed, what they cost in terms of the amount of service provided, whether in sum those programs and those amounts of service were worth it. In short, we were going to help these people use a budget, municipal or commercial, as it should be used: How to achieve what you want at a cost that is properly representative of desires, needs, total resources, other uses for the monies, etc.

As a matter of fact, given our previous school experience it was easy to deal with the school department and its budgeting process. Here we were dealing with an area in which there had been considerable thinking about program budgeting. Further, there were considerable financial and statistical records, there was an acceptance of testing and evaluation, there were records of attainment against local desires and national norms. It was like getting back to firm ground again after a long period on the ocean. We experienced all of the difficulties described in "PPBS for a School District," but at least they were known difficulties.

In brief then, program budgeting is a new approach to many people. It requires an entity (in this case, a department in a municipality) to identify each of its programs and the community purpose or need that program serves. This in itself often reveals programs that have been maintained for years where the need has long since vanished, or overlapping areas where other programs meet the needs more adequately. Then, and only then, do the departments establish budget guidelines which reflect the areas of priority for the

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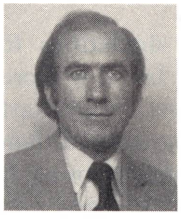

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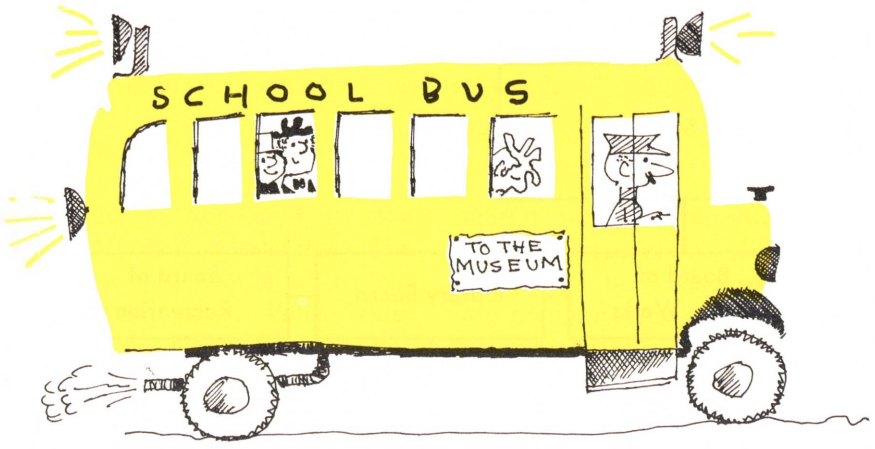


If a program costs $1,000 a year to administer, but only 20 citizens participate, something is wrong.

future. The departments set these priorities in light of the community's needs. They then make an estimate of the resources that will be needed to operate each program over the next several years. These data are compiled into a program budget format which includes the purpose of each program, a description of the services it provides, the benefits or service level expected from the program, and the costs anticipated for the next and future years.

When this has been done, the entire emphasis of the traditional budgeting process has been reversed. Now programs and levels-of-service come first and the cost of achieving them comes second. This might sound fiscally irresponsible but actually it is not. For the review of the department purposes almost always shows so many programs that are outdated, or not used, or in some other way irrelevant, that eliminating them frequently gives the department more money to work with in terms of previous years' budgets than it is used to having.

The process has similarities to zero-base budgeting but it is more gradual. As I say, we always start with an ongoing program and then by a series of refinements bring it closer and closer to the zero-base-budgeting ideal, where each part of each program is justified anew each year instead of merely being based on change in the previous year's budget. Obviously, that is where program budgeting eventually leads. But we do not start out that way.

The benefits

The benefits of both the process and its product, the program budget, are extensive. First, for the government units that must monitor and review operating departments, program budgeting provides a better understanding of what each department is doing or trying to do. Moreover, because it lays out the purposes, anticipated outputs and costs of each program within the departments, it makes it possible to compare the costs and benefits of the various activities. Such information facilitates the tasks of choosing priorities, assessing the impact of required budget cuts, and developing overall budget recommendations. Decision-making is further improved by providing, through the multi-year financial plans, an estimate of the long-term implications of new programs and program changes.

At the operating level, the process redirects administrative attention toward program output and the control of the quality of these services. Because traditional budget and management methods emphasize the control of expenditures and the use of the inputs (that is, personnel, equipment, etc.), the purposes of activities were easily lost sight of. Finally, the program budgeting process helps managers identify areas where needs are not being met, where services are duplicated, or where services are available yet not recognized by the community. Because departments are required to state their objectives, it creates a basis for departmental accountability.

For the members of the community who must ultimately bear the cost burden for municipal services, program budgeting offers a clearer picture of what their tax dollars are buying, and it provides numerous opportunities for the community to express its needs and desires to the various departments prior to and during the budget development process. Only too often does the traditional system of budget preparation entail simply adding a "reasonable" increase to last year's budget in order to arrive at the new budget request, thus usually failing to determine in any formal way whether the services are still needed by the community, or whether improvements are required.

Why shouldn't adults, willing to pay for private membership in golf and tennis clubs, be willing to pay a small fee for use of municipal facilities?

Introducing PPBS in a township or municipality is to a large extent an indoctrination job. Accordingly, there are a few things that should be spelled out first.

Implementation steps

A good implementation plan should provide the community with a functioning program budgeting system within the first year. This is desirable because the operating departments will be investing substantial time and attempting strange new procedures. They and the community should be rewarded with tangible results at the earliest possible date, even at the expense of elaborate analysis. The latter serves no purpose if the departments lose the desire to implement program budgeting before even the first program budget is produced.

Second, we think it is wise, when going into a new situation as we did in Anytown, to work with a small number of departments. When departments as disparate as recreation and public works are involved, life can become difficult enough; there's no point in complicating matters by taking on an inordinately large number of activities. Program budgeting is simple enough as a concept; it's the individual concerns of the different departments that represent the implementation problems.

With the above in mind, the following are the major steps for implementing a system of program budgeting:

- *Hold an orientation seminar.* A one-day orientation seminar should be conducted to acquaint those most affected by the new budgeting process with the basic principles, requirements, and techniques of program budgeting and a supporting program accounting system. During the session, specific exercises should be provided to give the participants a "hands on" feeling for the nature of the work.
- *Develop program structure.* In each department a small team of key personnel should identify the various departmental programs and group them into broad areas of need or purpose served. The identification and grouping of programs is called a *"program structure."* It forms the basis for planning and budgeting. After the initial structure is prepared it should be reviewed and modifications made, if necessary, to insure that the structure reflects the purposes served by the department. Also, as program budgeting must serve the town as well as the departments, the individual program structures should be aggregated, and all programs serving the same purpose identified. A single town-wide program structure composed of the different department structures should then be developed. A town-wide coordinator, whose role is discussed later, could spearhead this effort.
- *Define the goals of each program and describe the activities undertaken to achieve the goal.* For each program in the structure, a general statement should be prepared of the purpose the program serves in the community. This statement is frequently called a *"goal."* In addition, a description of the types of services provided by the program, as well as the volume and methods of providing the services should be developed.
- *Define statistical indicators and establish levels of service.* The department manager and the person responsible for such programs should determine what statistical indices are the best indicators of levels of service. Naturally, the selected indicators should be readily available. The levels of service presently achieved and those desired for the future should then be established.
- *Develop budget guidelines.* Overall guidance to department staff for preparing program budgets is provided by the budget guidelines. These identify the priority areas which should be emphasized in the coming year. In addition, they serve to highlight any assumptions or constraints which persons should realize as they develop the budget. The guidelines should be the result of a series of reviews and meetings with the departments' staff, their elected or appointed boards if they exist, and the community in general. At these meetings, all the suggestions and comments offered should be culled down to those which, in the department head's opinion, are most critical. As a last step, the guidelines should be submitted for approval to the department's board.
- *Recast current budget.* The con-

Once the department's program budget is compiled, it should be submitted to the various groups . . . who must approve the budget before it is submitted to the town finance (or budget) committee. Whenever the reviews result in reductions, the program leaders should be required to redefine their requests to reflect the impact of the cut on the program.

ventional budget of the year preceding the program budget should be recast into a program budget. This recast is vital in that the amounts shown for each program are a valuable and necessary guide for the specification of the financial requirements of a program in the first year of program budgeting.

The recast technique requires the assignment of each line item object in the departments to the various program or programs for which the expenditures will be incurred. The line items are either assigned directly to a particular program or distributed to several programs on an agreed-upon allocation basis.

• *Design program budget worksheets.* While the statutory requirements for the budget process are already defined, it is not until this point that the kinds of information required to fulfill the community's decision-making and communications needs are crystallized. Therefore, the next step is to determine how extensive the budget preparation process should be in each department, and then to design the content and arrangement of the forms needed to develop the budget. These forms should provide for the insertion of at least a statement of purpose and description of the program, the appropriate financial and statistical data, an indication of any desired changes, and alternative ways to achieve these changes.

• *Conduct budget workshops.* Workshops should be held to explain in detail how the budget will be prepared and reviewed.

• *Develop program budget requests.* During the first year of program budgeting, at least two elements should be developed for each program by the program leader. The first is the resources required to meet indicated program goals within the framework of the budget guidelines; the second is desired program changes. For each change, the leader should define how the change would benefit the community, the ways he can measure the achievement of those benefits, and alternative methods to accomplish the change. He should also project the costs of the change for at least three years.

• *Design program budget format.* The specific information and financial requests to be included in the department's program budget document should be decided upon. This would include, if appropriate, a budget message explaining why certain programs are emphasized, and also supporting schedules that permit a ready comparison of the budget request with that of the preceding year. This is particularly important in the first year of program budgeting when the transition could cause some confusion. The requests should then be compiled into the department's program budget.

• *Conduct review and approval process.* Once the department's program budget is compiled, it should be submitted to the various groups(that is, boards, committees; or selectmen) who must approve the budget before it is submitted to the town finance (or budget) committee. Whenever the reviews result in reductions, the program leaders should be required to redefine their requests to reflect the impact of the cut on the program.

• *Compile and schedulize budget requests.* On or before the specified submission date, the budgets should be submitted to the town's chief fiscal officer who then determines the total for all the budgets and calculates the impact of the aggregate requests on the tax rate. This information, together with the actual budgets, is then transmitted to the finance advisory committee.

• *Submit to finance committee for review.* The finance committee reviews should consider the impact of the total requests on what it considers an appropriate tax rate for the town's needs. To that end, the departments should be prepared to identify for the committee the program impact of additional costs, if any. Once the reviews are complete, the committee should present its recommendations to the town or village in program budget format.

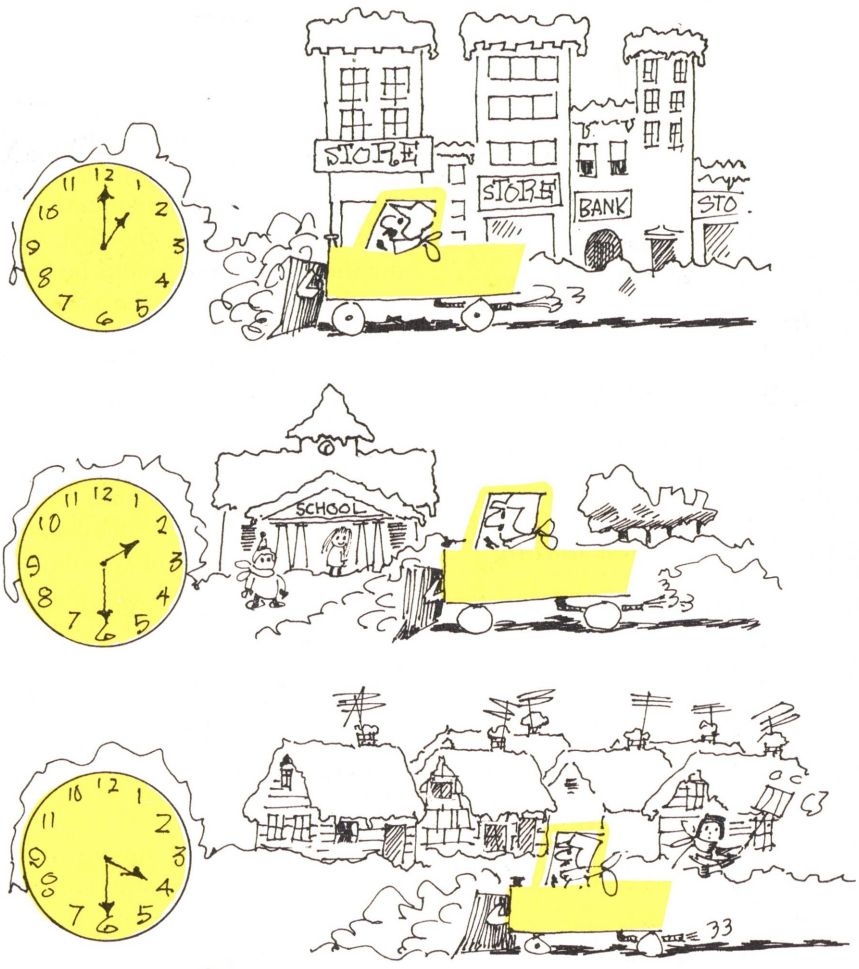
• *Submit to town meeting for approval.* The format of the town meeting need not be changed. To the extent, however, that there are discussions over resolutions, the issues should be more program-oriented, and hopefully more community benefit-related.

• *Design and implement program information systems.* In each department, the accounting and statistical accumulation procedures should be modified so that program reports can be provided. These reports should contain information useful for monitoring and evaluating each program, both financially and in terms of program outputs. As indicated below, providing appropriate financial information may require the design of some new accounting reports, the development of a uniform chart of accounts to minimize the data processing requirements, the establishment of data input controls, and the modification of some current data processing systems. The appropriate statistical data can be gathered by designing and then implementing forms and procedures tailored to the collection and compilation needs.

Subsequent refinements

As stated previously, a soundly conceived implementation plan should enable the town or village to install a working program budgeting system within one year, with refinements to be made in succeeding years. Before any of these refinements are adopted, however, the value they add to the process should be carefully assessed, particularly as to costs and effort.

Those departments wishing to improve the process during the second year can conduct a survey of community needs. The purpose of the survey would be to obtain community comments on the effectiveness of services rendered, to identify any areas which need improvement, and to uncover needs which are not currently being met. This survey should form the basis for that year's budget guideline devel-



Snow had to be removed whenever it fell; everyone would agree on that. But a community can schedule itself to move immediately and completely—and pay a considerable amount for this type of response. Or it can plan for snow removals on a staggered basis, clearing the business district first, then the school approaches, then the residential areas.

opment. In addition, during the second year, multi-year financial statements can be developed for each program in total, and not just the changes.

Also, a department can decide upon the criteria for evaluating the effectiveness of the programs it provides. Departments might set desired output levels for each program, and then check to see if these levels are being reached. If a program falls short of these objectives, alternative approaches might then be identified and evaluated in terms of cost and estimated effectiveness.

Finally, if, as suggested, not all the departments attempted program budgeting in the first year, another refinement would be to expand the system to the other departments.

An effective town-wide program budgeting system should provide for the appointment of a coordinator to help establish and maintain town-wide structures and act as a go-between among departments in order to bring the experiences of one department to the attention of all and to avoid duplication during the initial implementation period.

Accounting support

Program accounting is an integral part of the program budgeting process. If the municipality does not keep track of spending by program, it will not know if any of the programs have cost more than intended. Also, departments will lack historical data to guide future planning efforts. The following steps can serve as the foundation of an effective program accounting system:

- The content and timing of the program accounting reports should be defined in each department, based on its management needs. The requirements will probably differ somewhat among the departments, the larger departments often requiring more financial data, more frequently, and in more summary form than the smaller units.
- A uniform coding structure for all departments should be developed to establish comparability among the departments.
- The methods required to charge costs to the proper programs in each department should be developed, based upon the operating practices and the program structures. For example, in some instances, salaries will be distributed based on pre-determined decisions as to where people work. In other departments where a staff member can work in several programs, a time-reporting system might be needed.
- Program accounting reports should be complemented by program statistical reports which might include such program data as the level of educational achievement, miles of streets cleaned, or the number of clientele served.

Conclusion

Two other ingredients are needed to successfully implement program budgeting—coordination and a combination of flexibility and maintenance of standards. An effective town-wide program budgeting system should provide for the appointment of a coordinator to help establish and maintain town-wide standards and act as a go-between among departments in order to bring the experiences of one department to the attention of all and to avoid duplications during the initial implementation period. He can also help to maintain momentum. Program budgeting is a new way of operating for many public officials, and until it is fully ingrained, there is always the possibility of a regression back to incremental budgeting. But perhaps the most important ingredient is to remember to allow the individual departments flexibility in terms of depth and scope, while insisting that a minimum standard of comprehensiveness and comparability be maintained.

Finally, it should be recognized that fiscal control represents but one essential feature of program budgeting. There are other substantial benefits yielded by that system, such as the opening up of the departments' program and fiscal management processes, and the consequent strengthening of community understanding and support. Any town that finds itself in that position will certainly be well prepared to handle the lean years ahead.

Close year-by-year study of an industrial plant revealed one glaring oversight in its planning; by taking too long a time span for many of its calculations, the company was, in effect, masking a sharp drop in productivity —

PRODUCTIVITY ANALYSIS: PREREQUISITE TO MEANINGFUL FINANCIAL PLANNING

by Granville R. Gargiulo
Arthur Andersen & Co.

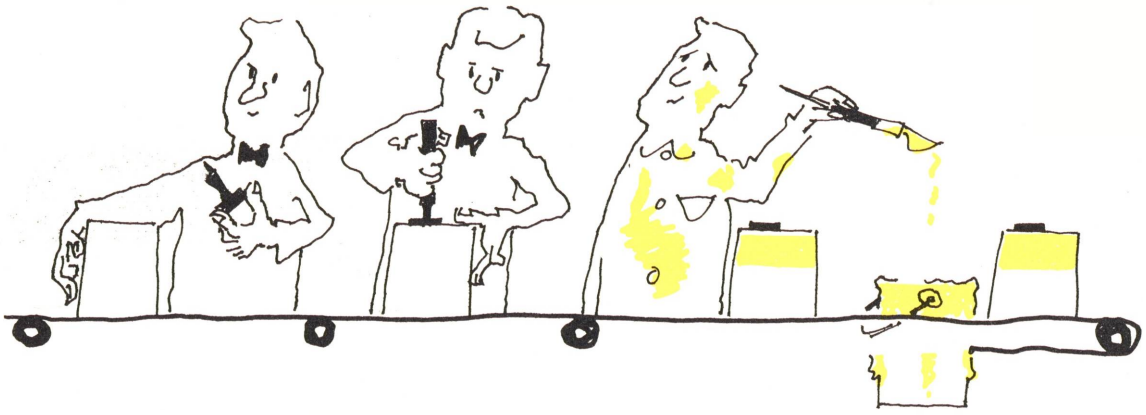
THE COMPLEX and competitive environment of most industrial organizations requires a management team that can deal effectively with change. Such a task normally requires the development of a sound financial or business plan which evolves from a planning process characterized by:

- The establishment of management objectives in a quantified measurable form together with the assumptions on which the plans are to be predicated.
- An identification of the strong and weak points of the organization and a determination of the opportunities to exploit the strengths and eliminate the weaknesses which would enhance goal achievement.
- The identification of specific alternative courses of action and the evaluation of these alternatives in terms of their impact on key criteria such as return on investment, earnings, and other performance measures related to management's objectives.

Factors to be weighed

This planning process and the realistic financial projection needed to adequately assess alternatives requires consideration of many factors and interrelationships. To be meaningful as a basis for decision making, the company's planning capabilites should enable comprehension of the full effects of financial interrelationships, operating characteristics, and governing management policies. In this regard, many companies have utilized computers to provide an improved planning capability and, in particular, the development of financial planning models.

Building a financial planning model involves extensive use of historical data and past performance. The specific format or logic of the interrelationships contained in a model will more than likely be based on an evaluation of such relationships in prior years of a company's operations. The para-



Addition of workers to a raw material processing area resulted in an actual decrease in productivity . . .

meters of these relationships are generally established from correlation studies and similar statistical analyses.

