

CLEVELAND PUBLIC LIBRARY
BUSINESS INF. BUR
CORPORATION FILE

The Litton Industries, Inc., 1968 annual report, "Litton Now and Tomorrow," reviews Litton as it is today and sets forth the base on which advancing technology will create the products and systems of tomorrow.

Litton today is a manifestation of applied enterprise—the creativity, initiative and energy of a broad group of people—which, in 15 years, has built a multinational industrial organization having self-generating and continuing growth potential for the future.

Fundamental to Litton's philosophy for growth is the conviction that the classically separate sciences and technologies of yesterday are fusing increasingly with each other and are interconnecting in their applications. Out of such evolving interrelationships flow not only new business opportunities but the solutions to the complex problems and needs of man.

In the early 20th century, economies of production scale enabled industry to greatly reduce unit manufacturing costs, thus making widely available the basis for a substantially improved level of living.

Today, economies of technological scale—from whole new technical solutions and innovations that come from truly multi-disciplinary endeavors across multi-industry fields—offer equally dramatic potential for the years ahead.

Indeed, new approaches of such a scope hold promise as the only effective means for solving such massive problems as those of modern urban living, environmental pollution, health and education, as well as the declining per capita world production of food.

For this reason, a company—which possesses a breadth of interacting and complementary technologies, together with the management techniques to interrelate those technologies—is uniquely qualified to be fully responsive to the challenges and opportunities of the future.

Litton is purposefully structured to apply this corporate concept. We are organized to create, develop and offer to the markets of the future a flow of innovative products and systems resulting from the economies of technological scale.

Litton is thus distinguished from companies with narrowly oriented product lines and also from firms comprised of elements joined only by a financial relationship. We believe, in fact, that industrial evolution inevitably will cause many of today's narrow-product-line companies to become interrelated elements of tomorrow's high-order, yet unified, organizations, creating new values for an ever-demanding society.

Litton believes many of tomorrow's most promising opportunities will occur in our existing marketing fields—Business Systems and Equipment, Professional Services and Equipment, Industrial Systems and Equipment, and Defense and Marine Systems. In each of these areas, described and illustrated in this report, we foresee "Systems of Tomorrow." Through economies of technological scale, these systems will offer a higher-order of service and performance than is possible today.

One of numerous examples is Litton's unifying approach to complex marine transportation systems. To plan and build these systems, we are using advanced management techniques to wed complementary Litton capabilities in electronics and automated materials handling with the newest ideas of ship design and construction, as well as whole new concepts of ship production facilities. Our Shipyard of the Future is itself designed to produce ships for today's needs and to meet the needs of the future.

Litton inhabits both now and tomorrow, benefiting today from yesterday's vision while ceaselessly planning to achieve tomorrow's goals. Our accomplishments in the present represent but steps toward the greater achievements of the future.

As we identify relevant new opportunities, Litton directs necessary capabilities and energies toward developing and capitalizing upon them. Considered as a coherent goal, such opportunities represent a continuing stimulus to Litton's momentum. Our activities of the future will share the common bond of technology and the systems management approach directed toward productive and profitable ends.

Highlights of Five Years' Operations

Fiscal Years Ended July 31

	<u>1968</u>	<u>1967</u>	<u>1966</u>	<u>1965</u>	<u>1964</u>
	(thousands of dollars)				
Sales and Service Revenues					
Litton Industries, Inc. historical results	\$1,855,007	\$1,561,510	\$1,172,233	\$ 915,574	\$ 686,135
Businesses acquired in poolings of interests— sales for years prior to year of acquisition:					
1968		217,291	203,674	170,429	148,346
1967			168,731	135,597	111,373
1966				18,251	15,308
1965					19,561
	<u>\$1,855,007</u>	<u>\$1,778,801</u>	<u>\$1,544,638</u>	<u>\$1,239,851</u>	<u>\$ 980,723</u>
Net Earnings					
Litton Industries, Inc. historical results	\$ 58,456	\$ 70,070	\$ 55,614	\$ 39,752	\$ 29,767
Businesses acquired in poolings of interests— earnings for years prior to year of acquisition:					
1968		13,129	16,052	12,067	9,248
1967			5,314	3,942	2,733
1966				(430)	268
1965					317
	<u>\$ 58,456</u>	<u>\$ 83,199</u>	<u>\$ 76,980</u>	<u>\$ 55,331</u>	<u>\$ 42,333</u>
Common shares outstanding at yearend adjusted for dividends and split	24,524,987	22,075,060	21,506,874	23,555,248	23,198,538
Equivalent common shares outstanding adjusted for dividends and split and assuming full conversion of preference and preferred stock:					
Litton Industries, Inc.	31,899,020	27,778,783	26,085,221	25,333,058	24,125,900
Reflecting subsequent poolings of interests	31,899,020	31,163,273	30,886,056	30,222,264	29,352,566
Earnings Per Share (See note)					
Litton Industries, Inc.	\$1.83	\$2.52	\$2.13	\$1.57	\$1.23
Reflecting subsequent poolings of interests	\$1.83	2.67	2.49	1.83	1.44
Stock dividends on common stock	2½%	2½%	2½%	2½%	2½%
Stock split of common stock			Two-for-one		

Note: Earnings per share are computed on the basis of the total number of shares that would have been outstanding at the end of each of the respective years assuming full conversion of preference and preferred stocks. The number of shares used in the computation has been adjusted for stock dividends, stock split and for the current

conversion rate for the preference and preferred stocks. To reflect subsequent poolings of interests, shares issued for companies acquired in poolings of interests from 1965 through 1968 are considered as having been issued in 1964.

Other Financial and Related Data

	1968	1967	
		After Adjustment for 1968 Poolings of Interests	Prior to Adjustment for 1968 Poolings of Interests
Sales and Service Revenues by Product Line:			
Business systems and equipment	27%	27%	31%
Defense and marine systems	27	27	32
Industrial systems and equipment	29	30	27
Professional services and equipment	17	16	10
	<u>100%</u>	<u>100%</u>	<u>100%</u>

For 1967, operating profits were essentially in proportion to revenues for each of the four product lines on both the adjusted and the unadjusted basis.

For 1968, the operating profit of business systems and equipment was substantially less than its contribution to revenues.

	(thousands of dollars)		
Depreciation expense	\$ 44,927	\$ 40,282	\$ 33,778
Capital expenditures	95,751	71,600	60,480

Financial Position

Net working capital	457,375	448,983	401,425
Current ratio	2.4	2.7	2.7
Total assets	1,207,876	1,088,351	945,024
Shareholders' investment	596,516	524,882	426,987

Litton Industries, Inc. & Subsidiary Companies

Consolidated Statements of Earnings

	Year Ended July 31, 1968	Year Ended July 31, 1967	
		After Adjustment for 1968 Poolings of Interests	Prior to Adjustment for 1968 Poolings of Interests
		(thousands of dollars)	
Sales and service revenues	\$1,855,007	\$1,778,801	\$1,561,510
Costs and expenses (including depreciation of \$44,927, \$40,282 and \$33,778) :			
Cost of sales	1,373,916	1,295,459	1,147,720
Selling, general and administrative	365,103	327,195	283,437
Interest	14,366	10,627	10,292
	<u>1,753,385</u>	<u>1,633,281</u>	<u>1,441,449</u>
Earnings before taxes on income	101,622	145,520	120,061
Federal and foreign taxes on income	43,166	62,321	49,991
Net earnings	<u>\$ 58,456</u>	<u>\$ 83,199</u>	<u>\$ 70,070</u>

The 1967 data, "Prior to Adjustment for 1968 Poolings of Interests," represents the operations of Litton as shown on its 1967 report. The 1967 data, "After Adjustment for 1968 Poolings of Interests," gives effect to the restatement of the 1967 operations to include operations of businesses acquired in 1968 in poolings of interests.

