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people, events, techniques

AICPA Recommends Congress Use Computer as Aid in Fiscal Decision Making; Government Reports Quarter-Billion-Dollar Savings With Computer Purchases

The American Institute of CPAs, now engaged in a special program to alert all its members to the wide impact of computers on the entire business scene, has suggested that Congress would benefit from use of a computer as the basis for an integrated information system.

Effective use of computerized data processing techniques, the AICPA statement noted, "makes it practical to be more selective, more penetrating, and more current than was ever possible before."

The statement was prepared by Karney Brasfield, chairman of the AICPA committee on relations with the Federal Government, and was presented before the Joint Committee on the Organization of the Congress last month.

The proposed system, which would embrace revenues, authorizations, and expenditures, would be particularly valuable in aiding members of Congress in fiscal decision making, the statement suggested.

Such a system would, if properly designed, give "greater capability in accumulating data on broad program classifications such as health, welfare and education, by purpose, organization, area, etc.," Mr. Brasfield said in his testimony. "This would seem to be of increasing significance as ad-

ditional programs are accomplished through making funds available to states, counties, cities, and other political subdivisions."

The system could also help, once it was established, in projecting the impact of proposed actions and alternatives, he said.

Mr. Brasfield suggested creation of "a small, highly skilled staff component to undertake the essential task of defining its needs on an integrated basis" as the first step in devising such a system. The staff group would be created within the framework of a joint committee.

Other Federal developments

In another Washington-EDP development, Comptroller General Joseph Campbell and Edward J. Mahoney, associate director of the Accounting and Auditing Policy Staff, General Accounting Office, said that savings under the Government's new policy of buying computers rather than leasing them could amount to several hundred million dollars a year.

In an exchange between the two GAO spokesmen and Senator Paul H. Douglas (Dem., Ill.) at hearings on Federal use of ADP equipment, Mr. Campbell revealed that to date only 45 per cent of Government-used computers have been

purchased outright rather than leased.

"We make estimates," said Senator Douglas, "that a billion dollars a year cost—approximately—either is or will shortly be paid for the use of computers by the Government. [See news story, M/S, May-June '65, p.14.] What is your estimate as to the savings per computer effected by purchase rather than by lease?"

Mr. Mahoney replied that in many cases studied intensively by the Government, purchasing EDP equipment had resulted in a payoff of about 100 per cent in five years' time.

"You mean it has doubled the cost over five years of leasing rather than purchasing?" Senator Douglas asked.

Mr. Mahoney replied that this was true in many cases and agreed that, for many major hardware components, cost to the Government could be cut in half by a policy of purchase rather than leasing.

Pointing out that if the present figure of 45 per cent purchases were extended to 100 per cent, the Government could save an additional \$275 million a year, Senator Douglas commented:

"There is gold in them thar hills."

IBM Uses Computer to Train Employees in Four Scattered Locations

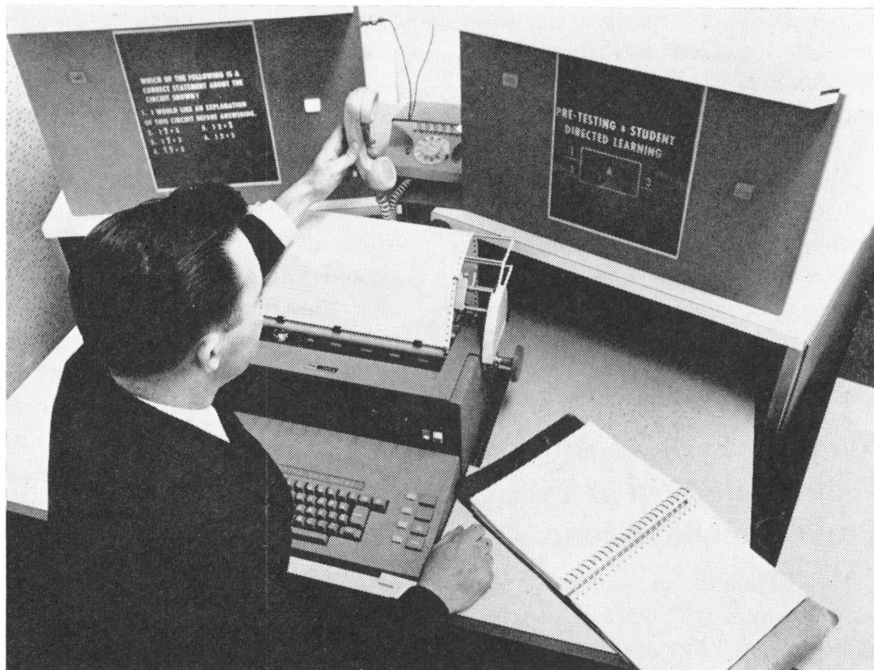
The first large-scale test of the use of a computer to train employees thousands of miles apart is now under way in International Business Machines Corporation.