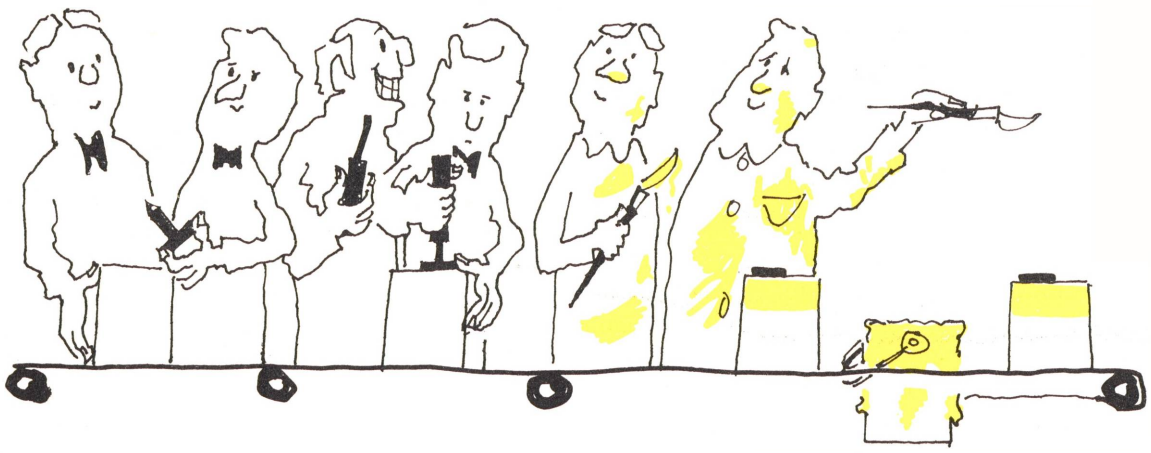
The heavy reliance on historical performance and related data as a basis for building a financial planning model and for supporting assumed effects of alternative management actions in the future, suggests the need for a clearer understanding and evaluation of what truly constitutes past performance. While the accounting and management information systems of a company may provide an identification of financial and operating problems on a relatively short-range basis, there is limited capability in most organizations to identify and isolate the trends in productivity which have a cumulative impact on profitability. Richard Gerstenberg, chairman of the Board of General Motors Corporation, stated, "I regard productivity as a measure of management's efficiency, or lack of efficiency, in employing all the necessary resources—natural, human, and financial." If this measure is not used to diagnose the gradual forces affecting performance—good or bad —then the reliance on historical information as a basis for developing a financial model poses risks of perpetuating capital and human productivity in the future which may be well out of line with maintainable levels.

Elaboration of this real danger is illustrated by the following case example.

A case example

The company represented by this example produces consumer non-durable products in a continuous production process environment. The initial phase of the investigation focused on a comparison of the company's two plants to industry averages at the four-digit Standard Industrial Classification code level.* In order to take advantage of the available methodology and published data

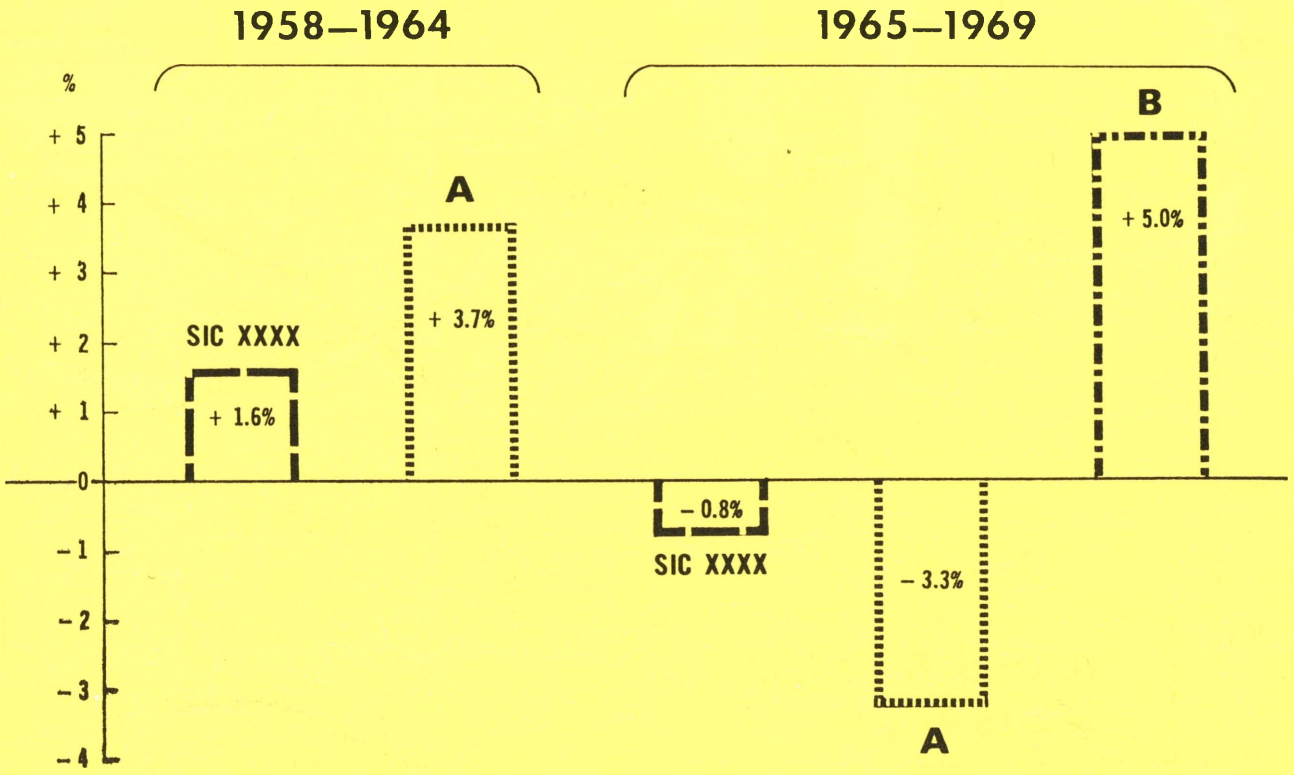
*Federal classification.



. . . since expected increased demand was not realized. Productivity per worker declined sharply.

EXHIBIT I

PRODUCTIVITY INDEX (output per all-employee man hour)
Comparison of 7 and 5-Year Average Annual Trends
A and B PLANTS vs. INDUSTRY



on productivity, output per man-hour was used to compare to the industry averages published by the Bureau of Labor Statistics.

Exhibit 1, this page, graphically portrays the results of this analysis. As a basis for comparison of both Plant A and Plant B trends, productivity ratios were developed for two distinct time periods, 1958 through 1964 and 1965 through 1969, the latter time frame to take account of the startup of Plant B in 1965.

As presented, the average annual trend for this early period showed Plant A gaining at a rate of 3.7 per cent, which is substantially higher than the industry average for this period. The trend for the 1965 through 1969 period showed a markedly different rate for Plant A, namely, a decline of –3.3 per cent compared to a negative 0.8 per cent trend for the industry. Plant B, on the other hand, showed a significant positive trend of 5.0 per cent. This experience for Plant B was not surprising since the plant was constructed more recently with substantially greater emphasis on automation and improved plant layout relative to Plant A.

Two distinct phases

The trends for the operation of Plant A indicate that there were, in fact, two distinct productivity averages: a period to the mid-sixties in which productivity rose at a rate substantially higher than the industry, and a second period, since the mid-sixties, in which productivity declined more rapidly than the industry. These trends were particularly surprising since, in most recent years, the company had experienced increasing levels of sales growth. Further comparisons of the company's plants-to-industry statistics showed that labor compensation had increased substantially faster than the in-

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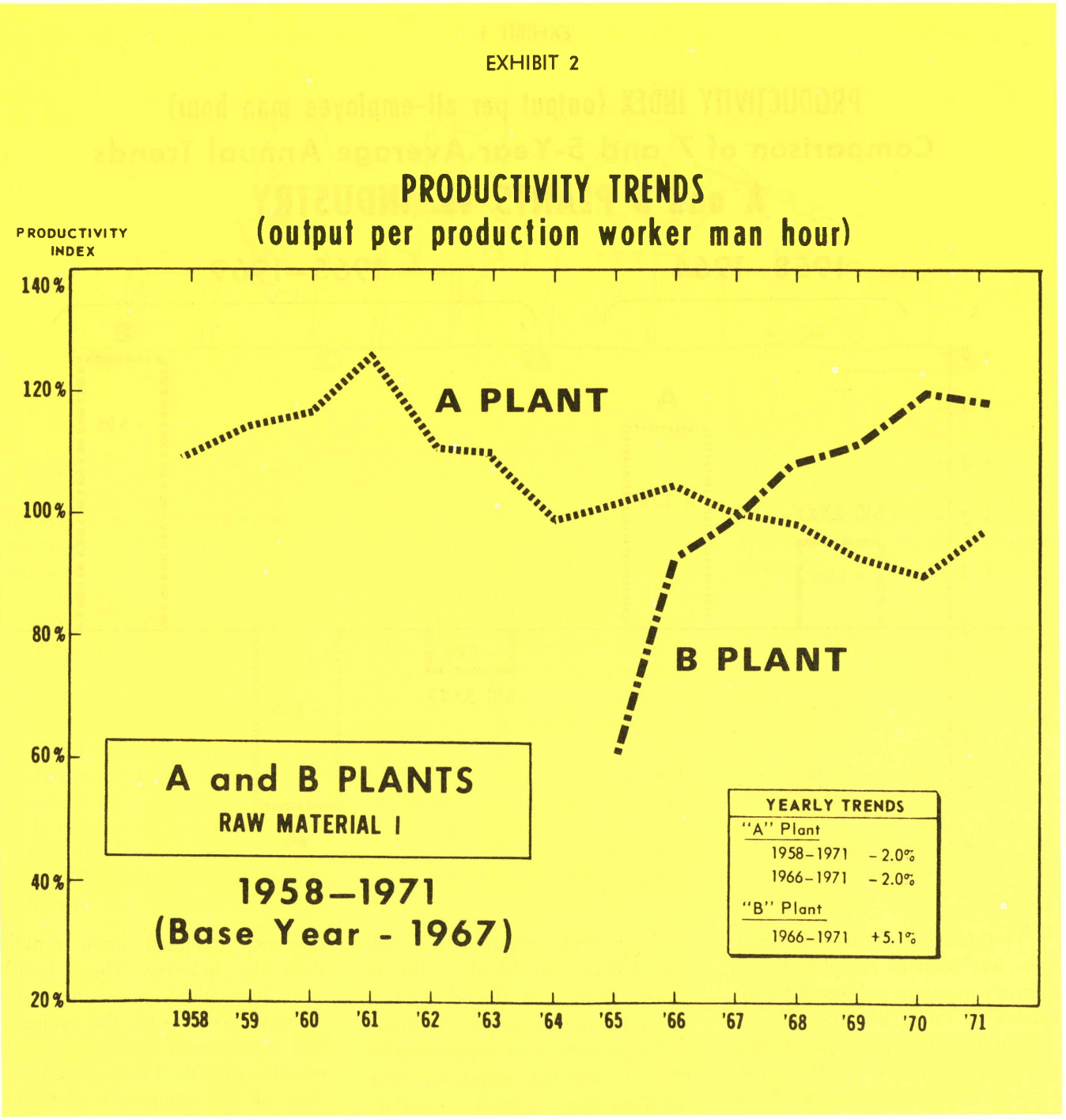
EXHIBIT 2



dustry average with a resulting increase for the company in unit labor costs relative to competition.

The unfavorable productivity trend at Plant A led to a detailed cost center analysis in a raw material processing operation and the Finishing & Packaging Department of both Plants A and B in an attempt to isolate the causal factors contributing to the significant differences in performance. The productivity trends for the Raw Material I processing areas at Plants A and B are illustrated in Exhibit 2, above, for the period of analysis, 1958 through 1971. As shown, the productivity index for Plant A reached a high point in 1961 and output per man-hour declined steadily ever since. On the average, for the entire period, the trend had been a 2.0 per cent decline. Plant B, on the other hand, had an annual improvement of 5.1 per cent for the period 1966 through 1971. Plant A's trend for this more recent period was 2.0 per cent, the same as for the entire period 1958 through 1971.

The relationship between changes in total output and labor hours is illustrated in Exhibit 3, page 27. The high point in productivity trend in 1961 relates directly to the data for that year in terms of hours and output. More specifically, the area between the "labor hours" line and "pounds produced" line was at its smallest in that year. The subsequent increase in the area between these lines in later years re-

flects the steady decline in productivity. This expansion resulted from the addition, between 1961 and 1964, of the equivalent of 12 people in various departments comprising the Raw Material I processing area of Plant A.

Attempts were made by the company to identify the causes of this increase in personnel. However, neither operating management nor accounting records could identify a change in operating requirements, cleanup, etc., which might account for this drastic change in the area's basic labor complement. While there were a few minor changes in the operation, the associated increases or decreases in labor seem to cancel themselves out and could not account for the increase of 12 people. The phenomenon is even more interesting since, once the expansion in work force had taken place, the relationship between hours and output remained fairly constant, i.e., the labor line moves relatively parallel to the output line.

In general, it appeared that additional labor was added to the area in the early sixties in anticipation of increased demand. While demand for intermediate raw material dropped significantly in later years as a result of reductions in raw material content of the finished goods, no review of the operating requirements of the area was made

EXHIBIT 3

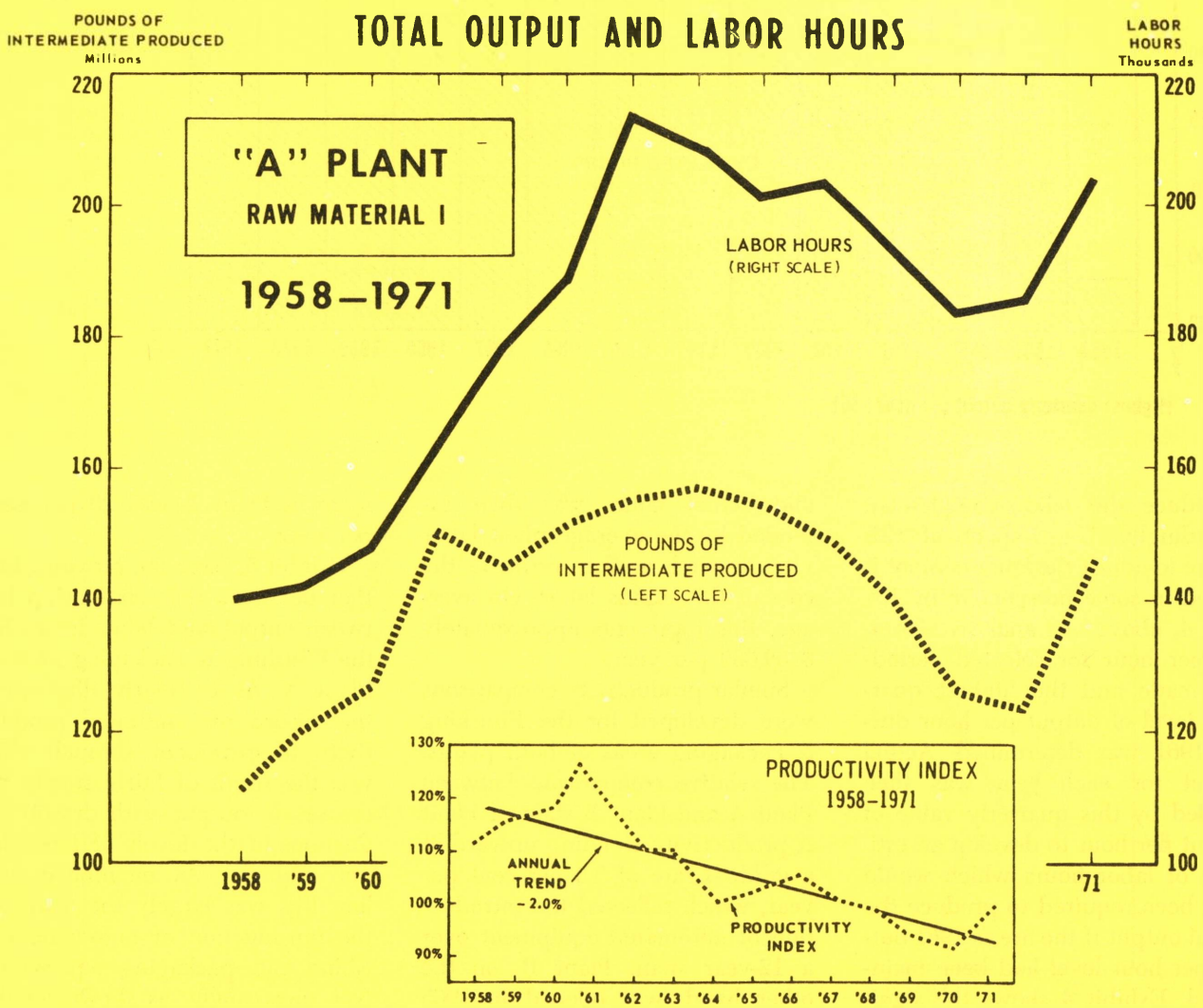
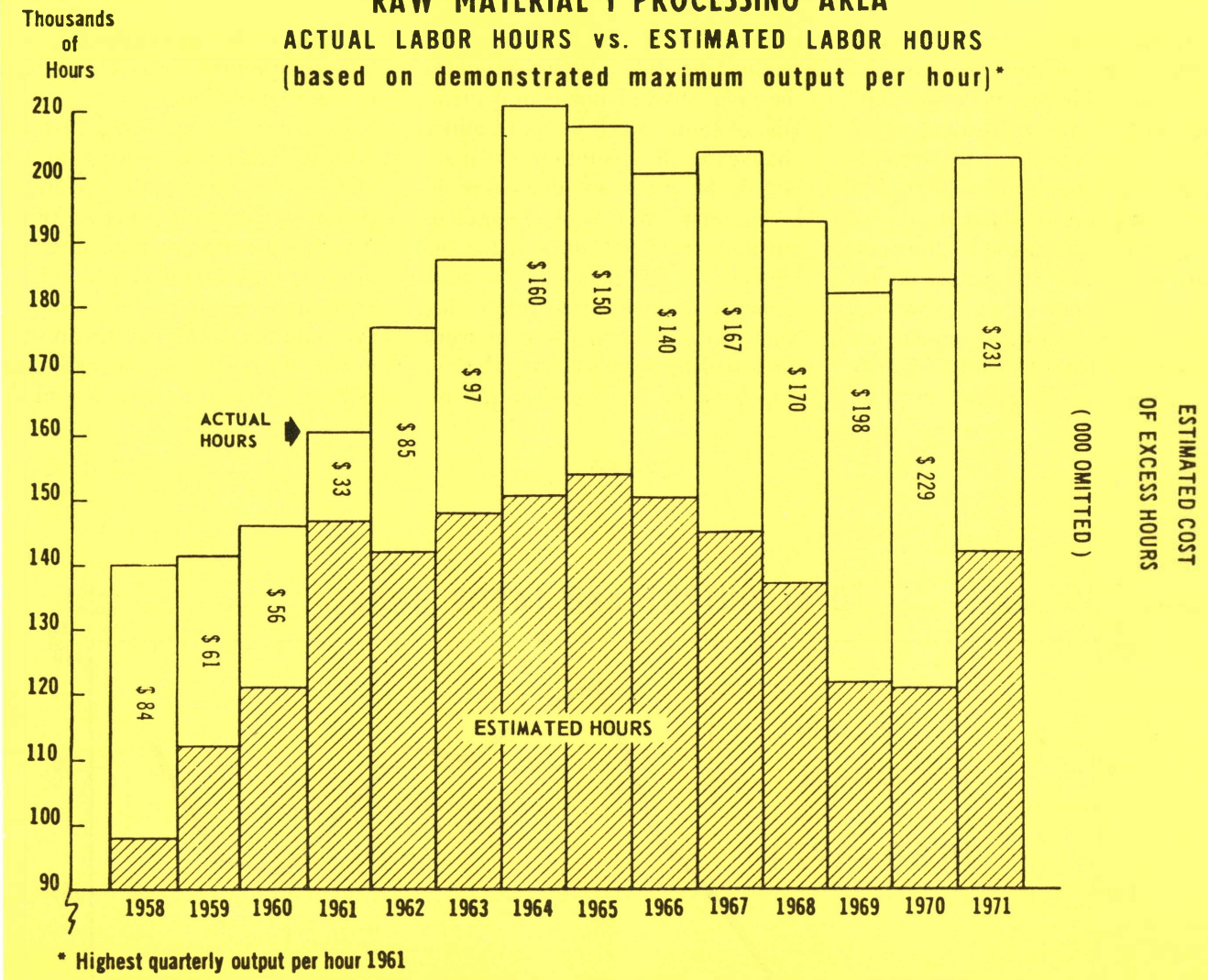


EXHIBIT 4



to reduce the labor complement accordingly. The impact of this failure to adjust the labor content is placed in some perspective by Exhibit 4, above. An analysis of output per hour for selected periods was made and the highest quarterly level of output per hour during 1961 was determined. Actual output for each year was then divided by this quarterly value of output per hour to develop an estimate of labor hours which would have been required to produce the actual output if the area's 1961 output per hour level had been maintained. Exhibit 4 shows the significant differences between actual hours and the estimated hours at 1961's demonstrated efficiency levels. The differences in estimated and actual hours was then extended by the average plant labor rates in each year to estimate the cost of this excess labor. On average, this represents approximately $150,000 per year.

Similar productivity comparisons were developed for the Finishing & Packaging areas at both plants. The relative comparisons between Plant A and Plant B showed Plant A productivity trending upward at a gradual rate of 3.5 per cent per year, which reflected the introduction of automated equipment over a 12-year span. Plant B, on the other hand, was opened in 1965 and its Finishing & Packaging operation fully automated within several years thereafter. Consequently, the productivity improvement at Plant B was 20 per cent per year.