See notes to financial statements.

Consolidated Balance Sheets

Assets

Current Assets:	<u>July 31, 1968</u>	<u>July 31, 1967</u>
(thousands of dollars)		
Cash, including certificates of deposit and treasury bills	\$ 54,099	\$ 69,587
Accounts receivable	351,215	320,162
Inventories, at lower of cost or market, less progress billings of \$84,717 and in 1967 \$86,760	368,621	319,648
Prepaid expenses	10,691	10,118
Total Current Assets	784,626	719,515
Property, Plant, and Equipment—See page F-6	309,673	272,777
Investments and Other Assets—See page F-6	113,577	96,059
	<u>\$1,207,876</u>	<u>\$1,088,351</u>

Liabilities and Shareholders' Investment

Current Liabilities:

Notes payable to banks	\$ 70,443	\$ 13,575
Accounts payable	148,998	152,221
Payrolls and related expenses	59,675	54,549
Federal and foreign taxes on income	36,816	45,939
Current portion of long-term liabilities and debentures	11,319	4,248
Total Current Liabilities	327,251	270,532
Long-term Liabilities (Note C)	201,272	196,793
Deferred Federal Taxes on Income	27,017	24,610
Deferred Service Contract and Other Income	24,254	22,550
Convertible Subordinated Debentures (Note D)	31,566	48,984
Shareholders' Investment—See page F-6 (Note E)	596,516	524,882
	<u>\$1,207,876</u>	<u>\$1,088,351</u>

See statement of properties, investments and shareholders' investment and notes to financial statements.

Litton Industries, Inc. & Subsidiary Companies

Properties, Investments and Shareholders' Investment

Property, Plant and Equipment—at cost:

	July 31, 1968	July 31, 1967
	(thousands of dollars)	
Land	\$ 20,693	\$ 14,387
Buildings	145,450	115,111
Machinery and equipment	337,464	333,121
	<u>503,607</u>	<u>462,619</u>
Accumulated depreciation	193,934	189,842
	<u>\$309,673</u>	<u>\$272,777</u>

Investments and Other Assets:

Equity in unconsolidated finance subsidiaries (Note B)	\$ 32,805	\$ 27,658
Long-term investments—at cost	28,450	22,807
Excess of cost over related net assets of businesses purchased	46,223	39,284
Other assets, including patents	6,099	6,310
	<u>\$113,577</u>	<u>\$ 96,059</u>

Shareholders' Investment (Note E):

Capital stock:

Voting preference, par value \$2.50 a
share, issuable in series:

Authorized 8,000,000 shares

Convertible participating series issued

5,586,689 shares, and 5,951,033 shares

less 36,702 shares in treasury
 \$ 13,875 | \$ 14,786 |

Voting preferred, convertible,

cumulative, par value \$5 a share,

issuable in series:

Authorized 3,000,000 shares

Series A issued 112,710 shares, and

128,257 shares
 564 | 641 |

Series B issued 1,749,009 shares, and

1,754,221 shares
 8,745 | 8,771 |

Common, par value \$1 a share:

Authorized 39,000,000 shares

Issued 24,524,987 shares, and 22,998,931 shares
 24,525 | 22,999 |

Additional paid-in capital
 313,346 | 240,498 |

Earnings retained in the business (less

\$193,870 and \$138,023 transferred to

paid-in capital for stock dividends paid)
 235,461 | 237,187 |

 \$596,516 | \$524,882 |

See notes to financial statements.

Consolidated Statement of Earnings Retained in the Business

Year ended July 31, 1968	(thousands of dollars)	
Balance at beginning of year		\$237,187
Net earnings for the year		<u>58,456</u>
		295,643
Deduct:		
Market value of 2½% stock dividend		55,847
Premium on redemption of convertible subordinated debentures		2,999
Cash dividends on preferred stock:		
Series A—\$3 annual rate	\$358	
Series B—\$2 annual rate	<u>978</u>	<u>1,336</u>
Balance at end of year		<u><u>\$235,461</u></u>

Consolidated Statement of Additional Paid-In Capital

Year Ended July 31, 1968		
Balance at beginning of year		\$240,498
Excess of market value of stock dividend over par value of common stock issued		55,282
Excess of principal amount of debentures and par value of preferred and preference stocks converted over par value of common stock issued		<u>17,566</u>
Balance at end of year		<u><u>\$313,346</u></u>

See notes to financial statements.

Litton Industries, Inc. & Subsidiary Companies

Year Ended July 31, 1968

NOTES TO FINANCIAL STATEMENTS

Note A—Principles of Consolidation

The accounts of the Company and its wholly-owned subsidiaries (excluding its finance subsidiaries) are included in the accompanying financial statements.

During the year ended July 31, 1968 the Company acquired the net assets of businesses which have been accounted for as poolings of interests. The 1967 financial statements have been revised to include these businesses. The Company also purchased other businesses, the operations of which are included from dates of acquisition.

Note B—Equity in Unconsolidated Finance Subsidiaries

The Company's equity in its wholly-owned finance subsidiaries is stated at cost, represented by investments and advances, and undistributed earnings of \$7,527,000 at July 31, 1968. These subsidiaries had total assets of \$100,816,000 and liabilities to banks and others of \$68,011,000 at July 31, 1968.

Note C—Long-term Liabilities

Long-term liabilities at July 31, 1968 consisted of the following:

(thousands of dollars)

Notes payable to insurance companies:	
Due to 1984 with interest from 3½% to 4½%	\$ 88,575
Due to 1993 with interest from 5% to 6¾%	7,514
Notes payable to banks:	
Due 1970 with interest at 4¾%	35,250
Due 1972 with interest at 5¾%	39,750
Due to 1987 with interest from 3% to 6¾%	7,383
Miscellaneous debt due to 1987 with average interest of 4½%	34,119
	<u>212,591</u>
Less current portion	11,319
	<u>\$201,272</u>

The principal maturities due during each of the next five fiscal years are as follows:

Year ended July 31, 1969	\$ 11,319
Year ended July 31, 1970	9,167
Year ended July 31, 1971	42,928
Year ended July 31, 1972	49,582
Year ended July 31, 1973	11,874

The Company has complied with its agreements to maintain specified ratios of assets to debt and shareholders' investment to debt.

Note D—Convertible Subordinated Debentures

Convertible subordinated debentures at July 31, 1968 were as follows:

(thousands of dollars)

3½% due April 1, 1987, issued 1962, 1963, 1964 and 1965	\$ 29,071
5¼% due December 1, 1974, issued 1959	2,495
	<u>\$ 31,566</u>

The 3½% debentures are convertible into common stock of the Company at \$40 a share until April 1, 1972, \$42.50 a share until April 1, 1982, and \$45 a share thereafter. The 5¼% debentures are convertible into common stock at \$20 a share. These conversion prices are subject to antidilution provisions.

The Company has agreed to retire annually \$2,819,000 principal amount of the 3½% debentures commencing April 1, 1972 and \$600,000 principal amount of the 5¼% debentures. At July 31, 1968 required annual retirements of the 3½% debentures and the 5¼% debentures have been met through April 1, 1985 and December 1, 1969, respectively.