Student terminals at IBM offices in Philadelphia, Los Angeles, San Francisco, and Washington, D.C., are connected to a central computer at Poughkeepsie, N.Y. The equipment is being used to present programed instructional material to customer engineers who service IBM's information handling systems. The pilot study's objective is to help determine the effectiveness of computer-assisted instruction as a method of teaching complex technical subject matter in an actual field environment.

An IBM 1440 data processing system is used to store and present instructional material prepared by training specialists of the company's Field Engineering Division. IBM 1050 data communications systems serve as the links between the students and the computer. Course material is entered into the system through the typewriter-like keyboards of the 1050 terminals linked to the computer by telephone lines.

Course material is presented in printed form on the same terminals that the students use for responses. The central computer analyzes the responses, checks their accuracy, and retains and stores student performance data. At some locations material is also presented on graphic display devices.

Each student is questioned and responded to individually. This permits each student to proceed at his own rate. Because the computer is time-shared, it can accommodate a number of students in various stages of various courses simultaneously. (At present twelve terminals can communicate with the computer at the same time. However, the maximum number is still



As part of a coast-to-coast pilot study of the feasibility of using computer-assisted instruction for technical training of field personnel, an IBM customer engineer takes a course from a computer thousands of miles away. The study is the first of its kind in industrial education, IBM says.

to be determined.) At any point in the course the student can be sent on to the next question, sent ahead to a later portion of the course, given remedial or enrichment material, directed to a textbook or reference material, or directed to consult with an instructor or counselor by telephone.

The author can change the course material at any time through one of the terminals. Thus, he need not be located near the central computer. Nor does he need special training to prepare the course; the courses are written in a fairly simple language known as Coursewriter, which requires no computer programming experience.

Demonstration

The technique was demonstrated this summer to educators attending the American Management Association's conference on educational technology. IBM computers in Yorktown, N.Y., were linked by telephone wire to terminals at the Americana Hotel in New York City. Segments of courses in statistics, American history, English, bridge, number squaring and cubing, and

spelling and reading were presented daily.

IBM will continue its pilot study for the balance of this year. The customer engineers receiving the training will attempt to maintain a reasonable schedule of instruction while on call at their offices. Thus, the effectiveness of the system under normal job pressures will be tested.

University laboratory

Computer-assisted instruction also will get a tryout at the new Irvine campus of the University of California (UCI), which, under a joint research agreement with IBM, will become a computer laboratory for investigating all the ways in which the computer can aid educational institutions. By applying computerization to all possible aspects of its work, UCI will turn itself into a computerization model for universities.

IBM computers will handle the university's data processing — student registration, scheduling, and records; budgeting; inventory management; book ordering and cataloging; payroll processing. They

will work on information retrieval projects intended to bring closer the day when all library information will be instantly available anywhere through electronic systems.

And they will offer programed instruction courses to students working from libraries, laboratories, and dormitories as well as classrooms. UCI professors will assist in the project by helping to develop automated lessons.

Need for Systems Analysts Will Triple Within Five Years, Diebold Group Says

The demand for qualified systems analysts will more than triple over the next five years, the automation consulting firm of The Diebold Group, Inc., is now predicting.

The number of people employed in automatic data processing, currently estimated at 250,000, will increase to at least 650,000 by 1970, according to the Diebold researchers. Of this total approximately 325,000 will be systems analysts. Since there are now only about 100,000 systems analysts, this may well pose a real problem for industry, the Diebold staff points out.