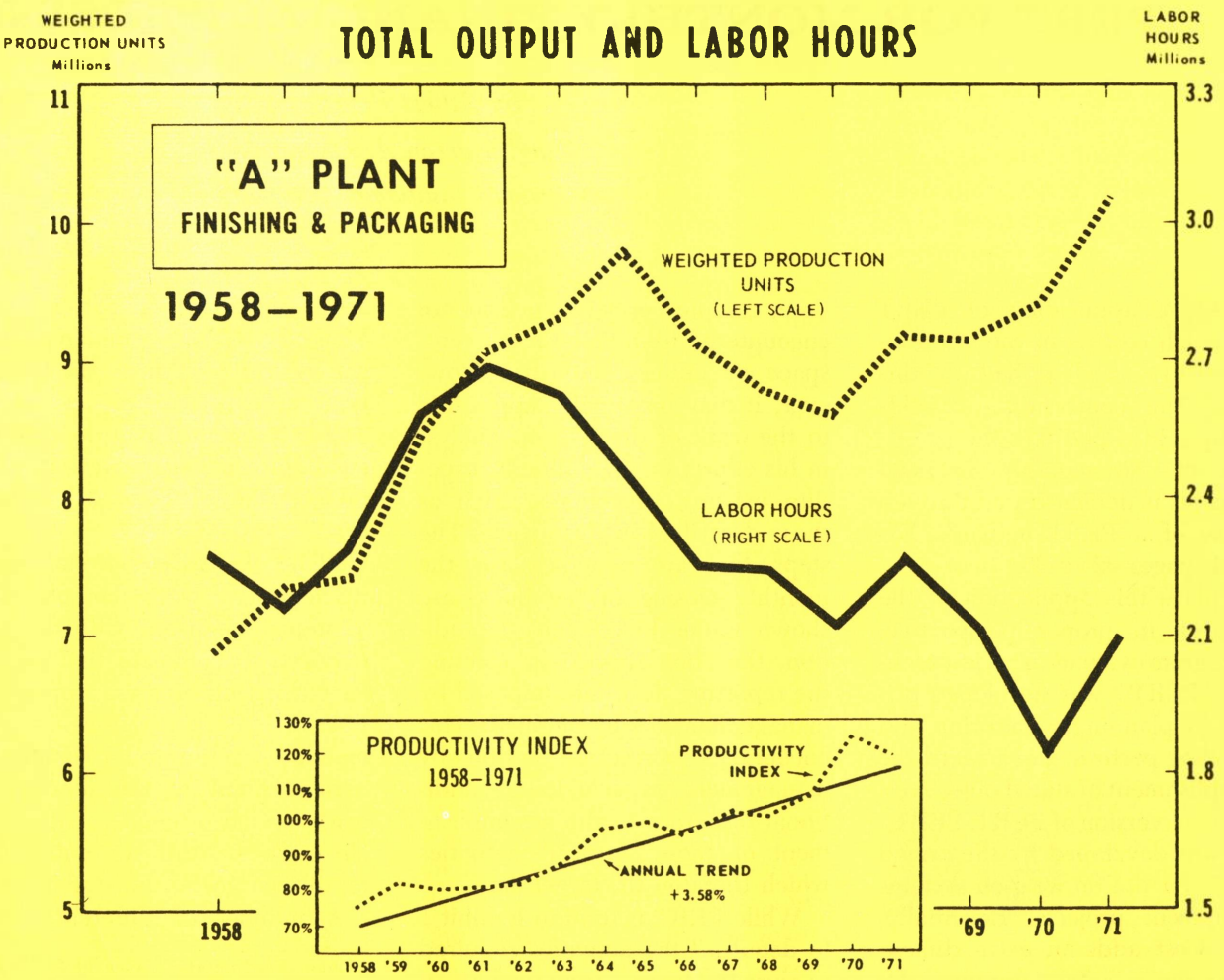
Exhibit 5, page 29, provides further detail on the relationship between output and labor hours for the Finishing & Packaging area at Plant A. As is clearly illustrated, the record of continued productivity improvement through 1971 was the result of fairly steady increases in output with drastic reductions in the levels of labor input required. As mentioned earlier, this was largely the result of the introduction of automatic finishing and packaging equipment. Not surprisingly, as shown on the insert graph, particularly high levels of productivity were achieved in those years which corresponded to the periods in which various

automated lines became operational, specifically 1958-59, 1963-65, and 1969-70. It is also of some interest to note that the impact on productivity resulting from these installations moved in a lag of about one year from the actual introduction of the new equipment, reflecting the natural learning curve, and the startup problems associated with new equipment.

What can we conclude?

This case study described provides ample evidence that one particular element of a company's historical performance which has a more gradual impact on profitability is productivity. If so much of the value of financial planning and the effectiveness of financial models to facilitate planning is based on a proper reflection and understanding of historical interrelationships, then management must have considerably greater insight into the factors contributing to productivity performance. The methodology of productivity measurement and comparison at the company or plant level provides initial insight into the factors at work which affect profitability, both past and in the future. Detailed productivity analysis of major or key operations of a business reveals how specific decisions in the past impact productivity and profitability and, thus, pave the way for judging the reasonableness of building such impacts into the logic of a planning model and/or assumptions about the future. Without productivity analysis, the validity of the model, and even perhaps the planning process, may be suspect.

EXHIBIT 5



PERT is almost invariably thought of as a control technique for monitoring accomplishment of a specific program. However, it can work equally well in controlling recurring work responsibilities —

PERT FOR MONTHLY FINANCIAL CLOSING

by Albert P. Ameiss
and Warren A. Thompson
Missouri Institute of Psychiatry

A UNIQUE application of PERT in job costing in the electronics industry is described in this article. The contribution of this technique in expediting the preparation of the monthly financial statements is demonstrated through the use of a PERT network, Exhibit 1, pages 32 to 35.

To place this application of the technique in proper perspective, the program evaluation review technique (PERT) was developed primarily for planning, monitoring, and controlling performance toward the accomplishment of stated objectives.

A recent version of PERT, PERT/Cost, was developed by the armed services for use on weapon systems development projects. Essentially, PERT/Cost adds an extra dimension to the schedule produced by the PERT procedure, namely, the consideration of resource costs.

PERT is an effective tool for one-time, complex projects such as are encountered frequently in the aerospace or defense industry. However, it may be equally applicable to the work of the systems analyst in his efforts to streamline or expedite existing procedures, such as those described in this article. The steps that are necessary for the monthly closing of the books are shown under PERT but, in addition, the "bottlenecks" in meeting the reporting deadlines imposed by management are highlighted. This encourages corrective action by management in scheduling additional resources to the accomplishment of those "critical" activities which threaten the target date.

While PERT is used in Exhibit 1 to detail *all* the activities required to close the books (from the date of cutoff for materials, labor, and overhead item inputs into the system until the job cost statements are completed), the Critical Path Method (CPM) pinpoints those activities which take the longest time as a group to accomplish. These frequently require decision-making by management to meet the project's target date at minimum cost.[1]

PERT demands that each activity necessary for the completion of a project be listed with the time required to complete that particular task. Each of these appears on Exhibit 1, along with the number of man-hours required for completion. Arrows point to the flow of the work, which originates with a circle marked "start" or cutoff date for all charges to the system.

A number of different "arrow

[1] Levy, Ferdinand K., Gerald L. Thompson, and Jerome D. Wiest, "The ABC's of the Critical Path Method," *Harvard Business Review*, September-October, 1963, pp. 99-100.

paths" are shown from start to finish and the total time required to traverse each path is the sum of the man-hours shown for all tasks along the route. By definition, the critical path is the longest one in terms of man-hours from start to finish and, therefore, dictates the minimum time necessary to complete the entire project. Only by finding corrective ways to shorten jobs along this critical path can the overall time of closing the books be reduced or kept within the deadlines set by top management for the review of the statements.[2]

Since only about 10 per cent of the tasks on most projects are "critical," the entire closing may be expedited by concentration on this "critical path" resulting perhaps in a reduction of costly overtime during closing time. For accounting personnel the result could also be improved quality or fewer errors which seem to multiply when accountants are working under pressure.

Therefore, PERT in an overall sense and CPM, with respect to the critical or "bad actors," are tools for action in reducing the elapsed time required for the monthly closing so that target dates for review are met at the minimum cost possible.

Techniques illustrated

The approach described in this article combines the use of the above techniques but confines the resources used to man-hours as opposed to dollars under the PERT/Cost method. In Exhibit 1 the PERT network is shown for the monthly closing of the job cost ledgers for all end items manufactured by an electronics equipment manufacturing subsidiary, but the principles illustrated and discussed in this article can apply to the operations of any manufacturing subsidiary. Complicating the monthly closing for this type company is the need to make its schedule conform with that of the parent company.

Extreme pressure is often exerted on such subsidiaries to have operating results in the hands of the parent company's accounting department in adequate time for inclusion in the parent's consolidated statements and submission to the corporate president on the date determined and published monthly by him.

As a part of Exhibit 1, footnotes are included showing the parameters of this PERT network. The first is the requirement that the subsidiary and parent company start their monthly closings on the same date, including the cutoff date on material requisitions, shown in this illustration as 4:00 p.m. on the fourth working day *before* the end of that month.

Another note indicates that the labor cutoff date is based on the parent company schedule using a 5/4/4 week cycle to accommodate the 13 weeks of each quarter. Other notes are discussed as we step through the PERT network, from start (S) to the final hour on which the financial statements are scheduled to be released to the chief financial officer of the subsidiary, for review and approval prior to submission to the vice-president-financial and later to the parent company.

Understanding the network

Important to an understanding of the PERT network are the symbols described under the legend located in the lower right-hand corner of Exhibit 1. The first symbol shown, the circle, indicates estimated elapsed time before the necessary printouts become available to the accounting department of the subsidiary. A central computer facility at the parent company handles all of the subsidiary's data processing.

The second symbol, the square, shows when each input of the subsidiary is required by the parent corporation's accounting department. Such time constraints imposed on the subsidiary apply to its operating results required by the parent's accounting system in closing at the same time that the subsidiary is doing so. A third symbol, the diamond, reports the labor cutoff on the aforementioned 5/4/4 week cycle.

The legend describes the use of capital letters as follows: "A" to denote hours required for each task described in the network; "B" for the number of personnel presently assigned; "C" for elapsed time in man-hours using only the personnel described under "B," that is, those presently on board; "D" the maximum number of personnel who could be used effectively, assuming that the critical path indicated a need for a crash program. This is

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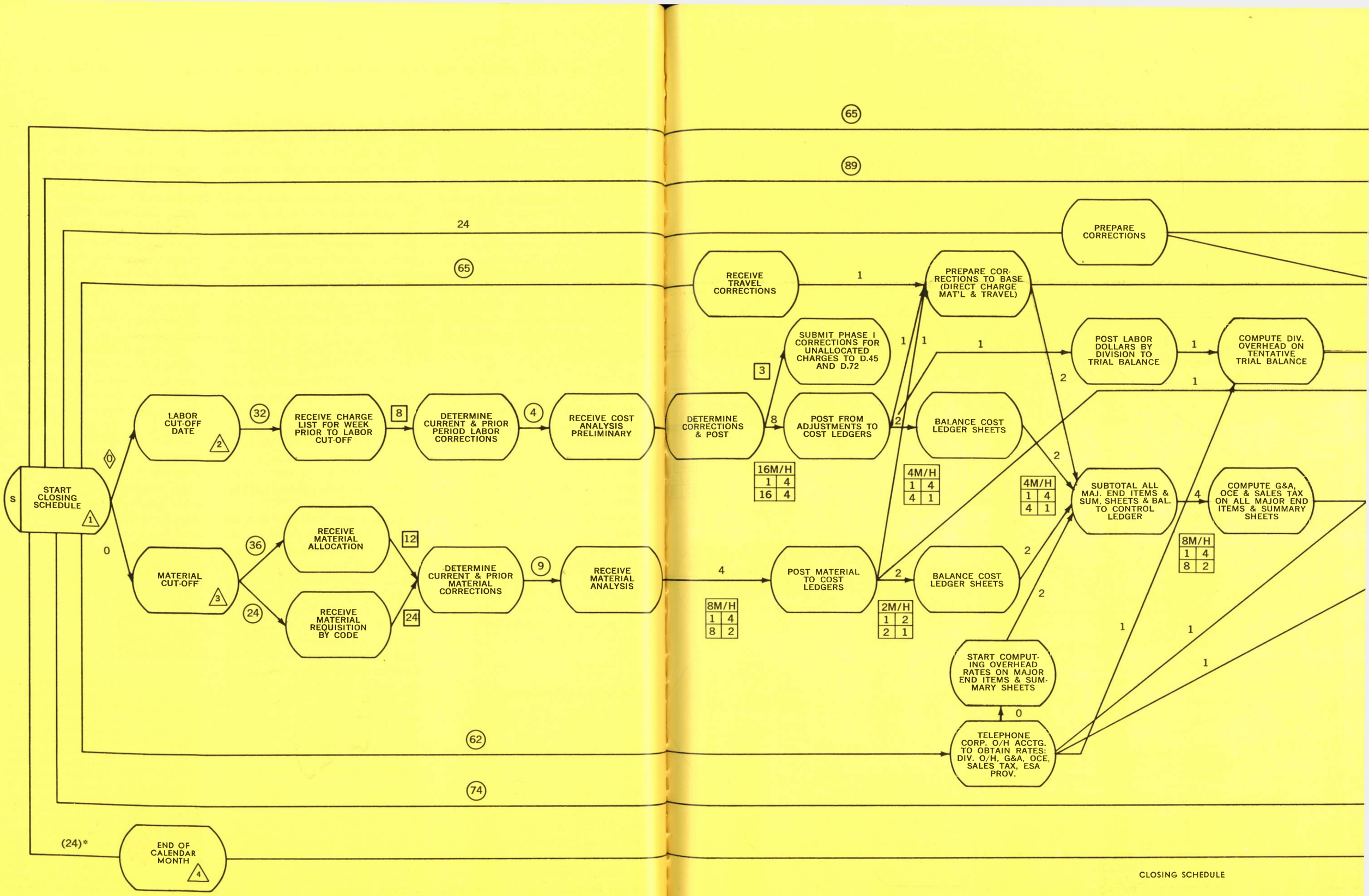
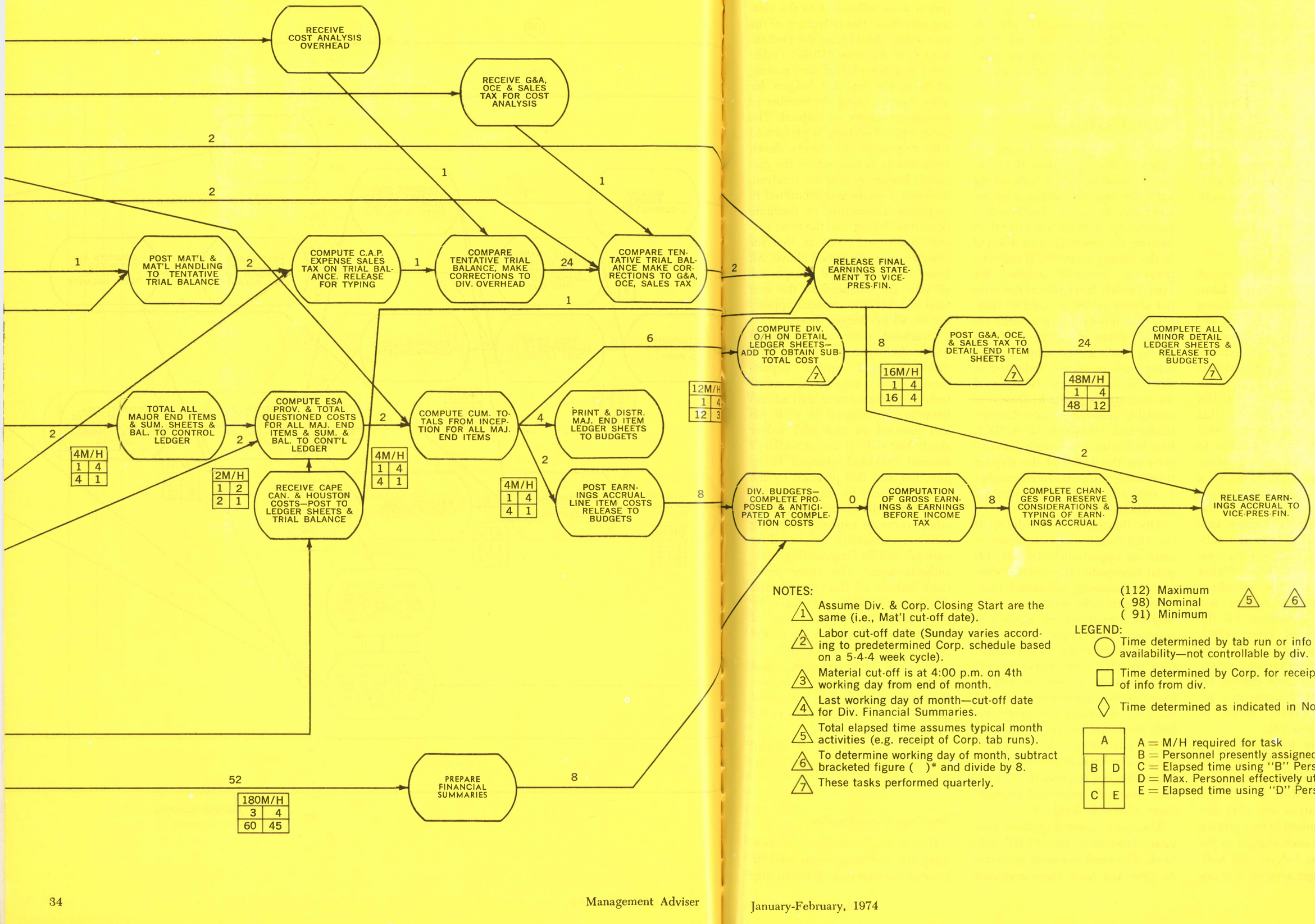
WARREN A. THOMPSON is associate professor and associate chairman of the department of psychiatry, Miissouri Institute of Psychiatry. He has administrative responsibility for the operations of the Central Computer Facility of St. Louis, which hooks up to the eleven hospitals in the Division of Mental Health. Dr. Thompson received his doctorate in business management from the University of Missouri. He is president of the Association of Mental Health Administrators.

[2] *Ibid.*



CLOSING SCHEDULE



NOTES:

1. Assume Div. & Corp. Closing Start are the same (i.e., Mat'l cut-off date).
2. Labor cut-off date (Sunday varies according to predetermined Corp. schedule based on a 5-4-4 week cycle).
3. Material cut-off is at 4:00 p.m. on 4th working day from end of month.
4. Last working day of month—cut-off date for Div. Financial Summaries.
5. Total elapsed time assumes typical month activities (e.g. receipt of Corp. tab runs).
6. To determine working day of month, subtract bracketed figure ( )* and divide by 8.
7. These tasks performed quarterly.

(112) Maximum
(98) Nominal
(91) Minimum

LEGEND:

- ◯ Time determined by tab run or info availability—not controllable by div.
- □ Time determined by Corp. for receipt of info from div.
- ◇ Time determined as indicated in Note 2

A	
B	D
C	E

A = M/H required for task
B = Personnel presently assigned
C = Elapsed time using "B" Personnel
D = Max. Personnel effectively utilized
E = Elapsed time using "D" Personnel

an important contribution of PERT —the "built in" flexibility—to meet important deadlines in getting the operating statements to the president on time. The last letter, the capital "E," indicates lapsed time in man-hours when the *maximum* number of personnel described under "D" above are used.

The use of the above symbols are illustrated in the subsidiary's closing. To initiate or start the closing, the labor cutoff date and material cutoff dates are determined, after which no further charges for such costs will be included in the month being closed.

Through the network

Following the determination of the material and labor cutoff dates, a considerable number of hours elapse (32) before the printout, described as "11.96," is scheduled for receipt by the subsidiary's accounting department. This printout lists all invalid charge numbers to be corrected for the week prior to the labor cutoff date. Following this happening, a square appears with an "8" inserted in it. Reference to the legend in this exhibit shows that the square is used to denote a time restraint by the parent company—in this case, the need for the parent company to receive corrected information from the subsidiary in order to meet its own closing-schedule deadlines. Within this time period, the subsidiary must determine the current and prior monthly corrections for the bad charges listed (run 11.96), shown as a previous event, and, having made appropriate corrections, submit the labor charges by jobs to the parent company's accounting department, shown as D.72 (Department 72).

Approximately four hours later the Cost Analysis Preliminary run (15.05) is scheduled, denoted as "Phase 1," suggesting that it is a preliminary analysis and that corrections are required before posting can be made of such charges to the *subsidiary's* cost ledgers. An individual cost ledger account is maintained for each job which the subsidiary undertakes, the majority of which represent the electronic engineering requirements of the parent company's contracts. The job number identifies the end item being produced as well as other pertinent data for internal managerial control.