Note E—Shareholders' Investment

Each share of preference stock is currently convertible into 1.0628 shares of common stock. This conversion rate increases by 3.09% in each of the years 1969 to 1989 and, additionally, is subject to antidilution provisions. If a cash dividend is paid on common stock, each share of preference stock is entitled to receive a cash dividend in an amount equal to the dividend per common share times the then applicable preference stock conversion rate. Each share of preference stock is redeemable at any time after January 31, 1976 at prices ranging from \$67.75 in 1976 to \$100.95 in 1989 and thereafter. The Company has the right, at its option, in January of each calendar year to redeem shares of preference stock by offering to each preference stockholder the right to call upon the Company to redeem up to 3% of his shares at prices ranging from \$54.95 in 1969 to \$100.95 in 1989 and thereafter. In the event of liquidation each preference share is entitled to receive \$25 a share plus accrued dividends.

Note E (Continued)

Each share of Series A preferred stock is currently convertible into two shares of common stock and is redeemable on or after April 1, 1972 at \$100 a share plus accrued dividends. In the event of liquidation each Series A preferred share is entitled to receive \$50 a share plus accrued dividends.

At July 31, 1968 each share of Series B preferred stock was convertible into .71474 of a share of common stock. On each occasion when a stock dividend in common stock is declared, the conversion rate will be adjusted upward to reflect the market value of the stock dividend and downward to reflect cash dividends paid on the preferred stock since the previous adjustment. As a result of the 2½% stock dividend on the common stock payable November 15, 1968 the conversion rate of the Series B stock is .71850 as of September 30, 1968. In the event a dividend in common stock is not paid in any fiscal year, the conversion rate will be reduced to reflect the cash dividends paid on the Series B preferred stock. In addition, the conversion rate is subject to antidilution provisions. Each share of Series B preferred stock is redeemable on or after January 15, 1978 at \$80 a share plus accrued dividends and, in the event of liquidation, is entitled to receive \$25 a share plus accrued dividends.

In December 1966, the shareholders of the Company approved a qualified stock option plan under which 250,000 shares of the Company's preference stock are available for grant of options to key employees to purchase stock at not less than market value at date of grant. Options are cumulatively exercisable, beginning one year from the date of grant, in equal installments over the remaining term of the option. No options were granted under this plan until 1968, and at July 31, 1968, options to purchase 43,300 shares were outstanding. The option price and market value at date of grant ranged from \$66 to \$85.

At July 31, 1968 common shares were reserved as follows: 851,525 shares for conversion of debentures, 225,420 shares for conversion of Series A preferred stock, 1,250,087 shares for conversion of Series B preferred stock, 5,898,526 shares for conversion of preference stock, 46,019 shares for conversion of preference stock issuable upon exercise of options granted under the qualified stock option plan, and 34,122 shares for issuance upon exercise of stock options outstanding at date of acquisition of certain companies.

Under certain acquisition agreements capital stock may be issued as additional consideration for businesses acquired. The number of shares to be issued is dependent, among other things, upon future earnings of acquired businesses and future market value of Litton stock. Based upon current estimates, the maximum number which could be issued as additional consideration is approximately 45,000 common shares and 75,000 preference shares.

Under the terms of the Company's borrowing agreements, consolidated earnings retained in the business of approximately \$73,571,000 was available for cash dividends at July 31, 1968.

Earnings retained in the business are not restricted by the excess of the liquidation preferences (\$164,927,000) of the preferred and preference stocks over their par values.

Subsequent to July 31, 1968, the Board of Directors proposed an amendment to the Articles of Incorporation to increase the total number of authorized shares of capital stock of the Company to 150,000,000 shares consisting of 120,000,000 common shares, 22,000,000 preferred shares and 8,000,000 preference shares.

The Board of Directors also declared a common stock dividend of 2½% payable November 15, 1968 to holders of record of such common stock at the close of business September 27, 1968. This transaction has not been reflected in the financial statements.

Note F—Lease Obligations

Current annual rentals under long-term leases expiring between 1971 and 1999 are approximately \$11,669,000 plus property taxes and insurance in some instances.

In addition to the above leases, the Company has agreed to lease, from the State of Mississippi, a new shipyard facility financed by industrial revenue bonds. This lease requires annual payments of approximately \$9,000,000 for each year from 1972 through 1997.

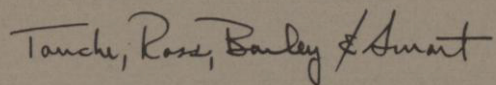
Touche, Ross, Bailey & Smart
3700 Wilshire Boulevard
Los Angeles, California

September 27, 1968

Board of Directors, Litton Industries, Inc.
Beverly Hills, California

We have examined the accompanying consolidated balance sheet of Litton Industries, Inc. and subsidiary companies as of July 31, 1968, and the related statements of earnings, earnings retained in the business, and additional paid-in capital for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other procedures as we considered necessary in the circumstances.

In our opinion, the financial statements referred to above present fairly the consolidated financial position of Litton Industries, Inc. and its subsidiary companies at July 31, 1968, and the consolidated results of their operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.



Certified Public Accountants

Litton Industries, Inc.

Board of Directors:

Charles B. Thornton, Chairman

Roy L. Ash

Glen McDaniel, Chairman, Executive Committee

Ransom M. Cook

Harry J. Gray

M. A. Hollengreen

Dr. Myles L. Mace

George E. Monroe

Henry Salvatori

Carl A. Spaatz, General USAF (Ret.)

Vernon Stouffer

Joseph A. Thomas

Officers:

Charles B. Thornton, Chairman of the Board

Roy L. Ash, President

Glen McDaniel, Chairman, Executive Committee

Harry J. Gray, Executive Vice President

Fred W. O'Green, Executive Vice President

Ellis B. Gardner, Jr., Senior Vice President

Austin Goodyear, Senior Vice President

Joseph S. Imirie, Senior Vice President

John H. Rubel, Senior Vice President

Ludwig T. Smith, Senior Vice President

John W. Allis, Vice President

William M. Berry, Vice President

Robert I. Bruder, Vice President

Joseph T. Casey, Vice President

G. A. Douglas, Vice President

Arnold R. Kaufman, Vice President

Robert H. Lentz, Vice President

John H. Martin, Vice President

Donald A. McMahon, Vice President

James R. Mellor, Vice President

C. Gordon Murphy, Vice President

Ralph H. O'Brien, Vice President

S. Murray Rust, Jr., Vice President

Joseph Seton Smith, Vice President

C. W. Vatz, Vice President

Paul E. Brunton, Controller

Robert L. Cole, Treasurer

George W. Fenimore, Secretary

Litton Industries, Inc.

Corporate Offices:

9370 Santa Monica Boulevard
Beverly Hills, California 90213

Transfer Agents:

Morgan Guaranty Trust Company
of New York

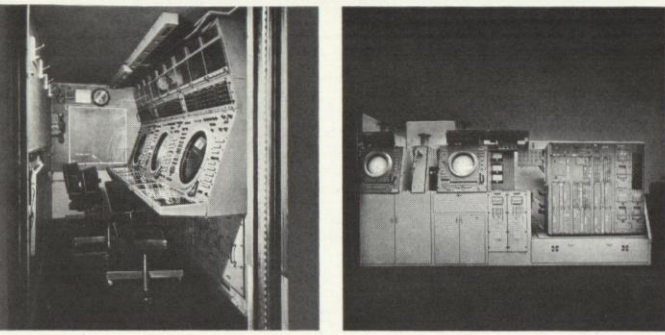
30 West Broadway
New York, New York 10015

United California Bank
108 West Sixth Street
Los Angeles, California 90014

Litton Industries, Inc.
P. O. Box 5555
Beverly Hills, California 90213

Registrars:

Chemical Bank New York
Trust Company
20 Pine Street
New York, New York 10015
Security Pacific National Bank
P. O. Box 3546
Los Angeles, California 90054



A command and control system that can be put into operation quickly regardless of weather, MTDS (Marine Tactical Data System) can be transported into battle by helicopter, plane or truck. It controls air operations in an assigned air space.