The problem is more than numerical. The systems analyst of

1970 will need to be more broadly experienced than the analyst of today. As systems analysts become involved with more and more areas of management decision making, they will need more knowledge of management and the business environment as well as of ADP, The Diebold Group warns.

As the proportion of systems analysts in the ranks of ADP workers increases (to 50 per cent in 1970 compared with 43 per cent in the 500 largest manufacturing concerns in 1955), the proportion of other types of workers will decline. The proportion of machine operators will drop from 25 per cent now to 8 per cent in 1970.

These are among the findings emerging from the second year of the Diebold Research Program, a cooperative effort conducted by the group on behalf of a number of major American and European companies (see M/S, March-April '64, p. 7).

As an outgrowth of another major Diebold research project, the Diebold Newspaper Research Program (sponsored by ten publishing firms and three industry suppliers), the organization now plans to publish annual surveys of U.S. and Canadian newspapers using computers for production purposes. The first such survey, published last spring, showed 73 computers already at work on hyphenation-justification, display ads, subscriber fulfillment, setting of financial tables, and other nonaccounting jobs.

The Diebold Group already publishes semiannual censuses of U.S. computer installations and annual censuses of European ones. The latest findings of its U.S. census confirm manufacturer reports that the small computer business is the fastest-growing segment of the market.

Computers renting for less than \$12,000 a month now account for 89 per cent of U.S. installations, compared to 75 per cent in 1956, according to Diebold. Computers with monthly rentals between \$12,000 and \$15,000 dropped from

9 per cent of the total market to 7 per cent in the same period, while computers renting for more than \$25,000 a month plummeted from 16 per cent to 4 per cent.

Organization study

In the latest—and somewhat far out expansion—of its research activities The Diebold Group announced a ten-year organizational research program focusing primarily on the relation between organization structure and communications. A number of nonbusiness organizations will be examined to see what lessons they can produce for business. Specialists working under contract have already looked into the Catholic Church (rated good on communications) and the Mafia (poor on horizontal communications). Other organizations being considered for study include the medieval Medici bank, the Hague political machine of Jersey City, N.J., and the John Birch Society.

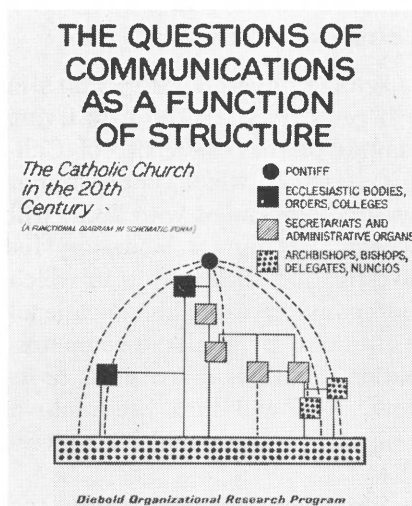
AICPA Publishes First In New Series of Studies In Management Services

A new series of technical studies in management services is being published by the AICPA.

Each study will consider a specific management problem area in depth. Text material will be followed by case studies describing actual consulting engagements.

The first study, "Cost Analysis for Product Line Decisions," is now available at a price of \$3 a copy (\$2.50 to AICPA members). The 132-page paperbound book describes the techniques of cost-price-profitability analysis for decisions to add or delete products and for make-or-buy decisions.

Future publications in the series will cover such subjects as pricing and distribution policies, purchasing and financing of production equipment, expansion or contraction of a business, and purchase or sale of a business.



Analyzing communications within many nonbusiness organizations, Diebold Group finds Catholic Church organization quite successful in maintaining communications flow among all levels of the hierarchy.



M.I.T. students communicate directly with computer via terminal devices.

M.I.T. Installs More Powerful Equipment in Computation Center

Computational needs that have doubled every two years since 1957 have caused the Massachusetts Institute of Technology Computation Center to discard old data processors and replace them with more powerful equipment three times in that period.