"Critical path" options

The final legend in the exhibit shows in the top portion the man-hours required for a task along with the options which management has in easing "bottlenecks," particularly if these are critical to meeting the target dates established in the closing schedule. If only the personnel presently assigned are used, the left-hand side of the symbol shown as "B" is used to indicate the number of personnel involved. Below it, shown as "C" in the symbol, is the elapsed time using such personnel, indicated in this task as 16 hours. However, if the decision is made to throw all available accountants into this particular task (shown in block "D"), four individuals can work conveniently on this task and the elapsed time using such maximum number is reduced to four man-hours for our specific task.

This illustrates the flexibility of the PERT analysis, giving management an opportunity right at this point to expedite the monthly closing by throwing additional manpower into tasks whose execution may be lagging for any number of reasons. For example, if runs are late, with reference to the scheduled time for their arrival, it may be impossible to use the full 16 hours on this particular event and meet the deadlines for reports for both divisional and corporate executives. Therefore, to be able to get the job done in only four man-hours is possible but requires in this case four times the personnel commitment otherwise involved.

The same general pattern prevails throughout this PERT network. The need to obtain printouts on time and have these reviewed by accountants for the different types of corrections which have to be fed back into the system requires strict adherence to the closing schedule. The balancing of the cost ledger sheets from the Preliminary Cost Analysis (15.05) (labor only) is accomplished and posting made to the job cost ledgers for labor charges using the number of man-hours shown as elapsed. The same type of activity is performed with respect to the events shown immediately below, where the *material* charges by jobs are received, corrections made and submitted to corporate accounting to facilitate corporate closing, and the same balancing act performed as that for labor charges, described above. All labor and all material charges for all jobs are balanced *to* the sum total of labor and material appearing on all job ledger sheets.

Overhead rates are computed under this type of closing, and overhead from various departmental pools (engineering, manufacturing, procurement, and administration) distributed to each job and inserted on that job's ledger sheet. Not only is the subsidiary's internal overhead charged to its jobs, but also that assessed by the parent company for general and administrative overhead, as well as other corporate expense, including sales tax on material purchased for each job and for "engineering study authorizations." The latter provisions include all the research and development effort undertaken by the engineering departments of both the subsidiary and the parent company allocated to each job.

After all labor, material, and overhead costs are assigned to jobs, the next event requires a subtotal for the purpose of balancing to the control ledger.

A trial balance is developed showing total costs incurred for the month being closed.

Earnings determination

Earnings calculations on all jobs, using the cost completion method, become the next task. The earnings

accrued for each job are based on the percentage of completion measured by costs incurred. Using dollar *costs* actually incurred for all material, labor, and overhead on a given job from its inception, and comparing this total dollar figure with its original *planned* or estimated cost when the bid for this job was made, a per cent of completion results which is applied against the total profit estimated for the job when bid to the customer, less any reserves thought necessary.

This accrual of earnings is made to all the *major* end items and then released to the budgeting department which completes the total earnings statement. Their review includes using such accrual of earnings in the process of reviewing each job with respect to its progress and anticipated completion dates. Thus, if the original completion date planned for the job appears in jeopardy, or the original target costs budgeted for this job are being exceeded, the percentage of profit accrued for that particular job is carefully scrutinized and a reserve set up. This flexibility in accruing or not accruing profits by jobs affords a real opportunity to "flag" potential cost overruns on jobs before the problem becomes too serious and corrective action can still be taken.

Having determined the amount of gross earnings before income tax, the total earnings figure is developed and released to the subsidiary's accounting manager as shown in the final events on the PERT report.

PERT standards

The *maximum* number of hours involved by using present personnel in this PERT network are shown as 112, the minimum 91, and the normal 98, affording accounting management a frame of reference in evaluating its overall performance in this hectic monthly chore of closing the books and meeting the deadline dates for review of the statements by its own top management, as well as that of the parent company. Standards are developed by the accounting manager, but dictated by top management's review date.

Without going into all the details in this network, it is apparent from the operation of this model that none can be eliminated in the drafting of the PERT analysis if the deadlines are to be met, particularly the review scheduled by the president of the parent company. The flexibility of this technique is such that adjustments can be made anywhere along the line as indicated by the fourth symbol under the legend of Exhibit 1. As a result, neither PERT nor CPM become an "end unto themselves" but rather flexible tools for accounting management telling them when additional manpower should be thrown into the breach as problems in closing are encountered—critical computer runs or other inputs are not received on schedule, or things don't balance.

PERT and its ally, the Critical Path Method (CPM), thus become useful tools, which quickly focus attention on activities or "work packages" which are most critical to the completion of the project on time. CPM offers an easy way to determine the effects of alternatives, such as the use of added resources in men or equipment to shorten various work packages in the project. Such techniques also enable accounting managers to evaluate the impact and costs of a "crash program" if this is absolutely required due to some emergency.

Planning, evaluation, and review techniques described in this article, if kept up-to-date, can help significantly in introducing order where chaos frequently reigns. Trying to close the books and take off statements in adequate time to permit the accounting manager a reasonable opportunity for his own review and analysis is the "consumation devoutly to be wished"—so that he can answer intelligently the inevitable questions from his superiors that such statements always engender.

. . . accounting management has a frame of reference in evaluating overall performance in the hectic monthly chore of closing the books and meeting the deadline date for review of the statements by its own top management, as well as that of the parent company.

There are almost as many leadership styles as there are supervisors and executives. The style isn't too important as long as it's not imposed; the vital thing is that there is a control mechanism at work —

LEADERSHIP STYLE AND THE LOCUS OF CONTROL

by Allen Weiss

Laventhol Krekstein Horwath & Horwath

AN ACCOUNTANT reviews a proposed information system, and he automatically begins to inject controls into it. Meanwhile, a behavioral scientist decries efforts to control people or activities in organizations. Is there a problem of semantics here, or a genuine disagreement relating perhaps to leadership styles?

Dictionaries give us something to contemplate. The verb "control," for instance, is defined two ways by the *Shorter Oxford English Dictionary*:

"1. To check or verify, and hence to regulate (payments, etc.). 2. To exercise restraint or direction upon the free action of; to dominate, command."

If the accountant's view of control is derived from the first definition and the behavioral scientist's from the second, as seems likely, then they are really talking about two different things; and they are not necessarily as opposed to each other's activities and concepts as they appear to be. This is, in fact, the case.

Accounting controls are informational, and they are indispensable to managers and supervisors, regardless of the precepts of leadership they follow. To demonstrate the usefulness of accounting control records and reports, let's first explore their nature and their relation to planning. Following that discussion, we will investigate the locus of control and its relation to the use of control information under various leadership styles.

Control records and reports

The management of Complexity, Inc., recognized that their operations required detailed planning and coordination of effort. Planning also met the need for predictability, but only if plans were carried out with reasonable certainty. The company looked upon accounting controls as a means for

monitoring performance under the plans that were in effect.

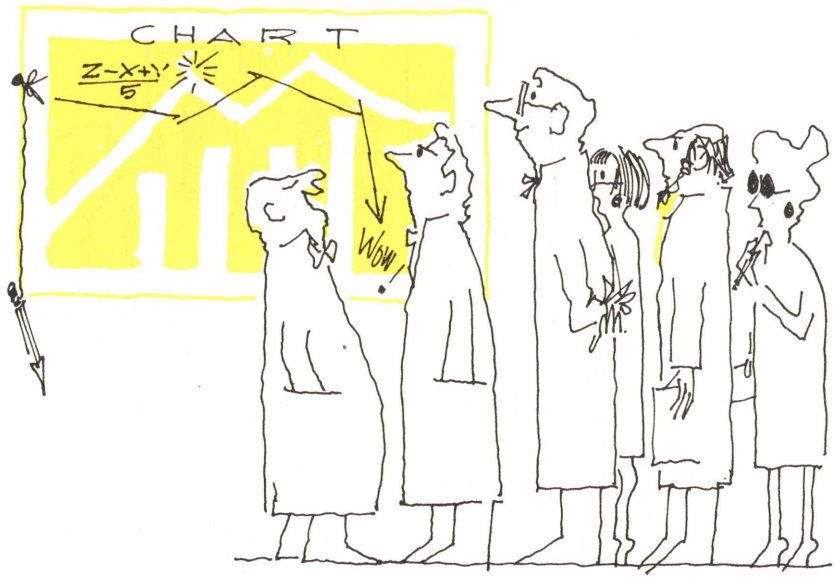
Carrying the logic a step further, deviations between planned and actual performance led to investigations that sometimes caused revisions in the standards and parameters employed in the succeeding cycle of planning and control. Thus, planning and control were inextricably bound in a continuing series of cycles.

Typical of the records and reports that the company adopted for purposes of control were:

—Exception reports indicating deviations from expected performance in excess of tolerable limits.
—Variance analyses pursuing in depth the causal factors that produced significant deviations.
—Scrap and reject reports reflecting waste due to quality problems.
—Trend reports indicating changing relations between production factors and incipient problems of deterioration in productivity.
—Logs: work logs keeping track of individual and group productivity; backlogs to help in scheduling and staffing.
—Assignment matrices providing supervisors with a total picture of activities in their departments by individual, as they should be going on.

At the top levels, the management of Complexity, Inc., believed in participatory methods of leadership. However, below the top levels, the management was aware that other styles of leadership were being practiced. This situation caused occasional twinges of uneasiness, but little discussion and no action. What could one do, the feeling seemed to be, if middle managers were invited to participate themselves, and encouraged to extend participatory techniques to their subordinates, but the message didn't get across?

Regardless of the leadership style practiced in a given department, no one appeared concerned that accounting control records or reports might in any way conflict with that style. This is a significant point. For, if control violated concepts of behavioral science, then the reports would have an affinity for certain low-rated styles, and they would be perceived as inappropriate under other, highly regarded styles.



Consultative leadership demands self-control among workers.

Locus of control

To see why similar records and reports are employed in departments run under different leadership styles, let's look into several departments and consider the relations between locus of control, leadership style, and use of control information. In the departments we will review, control is exercised by individuals (self-control), groups (group dynamics), top management (central authority), supervisors (local authority), and an intangible political interaction.

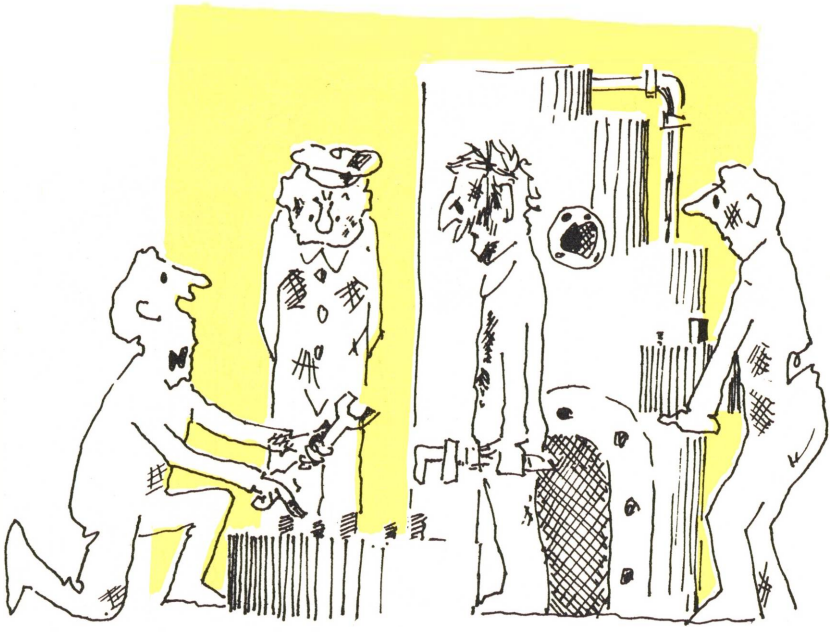
Individual self-control

Franklin Edison is in charge of research and development at Complexity. Proud of a string of patents in his own name, eager to get to work on a number of ideas he has yet to find time for, Edison is at his best when he guides one of his people toward a breakthrough, or when he encourages a disheartened colleague to persevere along a promising, but difficult, path.

Edison has gathered around him a staff of creative, innovative people, and he knows how to handle them. Each researcher is free to pursue leads that occur to him; each is expected to come up with his own ideas, approaches, methods, and solutions to problems. At the same time, each staff member is welcome to talk things over with Edison at any stage of his research. Out of such exchanges have come many new thoughts and novel undertakings.

The consensus at all levels of the company is that research and development has achieved extraordinary success under the direction of Franklin Edison. There are some who think that Edison is merely a fortunate man with a fine staff that runs on its own steam. But Edison himself doesn't trust to luck.

On the contrary, he keeps a record of all assignments of projects to his personnel and of progress toward completion. More than that, Edison has each project segmented into stages, and he regularly com-



Group control calls for high morale and unity in employees.

pares milestones reached against his intuitive timetable. He also maintains a backlog of unassigned projects; and in approving new assignments, he tries to balance long- and short-range jobs so that he will have completed items to report to his own superiors while major jobs are still in progress.

Nor is Edison unaware of cost/benefit relations. He uses cost reports to assess the effectiveness of his department's efforts and to revise his own thinking when new projects are to be planned and scheduled, and when priorities are assigned. Moreover, none of these records and reports is a secret to be kept from his staff. Budgets and variances are freely and openly discussed.

Edison's researchers exercise self-control. And they have access to control information in doing their jobs. Their department head has the same information, which he uses for planning and control. When a project threatens to fall behind schedule, he knows the facts and looks into the reasons. When he is called on to account for the status of projects, he has the information at hand. In practicing consultative leadership, he has not abdicated his position.

Group control

The machine maintenance department at Complexity comprises two lead mechanics, four assistant mechanics, and a varying number of apprentices under a department head, Alex Graham.

The lead men exhibit a pride of workmanship and a strong sense of responsibility for keeping the plant going. They feel a certain superiority toward the workmen in the plant and a distant, grudging respect for the engineering department. These attitudes are reflected, though less vigorously, in the assistant mechanics. Group morale is high. Group loyalty is very strong, too; and the group imposes standards on its members forcefully and promptly.

The group expects each member to work to the best of his ability. An emergency call on a machine that has just been serviced or repaired will bring strong comments of disapproval on the head of the mechanic who did the previous work. Stalling on the job is something the group feels it can detect, and it disapproves. On the other hand, the group insists that its members break promptly for meals and rest periods. And the group arranges to equalize overtime among its members.

For his part, Graham encourages the group to maintain work standards. He makes work assignments, but only in consultation with the group. Even in emergencies, Graham consults with the two lead mechanics before taking any action.

In Graham's office, there is a control board that shows where each man is and where he is assigned for the week. In the desk, there are preventive maintenance schedules for all machines and records of breakdowns. There are also records of hours worked, materials and parts consumed, and special reports of absenteeism, tardiness, and overtime. Graham and his crew go over these records and reports periodically.

Central authority

When Abel Strong took over his job as regional sales manager, he found a wide diversity of practices among the salesmen in his region and the local offices they worked out of. Sometimes this diversity created problems. For example, when two salesmen visited the same customer; or when a customer received a better offer from one office than its affiliate was getting from another of Complexity's sales offices.

Being a direct sort of person with an orderly mind, Abel Strong relieved his consternation and fear of repeated embarrassments by issuing an order centralizing author-

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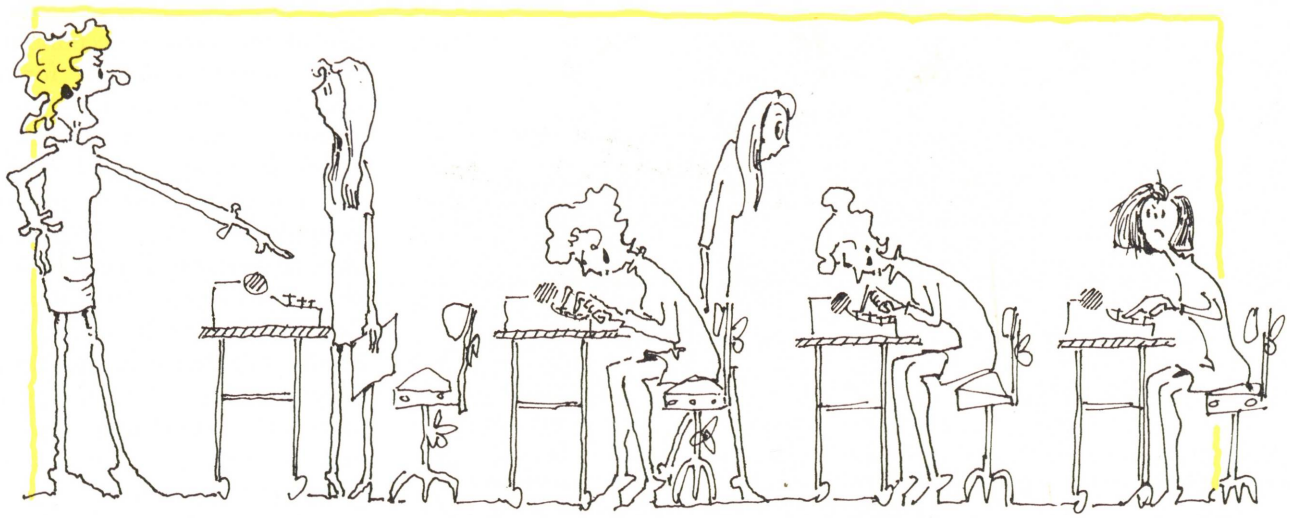


Supervisors can do very well with strict authoritarian measures.

ity in him. Every move on the part of a local office or its personnel now requires Strong's approval. Local office managers are reduced to the position of interpreting Strong's directives, predicting his decisions, and enforcing conformity to his fiat and company policy. That is, when they're not calling him for instructions or approvals.

Strong relies on reports of trends, variances, and exceptions. Additionally, local managers use logs and assignment matrices. Strong boasts of running a taut ship; others see the situation differently. In any case, control records and reports are very much in evidence at both regional and local levels.

Local authority

Mary Martinet runs the typing pool with an iron hand. She knows what her typists are doing at all times, when they should finish the jobs, and what they will do next. A strict disciplinarian in all matters, Ms. Martinet restricts telephone calls and enforces promptness in reporting in, returning from lunch, and ending rest periods. There is no nonsense and no horseplay.

Some typists leave within a week, but others stay on, either to complain to their friends on the outside, or to respect Martinet for her efficiency. The complaints often carry a trace of pride in surviving under a stark regime. And many of the typists are happy that they get direct answers to their questions. When asked whether papers should be clipped together on the left side or the right, Martinet never says it doesn't matter. She gives straight answers.

The typing pool is rightly considered one of the most efficient activities in the entire company. To keep it that way, Mary Martinet relies on a variety of control records: a work matrix tells at a glance where each job is assigned; logs show each typist's output and cumulative variances from standards set by Ms. Martinet in advance; backlogs help in scheduling, making commitments to other departments, and staffing. Martinet reviews all reports of absenteeism and lateness relating to her staff.

Although Mary Martinet uses many control records and reports herself, she regards them as her own property and no concern of her staff. The typists see only what their supervisor allows them to see, and only when she perceives some special reason for doing so.

Political interaction

Aristotle Smart tries hard to put a democratic veneer over his leadership style. Although he knows what he wants in advance, he will spend time with his staff to draw his ideas out of them. "That way, they feel committed to the ideas, and they extend themselves to make the plans work," reasons Smart. He also has a system for rewarding people in various ways when they conform to his will, so as to "condition" them for the future. Even when he criticizes someone (in private, of course), Smart manages to make his remarks easy to swallow. When differences arise among the people on his staff, Smart would rather reconcile people than determine rights and wrongs. In the face of opposition, he will seek some area of agreement and use this commonality of perception to work out a compromise.

Aristotle has been called a clever politician and a manipulator of

And manipulative management, in the right hands, still works

LOCUS OF CONTROL MATRIX

	LOCUS OF CONTROL				
	Individual	Group	Central Authority	Local Authority	Political
Leadership style	(Participative or consultative)		(Authoritarian)		Manipulative
Type of activity most readily adapted to	Innovative	Well-defined	Structured	Routine	Diverse
Individual need met	Freedom	Belonging	Orderliness	Discipline	Self-respect
Primary reporting to	Individuals	Group	Higher management	Supervisor	Supervisor/ manager
Immediate function of accounting controls	Guidance to individual	Direction of group pressures	Conformity of implementation	Control weapon	Basis for negotiation

people, but he shrugs off these epithets in favor of a pragmatic view: his methods work for him; he doesn't bother to ask why they work. Perhaps it's because he is skilled at playing a game that people like. If they are indeed being "fooled" into fancying that his ideas are their ideas, perhaps they want to be fooled that way. At least Aristotle is never crude. On the contrary, he is at all times thoughtful of the other person's feelings and emotional needs. Indeed, because of Smart's propensity for compromise, it is sometimes difficult to tell how much control resides in him as local authority, how much resides in the group that works for him, and how much belongs to individuals. Democratic leadership may actually require more manipulation than theorists are willing to admit. Such is the rationale of Aristotle Smart.