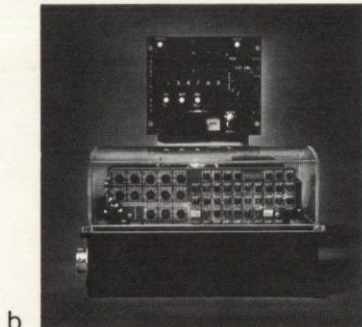
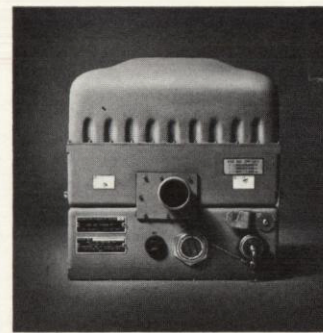
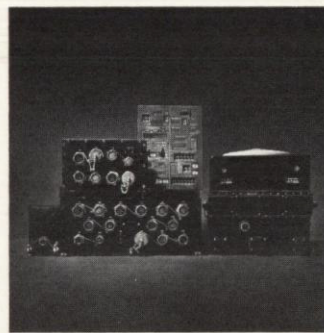
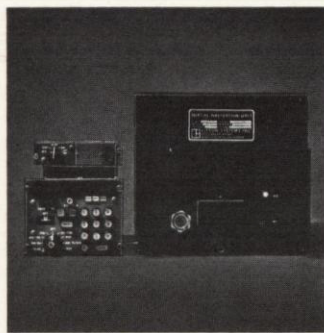
The ATDS (Airborne Tactical Data System) is an advanced airborne command and control system now in use by the Navy in Southeast Asia. ATDS controls air traffic, guides sorties to target and directs air and search operations.

Tacfire, Litton's tactical fire direction system to be operational in 1970, will provide U.S. Army artillerymen with unprecedented accuracy and speed in selecting and hitting targets. Integrating the most advanced computer, communication and display techniques, Tacfire automates artillery calculations, eliminating critical delays in fast-developing tactical situations. With Tacfire, target intelligence analysis and planning are 30 times faster and much more accurate than present manual operations. Data Systems division is producing Tacfire under the Army's first total package procurement contract. All development, production and major support for the system are the responsibility of Litton.

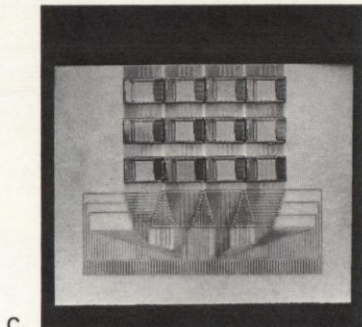
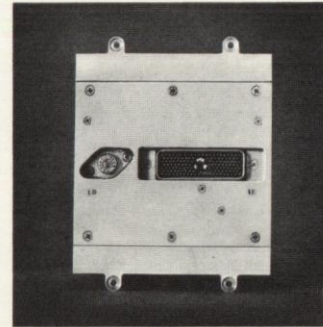
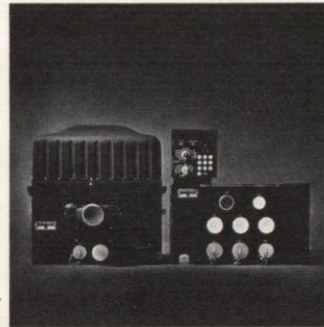
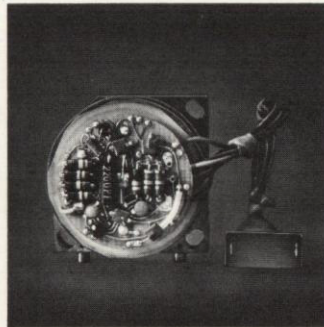
Defense and Marine Systems, 1968 Highlights: Litton further expanded its participation in multi-billion-dollar Defense and Marine markets during 1968. Technological capabilities, built upon intensive research efforts of past years, developed proprietary products and systems that will be supplied to these markets. During the year Litton was named the winner of a U.S. Navy contract definition program for the most advanced amphibious assault fleet ever conceived. For the U.S. Army, Data Systems division began work on an automated artillery command and control system. For the U.S. Air Force, Guidance and Control Systems division undertook the design of the next generation of integrated navigation equipment. Such programs, resulting from Litton's advanced planning for long-range defense needs, should assure continuing sales growth through the 1970's...



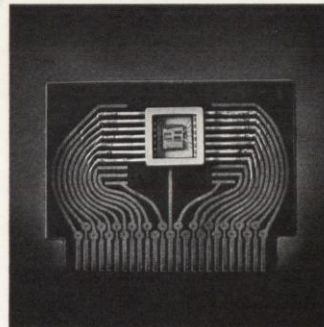
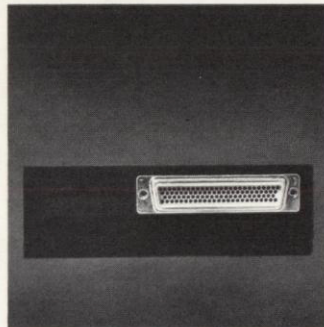
a



b



c



More than 2000 LN-12 inertial navigation systems have been installed in three generations of F-4's. The system developed by Guidance & Control Systems division is not affected by weather. This LN-12D guides F-4D's and F-4E's.

a

Because of its high accuracy, the LTN-51 is the only commercial navigation system certified for use by jetliners. Customers include American Airlines, Air France, Alitalia and Sud Aviation for the preproduction Concorde supersonic transport.

Litton's LN-16 SIDS (Stellar-Inertial-Doppler) integrated navigation system establishes a new dimension of accuracy for aircraft guidance. Automatically, SIDS gives pilots 24-hour, all-weather global navigation.

U. S. Air Force B-52's, equipped with SRAM (Short Range Attack Missile) weapons system, are fitted with Litton's LN-15S. The all-attitude inertial reference unit provides target-location data to the missile prior to launch.

Reliability in the LN-30 is achieved through extensive use of large-scale integrated circuitry. The most advanced inertial system available today, it meets rigid performance requirements and is designed for low cost, volume production.

b

Primary element of the LN-30 is the A-1000 accelerometer, designed to use advanced suspension techniques to achieve precise performance at low cost. It measures aircraft acceleration rates.

The LN-15G is the first inertial navigational system adopted by the Army. OV-1D reconnaissance and RU-21 electronic warfare aircraft navigate and carry out missions with precision and reliability previously unattainable.

Flat-pack electronic elements contribute to the compactness and light weight of Litton's high-speed LCM-710, among the most technologically advanced memory systems now in operation. It is used in military computer programs.

A computer memory utilizing LSI (Large Scale Integration) techniques stores information at a higher density and lower cost than present equipment. It is particularly compatible with next-generation LSI electronic systems.

c

LSI techniques on metal-oxide-silicon wafers in the Litton block-oriented computer provide high data processing capability at low cost. Each half-dollar-sized wafer contains 40,000 operating functions. Litton is developing this computer for the U. S. Air Force.