Now the fourth change is under way. The center, which also serves 51 other New England colleges and universities, has announced that it will install an IBM System/360 Model 67 in the next 18 months.

The new time-sharing computer complex, it is hoped, will meet the constantly expanding communications needs of students and faculty at participating institutions.

The present installation, an IBM 7094, can process problems for only thirty users simultaneously. The System/360 will permit 200 users to communicate with the central machine at the same time.

At present, the Computation Center is being used by M.I.T.'s Civil Engineering Department for, among other things, the design of superhighway interchanges and large steel structures. But it also plays a vital role in a wide variety of M.I.T.'s research programs, from

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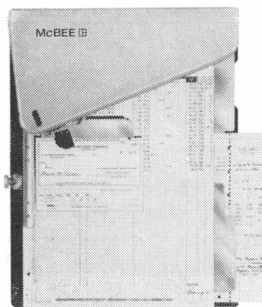
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studies of cosmic rays through systems of industrial management to the political and social behavior of man. The other 51 institutions sharing time with M.I.T. are also using the Computation Center for an equally wide range of subjects.

Time sharing grows

Several other developments also reflect the growing interest in computer time sharing:

C-E-I-R, Inc., goes on the air this fall with a time-sharing service for scientists and engineers in the Washington, D.C., area. Subscribers are paying \$250 a month for 50 hours' use of the system, plus \$25 for telephone lines in the District of Columbia (slightly more in Maryland and Virginia) and \$35 to \$125 for rental of a Teletype console. Software for the system, including a mathematical programming language called BASIC, was developed at Dartmouth University in a project aided by funds from the National Science Foundation.

Computer Sciences Corporation's Service Bureau Division plans to offer time-sharing service to small and medium-sized organizations in Southern California, starting with San Diego. However, instead of simply charging for the service on an as-used basis, CSC will cooperate with the customer in marketing computer time to potential users in the immediate area and will share in the profits. CSC will install UNIVAC 1004 or IBM 1400-series processors in facilities provided by the local organizations for direct access to CSC's UNIVAC 1107 computer.

National Cash Register Company's public-utility-type on line data processing service for savings banks and savings and loans associations (see M/S, March-April '65, p. 6) is now in operation in New York. Teller machines at subscribing banks are connected by telephone lines to an NCR 315 CRAM computer in NCR's New York data processing center. About 1.5 million savings accounts will be handled by the system.

New Hospital Data Collection Device Shown By Standard Register

A new data collection device especially designed for hospitals but adaptable to industrial use was introduced by The Standard Register Company at the American Hospital Association's recent convention in San Francisco.

The new desk-top electric data collecting machine, called a source record punch, records information in both printed and key punched form on the same documents at the same time and place with a single entry. Documents are then ready for tabulator or computer handling without further manual transcription or machine coding. This, the manufacturer says, answers a hospital's need for a way to gather all kinds of information about a patient's treatment at its point of origin and capture "instant input" for automatic or electronic data processing.

The system works this way:

When a patient enters the hospital, a master card is prepared for him on which his account number is punched and printed. An embossed metal or plastic plate containing constant information about

him (such as his name and his doctor's name) is then attached to the card.

When a service is ordered, the nurse picks the appropriate set of a group of standard-size requisitions called zipcards. They consist of up to five carbon-interleaved forms, including a standard tabulating card. She inserts the zipcards and the patient's master card in slots on the machine. When she depresses a bar, the patient identification is reproduced on the set of forms and the patient number, the date, and the station number card are punched and printed. She then simply checks on the form set the service to be performed and sends the zipcards to the service center.

After the service is completed, the zipcards are inserted in another source record punch. Code numbers, test results, and other variable information are entered through the keyboard, which can be operated by persons untrained in business machine operation.

Paper copies of the form set are distributed where needed. The last copy, the punched card, goes to the business office, where it can be used, without further processing, for automatic posting or data storage.

Vacation and Holiday Policies Growing More Liberal, NICB Reports

American business concerns are—
Liberalizing vacation policies
Lowering service requirements for vacations

Increasing the number of paid holidays granted employees.

All in all, more and more American employees are getting more and more time off with pay, according to a National Industrial Conference Board study released last month.