Because Smart prefers to convince people of views he has espoused, and to lead them to adopt his views from the evidence, he is ready to make use of every type of information that comes his way. He welcomes most those reports that prove his point, and he shows them to his staff; but he has been known to change his mind in the face of overwhelmingly contrary evidence. Since his voracious appetite for reports brings him a burdensome plethora of information, Smart has learned to prefer exception reports over all others.

The Locus of Control Matrix (above) recapitulates what has just been said about each locus of control: individual, group, central authority, local authority, and politically interactive. Four styles of leadership—participative, consultative, authoritarian, and manipulative—are identified with loci of control. There is also a type of activity most readily adaptable to each locus, from routine operations that adapt to local authority, to innovative or creative activity that adapts best to self-control.

Each locus fills need

Each locus of control meets a set of individual needs; the matrix focuses on one principal need in each case. For example, individual self-control meets a need for freedom of action; and group control operates where the need to belong is cogent. Central authority, working through policies, formal procedures, standing orders, or fiat, appeals to those with a penchant for orderliness; and a stricter, closer discipline, with immediate instructions or commands, is for followers of the dictatorially inclined leader and his concepts. Political interaction, an underrated methodology, satisfies emotional needs for self-respect; the assumption is that appearance counts, even when it diverges from actuality.

Reporting channels conform to the locus of control, and they support it. For instance, under a system of self-control, accounting reports provide guidance for individuals, whereas groups use accounting reports to direct and focus pressures, central authority uses reports to enforce conformity in implementation of policies, and local authority will most likely employ accounting information as a club for beating heads with. Politically interactive leadership uses data as a means for sending messages, establishing hospitable common ground for its ideas, and negotiating acceptable agreements.

Summary

One thing is clear: the need for control information exists under all styles of leadership, and it adheres to the locus of control. To put the matter simply: those who exercise control (including self-control) require information.

That information may at times offer reassurance that work is proceeding according to schedule. At other times, control information provides a warning of incipient problems. Additionally, such information helps to plan knowledgeably and to revise plans or schedules when necessary.

At organization levels above the locus of control, reports serve similar purposes, and they are just as necessary. Where individuals control their own activities, their supervisor (and his superior) should have reassurance or warning, too. But when an authoritarian manager receives control information relating to his department, he is actually receiving feedback on his own performance: having delegated no responsibility, he is exclusively responsible himself. Whatever message the control information conveys, that message is for him—and for his superior, of course.

In short, accounting control records and reports are not tied to a particular style of leadership; but the point of use for this information, and the manner in which it is used, are related to the locus of control.

How a model was 'fine-tuned' until it could answer almost any hypothetical question about its company—

A CORPORATE PLANNING MODEL FOR A CONSTRUCTION MATERIALS PRODUCER

by Robert E. Engberg
Capitol Aggregates, Inc.

and

Roger L. Moore
Ernst & Ernst

CEMENT, aggregate, ready-mix concrete, and asphaltic concrete are a large, basic segment of the construction materials industry.

Portland cement had its start early in the 19th Century when an English bricklayer named Aspdin first made portland cement by burning a combination of limestone and clay on his kitchen stove. Today, cement production is a closely controlled chemical process combining limestone, iron, silicon, and a small amount of other ingredients. It is essential that a plant be located close to good limestone reserves and to the marketplace because of the very high freight costs.

Capitol Aggregates, Inc., a wholly owned subsidiary of the H. B. Zachry Company, is a prominent name in worldwide heavy and industrial construction. Capitol was formed in 1957 in Austin, Tex., as an offshoot of a parent company construction project in that city, to produce a limited amount of sand and gravel. Soon Capitol entered the Austin ready-mix market and constructed a new aggregate plant in the area. Several other operations have been added since in various parts of Texas. The major addition to production and sales came in 1965, when another cement plant went on stream.

The company; the future

Capitol plans to play a major role in the growing Texas economy. There seems little doubt that it will. It is a company whose management has learned to plan ahead. It knows its industry and it has assessed where it is going. It has taken a clear-eyed look at company strengths and weaknesses. It learned, years ago, the need to define in specific terms its hopes and goals. It weighs alternatives and

The objective of the special project was to develop an integrated model of the revenues, cost, and operating characteristics of the combined corporate operations. The model was to be used by corporate management to determine how changes in the market, changes in supply conditions, changes in production facilities, might affect profitability, return on assets, and cash flow . . .

evaluates them on a cost-benefit basis. It develops forecasts, plans, and budgets, which it updates on an annual basis.

Capitol Aggregates, in short, knows how to plan. But the company recently decided to fine-tune its planning by improving the techniques and speed of evaluating alternatives.

The objective of the special project was to develop an integrated model of the revenue, cost, and operating characteristics of the combined corporate operations. This model was to be used by corporate management to determine how changes in the market, changes in supply conditions, changes in production facilities, and so forth, might affect profitability, return on assets, and cash flow; and how those effects could be influenced by management.

It was decided that the model would be designed to handle more than just an aggregate-cement-ready-mix company. It was, in fact, developed so that it could handle any organization that can be described in terms of products flowing through cost centers containing fixed costs and variable costs which can be represented by a linear function.

ROBERT E. ENGBERG, CPA, is secretary-treasurer of Capitol Aggregates, Inc., San Antonio, Tex. He is a member of the Texas Society of CPA's and the American Institute of Certified Public Accountants. Mr. Engberg has been working in private industry (manufacturing and real estate) for more than a dozen years. ROGER L. MOORE, CPA, is a manager in the St. Louis office of Ernst & Ernst. He is a graduate of Miami University of Ohio and holds a master's degree in business administration from Xavier University. Mr. Moore is a frequent speaker at chapter meetings of the National Association of Accountants. He has also presented numerous talks to graduate students in several colleges.

To design the model the following tasks were accomplished first:

1. Charting the material and cost flows of the corporation (Exhibit 1, page 45).
2. Analyzing the types of planning and operating decisions made currently and anticipated in the future.

The material and cost flow chart shows the physical operation, knowledge of which is essential to model building.

The decision chart enabled us to build a model that will be the most responsive to the needs of management based upon the types of planning and operating decisions to be made.

Material and cost flow chart

The material and cost flow chart is similar to a process flow chart. But we incorporated these elements:

1. Each block in the chart generally represents an operation that can specifically be identified by process and/or equipment, and for which there can be identified the number of operating and supervisory personnel, and in some cases (where appropriate) direct depreciation. Direct depreciation would include depreciation on machinery represented in that particular block.

The blocks on this chart could be interpreted to refer to idealized cost centers in the context of cost accounting. We made sure that there was a direct correlation between the model and the accounting system.

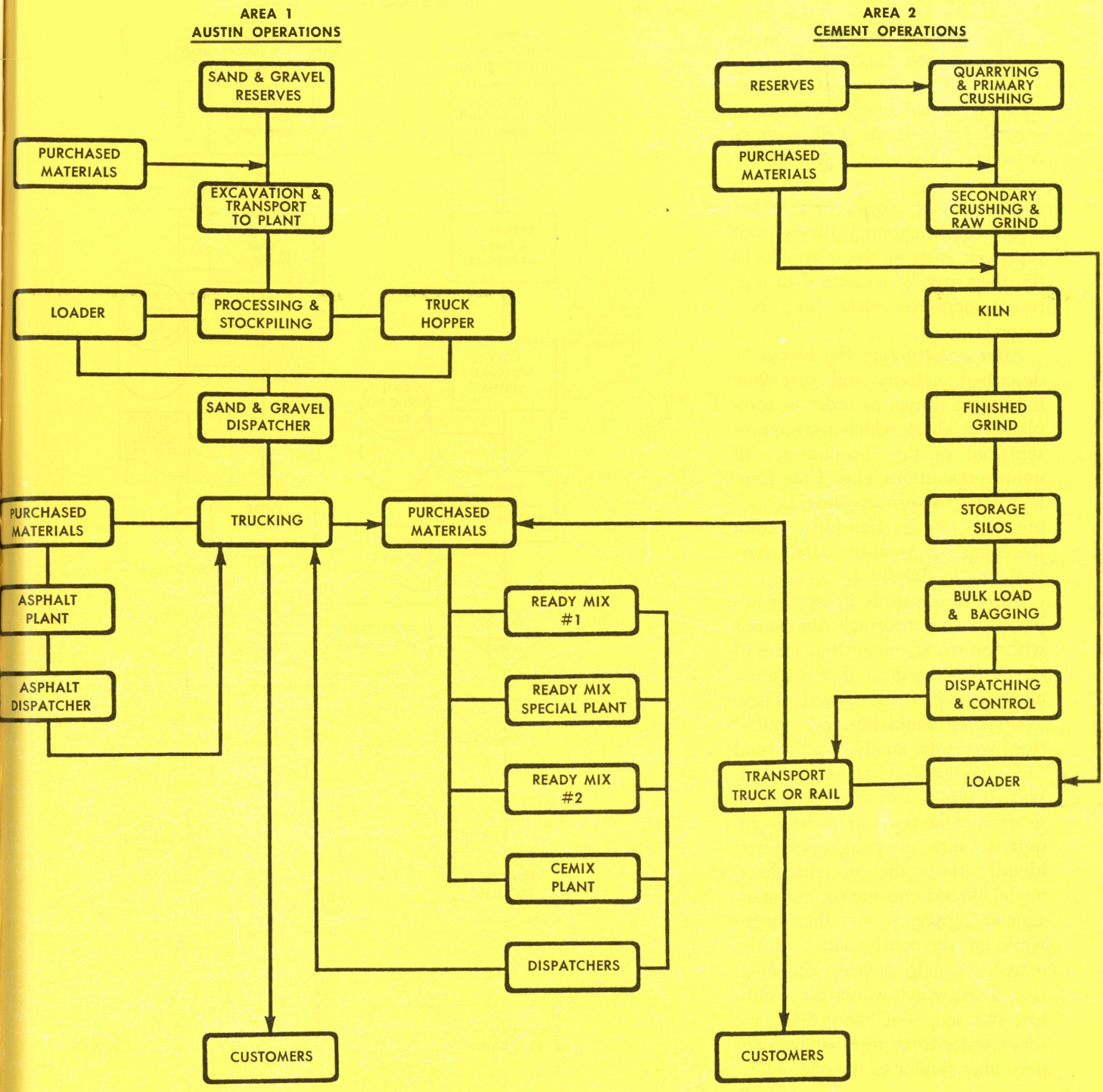
2. Outside purchases (referred to as "Purchased Materials") were also considered to be an operation, and hence a cost center; therefore, they were represented by blocks on the material and cash flow chart. The chart would thus contain all of the cost elements incurred by the corporation in the conduct of its business.

3. The corporation consists of the following "businesses":

Aggregates
Bulk cement

EXHIBIT I

Abbreviated Material and Cost Flow Chart



Bagged cement
Asphalt
Ready-mix
Cemix (a bagged product for do-it-yourselfers consisting of cement, sand, gravel, and other additives)
Clinker sales (cement in a stage just before finish grinding).

The material flow chart was constructed so that blocks common to several products, as well as flows between "businesses," would be visible.

4. Customer blocks were added to the chart. Although they do not represent costs as the other blocks do, they may be construed to represent negative costs (i.e., revenues).

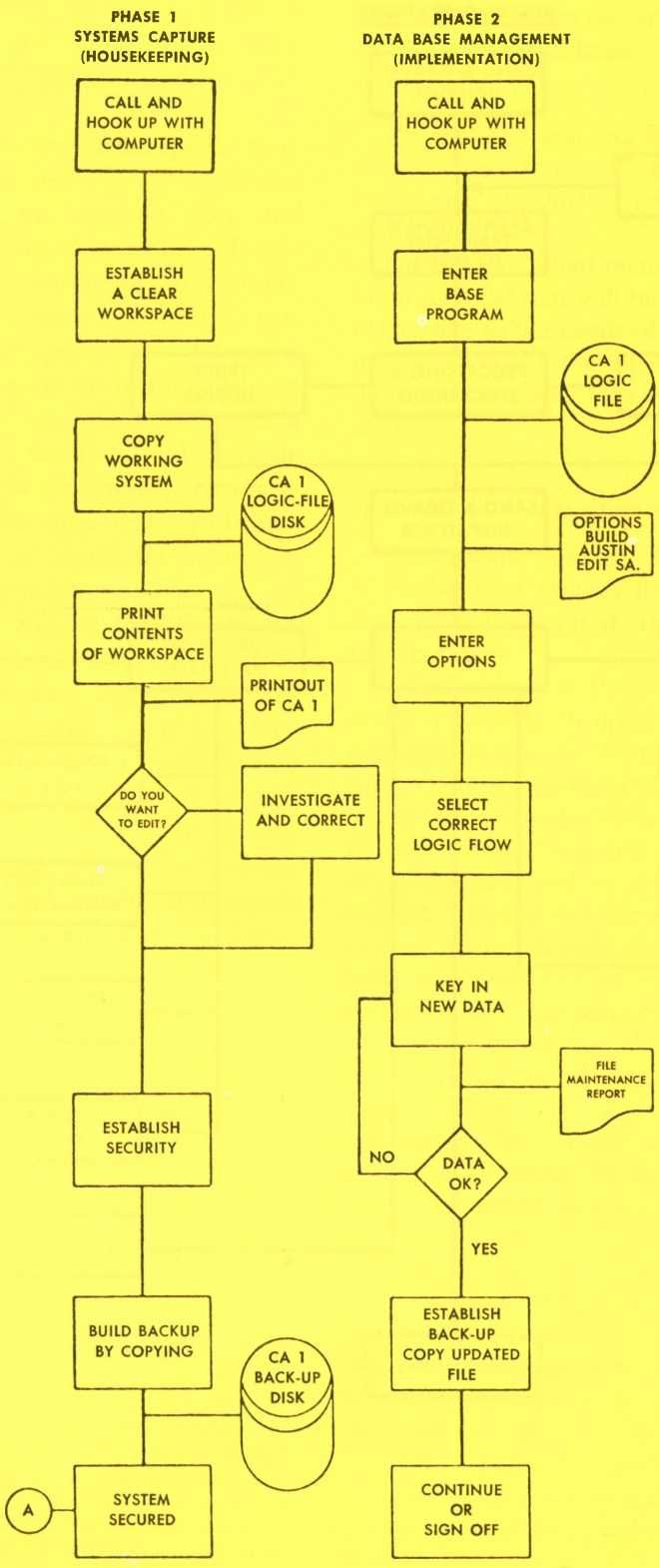
After constructing the blocks as described, activity and cost flow lines were drawn in order to complete the chart which now represents all of the "businesses," all unique operations (i.e., Cost Centers) and the process flow, including the interrelationships within the company. An abbreviated chart is shown in Exhibit 1.

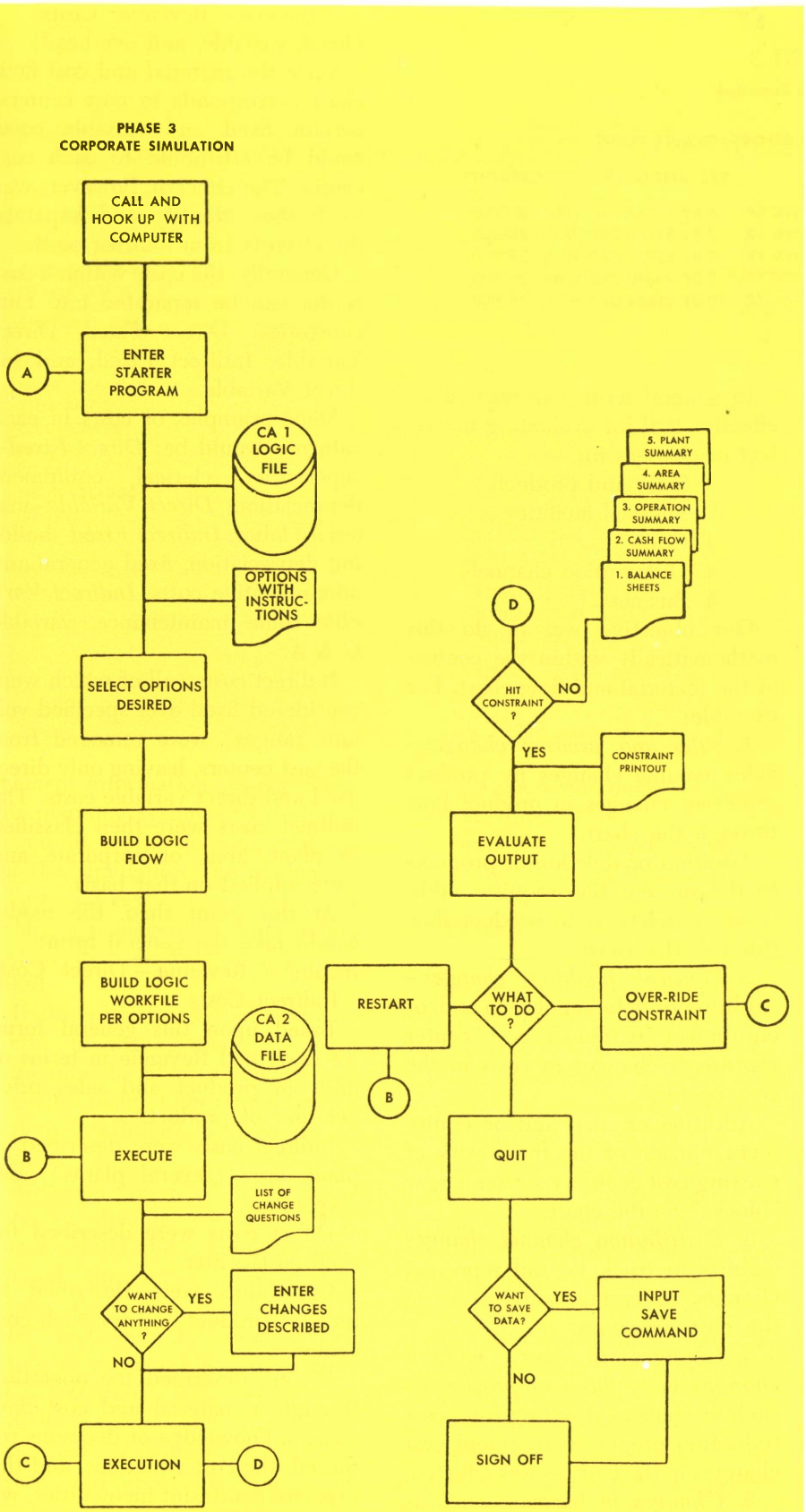
Early in the study it became apparent from informal discussions with top management that some of the evaluations desired of the model were highly specialized. These evaluations could be made, but if they were the model would tend to be less general and far too complex. It was felt that we needed to determine the types of decisions required for planning purposes, identify those that a generalized model should encompass, get management approval, and then begin work on the mathematics of the model. To help develop the decision chart, which would also establish the scope of the model, we sent a letter to all top management personnel similar to the one below.

"At this point it is desirable that management give some additional thought to those areas where present and future decisions will be made. All of the points and problems raised to date probably lend themselves to solution in one form or another. However, as each spe-

EXHIBIT 2

Systems Overview and General Approach





cial case is included, the model becomes far more complex and less general, thereby restricting its usefulness. We also ask that you use the material and cost flow chart and note where decisions are made. This will aid you in listing the kinds of decisions that are made.

"The model is to be a tool to help corporate management determine the effect on profitability of alternative courses of action. To assist in defining the scope of the model and to keep it within the bounds of flexibility and manageability, we would like to receive your thoughts regarding those areas that you feel should be included in the scope of the model to better assist management with their planning responsibilities. Many of the areas which may be suggested may fall into categories such as short-range production and inventory control problems, or short-run reaction to market shifts. These should probably not fall within the scope of the model to be developed.

"We would like to receive your thoughts and ideas for discussion at the next steering committee meeting."

As a result of the letter the steering committee—a top management group with whom the task force met regularly during the project—arrived at a number of planning decisions. It was agreed that a model would be developed, general enough in nature to help in making the kinds of decisions listed.

Some of the decisions management would be making were: Should we acquire reserves? Should we supplement present reserves? When should we abandon reserves? Should we build new plants or modify old ones? What size and type of equipment should we have? How large should our trucking fleet be? How do we evaluate the effect of new markets on our facilities? Should we consider a new business or business opportunities? There were also many other questions too numerous to list.

It was further decided that all

EXHIBIT 3

Constraints Exceeded

CONSTRAINT EXCEPTION REPORT—GRAVEL PLANT

COMMENTS	YRS AMT OVER	CAPACITY
185 CY PER HR, 10 HR DAY, 5 DAY WK, 51 WK YR	6 BY 15547 CAP WAS	357000
185 CY PER HR, 10 HR DAY, 5 DAY WK, 51 WK YR	7 BY 34174 CAP WAS	357000
185 CY PER HR, 10 HR DAY, 5 DAY WK, 51 WK YR	8 BY 53733 CAP WAS	357000
185 CY PER HR, 10 HR DAY, 5 DAY WK, 51 WK YR	9 BY 74270 CAP WAS	357000
185 CY PER HR, 10 HR DAY, 5 DAY WK, 51 WK YR	10 BY 95834 CAP WAS	357000

alternatives would be evaluated from a total corporate standpoint, i.e., how changes in one "business" would affect other parts of the corporation.