MSI (Medium Scale Integration) circuit designed and developed by Litton contains 48 metal oxide semiconductor transistors. It is used in analog-to-digital conversion circuitry for military and commercial aircraft navigation systems.

Guidance and Control Systems division's nuclear magnetic resonance gyro model aids in development of precision magnetic field sensors and gyroscopes with no moving parts. These devices are designed for space missions.

DMS

2

Data Systems division, now producing the Tacfire command and control system, is making use of new-generation communication, computer and display techniques. In the first automation of high-speed military radio communications, Litton is building DTAS (Digital Transmission and Switching System) for the U.S. Marine Corps. DTAS offers speed and reliability advantages of using coded digital signals to replace voice communications... In another pioneer project, Guidance and Control Systems division is developing the DILS system, which for the first time integrates doppler, inertial and Loran navigation techniques to achieve higher orders of accuracy and reliability. DILS will be designed to fulfill the requirements of aircraft navigation in the next decade, having wide application among tactical planes and jet transports...

The LN-14 navigation and attack system provides pilots of advanced F-111A aircraft with continuous and accurate navigation data, as well as a highly effective integrated weapon delivery capability. All functional parts of LN-14 are in modules.

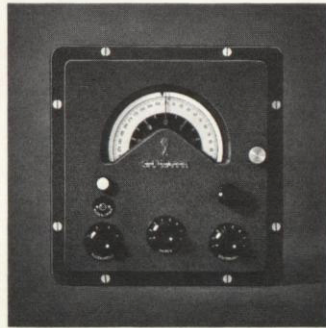
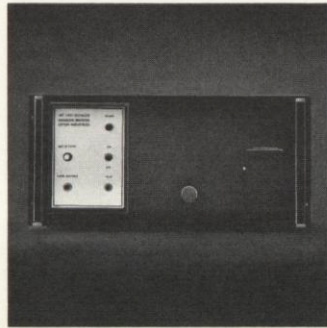
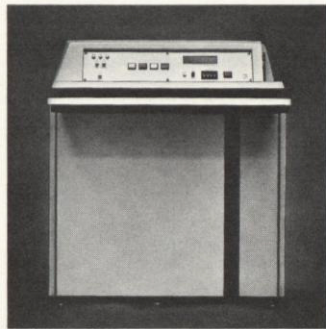
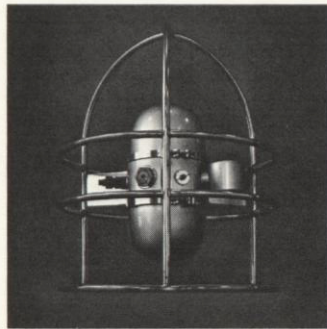
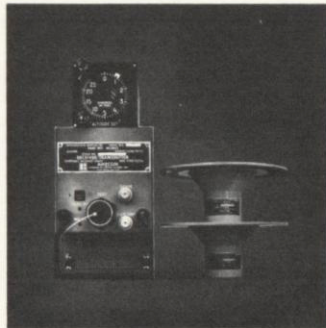
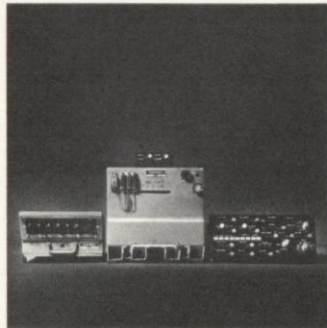
The Amecom radar altimeter provides highly reliable altitude information for the U. S. Air Force C-5A. The solid-state unit contains a monitoring system that assures accurate display of data to the pilot.

Amecom Model 2001 oceanographic digital data acquisition system measures and records seawater conductivity, temperature and depth. Weighing only 85 pounds, it gives a small launch the research capability of a larger vessel.

Mellonics division develops computer software programs and information handling systems for government and industry. Model 9209 Converter transfers textual material from typewriter-produced magnetic tape to computer tape for storage or editing.

New Datalog MC-2400 high-speed printer produces results from computer and measuring systems. Simple design and few moving parts assure quiet, reliable operation. It is ideally suited for laboratory use in aerospace and nuclear industries.

Plath division's new automatic pilot assists in keeping ships on course. The device functions with a gyro compass. It can be coupled to electric, hydraulic or electric-hydraulic steering engines.



Litton's Ingalls division over the years has built a large number of fast, efficient ocean vessels for military and commercial fleets. Included among the many types is the U. S. Navy's high-speed destroyer Morton.

a

Combining luxurious accommodations with the most advanced marine safety features, the Brasil is one of seven passenger liners built by Ingalls. The 617-foot vessel offers such entertainment facilities as gyms and theaters.

The Oregon II, operated by the Bureau of Commercial Fisheries in the Caribbean and the South Atlantic, uses electronic research equipment in seeking new fishing grounds. New catch techniques are tested to benefit the fishing industry.

The Mayaguez is one of many cargo-liners Ingalls has modernized and enlarged, increasing efficiency and extending their life in the merchant fleet. Ingalls' conversion program transformed this vessel into a 504-foot-long ship carrying 234 containers.

The 570-foot 'carry all' amphibious assault ship Cleveland launches helicopters and landing craft carrying troops and equipment. The ship is capable of transporting 850 combat troops and 188 officers. It carries a crew of 457.

b

The Hermitage is one of eight U. S. Navy landing ship docks, first of their type. These seagoing drydocks become partially submerged to allow other vessels to be taken aboard for repair. Ingalls now has an advanced type, the Anchorage, under construction.

One of seven fast oil tankers constructed for the Military Sea Transport Service, the Yukon is 614 feet long and displaces 32,000 tons. It is similar to several Ingalls-built commercial tankers that are among the fastest vessels of their type in worldwide service.

The Glacier is the Free World's largest and most powerful ice breaker. Capable of plowing through 15 feet of solid ice, the big U. S. Navy ship led the fleet of Operation Deep Freeze, a historic scientific expedition to the South Pole.

The 640-foot Holland is capable of fully supporting nine nuclear-powered submarines at sea. In addition to facilities for refueling submarine reactors, the tender stores Polaris missiles, contains 50 repair shops and carries 85,000 different spare parts.

c

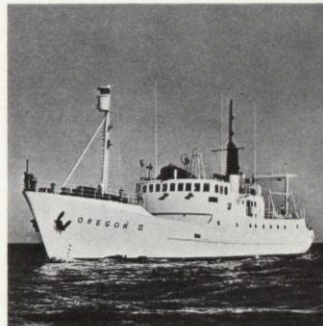
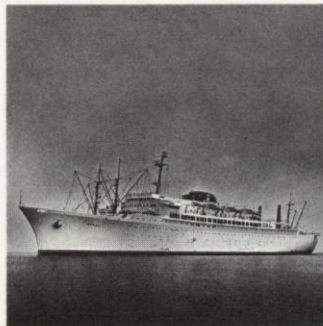
Highly automated and built with new lightweight, high-strength steel, the President Fillmore, one of five identical ships built by Ingalls, holds world speed records for cargo movements between the United States and the Orient.

Mormacargo and her five sister ships are the nation's first electronically controlled cargo-liners. Electronic features and other technical advances reduce crew requirements by 25 per cent in comparison to similar vessels using conventional marine equipment.