In 1956, only 15 per cent of manufacturers surveyed gave a maximum four-week vacation and then only after 25 years' service, the NICB report said. Today, two-thirds of survey respondents give



The Standard Register Company's new source record punch will record information in both human-readable language and machine-readable code on the same document at the same time in a single operation.

four weeks, and qualifying service has been reduced from 25 to 20 years in most of the companies surveyed.

In a majority of cases, there is no set "vacation time," and in the remainder the vacation season ranges over a period of nine to eleven months. An increasing number of companies are also permitting employees to split their vacation period.

Today, 31 per cent of the firms surveyed give eight holidays a year. This compares with 10 per cent in 1956. Six holidays—Christmas, Thanksgiving, New Year's Day, Independence Day, Labor Day, and Memorial Day—are the standard for most firms, although the trend to give eight holidays is still growing. Most popular for seventh and eighth holidays are Christmas Eve, Good Friday, and the Friday following Thanksgiving.

New Computer-Prepared Tax Service Announced In Five Western States

A second computer-based tax service, comparable to Computax (see news story, M/S, Jan.-Feb. '65, p. 4), is now being offered in five western states—Texas, New Mexico, Arizona, Colorado, and Utah.

Datatax, the new service, is, like the larger service, primarily designed for accountants and other professional tax preparers. The preparer interviews the client and gets pertinent tax information from him. He sends these preliminary figures to Datatax headquarters in Albuquerque, N.M. Within 72 hours, he has a completed tax return to deliver to his client.

Datatax charges \$4 for a Federal tax return using the standard 10 per cent tax deduction. An additional \$1.50 is charged for itemizing deductions, providing additional schedules, or income tax averaging.

State tax returns are completed for an additional \$1.50.

September-October, 1965

The service is currently limited to the five western states but may be expanded next year if demand grows.

Meanwhile, Commerce Clearing House, Inc., and Computer Sciences Corporation have announced that Computax, originally wholly owned by Computer Sciences Corporation, has been reorganized as Computax Corporation, with a 50-plus percentage of stock held by Commerce Clearing House and the remainder by Computer Sciences Corporation.

Computax reorganization

Computax Corporation will continue, as it has before, offering service for computer calculation and printing of income tax returns and schedules. The technical staff and computer facilities used by Computer Sciences Corporation during the past two years will be retained; Commerce Clearing House will bring its national marketing organization to the combination.

Headquarters for Computax Corporation will be in Los Angeles, with other processing centers in other cities. Those definitely scheduled include New York and Chicago.

Manpower Input-Output Tables Published by Department of Labor

Input-output tables, similar to those prepared by the United States Department of Commerce showing the effect of expenditures in one industry on all associated industries, have now been prepared by the U.S. Department of Labor for manpower analysis.

The new tables show the effects of a shift in demand for the products of any one industry on direct and indirect employment in all sectors of the economy.

The tables illustrate, as one example, what happens to employment in all subsidiary industries—steel, tires, glass, upholstery fabric, etc.—if the demand for automobiles increases.

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Get the Facts on the New Cummins Tallyprinter. Send for a copy of the Tallyprinter brochure showing actual impression examples.



TABLE 1. TOTAL EMPLOYMENT¹ (DIRECT AND INDIRECT)² PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1962
[Producers' value]