Alternatives would be measured and evaluated through the following output:

1. Pro forma reports for specified number of years
   - Statements of income
     - Corporate
     - Area (a grouping of plants in a geographical region)
     - Plant
     - Product
   - Balance sheets
   - Cash flow
   - R.O.A. (Return on Assets)
   - Plant operating reports
   - Other financial ratios
2. Constraint reports for a specified number of years.

   The purpose of these reports is to list production and/or material constraints exceeded at any cost center, identify the year, and then simulate alternatives to alleviate the constraints.

The next step was to begin the mathematical construction of the model.

Development of the model

The material and cost flow chart (Exhibit 1) represents the physical operation, and the decision chart represents the kinds of decisions required for planning purposes.

Having developed the above two documents, we then needed to describe in even more general terms what we wanted the model to do before we could begin the mathematical construction.

In general terms, we wanted an effective tool for evaluating the effect of changes in:

1. Sales and products
2. Physical facilities
3. Costs
4. Distribution channels
5. Business.

Our objective was to do this mathematically within the context of the material and flow chart. For example:

1. *Sales and product changes*—Sales volume changes by product represent changes in product flow through the chart.

Addition or deletion of products to the present line requires additions or deletions to product flow through the chart.

2. *Physical facilities changes*—Addition or deletion of men and/or equipment within a cost center represents changes in costs in the cost center.

Addition of men and/or equipment outside of the framework of existing cost centers represents new "blocks" on the chart.

3. *Distribution channel changes*—Shifts in truck vs. rail represent changes in certain parameters in the cost equations.

4. *Changes in costs without changes in facilities or processes*—such as changes resulting from cost reduction programs—represent cost changes in the cost centers affected.

5. *Changes in business*—such as adding "pre-stressed concrete" which would require additional processes—would require adding appropriate new blocks to the chart.

The model then took on the form:

$$\text{Income} = \text{Revenue} - \text{Costs}$$

(fixed, variable, and overhead)

Since the material and cost flow chart corresponds to cost centers, certain fixed and variable costs could be attributed to each cost center. The concern, however, was to further identify and separate direct costs from indirect costs.

Generally, the costs within a cost center can be separated into four categories: Direct Fixed, Direct Variable, Indirect Fixed, and Indirect Variable.

Some examples of costs in each category would be: *Direct Fixed*—supervisory, clerical, equipment depreciation; *Direct Variable*—materials, labor; *Indirect Fixed*—building depreciation, fixed general and administrative costs; *Indirect Variable*—some maintenance, variable G & A.

Indirect costs (all of which were considered fixed over specified volume ranges) were removed from the cost centers, leaving only direct fixed and direct variable costs. The indirect costs were then classified as plant, area, or corporate and were applied on that basis.

At this point then, the model would take the general form:

$$\text{Income} = \text{Revenue} - \text{Direct Costs} - \text{Indirect Costs}$$

Based upon this general form, we described Revenue in terms of units of product and sales price per unit of product.

Indirect costs were described as plant, area (several plants), and corporate.

Direct costs were described for each cost center.

Constraints were described in units of product and for each cost center.

Having described the operation through a material and cost flow chart, a knowledge of decisions required, the cost equations, and the capacity constraint inequalities, we were now in a position to: (1) complete the data collection, (2) define output reports, (3) complete the system design, and (4) program, test, and use the model.

This planning system, was designed to be one module of a man-

EXHIBIT 4

Plant Level Reports

COST DETAIL, PLANT NO. 14 NEW AUSTIN GRAVEL PLANT

	Period 1	Period 2	Period 3	Period 4	Period 5
FIXED COSTS:					
DIRECT LABOR	0	137280			
DEPRECIATION	0	221286			
TOT FXD COST	0	358566			
VAR COSTS:					
OPER SUPPLIES	0	1847			
KILN BRICK	0	9233			
ELEC POWER	0	23294			
REPAIRS	0	33237			
ROYALTY	0	51702			
SHOP CHARGES	0	7386			
GRAVEL PURCH	0	80876			
MISC EXP	0	7386			
TOT VAR COST	0	214961			
TOTAL COST	0	573527			

PLANT INCOME, PLANT NO. 14 NEW AUSTIN GRAVEL PLANT

	Period 1	Period 2	Period 3	Period 4	Period 5
SALES:					
SAND	0	167918	176415	185341	194720
GRAVEL	0	204422	214767	225633	237049
FILL MATRL	0	58559	61522	64635	67906
TYPE I SACK	0	91260	95878	100729	105826
I C GRAVEL	0	199555	209653	220261	231406
TOTAL SALES	0	721714	758235	796599	836907
DEDUCTIONS	0	0	0	0	0
NET SALES	0	721714	758235	796599	836907
FIXED COSTS	0	358566	334573	314700	298487
VRBLE COSTS	0	214961	226862	239454	252771
TOTAL COST	0	573527	561435	554154	551258
OPRTG INCM	0	148187	196800	242445	285649

agement information system. Since this planning system was designed to aid in useful decision making, via the simulation and evaluation of alternatives, it forms a part of a larger management information system that is truly decision-oriented.

If this planning system is to be useful to management, management must be able to analyze and evaluate many alternatives under various conditions, and to do so rapidly.

Although the need for a computer is obvious, we believed it was essential the system be programed for time sharing. We wanted the system to be an interactive one, with the manager-user sitting at the console and guiding the simulations. The user can be actively involved while the system is running. He can see intermediate results and abort the run if an alternative indicates unsatisfactory results. It is also possible to make changes while the system run is in progress. This can be done by observing results, or, where desired, by testing an alternative under different conditions after observing preliminary results.

The system was designed to operate in three phases:

Phase I—System Capture
Phase II—Data Base Management
Phase III—Corporate Simulation.

The complete overview and general approach are described in the flow chart in Exhibit 2, pages 46-47.

Phase I—System Capture—the entering and securing of the programs into the computer.

Phase II—Data Base Management—the entering and securing of current data and model parameters.

Phase III—Corporate Simulation—the utilization of the model to simulate the various alternatives evaluated in the planning process.

Data collection was considered during the development of the cost and constraint equations. We, therefore, did not develop any equation for which data would be impossible to obtain.

The existing costs in each cost center were examined, generally according to the following steps:

1. Classify costs as direct and indirect.
2. Reclassify, where appropriate, the indirect costs to plant level, area level (more than one plant) or corporate level.
3. Examine the direct costs and reclassify them as fixed and variable where appropriate.
4. Update fixed costs from source data.
5. Update variable costs through time study or estimation. (This step, as expected, required the most time and effort.)
6. Convert all variable costs to cost per unit of finished product.
7. Estimate production capacity constraints. (This was done by operating management.)
8. Estimate any material capacity constraints. (This was also done by operating management.)
9. Document all data into a format compatible for input into the computer program.

Other data collected:

1. Product prices
2. Sales volume, by product and by geographical area
3. Raw material prices by item
4. Wage and salary rates
5. Fringe benefits
6. Original and book value of all assets

EXHIBIT 5

Area Level Summary Report

OPERATING SUMMARY, AREA 01 AUSTIN

	Period 1	Period 2	Period 3	Period 4	Period 5
PLANT 01	280211	251442	266468	280805	294453
PLANT 03	30657	32730	35611	41317	43245
PLANT 04	201112	0	0	0	0
PLANT 06	117611	134145	149651	162477	171631
PLANT 10	16606	17144	19173	22299	22793
PLANT 12	0	0	0	0	0
PLANT 14	0	148187	196800	242445	285649
TOT OPR INC	646197	583648	667703	749343	817771
AR SPRT COST					
ADMIN+SALES	228161	233655	240433	250649	261595
TOT AD+SL EX	228161	233655	240433	250649	261595
TOT AR INC	418036	349993	427270	498694	556176
OPR RATIOS					
INC/SALES	17	14	16	17	17
PLANT ASSETS	3569915	3419370	3297306	3220333	3174439
OVHD ASSETS	62471	62934	66620	70265	73164
TOT ASSETS	3632386	3482304	3363926	3290598	3247603
AVG ASSETS	2533934	3557345	3423115	3327262	3269101
PERCH R O A	16.5	9.8	12.5	15.0	17.0

7. Future depreciation and debt retirement schedules
8. Other pertinent balance sheet data.

The information collected for the present year and entered into the model represented the "base case" in the planning system.

All "what if" questions for the present year are compared in various ways with the base case. The "what if" alternative is compared with the "base case" by incremental income, profits, return on assets, and cash generated. Also, any capacity constraints exceeded are evaluated.

Since the effects of most "what if" alternatives are more than one year in duration, it is necessary to forecast a "base case" for a specified number of years. This is possible within the planning system by stating expected price, cost, or growth rates as specified percentages in simple or compound rates. Net value of assets into the future is projected through depreciation tables.

The "base case" actually represents what the company would look like without changing physical facilities, without cost improvement projects, and subject to certain assumptions about price, cost, and growth.

Simulation results are presented in formal reports that cover one or more specified periods, depending on the needs of the user. These reports present financial information in a variety of forms as well as indicating when capacities are exceeded.

Generally, but not necessarily, constraint reports denoting where physical capacities were exceeded are requested first. This is a simple line report showing the item affected and some general information regarding the constraint violation. (See Exhibit 3, page 48.)

The ultimate purpose of the model is displayed in several key pro forma financial reports that present the alternative results in intelligible, condensed, and related form. In the following paragraphs we discuss some of the more important output reports at various levels and how they can be used.

At the lowest level of reporting, we have an opportunity to review the results of projections and evaluate the profit contribution of the various products.

The plant income report quickly displays to the user the various products and their related sales contribution, the total fixed and variable costs, and the resulting net operating income for the plant. (See Exhibit 4, page 49.)

Pertinent summarized information appears on this report about the various plants within the geographically defined area. In addition, certain operating ratios are presented, as are the totaled plant and administrative asset investments. A return on the total area assets invested is then displayed. (See Exhibit 5, this page.)

Corporate level

Reporting at all levels is essential to the successful use of the simulation results; however, it is at the corporate level that all of the factors and interrelationships are brought into total perspective. The ultimate answers to the "what if . . ." questions now present themselves in various forms in the following reports. (See Exhibit 6, page 51.)

Corporate Overview—This single-page report brings into focus some of the major items of concern regarding an alternative review, such as net cash flow, return on assets, and income.

Cash Flow Summary—A summary of all major items expected to affect cash, finalized in a net cash flow figure for each period. This analysis should be of particular interest to the potential borrower/investor.

Corporate Operating Summary—Area results of operation are carried forward and presented with corporate level income and expense considerations (general and administrative, interest, Federal income taxes, and others) to provide a final expected net income for the given period.

The reports in themselves present a relatively simple financial picture of what the future might hold for the entity. In fact, they represent a massive array of information that required a great deal of sophisticated programing, proj-

ect planning, data gathering, and implementation effort. The end products justify the effort; meaningful output is the reward.

Application and use

An idea becomes a working tool only when it is translated into action.

The initial "live" test of the model results involved a twofold demand upon its capabilities. The detailed operating budgets and profit forecasts for the coming year, normally done manually, were to be prepared. And the company was considering a $5.5-million expansion involving new plants in Austin, Tex., and certain improvements at the cement plant in San Antonio. It was a fitting first test for the planning model.

Formal budgets are a "must" for a company wishing to grow and remain successful; but they are easier to discuss than to accomplish, particularly in a many-faceted operation with several locations, each location having several plants. The plants, too, may have subsections.

Good analysis and budgeting require proper attention to all items within the sphere of study. Careful consideration should be given to each element of cost as it affects the demands put upon the facility.

Before the company adopted our planning system, difficulties occurred frequently in manually gathering, reviewing, and extending the data, and presenting the realistic effects of the forecasted demands. The time element alone was a major obstacle in budget preparation.

We looked then to the model and its programed mathematical equations, relationships, and formulas to solve these problems for us, and many more. In effect, we would ask questions of the model, and the answer would promptly come to us in the form of a useful financial/statistical report. These reports became a major tool in the management of company affairs for the next 12 months.

The managers, sales force, and superintendents review the existing "base case," asking such questions as where they stand at present, and what they can expect in the way of change for the next year. Simply put, we give the model information different from that in the base case, and ask what the effect of those changes would be. To illustrate, if we:

> Decrease sales volumes in all plants by 10 per cent . . .

EXHIBIT 6

Corporate Level Reports

CAPITOL AGGREGATES CORPORATE OPERATING SUMMARY

	Period 1	Period 2	Period 3	Period 4	Period 5
OPERATING INCOME:					
. . . AREA .01	418036				
. . . AREA .02	1947960				
. . . AREA .03	97451				
TOTAL	2463447				
GEN+ADMN	238989				
EXPLORATION	14207				
OTHR INC+EXP	(37015)				
PRFT SHRING	264334				
TOT ADMN EXP	480515				
OPER INC	1982932				
INTEREST	485042				
INC BEF FIT	1497890				
FED INC TAX	718987				
INVEST CRT	(331722)				
NET INC	1110625				
PERCENTAGES:					
NT INC/SALES	11				
PERC R O A I	17				
NET INC/EQTY	18				
EQTY/T ASSET	47				
AVG ASSETS	12013204				

CAPITOL AGGREGATES CORPORATE CASH FLOW SUMMARY

	Period 1	Period 2	Period 3	Period 4	Period 5
NET INCOME	1110625				
DEPRECIATION	948047				
SHT TRM DEBT	0				
DEPLETION	6080				
NEW L T DEBT	3354000				
TOTAL AVLBLE	5418752				
ASSET REPLMT	448890				
PRPSED ASSET	4290000				
SHT DEBT RTR	300000				
SCH DEBT RTR	1087846				
REC REQRMNTS	477280				
INV REQRMNTS	(97734)				
LAND INVESTM	0				
OTHER ASSETS	0				
ACCTS PAYBLE	335271				
TAX LIABLTS	0				
TOTAL RQRMNT	6841553				
NET CASH FLW	(1422801)				
DEBT/ASSETS	.53				
TOTAL DEBT	6960254				
POLICY DEBT	6717607				
AVAILABLE	(242647)				

CAPITOL AGGREGATES CORPORATE BALANCE SHEET

	Period 1	Period 2	Period 3	Period 4	Period 5
CASH	(1122801)				
RECEIVABLES	1566772				
INVENTORIES	420477				
CURR ASSETS	864448				
PLT+EQUP	13637602				
ACUM DPRCTN	3941461				
NET PLT+EQUP	9696141				
LAND	2016370				
OTHER ASSETS	593920				
TOTAL ASSETS	13170879				
SHT TERM DEBT	0				
CRR PORT LTD	1168440				
ACCTS PAYBLE	664729				
FIT PAYBLE	0				
CURR LIABLTS	1833169				
LNG TRM DEBT	5127085				
TOTL LIABLTS	6960254				
OWNERS EQTY	6210625				
LIABLTS+EQTY	13170879				
CURRENT RATIO	.5				
	.47				

CAPITOL AGGREGATES CORPORATE OVERVIEW REPORT

	Period 1	Period 2	Period 3	Period 4	Period 5
CURRENT RATIO	.5	.9	1.5	1.9	2.4
EQTY/ASSETS	.47	.30	.35	.38	.45
TOTAL ASSETS	13170879	25191364	25247775	28770269	28953701
NT CASH FLOW	(1422801)	819801	476423	1129449	1329290
AREA 01 P/L	418036	349993	427268	498695	556177
PERC R O A I	17	10	13	15	17
AREA 02 P/L	1947960	1550535	3495365	3978810	4356416
PERC R O A I	25	11	17	19	20
AREA 03 P/L	97451	106518	112772	116939	116016
PERC R O A I	242	148	190	219	227
NET INCOME BEF INT+TAXS	1982932	1664312	3438134	3904374	4262708
R O A I BEF INT+TAXS	17	9	14	14	15
NET INCOME	1110625	1205395	1114257	1603144	1552675

Many of the "what if" questions would go unanswered if we had to rely solely on a manual approach. Now they are answered promptly, accurately, and in good form. The company is very pleased with the first real test of the model . . .

Increase costs of labor by three per cent . . .
Reduce production capacity of Plant 1 by 33 per cent . . .
Borrow five million dollars payable monthly over ten years at an annual interest rate of eight per cent . . .
Expect receivable balances in relation to sales to decline by ten per cent . . .
Increase inventory at Plant 2 by 100 per cent . . .
Shift all variable costs in Plant 3 to a fixed classification . . . and so on,

then, have we exceeded any capacities?

What will our profits be at various levels of operation?
What will the return on assets be?
Will we have sufficient operating cash available to sustain operations?
What will our current ratio be?
Is product X in Plant 1 yielding a profit? And many more.

Yes, it does sound rather simple and casual; however, the fact remains that many of the questions would go unanswered had we to rely solely on the manual approach. The questions were answered promptly, accurately, and in good form. The company is very pleased with the first real test of the model and looks for even greater success on next year's operating budget preparation.

$5.5 million expansion

The operating budget involved only one year of expanded information. In this case we were interested in the effects of the proposed expansion over a seven-year period. The same basic questions again, but an answer for each year—will we make it over the long term with the investment requirement, cash flows, and sales forecasts presented for the seven-year term?

The results of this expansion program via the planning system—the mathematical expansion in this case—also were well received, evidenced by the fact that the construction program is well under way and nearing completion. Needless to say, management felt much more comfortable about making the investment decision armed with the model output information.

A "double-barreled" success hopefully leads us to additional success and future profitable achievements. Simulation results regarding a $23-million three-phase expansion program scheduled for the near future are now in management's hands. Initial review indicates a successful model run and there are encouraging signs regarding feasibility of the expansion program itself. Could the company make the right decision without the planning model? That, of course, is difficult to say; it is felt, however, that the final decision will be arrived at without many of the uncertainties that would have otherwise clouded it.

Conclusion

The basic objectives of this project have been achieved. We hope in the future to tie in to existing live systems (general ledger accounting) now on other computer facilities. Such an interface would allow "on the spot" progress monitoring of operations. The result would be truly a live and responsive management tool. Also, we look to such possibilities as break-even analysis (in chart form), application of the model in other affiliated companies . . . the list goes on and on.

A tremendous by-product of the entire effort, certainly worth mentioning, was the learning experience for the entire team involved in the project. They now know much more about the company, its products, potentials, costs, and people. This result was unexpected, but has proven to be highly valuable.

what people are writing about

BOOKS

Economics & The Public Purpose by JOHN KENNETH GALBRAITH, Houghton-Mifflin Company, Boston, 1973, 334 pages, $10.

Professor Galbraith climaxes his many books on economics and the social fabric with this massive thesis. For that it is. Dr. Galbraith's economic credentials are impressive but the purpose of this book is carried in the second part of its title, ". . . and the public purpose."

Dr. Galbraith thinks the present state of economics—its theories, its truisms, its workings—flatly contradicts any true public purpose, and he makes a good case of it. To start with, he defines the old Adam Smith school of economic theory and shows how that had application in a world of small entrepreneurs. Its rules roughly worked. But that world has largely disappeared, he believes, or at least it is largely subservient now to an entirely new world of economic entities which can safely defy the old "laws" of economics, can set their own prices, and can depend on government rescue expeditions if anything goes wrong.

This new world of economic baronies he defines as the dominant sector of the economy, the Planning System, where management is the new Lord of the World. Companies in the Planning System are not owned by anyone, he points out, their stockholders are merely passive participants in their profits. They exist for one reason only, to perpetuate themselves and the "technostructure" they support.

The lesser sector of the economy is made up of the Market System, the world of small companies, of service enterprises, of individual proprietors. Here the neoclassical economics do work, he points out, here true competition does exist, here labor is truly mobile. But the fact that this market system is com-

pletely subservient to the planning system, that it exists on crumbs from the rich man's table, as it were, makes the market system always less powerful, less influential, more depression-prone than its more potent colleague.

Effect on policy

Since the planning system wields so much power, since it embraces entire administrations rather than one or two venal legislators, its effect on public policy is vital and dangerous. To take the most current example, Galbraith argues that the automobile and gasoline producers in the planning sector forced Government acceptance of a vast roadwork system, which in turn increased demand for the manufacturers' products. In the meantime, the nation's railroads withered away to the point almost of no return. Now, with an "energy crisis" that threatens severe heating shortages in our northern cities, the idea of seriously curtailing gasoline consumption by automobiles is not even considered. Perhaps now it can't be. Cities have grown up without public transportation, with suburbs located miles from the places where people work. These suburbs *sans* sidewalks themselves were created by the ubiquitous automobile. Most are so isolated that not only the wage earner must drive but his crypto-servant wife must maintain another machine in order to shop for food and necessities.

And all this while businesses and schools may have to close early through the winter months because there's not enough fuel to heat them.