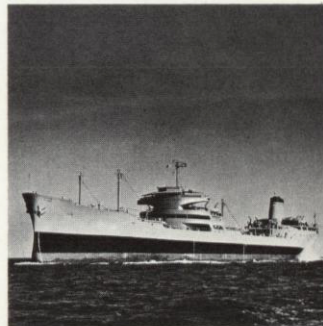
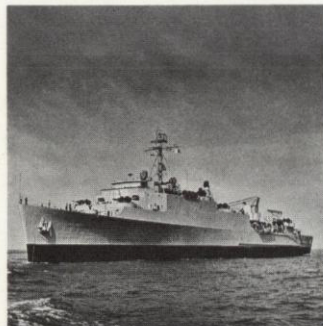
The Tripoli is a multi-purpose carrier operating in the Pacific. It can land a complete assault force on the beach or by helicopter behind enemy lines. The 600-foot vessel, which has a speed of more than 20 knots, carries 2000 marines and a crew of 550.



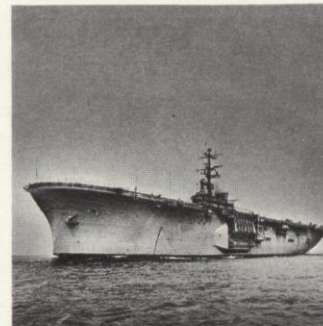
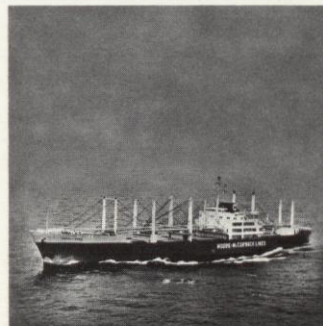
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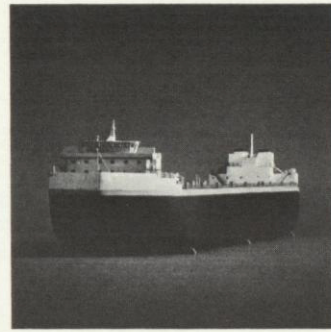


b



c





DMS

3



In the expanding commercial avionics market, Litton's LTN-51 system became the only inertial system certificated for airline use by the Federal Aviation Administration. It is being ordered in increasing quantity by major world airlines... In the computer software market, growing at twice the rate of computer hardware, our Mellonics division is an industry leader. Mellonics does all computer program design, development and integration for U.S. Air Force satellite control. The division's advanced programming concepts are being applied in transportation and materials handling applications. Litton innovation in ship construction is leading the way to revitalizing this U.S. industry. Our Shipyard of the Future, using production rather than construction techniques, will be completed in 1970 and will permit dramatic cost economies in series production of military and commercial vessels.

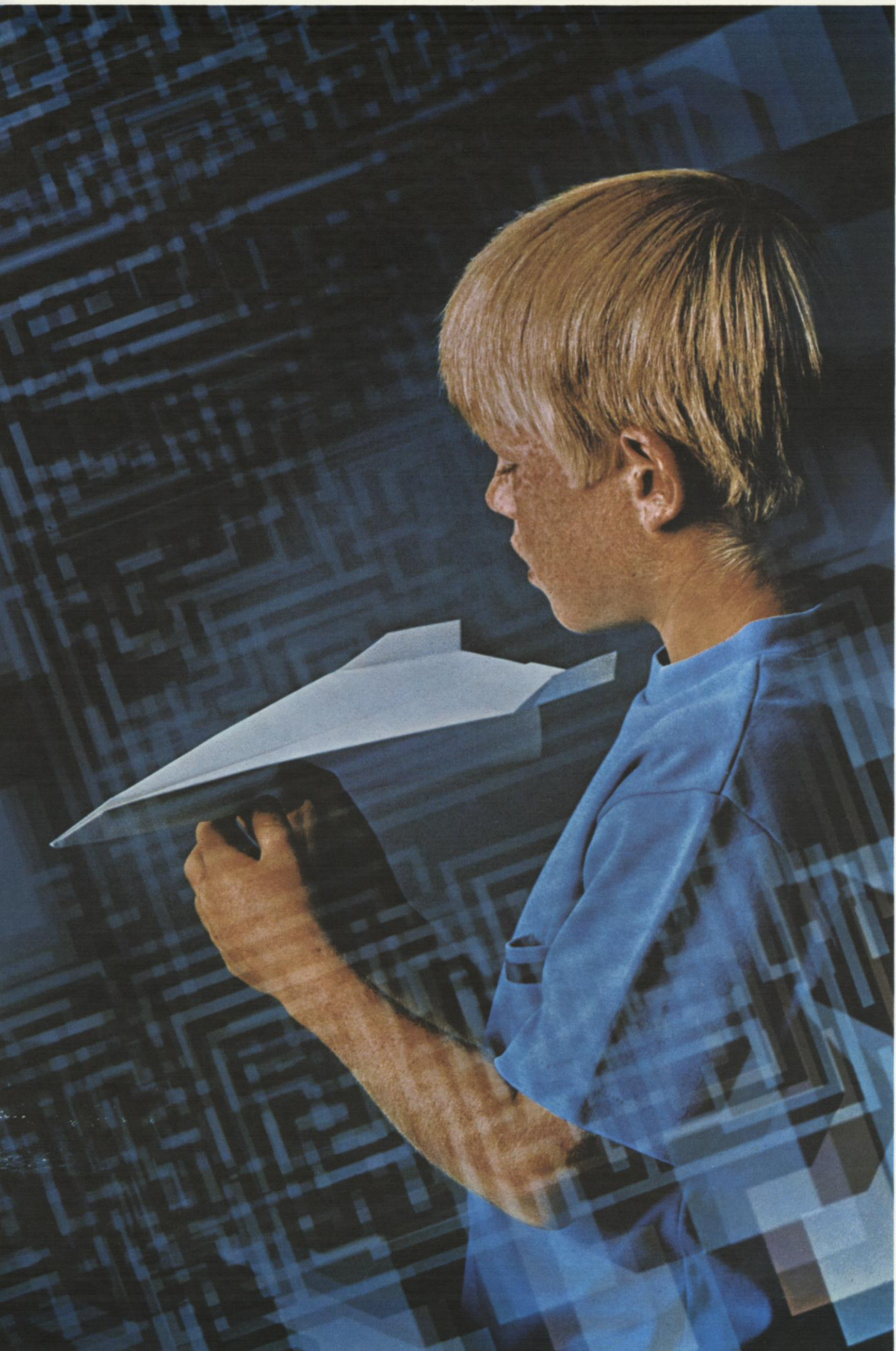
The nuclear-powered attack submarine Tautog carries the newest undersea weapon systems and sonar equipment to seek and destroy enemy vessels. It is the latest of six of its type built for the U.S. Navy, and six more are under contract.

Litton is building 1000-foot vessels to transport ore pellets on the Great Lakes. Bow and stern are being manufactured at Ingalls. Litton's new Erie Marine facility is assembling the midbody. First delivery is scheduled for 1970.

More versatile than any vessel now afloat, the U.S. Navy's revolutionary LHA amphibious assault ship will combine transport, landing and logistic functions otherwise requiring several specialized craft. The 800-foot, 40,000-ton ship will carry a Marine force, helicopters, tanks, landing craft and tons of combat equipment, landing them anywhere within a 10,000-mile range. Extensive automation of LHA shipboard operations results in a crew of hundreds fewer than formerly required for a vessel of its size. Awarded in May 1968 under the Navy's new 'total package' procurement concept, the LHA will be built at Litton's Shipyard of the Future, now under construction at Pascagoula, Miss. LHA was designed by Litton's Advanced Marine Technology division.