The figure at the head of each column shows the total employment directly and indirectly attributable to \$1 billion of delivery to final demand by the industry shown at the top. The other entries in the column show the distribution of this employment among the sectors in the economy.	Livestock and livestock products	Other agricultural products	Forestry and fishery products	Agricultural, forestry, and fishery services	Iron and ferro-alloy ores mining	Nonferrous metal ores mining	Coal mining	Crude petroleum and natural gas	Stone and clay mining and quarrying	Chemical and fertilizer mineral mining
	1	2	3	4	5	6	7	8	9	10
Total.....	199,872	162,139	114,079	196,201	51,141	74,591	100,310	29,657	92,490	57,335
Direct.....	108,350	112,934	64,608	115,670	22,166	43,871	72,166	8,176	60,446	27,945
Indirect.....	91,522	49,205	49,471	80,531	28,975	30,720	28,144	21,481	32,044	29,390
DISTRIBUTION OF INDIRECT										
(1-4) Agricultural, forestry, and fisheries.....	57,263	19,707	24,624	62,313	888	819	839	1,156	695	692
(5-10) Mining.....	439	794	261	330	2,215	1,837	548	193	1,008	1,649
(13-64) Manufacturing.....	11,095	8,715	7,675	5,881	6,703	11,192	12,467	5,061	15,080	9,096
(65) Transportation.....	3,618	2,203	2,037	1,749	8,656	3,836	1,789	2,631	2,585	6,359
(66-68) Communications and utilities.....	972	1,017	825	746	841	1,315	1,199	646	1,198	1,602
(69) Trade.....	7,204	5,521	3,046	3,076	2,953	4,058	4,896	2,138	4,674	3,671
(70-71) Finance, insurance, and real estate.....	2,883	3,205	3,096	1,894	2,194	2,860	2,217	3,358	2,160	1,523
(12, 72-79) Services and miscellaneous.....	8,049	8,102	7,907	4,542	4,522	4,802	4,191	6,298	4,643	4,798
Ratio of indirect to direct.....	.84	.44	.77	.70	1.31	.70	.39	2.63	.53	1.05
	Maintenance and repair construction	Ordinance and accessories	Food and kindred products	Tobacco manufactures	Broad and narrow fabrics, yarn and thread mills	Miscellaneous textile goods and floor coverings	Apparel	Miscellaneous fabricated textile products	Lumber and wood products, except containers	Wooden containers
	12	13	14	15	16	17	18	19	20	21
Total.....	113,751	122,496	129,602	71,184	135,690	99,681	163,334	158,352	145,114	161,464
Direct.....	77,427	58,499	31,194	15,976	67,776	34,850	97,361	57,052	90,086	80,769
Indirect.....	36,324	63,997	98,408	55,208	67,914	64,831	65,973	101,300	55,028	80,695
DISTRIBUTION OF INDIRECT										
(1-4) Agricultural, forestry, and fisheries.....	1,049	1,080	59,732	30,804	26,199	10,354	10,646	15,064	18,887	7,971
(5-10) Mining.....	1,194	852	513	328	777	655	390	606	434	543
(13-64) Manufacturing.....	17,864	45,302	12,454	8,493	17,633	31,449	35,235	59,317	11,047	46,835
(65) Transportation.....	2,891	2,968	5,541	2,161	4,664	4,808	3,000	4,406	6,524	6,217
(66-68) Communications and utilities.....	628	1,109	1,181	753	1,341	1,153	1,044	1,358	1,052	1,095
(69) Trade.....	8,202	5,338	7,397	3,354	7,324	7,726	6,829	9,854	7,103	8,096
(70-71) Finance, insurance, and real estate.....	1,196	1,749	2,478	1,420	2,538	2,394	2,262	2,668	2,386	2,302
(12, 72-79) Services and miscellaneous.....	3,500	5,601	9,107	7,896	7,437	6,290	6,568	8,026	7,591	7,636
Ratio of indirect to direct.....	.47	1.09	3.15	3.46	1.00	1.86	.68	1.78	.61	1.00
	Household furniture	Other furniture and fixtures	Paper and allied products, except containers	Paper-board containers and boxes	Printing and publishing	Chemicals and selected chemical products	Plastics and synthetic materials	Drugs, cleaning, and toilet preparations	Paints and allied products	Petroleum refining and related industries
	22	23	24	25	26	27	28	29	30	31
Total.....	137,413	119,014	88,775	100,155	111,189	75,621	83,718	85,164	85,122	45,805
Direct.....	74,460	62,401	41,769	43,154	69,856	33,459	29,833	26,956	29,027	10,580
Indirect.....	62,953	56,613	47,006	57,001	41,333	42,162	53,885	58,208	56,095	35,225
DISTRIBUTION OF INDIRECT										
(1-4) Agricultural, forestry, and fisheries.....	5,163	2,375	2,914	1,796	1,772	2,401	1,895	3,378	3,445	1,090
(5-10) Mining.....	647	927	1,454	829	445	2,973	1,869	855	1,326	5,072
(13-64) Manufacturing.....	35,529	33,171	21,443	32,926	17,478	14,651	27,641	23,278	27,768	8,142
(65) Transportation.....	4,088	3,740	5,148	5,338	3,380	5,411	5,451	3,827	5,360	5,892
(66-68) Communications and utilities.....	1,211	1,132	1,403	1,138	1,683	1,769	1,509	1,799	1,379	1,181
(69) Trade.....	7,639	7,448	6,135	6,634	4,290	5,134	4,998	5,151	6,706	2,936
(70-71) Finance, insurance, and real estate.....	1,946	1,840	1,862	2,048	2,438	2,494	2,402	2,415	2,465	3,106
(12, 72-79) Services and miscellaneous.....	6,733	5,978	6,644	6,287	9,847	7,418	8,120	17,509	7,638	7,805
Ratio of indirect to direct.....	.85	.91	1.13	1.32	.59	1.26	1.81	2.16	1.93	3.33