The crypto-servant wife line may have flagged attention a few seconds back. It is Galbraith's theory that women have become crypto-servants—chauffeurs driving those superfluous cars, laundresses doing the family washing in shiny new washing machines, or stacking dishes in dishwashing machines. They are all consumers of the products spawned by the planning sector. That is what they are trained to be, and that is their own and others' conventional view of them.

It is the conventional view because the planning system, whose products the crypto-servants have been brainwashed into consuming, regardless of need or utility, has willed it so. For the planning system must still sell its goods well enough to keep its stockholders satisfied. It does not really compete any more. It simply holds its own and perpetuates its technostructure. It endures strikes because any gains labor makes are simply reflected in higher prices to its consumers. If foreign countries undersell it domestically, it simply exports its manufacturing arm to the country where production costs are lower. It can locate anywhere, sell most of what it produces, whether it's good or bad, by shrewd advertising, and control or directly influence government decisions that help its market.

Here the analogy is even clearer in the case of defense contractors than it is in the case of the highway lobby which has done so much for automobiles and petroleum, for air pollution, and for our present fuel crisis. Defense contractors decide what they want to build; their counterparts in the Defense Agencies insist they need that particular weapon or weapons system desperately; each side, contractors and Defense Agencies, cooperates on a campaign to persuade the public that there is some drastic new threat from abroad (Russia today, China until recently) that can only be countered by vast investments in the new weapon. The new weapon is contracted and built in plants financed by the Government. Losses are absorbed by the Government, overrun costs paid, and, if in spite of all this the companies still face trouble, the Government will lend them the money to keep them afloat.

Two bureaucracies, in Galbraith's view, reinforce each other: the bureaucracy of the company technostructure and the bureaucracy of the particular service that wants the system. This is a symbiotic relationship in which each side of the partnership, business and Government, aids and strengthens the other.

Such symbiotic relationships exist between nearly all businesses large enough to require regulation and the Government bureaus designed to regulate them, Galbraith charges. The Food and Drug Administration has notoriously erred for the benefit of the food producers and the drug manufacturers. Perhaps a slight exception might be made in the case of the Federal Communications Commission, which has been making threatening noises about the television networks since the Watergate scandals and the network coverage of them. But, by and large, the Federal regulatory agencies have been most notable for their cooperation with their charges.

Where are the remedies?

These are Galbraith's charges and his theories. Given his first thesis, that the conventional theory of economics is as out of touch with today's realities as the paddle wheel steamer, there seems to be little one can argue with in his analysis, though most of what he criticizes has been pointed out for years. His theories as to what to do about it are another matter. He would equalize pay between the planning and the market systems, although he doesn't specify how. He would make any corporation doing more than 30 per cent of its business with the Government a branch of the Government, paying the original stockholders fair market value for their shares. He would set ecological limits on the harm any company could do to the environment, but within those limits leave the company complete freedom to determine how it was going to make its products. The remedies, without detail, sound as though they might lead to greater abuses than the disease.

One amusing note: His entire

analysis, of course, runs directly counter to the Administration's most cherished theories and practices. So it is not too surprising that one review, written by an Administration apologist, takes stern issue with the crypto-servant role of women, and points out proudly that women working outside the home have risen from 24 per cent in 1950 to 42 per cent today. The reviewer seems to have overlooked entirely the fact that the book specifies on page 267, speaking of the planning system:

"Here a permanently subordinate caste, consisting extensively although not exclusively of women, is consigned to a role of advertised inferiority. Not only is it agreed that compensation for secretarial, literary, communication, computation and like tasks should be far below that for privileged ranks but will remain closed to those who perform these functions . . ."

Crypto-servants from nine to five only, perhaps?

This is a book that will cause much discussion and should certainly be read by everyone concerned with modern corporate enterprise. It is much more convincing when it dissects the myths of conventional economic "truths" than it is in prescribing remedies for what ails the body politic and economic. Perhaps another book is on the way. Certainly another one seems called for.

R.M.S.

Public Budgeting and Management by ALAN WALTER STEISS, D.C. Heath and Company, Lexington, Mass., 1972, 349 pages, $12.50.

This relatively simple and nonmathematical explanation of the use of management science techniques in public administration also has application to nonprofit organizations and in some cases to business.

Here is another case of a misleading title. This one sounds like a textbook for a government class. Actually, it is a manual of management science directed, but not limited, to the public sector.

The inappropriateness of the title is instantly demonstrated in the preface by the author's definition of public management: "the application of management science techniques to the field of public administration." First, of course, he has to describe the basic management science techniques, and his relatively intelligible explanation of such concepts as basic systems analysis, decision making, authority relationships, information theory and communication flow, PERT and CPM, matrix analysis, uncertainty, and feedback are just as applicable to business as to government.

Public management

In the first part of the book Dr. Steiss explains these techniques and applies them to public management. This section concludes with a suggested model for public decision making.

Public budgeting

The second part of the book deals with the process of public budgeting as a means of resource allocation. The basic systems planning approach is elaborated, and the cost-effectiveness analysis is examined in some detail. The author concedes that PPBS (Planning-Programing-Budgeting System) has fallen out of favor in the Federal government, but he feels that the basic idea of program budgeting—presenting budgetary requests in terms of program packages rather than in the usual line-item format—is sound and should be retained. He concludes with an analysis of the politics of public budgeting.

Applications widespread

This book, which is not at all hard to read, has applicability to all levels of government and, to some degree, to business and nonprofit organizations as well.

L.S.

Corporate Management in Crisis: Why the Mighty Fall by JOEL E. Ross and MICHAEL J. KAMI, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1973, 263 pages, $7.95.

With the benefit of 20-20 hindsight, these authors retell the grim tales of recent business history. Their point: don't make the same mistakes.

What do the names Lockheed, Ling-Temco-Vought, A&P, Litton, and Penn Central bring to mind? Billion dollar corporations that suffered major reverses. The business press has extensively covered the gory details of their failures. What Messrs. Ross and Kami do is first to repeat these well-known stories, then show how these errors relate to a basic list of management fundamentals, and finally provide the reader with a check-off list to evaluate his own company's management strength.

It's a well-written book, easy colorful reading, and it may be a painless way to remind managers how easy it is to ignore basics.

For instance, according to the authors, AT&T and A&P were two companies suffering from "hardening of corporate arteries." This condition resulted from, "Permitting *rigor mortis* to set in because of complacence, nepotism, apathy, a protected market gained through a monopoly position or patent, or management menopause. Leads to rigidity and bureaucratization."

While for want of better strategy organization, Ling-Temco-Vought "grew so fast and was so disorganized that there wasn't time for structure, coordination, and there was little communication between parts," the authors explain.

Besides listing the "bad guys" (those corporate managements that made mistakes), the authors list a couple of corporate managements they feel are the "good guys." Since this book is so closely tied to current events, deciding which companies are to be on each side of the fence is a risky business.

For example, ITT is one of the

"good guys." In pointing out the characteristics that bring about this designation, the authors list, among other traits, "Doesn't only react but causes change. Noted for reaction to and anticipation of ecology and other social demands."

Uncomfortable advice

Some of the advice to management offered by the authors may not sit well with all readers. For instance, one of the lessons to learn from the collapse of the Penn Central, they say, is, "Don't depend on the establishment to protect you. Government agencies, regulatory bodies, consultants, accountants, and other watchdogs have interests that may conflict with your own."

Among the lessons to be learned by executives in a service industry from the misadventures of Pan Am and Eastern Airlines is, "Maintain some management depth. If you must go outside for managers, consider hiring them yourself rather than asking a consultant or 'body snatcher.'"

The authors take another swipe at consultants when they advise against buying a turnkey operation: "Some computer manufacturers and some consultants will try to sell you the 'turnkey' system—one that is designed and debugged and ready for you to 'push the button' or 'turn the key.' Warning: Don't buy it! First, the chances are good that you will have to spend a lot of time educating *him* in *your* operations. Second, installing the system without substantial preparation is likely to result in chaos. Third, if you don't have the capable staff to design your own systems, it is unlikely that the same staff can operate it after it's 'installed' by the consultant."

Avoid accounting manipulations, the authors warn. They place the ultimate blame for the publication of financial statements that are "something less than factual" on corporate management; although they do say, "Perhaps the accounting profession is at fault. Are they not independent professionals and can they not arrive at precise figures based upon commonly accepted principles? The answer, of course, is yes—and no!"

Although the authors may not be enamored with the accounting profession or consultants, their book is interesting—especially if you're a few years behind in your periodical reading. L.H.D.

Paradise Lost: The Decline of the Auto-Industrial Age by EMMA ROTHSCHILD, Random House, New York, 1973, 264 pages, $6.95.

This is a bad season for industrial giants. Almost simultaneously with the publication of Galbraith's Economics & The Public Purpose *comes Ms. Rothschild's* Paradise Lost, *which details the breakdown of an industry that has all the characteristics of Galbraith's planning sector, an immense technostructure, and the ability to control both the Government and its markets. It is the industrial example par excellence of an industry that controls its prices and establishes its market through advertising.*

However, there is one distinct difference between the two books. Whereas Galbraith's technostructure perpetuates itself endlessly, he has, in his generalities, overlooked the factor of time. Ms. Rothschild concentrates on it in her study of one particular industry, that of the American automobile manufacturers. For her thesis is that the automobile, preeminent among all American products, gained its reputation in the 20s and 30s, and is today the product of a mature if not obsolescent industry.

Moreover, it's an industry that's frozen in the patterns of the past. It has two gods, Henry Ford and Alfred Sloan, both men of the earlier part of the century, who set up patterns in which automobile manufacture has been locked ever since: Ford established the assembly line manufacturing technique; Sloan the selling methods by which slight styling changes and flashy new color combinations replaced honest changes in engineering or automotive design.

The social difficulty lies in the overwhelming effect the automobile has had on every phase of American life and livelihood. Now the nation has almost too much committed to the car to sacrifice it. Cities without anything else except air transport would strangle without it. Towns without even air connections would wither and die.

Ms. Rothschild sees these implications clearly, except that she doesn't seem to absorb their full seriousness to this country. Her most common reference to the present problems caused by the automobile is to the great age of railroad expansion in Great Britain, when whole new cities were created by the burgeoning railroads, cities which she points out, were hard hit when the railroads which had created them went out of existence.

But England, according to the writer, just came into prominence in the automobile manufacturing picture in the 40s and 50s. In other words, it had an alternative ready for its overextended railroads when they finally collapsed.

We weren't so wise or our history didn't permit us to be. For we built entire communities on the automobile alone; we geared our environment deliberately so that an automobile became almost an essential of life.

One example: Although Easterners and residents of older Midwestern cities with their subways and rapid transit systems can adjust to carlessness (many New Yorkers would never consider private car transportation unless they were absolutely forced to), Los Angeles, the automotive nightmare of the world, has no public transportation system of any description. A car, any kind of car, is essential there.

Yet in 1920, when Los Angeles was still a small city, and when the

automobile was just beginning to become prominent on the American scene, Los Angeles was noted for having one of the best public transportation systems in any municipality.

The automobile killed it.

Now, of course, it is the much-heralded energy crisis that brings all these things into focus sharply. But the Arab actions are only the smallest part of an energy crisis that's been waiting in the wings for years.

Blindness in Detroit

Yet Detroit, even while it touted new interior trim on its models or bumpers that could actually endure a bump, steadily ignored this possibility as it did so many others.

It refused to consider the Wankel engine that the Japanese were steadily perfecting. Wankels of course do nothing to alleviate a shortage of gasoline; they merely meet Government pollution emission standards. Detroit put on a belated and expensive chase for the catalytic converter but now argues that it can't be refined sufficiently to meet pollution standards in time to meet the law's provisions.

Catalytic converters are additions to existing cars and justify a price increase. Wankel engines would involve redesigning entire production facilities, and could not be used to justify cost increases. After all, inexpensive Japanese cars already have such an engine.

With a petroleum shortage and gas rationing in some form (no matter who assures us optimistically that "it won't come to that") already being planned, the whole issue has now become academic. But the long-term refusal of American manufacturers to build small cars competitive with the Japanese and German models which had already stolen so much of their market is not academic.

The difficulty seems to lie in the obsession of American makers with the principles of Fordism and Sloanism. Under Ford, mass production was everything. Under Sloan, forced obsolescence and trivial apparent changes were. Underneath, the industry has been producing the same basic car, in three different models, for years. Each of the three has different bodies put on or over it, different options attached, white wall or standard tires put on. But the basic cars remain unchanged.

And the basic factories that make them. Radical engine changes, such as converting from the ancient internal combustion to the Wankel engine, cost money, and for years automobile makers have been chary about investing their money in their own industry.

The record shows it—the inevitable consequences of an endlessly penny-wise, pound-foolish attitude. "Americans still want a big car . . ." when Volkswagens and Toyotas had already taken over ten per cent of the buyers' market. The hurried suggestion that emission control devices prepared by the Americans should be scrapped because they would be wasteful of fuel—while the Wankel engine remained almost completely unexplored. The assertion that Wankel engines couldn't power standard-sized American cars only weeks before Government tests proved conclusively that they could.

The one response of the Americans, the General Motors "new" automobile plant at Lordstown, Ohio, has, far from becoming a sign for a hopeful future, become a symbol for a past that's long been over. Lordstown, constructed in a heavily agricultural area, was designed to build an American small car, as an offset to the foreign imports that were threatening Detroit. But it was organized on the same lines that had proved so successful for Detroit in the early halcyon days of the industry: mass production, production to a stopwatch. And the supervisors were those whom the manufacturer was keeping an eye on for the future. In other words, the best symbols of the shining future were those who had been most deserving of management's approbation in the past. Lordstown was to be their proving ground as Viet Nam was to be the professional officers' route to having his "ticket punched" and winning quick promotions.

Not surprisingly, Lordstown, the key to the future, became, in spite of its largely rural population, almost a bellwether of industrial unrest.

The workers resented their hard-boiled supervisors. They resented having to produce repair shop receipts to document an absence from work (no one could get to Lordstown unless he owned a car) when they were automobile men themselves and could usually have fixed the difficulty in 15 minutes. But then they would have been late to work. So they paid their exorbitant repair bills and lost half a day at work and got their all-important receipt.

And eventually, this nice, native rural population of workers went on strike in 1972 against "conditions." And by that they meant working conditions not wages, which no one ever denied were generous.

It is a serious picture Ms. Rothschild presents, that of an industry that has so oversold its market with inferior products that its market has rebelled against it to the degree that it could. Given the artificial dependence on the automobile that the industry has carefully nurtured and the sudden realization of a fuel crisis that should have been foreseen years ago (and was by many), it is a picture of blindness to needs and wishes that would be ludicrous if its consequences were not so serious.

This is a book, convincing in every fact reported, that should be must reading for everyone concerned with an industry where foreign competition, particularly competition that has arisen since the War, is a serious threat. It is a picture of a native industry that by having its own imperious way and by blind devotion to a pair of outmoded principles has been busily engaged for nearly 50 years in digging its own grave.

The Rape of the Taxpayer: Why You Pay More While the Rich Pay Less by PHILIP M. STERN, Random House, New York, 1973, 483 pages, $10 (cloth bound), Vintage, $2.45 (paperbound).

This indignant attack on the Internal Revenue Code is intended to provoke public demand for tax reform.

In theory, the Federal income tax is a progressive tax, based on ability to pay, that hits the high-income taxpayer harder than the poor. Actually, as this book demonstrates, it's the middle-income citizen who suffers most.

On paper, the effective tax rate (tax as a percentage of total income) should be 45 per cent for someone with an income of $100,000 a year; actually it is about 30 per cent. Some people with incomes over $200,000 a year pay no income tax at all; many others pay less than 10 per cent. Why? Because the tax law is ridden with loopholes and tax shelters, of course, and this book maintains a high fever of indignation about them for nearly 500 pages.

Mr. Stern borrows an idea originated by Stanley S. Surrey, a former Assistant Secretary of the Treasury, of classifying as "tax expenditures" the cost to the Treasury (in revenues that otherwise would be due) of the exemptions, deductions, allowances, and other preferences that undermine the ostensible Federal income tax rates. Mr. Stern refers to these "expenditures" (which are costs to all taxpayers) as welfare payments.

On this basis, he claims, the 1972 cost to the taxpayers in lost revenues came to $77 billion. This amounts, he says, to a Federal welfare program "that gave each of America's 3,000 richest families $720,000 a year of your hard-earned money."

In many cases these tax loopholes are subsidies—to state and local governments (the exemption of interest on their bonds), to home owners (the home ownership deductions), and to business (oil, shipping, even clam and oyster shells). Most profitable corporations pay about a 35 per cent income tax rate (on paper it is 48 per cent); some of the nation's most successful companies pay almost no income tax. Some of these subsidies are deliberate and generally accepted as desirable; some are almost accidental, slipped into an incredibly complex tax law by Congressmen serving special interests (occasionally following Congressional or Presidential rejection of an actual subsidy bill).

It would be better, Mr. Stern feels, if subsidies were open and aboveboard rather than concealed in the tax statutes. That would allow more honest debate on their merits. More important, it would prevent their cost being borne so overwhelmingly by the least favored of all taxpayers, the unmarried individual with income entirely from wages and with personal deductions too small to itemize.

Tax loopholes detailed

Mr. Stern outlines in great detail the various sources of inequities in the income tax burden: municipal bonds, capital gains, and a myriad of tax shelters (oil, real estate, cattle, the leasing of locomotives and airplanes, clam and oyster shells, the "rent-a-cow" business, the "Mexican vegetable rollover," and other little known but fascinating gimmicks).

He attacks such cherished escape valves of the middle class as marital income-splitting, deductions for costs of home ownership, and the personal exemption, on the grounds that they, too, help the rich more than the poor. He even dares to criticize special income tax treatment for the aged and the blind (why not sufferers from muscular dystrophy?), all in the name of consistency and complete equity.

Mr. Stern favors taxation of all income at a progressive (but much lower than the present) rate with no exemptions, with open subsidies for housing, oil, charities, and any other causes deemed worthy of them. Not all readers will agree, but all will find this book fascinating, eminently readable, and disturbing.

The book has its flaws, of course. Its research is solidly based, mostly on work done by the Brookings Institution, but there is so much of it that an accountant would have no trouble finding instances in which arithmetical errors or errors of interpretation produced a wrong answer. There is so much in the way of statistical data that even the figure-oriented reader may feel a little overwhelmed.

More serious is a certain sloppiness in the way that it is all put together. As the author admits in the preface, the book is essentially an updating, with a good deal of completely new material, of an earlier (1964) work of his, *The Great Treasury Raid.* Unfortunately, to save work, many of the tables and examples from the earlier book have been carried over almost intact, with merely a footnote or an added paragraph to indicate that later tax laws have changed the figures.

This is particularly a problem for the reader who is thinking of using the book as a guide for tax avoidance rather than as a polemic against it. This is perfectly feasible—certainly the material is detailed enough—and Mr. Stern would not disapprove. He does not criticize those who take advantages of the law to save themselves money; "Indeed, being blessed with substantial means," (Mr. Stern is an heir of a founder of Sears, Roebuck and Co.) "I do so myself." However, it demands incredibly careful reading, since many descriptions of tax shelters and loopholes are negated or modified by subsequent sentences, paragraphs, or footnotes that bring up later tax legislation. This kind of updating is understandable, in view of the sheer bulk of the book, but inconvenient for the reader; a complete rewrite would have been better.

The style, while eminently simple, is occasionally irritating:

"But what is a billion dollars? How can one comprehend such a stupendous number?" It is true that the message is aimed directly at the man in the street and it has to be brought down to his level, but the result is often tedious for the more sophisticated.

Nevertheless, this is an important book. Its facts are of vital importance to every American, and its recommendations are worthy of serious study (particularly the insight that special privileges written into the law are inevitable so long as Congressmen's campaigns must be financed by the corporations and the seekers of special privilege —Mr. Stern would have political campaigns financed by the government). Reportedly there are now mutterings within the Administration about having another go at tax reform. Mr. Stern's indignation will be more than repaid if public opinion forces some real action at last. L.S.

Supermoney by 'ADAM SMITH,' Popular Library, New York, 1973, 287 pages, $1.95 (paperbound).

'Adam Smith,' the author of The Money Game, *has done it again in this tale of tangled financial dealings.*

Amusing and anecdotal, this book reveals no sure route to riches in the stock market but it does detail some horror stories of what not to do, including the tale of a Swiss Bank that cornered the world market in cocoa at a time when cocoa prices were sliding, then doctored its books to conceal the loss and ended up with a $20 million loss. 'Adam Smith' had a particular interest in this; he owned part of the bank.

Amusing, well-written, and to the point, *Supermoney* in paperback would be a perfect companion for a plane journey or, now that the fuel crisis is with us, an Amtrak trip.

R.M.S.

Social Responsibility Audit: A Management Tool for Survival by JOHN HUMBLE, Foundation for Business Responsibilities, Room 18-11 Portland House, Stag Place, London SW1E 5BS, 1973, 60 pages, 1.25 pounds ($3.20), paper bound, quantity discounts available.