*By helping achieve enduring security for
the Free World, Litton Defense and
Marine Systems of Tomorrow will assure
youth the opportunity to realize its
aspirations to the fullest.*



MAJOR OFFICES AND PLANTS: AUSTRALIA, Applecross, Western Geophysical; Melbourne, Business Equipment Holdings; Sydney, Business Equipment Holdings. AUSTRIA, Vienna, Automated Business Systems, Monroe, Sweda. BELGIUM, Genk, Fitchburg Paper; Brussels, Coppee-Rust, Guidance and Control, Litton Precision Products, Mellonics, Sweda. BRAZIL, Sao Paulo, Equipamentos Industriais Robins, Mecanilse. CANADA, Alberta, Calgary, Canadian Aero Service, Western Geophysical; Newfoundland, Stephen, Marine Technology; Ontario, Brantford, Kester Solder; Ontario, Port Credit, Eureka; Ontario, Ottawa, Canadian Aero Service, Litton Systems; Ontario, Rexdale, Litton Systems; Ontario, St. Catharines, Marine Consultants & Designers; Ontario, Scarborough, Cole Steel, Hewitt-Robins; Ontario, Toronto, Litton Business Systems, Hewitt-Robins; Quebec, Laval, Standard Desk, Ltd.; Quebec, Montreal, Automated Business Systems, Hewitt-Robins, Royal Office Typewriters, Rust Associates; Quebec, Rock Island, UTD. CHILE, Santiago, Aero Service Chile. COLUMBIA, Bogota, Aero Service Colombia. CYPRUS, Famagusta, Business Equipment. ENGLAND, Clayton West, Eureka Marketing Systems; Cross Hills, Landis Lund; Croydon, Litton Business Systems, Rust Engineering; Hounslow, Western Geophysical; Hull, Imperial Typewriter; Leicester, Imperial Typewriter; London, Advanced Data Systems, Hewitt-Robins, Litton Business Systems, Westrex; Rayleigh, Litton Business Systems; Slough, Litton Precision Products. FRANCE, Lyon, Landis Gendron; Paris, Coppee-Rust, Dectone, Hewitt-Robins, Litton Business Systems, Litton Precision Products, Saphier, Lerner & Schindler, GERMANY, Freiburg, Fritz Hellige, Litton Technische Werke; Berlin, Willy Feiler, Sass-Wolf; Bonn, Guidance and Control; Düsseldorf, Deutsche Monroe Sweda; Hamburg, C. Plath; Tuttlingen, Georg A. Henke. GREECE, Athens, Litton-Greece. HOLLAND, Amsterdam, Hewitt-Robins, Monroe; The Hague, Sweda; Leiden, Royal Typewriter. HONG KONG, Westrex. INDIA, Calcutta, Hewitt-Robins. ITALY, Milan, Western Ricerche Geofisiche; Pomezia, Business Equipment, Guidance and Control; Rome, Westrex. JAPAN, Tokyo, Guidance and Control, Westrex. LEBANON, Ras Beirut, Westrex. MEXICO, Mexico City, Memory Products, Triad; San Rafael, Sweda; Tijuana, Memory Products, Triad. PAKISTAN, Karachi, Westrex. PHILIPPINES, Manila, Automated Business Systems, Westrex. PORTUGAL, Lisbon, Sweda Portuguesa. PUERTA RICO, Roosevelt, Monroe; San Juan, Automated Business Systems. SOUTH AFRICA, Johannesburg, Hewitt-Robins. SPAIN, Barcelona, Westrex; Madrid, Sweda; Oviedo, Cole Steel. SURINAM, Paramaribo, Aero Service Surinam. SWEDEN, Solna, Svenska Dataregister; Sundbyberg, Monroe, Sweda. SWITZERLAND, Zurich, Litton Business Equipment, Litton Industries, Litton Precision Products; Versoix, Papeterie de Versoi; Vesenz, Permaco. TAIWAN, Taipei, Westrex. TURKEY, Ismir, Litton-Turkey. VENEZUELA, Caracas, Automated Business Systems, Monroe. TRINIDAD, Port of Spain, Westrex.