Sample manpower input-output table from Monthly Labor Review

Secondary effects—the demands of the steel industry under the increase in automobile demands, for instance, for increased employment in the production of iron ore and coke—are also accounted for.

Typical of the entries is that

showing the effect of a billion dollars of orders in the furniture industry. A billion dollars of orders generates 137,413 jobs. These break down to:

Jobs in the furniture industry itself—74,460

Jobs in supporting industries—62,953.

Of the indirect employment created, 35,529 jobs are in manufacturing of lumber and wood products, fabrics, and rubber and plastic products; 5,163 jobs are

in agriculture and forestry (cotton and logging). The remainder is distributed among transportation, trade, and service industries. All in all, for every 100 jobs created directly, 85 jobs are created in supporting fields.

The tables for various industries are printed in the July issue of the Bureau of Labor Statistics' *Monthly Labor Review*. Copies at 75¢ each may be ordered from the Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402.

Nation's Computers, Now 25,000 Strong, Will Double in Five Years

The nation's computer population, now standing at 25,000, should increase to 50,000 by 1970.

So predicts the first issue of *Moody's Computer Industry Survey*, a new periodical reviewing the technical/financial outlook for the data processing field.

According to the survey, the decline in orders and order backlog occurring during the first quarter of 1965 can be attributed to the cancellation of multiple orders made last year for new equipment and to the effect on dollar figures of the new trend toward lower unit cost of equipment. However, the editors of *Moody's* predict a reassertion of "uptrends in new and unfilled orders later this year..."

Competitive pressures in the industry continue to be pronounced. Significant among the major general purpose computer manufacturers was the shift to increased emphasis on small computer development. Heralding this shift were announcements of the Honeywell 120, the IBM 360-20 with tape, and the appearance of the new GE 115, together with the already existing RCA Spectra 70/15.

The most encouraging area of growth in the computer field, as seen by *Moody's*, has been that of the service companies. Although few of these companies are more than ten years old, the *Survey* finds

that all are "reasonably profitable," with annual sales ranging between \$3 million and \$20 million." And the demand for these "software specialists" is expected to become stronger in the future.

According to *Moody's*, it will not be the large computer manufacturers who will be immediately affected by the growing emphasis on services and development of small computers. But smaller firms, deriving most of their sales from computer revenues, are finding themselves faced with "enormously expanded market possibilities."

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New York Stock Exchange Inaugurates Automated Accounting Service

The Central Computer Accounting Corporation (CCAC), a new automated brokerage accounting service, has been organized as a subsidiary of the New York Stock Exchange.

The new organization initially will be open only to Exchange members, but eventually it will be made available to qualified non-members as well. It is expected to go into operation in mid-1966.

This development is the latest in a series of steps the Exchange has taken in moving toward a broad-gauge automation program. Others have included a new ticker system, a central certificate service that will be completely operational late this year, and the Market Data System, which will automate the recording and transmission of trading information on the Exchange floor.