With this little booklet, a well known British management consultant gets on the "social audit" bandwagon, offering his own blueprint for an audit of management's social responsibilities.

A lot of businessmen are talking about social responsibility and social auditing these days, and most consultants are eager to establish their credentials in this field. This book offers such a bid from John Humble, a director of Urwick Orr and Partners, the large British management consulting firm.

Because, in his view, the profit motive must come first, Mr. Humble suggests that corporations limit their definitions of their social responsibilities to areas of enlightened self-interest rather than raising moral or ethical issues: "Is it possible to have a meaningful corporate ethical view?"

After reviewing the growing pressures on business to recognize its social responsibilities more explicitly, Mr. Humble endorses the basic idea of the social audit and advocates its inclusion in the regular planning process. He briefly discusses the purposes of the audit, the responsibility for it, participation in it, limitations on its scope, and its intended audience without taking any particular position on these issues. Then he goes on to present his own questionnaire for a social audit by a company, governmental agency, or nonprofit organization.

The principal headings under which Mr. Humble recognizes auditable areas are the external environment (social responsibilities and opportunities, community relations, consumer relations, pollution, packaging, investment relations, and shareholder relations) and the internal environment (physical environment, working conditions, minority groups, organization structure and management style, communications, industrial relations, and education and training). Under each category he recommends listing the organization's strengths, weaknesses, opportunities, and threats and what action it should take.

This "paper is a personal and highly tentative view of a field full of uncertainty," Mr. Humble emphasizes. His audit plan, which is somewhat superficial and does not seem to be the product of deep thought or extensive research, nevertheless should be a helpful reference tool for any manager thinking of developing his own social audit or for any consultant considering offering such a service.

L.S.

Corporate Lib: Women's Challenge to Management by ELI GINZBERG and ALICE M. YOHALEM (Editors), The Johns Hopkins University Press, Baltimore, Maryland, 1973, 168 pages, $6.50 (cloth bound), $2.50 (paperbound).

Not just another rehash of the arguments for and against women in management, this little volume provides one of the most provocative assessments to date of their chances for making it.

The editors of this book, a symposium on women's prospects of entering the executive suite, conclude — somewhat questionably — that "women have challenged management, and it is a reasonable prognosis that management, women, and the nation will never be the same again."

The book is the product of a conference, sponsored by the Columbia University Graduate School of Business, held at Arden House in the fall of 1971. Its contents are the principal speeches given at that meeting by a dozen economists, sociologists, and educators, most of

them women; a representative of the U. S. Department of Labor (male); and a personnel executive (male).

As is always the case with such anthologies, the presentations vary widely in points of view as well as in quality, significance, and subject matter. To arrive at a summary the editors really had to reach, and in the case of the summary quoted above they reached too far.

There was no consensus among the speakers that women are on their way into management. (One speaker even suggested consolingly that management really is no place to be, even for men.)

There was consensus that discrimination exists in the corporation structure and that it will not be easy to overcome. That, however, besides being well known, was the point of departure rather than the conclusion. As to what could—or should—be done about it, opinions differed, in some cases sharply.

Edward A. Robie, senior vice president, Equitable Life Assurance Society, declared, "Business and industry should give a high priority to revising the channels of access to management so that a greater percentage of qualified women can reach management positions. There are a lot of good reasons why we should do this, and no good reasons why we should not."

Why? "From a management point of view, perhaps the strongest argument for revision of employment practices so as to increase the number of women in management positions is that industry can simply no longer afford to waste so valuable a resource. . . . Every available source of talent must be tapped if we are to cope effectively and competitively with [business's complex] problems."

How? Among other means, by more flexibility in work scheduling and compensation arrangements, by provision of child care, and by a conscious policy of recruiting women for entry-level management positions to meet the complaint of one female manager quoted by Mr. Robie, "Nobody knows how well we can do in management jobs because no company gives enough of us a chance to get the experience that would prove or disprove the allegations that we won't do well."

The opposing view

Valerie K. Oppenheimer, research sociologist at the University of California at Los Angeles, disagreed with Mr. Robie on virtually every point of fact.

"If I were in personnel management," she said, "it would take many more persuasive reasons than these to get me moving. For example, Mr. Robie argues that by 1980 six million more women will be in the work force and 'no work organization can effectively digest such a large change in the composition of its labor force without making changes in the composition of its managerial ranks.' I should like to point out that 31 million women are already in the labor force without any accompanying breakthroughs into management . . . if most female employees are in the usual dead end female jobs, I fail to see what difference it makes whether women are 20, 40, or 60 per cent or more of the workers in the enterprise."

She also scoffed at Mr. Robie's assertion that "management is now going to turn to women because the problems of today's world have become too complex for men alone to solve . . . regardless of whether our society would have done better with the managerial talents of women, it has certainly managed, up to now, to function without these talents."

Only pressures will work

Continuing high rates of unemployment will make it "even more unlikely, of course, that a spontaneous desire to bring women into management will occur. . . . if they do expand the opportunities for women in management it will be because they have to—because pressures will continue to mount for a more equalitarian sex distribution in jobs."

Some of these pressures have been translated into law. Discrimination in employment by Federal government contractors and subcontractors (about one-third of the labor force) because of race, color, sex, or national origin was prohibited by Executive Order 11246, as Michael H. Moskow, Assistant Secretary of Labor, pointed out. The Office of Federal Contract Compliance is now demanding "affirmative action" programs such as those called for in the case of minority groups.

Women's need to work

Whether this will result in "token women" in management or something bigger depends on the state of the economy and on women themselves. Women, although held back by their own conditioning in home and school as well as by male opposition, increasingly need to work, Ms. Oppenheimer pointed out. Inflation, with its pressures for a second income; the rising divorce rate; and the falling birth rate all push women into the labor market while a rising level of education and shrinking employment opportunities in the traditional women's fields push them toward men's jobs.

"With any kind of turndown in the economy"—and a recession in 1974 is widely predicted— ". . . it is probably going to be very close to insuperable to improve female opportunities," James W. Kuhn, professor of industrial relations, Graduate School of Business, Columbia University, warned. "One of the significant determinants of expanding employment opportunities for women at the executive level will be overall economic activity. In a soft labor market there may be aggressive competition between the educated elite of white and black men and women . . . a combination of more racial polarization, economic recession, and more militant demands by women may produce

. . . educated and able white women and equally qualified black males fighting for token jobs in the executive suite."

It would appear that something even tougher than the methods already employed by the Women's Lib groups is going to be needed.

L.S.

How to Win Profits and Influence Bankers: The Art of Practical Projecting by RICHARD C. BELEW, Van Nostrand Reinhold Company, New York, 1973, 176 pages, $19.95.

This simple book succeeds in its simple objective: to show the small businessman how to prepare financial projections for a prospective lender.

The author of this book, who is executive vice president of Diversified Discount and Acceptance Corporation, a Minnesota firm that specializes in business loans, has also had experience as a bank officer and president of a bank-affiliated small-business-investment company. Obviously he has dealt with a good many applicants for small business loans. And obviously, although he does not spell out the problem in so many words, many of these applicants lacked personnel with the accounting know-how needed to support their applications. These are the people he wrote this book to help.

Financial statements simplified

The book describes, in the simplest possible language, how to develop forecasts of operations, related cash flow, proforma balance sheets, and estimated borrowing requirements and how to use this information to support loan requests. He also shows how to forecast the amount and type of capital the company will need a year from now —or up to five years in the future.

The style of the book is so simple that it verges on the childish. Indeed, the book is dotted with so many sentences like, "In a free-enterprise economy such as we have in the United States, profits are the yardstick" and "Making profits can be fun," that it reads as if it had been written by a ghost writer. (Perhaps it was.) But the content is thorough, comprehensive, and undoubtedly helpful to the financially unsophisticated.

For the accountant there is nothing useful in this book. It offers no real inside look into a banker's mind. But for the small businessman it may well prove invaluable.

L.S.

Briefly listed

A Practical Approach to Computer Simulation in Business by L. R. CARTER and E. HUZAN, Halsted Press, New York, 1973, 298 pages, $15.95.

This book aims to introduce the general principles of simulation as applied to business. Little mathematical knowledge is assumed, though familiarity with the computer as a tool is.

Topics covered include: a review of some statistical concepts; the use of FORTRAN and CSL for computer simulation studies; queuing systems; forecasting and inventory control; simulation of other systems (including production control and profitability analysis); and sample programs in FORTRAN, BASIC, and CSL. Relevant statistical tables are contained in appendixes.

MAGAZINES

Management Consultants in Nonprofit Organizations: A Survey, Discussion and Recommendations by CARL W. NELSON, *Business Perspectives,* Spring, 1973.

Like many profit-seeking companies, nonprofit organizations encounter problems which require the aid of management consultants. Dr. Nelson discusses the role of consultants in nonprofit organizations, examines the related problems, and makes recommendations for their solution.

Management consulting firms can be of great help to nonprofit organizations, in that they offer expertise in specific problem areas such as manpower planning, specialized and technical studies, accounting and financial matters, etc. The techniques that consulting firms use to approach problems are not usually available to managers of the nonprofit organization: general statistical analysis, simulation programs, etc.

The survey of nonprofit organizations, made by the author, shows some of the problems that exist when consultants are used in nonprofit organizations.

First, the survey showed that only 43 per cent of the respondents were well satisfied with consulting firms and stated that they received "good value for their money." The remaining 57 per cent indicated some dissatisfaction: 40 per cent of the nonprofit organizations rated their experience with consulting firms as "somewhat beneficial" and the remaining 17 per cent rated their experience with consulting firms as a "waste of time and money."

It is suggested that there are two reasons for this dissatisfaction. First, the consulting firms charge their services to nonprofit organizations at the same rate as that charged to profit-seeking businesses. Since the consultant's fee may be a large budget item, the nonprofit organization may be expecting too much for its money.

Second, the consultants may be approaching the problems with the same methods used for solving problems in a profit-seeking company. At least one critic feels that consultants ignore the human element in forming their solutions.

Another problem disclosed by the survey is that some of the recommendations made by the consulting firms were not carried out solely because the nonprofit organizations did not have the resources to implement the recommendations.

The author makes the following recommendations, hoping that if

they are followed, more expertise will be made available to nonprofit organizations:

(1) Consulting firms might offer their services at a reduced rate to nonprofit organizations, especially during slack periods.

(2) Nonprofit organizations could jointly commission consultant studies and thereby reduce their individual out-of-pocket costs.

(3) Consultant studies could be made available to other nonprofit organizations at a minimal fee especially if they are of general applicability.

(4) Professional societies or a combination of nonprofit organizations in a particular social service field could independently attempt to organize consulting bodies much as individual industries set up special study groups.

(5) Consultant organizations could increase or develop the expertise of their existing personnel in the social services. This could be accomplished through changes in hiring policies or through staff development programs.

JOHN MARSHALL
Lousiana State University at Baton Rouge

Developing Managers Without Management Development by SAUL W. GELLERMAN, *The Conference Board Record,* July, 1973.

Formal management development programs are ineffective unless the manager has the opportunity to apply on-the-job what has been taught in the classroom. The most important element of management development is an organizational environment which encourages managers to learn from their jobs.

The development of a manager depends primarily on the quality of his experience within a firm, and how well he is encouraged to use that experience as a learning technique. If an organization is to have an adequate supply of competent managers, then that firm should adopt a general approach for developing those managers based on the following principles:

(1) All instructional opportunities, inherent in the work assigned to a manager, must be utilized by the superiors in order to insure maximum experience. Formal instruction is inadequate without the opportunity to practice what is taught.
(2) A person only learns when faced with a challenging problem demanding a creative solution.
(3) The organization itself must be designed to give managers the opportunity to learn from experience. The organization structure must create conditions in which talented men can "develop."

Four aspects of organizational climate are necessary in order to develop talented managers:

Organizational Structure – The author suggests that "the ideal structure for developmental purposes is a small, self-contained unit requiring little or no external support, which has an undivided responsibility for the attainment of some major organizational purpose." This task force type of organization has several advantages over traditional, bureaucratic structures. First, the communication network is shorter and faster. Second, general managerial skills are developed as opposed to functional specialization. And third, identification and recognition of promising managers is maximized.

Job Design–A job will stimulate manager development if it has been designed to be at least partially "unmastered" by the manager. As long as complete mastery of a job has not taken place, the manager will be stimulated for additional learning. Upon mastery of the present job, new learning opportunities must be available to a manager if his development is to continue. Also, managerial mistakes should be used as a "basis for instruction, rather than punishment." Errors should be viewed as simply a part of the overall development and learning process of managers, with the prevailing organizational atmosphere one of encouraging managers to try new and creative solutions to their problems, without fear of embarassment for failure.

Career Planning–The manager should always be faced with new learning opportunities, with responsibilities being deliberately shifted among jobs and activities so as to ensure continuing skill development. Major modifications of a manager's job should occur within a three-to-five year period. Although it is not always possible for promotion to be the means of modification, the same result can be achieved simply by changing the mix of managerial responsibilities.

Control Systems – The control function of a superior is based on seeing that subordinates are learning from their jobs. The role of the superior is one of coaching not controlling. Only in this way can the subordinate be allowed the freedom necessary for learning to occur.

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Increasing the Productivity of Highly Variable Labor by STEVEN O. CORRIE, *The CPA Journal,* July, 1973.

Mr. Corrie, of Arthur Andersen & Co., describes how the implementation of pre-established labor standards to short-run demand forecasts improved the operations of a small photo-finishing company and led to a significant reduction in per-unit labor costs.

The article initially compares the competitive position of small photo-finishing companies with the industry leader, Kodak. Such factors as lower volume and guaranteed rapid service lead to more labor intensive costs for the smaller companies; consequently, maximizing labor productivity is essential for the smaller photo-finishing companies competing with Kodak.

The particular company under consideration had a highly irregular demand, both in terms of annual peaks (Christmas and summer) and weekly peaks (caused primarily by weekend picture-taking and subsequent film drop-off on Sunday). This weekly pattern caused processing requirements (and hence, labor requirements) to be unusually high on Monday and Tuesday (because of promised rapid service), with a pronounced drop for the remainder of the week.

Comparison of old and new

The author describes briefly the old scheduling practices of the company, which were basically attempts to match fluctuating demand requirements with the available labor force (both full-time employees and part-time employees, the latter being obtained on one or two days' notice). Demand plots were made each Thursday to estimate the following Monday's labor requirements, and department supervisors were charged with reviewing daily volume requirements and deciding whether adjustments in the labor force for the next day were necessary. This practice, along with hourly wage payments (as opposed to piecework) and the lack of departmental standards, led to several problems. Among those mentioned by the author were the overstaffing of part-time help at the beginning of the week, inefficiencies of full-time help induced by the overstaffing, and the tendency of employees to pace their work habits to fill each day.

In discussing the new scheduling practices, Mr. Corrie expounds on two areas of improvement. First, a system of departmental labor standards was set up for each main product line. Second, forecasting was improved by the implementation of a statistically based forecasting system. By applying the standards to the projected daily demand requirements, the manpower requirements for each Monday were calculated, as well as for the remaining days of each week.

The author concludes by listing the positive benefits of the new practices. Among these were a reduction in incidents of overstaffing, a reduction of costs per unit, and better management control of labor. The cost savings per unit are especially important, because the company competes on the basis of quick service and low price.

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Sales Reports that Lead to Action by SAM R. GOODMAN, *Financial Executive,* June, 1973.

Sales reports must be removed from the area of mere custodial reporting if they are to initiate effective action. This author describes a system of sales reports which permit more creative analysis by marketing personnel.

"Sales reports, to be effective, must make someone act." In order to do this, Mr. Goodman suggests several key points which should be included in an effective set of sales reports. Rather than stressing the dollar volume of product activity, and what happened yesterday, these reports should make the marketing executive question what might happen in the future.

Items such as percentage increases or decreases and incremental profitability provide a more decision-oriented picture of product movement. Another item is the effective division of information by products, customers, geographic areas, salesmen, and other categories which will provide "built-in warning flags that indicate quickly when remedial action is needed."

The basic document from which Mr. Goodman's sales reports are drawn is the direct account report. This report breaks down all sales data into the basic building blocks which can then be used to create all other reports in the series. The first of these reports to be drawn from the basic document is the purchase record. This report matches product volume with the dollar incentives given to customers to achieve this performance. Percentage changes in dollar and volume of sales from one year to the next are compared to the similar change in the market of competition in order to compare individual customers to others in that specific area. An additional comparison can be made with the various allowances which were given to that customer to promote increased sales.

The second report analyzes customer mix according to changes in volume levels within recent periods. This allows managers to get a better picture of the results of their selling efforts among the largest accounts. The third report, one of the most important in the series, furnishes information as to the quality of sales volume. By dividing customers in an "ABC inventory" manner the manager can see what categories of customers, by yearly volume, provide what percentage of total volume. In this way many decisions can be made about marginal customers and where increased sales effort should be directed. Such a concept differs from the more traditional idea of focusing on increases in total volumes without looking at the sales effort needed to produce that increase.

The next report carries the product dollar sales by class of trade. This report can give the manager information on the performance of any specialized sales force from one year to the next, but is meant to be a report of perspective more than an action report. It is to be prepared only once or twice a year.

The last report in the series analyzes geographic profitability. "It is designed mainly to evaluate total marketing management and the relative profitability of divisions by district." As such, it provides the logical conclusion to the integrated sales reporting system which has been developed. There are many useful comparisons which can be made from the information on this report. One of these is a comparison by division of geographic sales

with direct profit. Other comparisons can be made for promotion costs, by dollar amount and by percentage of sales, to sales volume and volume mix. These comparisons are useful for evaluating geographic profitability and highlighting areas of heaviest promotional competition.

In summary, Mr. Goodman states that sales reports which will permit creative analysis by marketing personnel "should not be based on an accounting system which has custodial reporting as its main responsibility." Instead, sales reporting must be prepared and used in conjunction with conventional accounting systems utilizing current EDP technology.

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Complex Objectives, Decentralization, and the Decision Process of the Organization, by CLEMENT G. KROUSE, *Administrative Science Quarterly,* December, 1972.

By assuming away interunit dependencies, a model is developed with a full separation of relevant decision variables which can then be uniquely assigned to the decision-making units. These decision-making units at the operational level are described as quasiautonomous units. With this model, the final organizational decisions optimal with respect to the complex objectives of the organization are determined by upper management levels. The sequence of decisions that occurs before the organization develops its final optimal decisions are also described; in comparison, models developed by others in the past have usually implied a single step analysis of a set of simultaneous equations.

The model describes the adaptation behavior of target adjustments by which the organization constantly revises its activities. Krouse describes a target as a general label for various terms such as budgets, standards, quotas, achievement foci, and aspiration level. He distinguishes between two types of targets: (1) technical (or first-level) targets at the operational level which are directly affected by agents external to the organization, and (2) policy (or second-level) targets which are internally adaptable through changes in policy by upper management levels. The policy target is a device by which the activities of the organization are decomposed and its direction constantly revised. The use of the policy targets enables the organization to substitute a sequence of smaller problems for a more complex one and facilitates the decentralized assignment of the smaller problems to eliminate most interunit dependencies.

Decentralization arises in Krouse's model as the result of the formulation of subgoals through goal decomposition. However, since managers cannot consider all the organizational relations simultaneously and efficiently, they are cognitively unable to decompose the goals themselves. Planning and coordinating toward the organization's objectives are the responsibilities of upper management levels and involve the assignment and experimental adjustment of targets directed toward the achievement of the overall corporate goal. Upper levels of management establish specific target assignments for the operations level units to perform accordingly. The task is simplified for the operations level units: each organizational activity (directed toward a target) has only a small number of variables to manipulate. Furthermore, each activity is assumed to be performed autonomously at any given time.

Upper level management therefore directs targets down to the operations level units. The operations level units are autonomous in the model, subject only to targets passed down to them from upper level managers. The operations level units determine efficiency prices by their activity and feed this information back to upper levels of management. Management, in turn, adjusts the targets and sends down new targets to the operations level units. The organization's problem-solving process is thus conceived as one of trial and error—an experimental process that is both iterative and closed-loop.

Multiple objective model

A multiple-argument objective criterion (a utility function) model is recognized. Many past models have assumed the maximization of a single, integrated, organizational objective. However, some other models, such as those of Williamson and Baumol, have also recognized the multiple-argument objective. Krouse describes the organization's objectives as the maximization of performance and the minimization of imputed cost.

The adaptation rule in Krouse's model requires upper level managers to adjust only the targeted variables in order to bring about optimal performance. All the other variables are held constant at their prevailing levels. This revision and target-adaptation process of adjustment is formulated as continuous and systematic.

This model describes the organizational decentralization process and the iterative target adjustment process, while recognizing multiple goals and assuming interunit independence. Although models similar in many respects to this model have been presented before, Krouse claims that the key aspect of his model—attention to the sequence of decisions—is novel. His treatment of decision-making would appear to be a more realistic description of how organizations may attempt to optimize their corporate activity than is the optimal, result-oriented, single-step analysis by simultaneous equations. In summary, this interesting article explores an area in the decentralization model that has received little attention in previous literature.

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