Systems design for the new Central Computer Accounting Corpora-

tion was done by Haskins & Sells. Peat, Marwick, Mitchell & Co. acted as general consultants, and Price Waterhouse & Co. are acting as auditors and financial consultants on the project. International Business Machines, Radio Corporation of America, and Honeywell, Inc., are supplying equipment for the system.

Western Union Awarded Systems Study Contract By Liquor Distributors

The management consulting services group of Western Union has been awarded a contract to study the operations of the 650 members of the Wine & Spirits Wholesalers of America, Inc., a national association of independent liquor distributors.

The idea is to see how advances in computer technology and management sciences can be used to improve the distributors' efficiency and sales effectiveness. The final report will spell out information system techniques that are suitable for the distributors and will evaluate alternative means by which each member can achieve automated data processing capability.

Household Finance Will Link 1,000 Branch Offices To Chicago Computer

Household Finance Corporation will link more than 1,000 branch offices with a central computer center in one of the nation's largest communications-based electronic data processing systems. The consumer finance company has signed a contract with IBM for purchase of the necessary equipment.

The network will require an investment of more than \$10 million. When it is completed, some time in the 1970's, it will process an average of 150,000 transactions daily.

Called ORBIT (for On Line-Real Time Branch Information Transmission), the system will have two



Terminal device, designed by IBM for Household Finance Corporation, will transmit information from branch offices all over country to headquarters in Chicago.

IBM System/360 Model 50's as its nucleus. Each computer will have a memory capacity of more than 250,000 characters and in addition will have direct access to five IBM 2314 disk systems, on which two million customer records will be stored.

This record-keeping equipment, to be housed at HFC headquarters in Chicago, will be tied to specially designed branch office terminals by leased communications lines. Each terminal will have instantaneous two-way communication with the computer center. They can also communicate with each other.

The system will work in this way: When a customer makes a payment on a loan at a branch office, his ledger card will be entered in the terminal unit. His account number, kind of loan, and amount of payment will be keyed into the transmitter and relayed to the computer. The computer will locate the customer's master record on the disk storage file, record the amount and method of payment, and simultaneously update both the branch office records and the master corporation records in Chi-

cago. The entire transaction will take only a few seconds.

In addition to loan accounting, the system can be used to prepare checks for customers, to handle general ledger accounting, and for a variety of special uses. One special use is the preparation of legal contracts for loans. The computer would determine the start of payments, the duration of the loan, and the application of the loan repayment; this information would be included in the contract printed on the branch office terminal.

Missouri CPA Firm Will Do Data Processing for Several Local Banks

In a reversal of the trend toward CPAs' using banks' data processing facilities for their work, an accounting firm in Columbia, Missouri, is enlarging its own data processing installation and already has contracts with three local banks to process their data.

Williams, Keepers, Oliver, Payne and Rackers, which has had a National Cash Register 390 computer in its main office in Columbia for

about two years, will replace it in December with the larger, more powerful NCR 315-100 system. Local banks, which have already installed NCR bank proof machine and encoders in anticipation of the service, will help to pay the increased cost of the new installation.

The accounting firm, which expects to schedule more bank work when the system is installed, says it will be used for payroll and other accounting work for its clients and for several CPA jobs which must now be sent to NCR's St. Louis data processing center.

Transaction Costs in Computer Operations Decreasing, CPA Says

Because of steady improvement in the internal efficiency of computers, per-transaction costs for electronic data processing have declined sharply over the past ten years.

Such, at least, is the contention of the equipment manufacturers, and that claim is supported by a study made by Manuel R. Sylvester, partner in the Honolulu, Hawaii, CPA firm of Baker & Gillette, he reports in the *NAA Bulletin*.

Mr. Sylvester compared the costs of processing a specific payroll program in 1954-56, 1959-60, and 1963-64 on equipment of three different manufacturers. He calculated computer operating costs only, without trying to include costs of personnel or of data preparation and communications devices.

Over the ten-year period, processing costs on the three manufacturers' equipment decreased by ratios of 20 to 1, 10 to 1, and 5 to 1.

These figures, Mr. Sylvester warns, should not be taken at face value since only one computer program was tested and many related costs were ignored. Even so, he concludes, it is "probably safe to say that the equipment cost of handling general business problems has gone down considerably."