UNITED STATES—ALABAMA, Birmingham, Rust Engineering; Clanton, Sturgis-Newport. ALASKA, Anchorage, Western Geophysical. ARIZONA, Tucson, Ritter-Ardes. CALIFORNIA, Anaheim, Hewitt-Robins, Kester Solder; Beverly Hills, Advance Data Systems, Applied Technology, Litton Industries, Memory Products; Camarillo, Applied Technology; Canoga Park, Advanced Circuitry, Guidance and Control; Chatsworth, Encoder; City of Commerce, Ritter-Ardes; Culver City, Advanced Marine Technology; Fullerton, Kester Solder; Gardena, Brand Worth; Hollywood, Aero Service, Westrex; Los Angeles, Applied Technology, Business Equipment Center, Cole Steel, Guidance and Control, Hewitt-Robins, Inter-Pak, Kimball Systems, Sweda, Western Geophysical; Lynwood, Hewitt-Robins; Monterey, Data Systems; Oakland, Educational Systems; Palo Alto, Automated Business Systems; Pasadena, Kimball Systems; Pleasanton, Educational Systems; Pomona, Hewitt-Robins; Redwood City, Ritter-Ardes; Salinas, Streater; San Carlos, Electron Tube; San Francisco, Carlisle, Datalog, Saphier, Lerner & Schindler; Santa Clara, Electron Tube; Santa Fe Springs, Hewitt-Robins; Sunnyvale, Mellonics; Van Nuys, Data Systems; Venice, Triad, USECO; Woodland Hills, Guidance and Control. COLORADO, Colorado Springs, Clifton, Memory Products. CONNECTICUT, Greenwich, Litcom; Hartford, Automated Business Systems, Business Equipment Center, Hewitt-Robins, Royal Typewriter; New Milford, Winchester Electronics; Oakville, Winchester Electronics; Stamford, Hewitt-Robins, Royal Typewriter; West Hartford, Royal Typewriter. DELAWARE, Smyrna, Advanced Circuitry. DISTRICT OF COLUMBIA, Litton Industries. FLORIDA, Orlando, Automated Business Systems; Pompano Beach, Sturgis-Newport. ILLINOIS, Bellwood, Jefferson Electric; Chicago, Eureka X-Ray, Gear Products, Kester Solder, Kimball Systems, Litton Industries; Danville, Eureka X-Ray; Des Plaines, Monroe, Profex-ray, Sweda; Downers Grove, Gear Products; Gurnee, Louis Allis; Melrose Park, Hewitt-Robins; Pontiac, Landis Tool, Louis Allis. INDIANA, Evansville, Louis Allis; Frankfort, Streater; Huntington, Utrad; Indianapolis Streater; Kendallville, McCray; Roanoke, Utrad. IOWA, Burlington, Lehigh-Leopold. KENTUCKY, Florence, American Book, Hewitt-Robins. LOUISIANA, New Orleans, Western Geophysical; Shreveport, Western Geophysical. MAINE, Brewer, Automated Business Systems. MARYLAND, Bethesda, Applied Science; Cheverly, Bionetics; College Park, Amecom; Frederick, Hewitt-Robins; Hagerstown, Landis Tool; Riverdale, Bionetics; Silver Spring, Amecom; Rockville, Bionetics. MASSACHUSETTS, Athol, UTD; Boston, Business Equipment Center; Burlington, Clifton; Cambridge, Advanced Marine Technology; Fall River, Clifton, Airtron; Fitchburg, Fitchburg Paper; Holyoke, Fitchburg Paper; Westminster, Fitchburg Paper. MICHIGAN, Detroit, Electronic Business Systems; Saginaw, Automated Business Systems; Sturgis, Sturgis-Newport. MINNESOTA, Albert Lea, Streater; Duluth, Guidance and Control; Minneapolis, Applied Science, Atherton. MISSISSIPPI, Corinth, Sturgis-Newport; Jackson, Automated Business Systems; Pascagoula, Ingalls Shipbuilding. MISSOURI, Springfield, Advanced Circuitry, Automated Business Systems, Royal Typewriter; St. Louis, Kimball Systems. NEW HAMPSHIRE, Manchester, Automated Business Systems. NEW JERSEY, Belleville, Kimball Systems; Bloomfield, Amecom; Carlstadt, Automated Business Systems, Clifton, Monroe; Morris Plains, Airtron, Monroe; Newark, Kester Solder; Oradell, Litton Publications; Orange, Monroe, Sweda; Paramus, Amecom, Royfax; Passaic, Hewitt-Robins; Trenton, Automated Business Systems; West Orange, Monroe. NEW YORK, Buffalo, Hewitt-Robins; Chatham, Streater; East Farmingdale, Kimball Systems; Melville, Litcom; Mount Vernon, Potentiometer; New York, American Book, Business Equipment Center, Business Equipment Group, Chapman-Reinhold, Cole Steel, Creative Marketing Management, Eureka, Fitchburg Paper, Litton Industries, Royal Typewriter, Saphier, Lerner & Schindler, Westrex; Pelham Manor, Litcom; Syracuse, Automated Business Systems; White Plains, Educational Systems; Yonkers, Lehigh-Leopold. NORTH CAROLINA, Hendersonville, Royal; Murphy, Clifton. OHIO, Athens, Automated Business Systems; Cincinnati, Hewitt-Robins, American Book; Cleveland, Automated Business Systems, Marine Consultants and Designers, Stouffer Foods, Stouffer Restaurants and Inns, Wilson Marine; Dayton, Kimball Systems; Sandusky, Hewitt-Robins; Salon, Stouffer Foods; Toledo, Litton Dental; Warrensville Heights, Atherton. PENNSYLVANIA, Clifton Heights, Clifton; Collindale, Clifton; Drexel Hill, Clifton; Dunmore, Eureka; Erie, Erie Marine; Greensburg, Aero Service; King of Prussia, Hewitt-Robins, Stouffer Foods; Kingston, Automated Business Systems; Moosic, Fitchburg Paper; Philadelphia, Aero Service, Sturgis-Newport; Pittsburgh, Rust Engineering; Troy, Eureka; Waynesboro, Landis Tool; Williamsport, Electron Tube; York, Cole. SOUTH CAROLINA, Columbia, Monroe; Greenville, Automated Business Systems; Simpsonville, Louis Allis. TENNESSEE, Calhoun, Rust Engineering; Johnson City, Automated Business Systems. TEXAS, Fort Worth, Automated Business Systems; Houston, Western Geophysical; Lubbock, Guidance and Control; Midland, Western Geophysical; San Antonio, Business Equipment Center; Victoria, Business Equipment Center. UTAH, Ogden, Automated Business Systems; Salt Lake City, Automated Business Systems, Data Systems, Guidance and Control. VERMONT, Derby Line, UTD. VIRGINIA, Ashland, Hewitt-Robins; Blacksburg, Poly-Scientific; Bristol, Monroe; Falls Church, Bionetics; Hampton, Sturgis-Newport; Norfolk, Business Equipment Center, Rust Engineering; Richmond, Business Equipment Center, Everett-Waddey, Rust Engineering. WEST VIRGINIA, Wheeling, Automated Business Systems. WISCONSIN, Appleton, Automated Business Systems; Brookfield, Louis Allis; Greendale, Louis Allis; Menomonee Falls, Litcom; Milwaukee, Hewitt-Robins, Louis Allis; Oak Creek, Louis Allis; Whitewater, Sturgis-Newport.

To our shareholders:

In fiscal year 1968 Litton Industries achieved record sales of \$1,855,007,000, with net earnings of \$58,456,000. In the preceding fiscal year, sales were \$1,778,801,000, composed of \$1,561,510,000 reported previously and \$217,291,000 derived from the poolings of interests of companies acquired in 1968. Earnings in fiscal year 1967 were \$83,199,000, composed of \$70,070,000 reported previously and \$13,129,000 from the poolings of interests of companies acquired in 1968.

The conditions which caused the earnings decline were reported to shareholders in January, and to a large degree have been corrected. Third quarter earnings increased over the previous quarter and fourth quarter earnings showed a continuing substantial improvement.

In 1968 Litton broadened its foundations for continuing profitable growth by entering new high-potential markets, adding major contracts, introducing a record number of products and further expanding its strong financial base.

A field in which Litton sees high potential for the future is education. Stimulated by growing emphasis on life-long learning, by urgent requirements for specialized methods of instruction, and by the revolution in processing and disseminating information, this market is in an era of unprecedented expansion. With the acquisitions of Chapman-Reinhold, Inc., in June 1968 and the D. Van Nostrand Co. after the end of the fiscal year, Litton now provides a wide range of textbooks, audiovisual materials, professional publications, reference media and training programs. For the advanced techniques of individualized instruction, we offer a series of programmed texts, covering a variety of subjects for many educational levels.

Industrial opportunities of a new type for Litton were created by entry into the changing machine tool industry. Our capabilities in computer and control technology should have many innovative applications in products for this industry. In January 1968, Landis Tool Co., the world's largest manufacturer of precision grinding machines, joined our company. Early in the

current fiscal year UTD Corp. became part of Litton. UTD is a leading producer of metal cutting tools and other products involved in manufacturing processes. A definitive agreement also has been signed under which The New Britain Machine Co. will join Litton. New Britain manufactures multiple spindle automatic turning systems, numerically controlled profilers, boring, milling and drilling machines.

In both the defense and marine fields, Litton had an outstanding year in securing programs which will provide continuing growth well into the next decade. The U.S. Navy chose Litton to build a series of advanced assault ships, the second major shipbuilding competition won by Litton in the past two years. This program, which has been authorized by Congress to begin in fiscal 1969, has a \$1 billion potential.

Another contract in excess of \$120 million provides for the production of the first of a new generation of U.S. Army automated command and control systems. This Litton system, based on proprietary technology, has great long-range potential as the basis for total automation of U.S. Army artillery and missile forces. In addition, a large market exists for these systems in allied nations.

The U.S. Air Force has selected Litton to develop a revolutionary type of navigation system which integrates the technologies of inertial, doppler and Loran. Development of this new system should help assure Litton's continuing position as the leader in aircraft navigation in the 1970's.

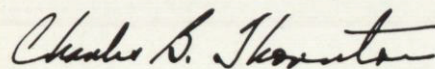
While achieving these advances in our business, we have maintained a strong financial position. In addition to internal cash generation, presently running at a rate in excess of \$100 million a year, we have \$115 million available under a revolving credit agreement with 29 leading banks. These funds, when combined with our present working capital of \$457 million, provide a solid base for continued future growth of your company.

Litton's multinational productive capacity increased markedly in 1968 with completion of 26 manufacturing facilities totaling nearly

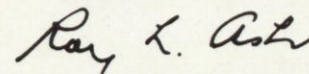
2.5 million square feet of space. These major new plants include: Litcom division, Melville, N. Y.; Eureka division, Dunmore, Pa.; Louis Allis division, Evansville, Ind.; Automated Business Systems division, Athens, Ohio; and Fitchburg Paper division, Genk, Belgium. More than 106,000 Litton employees now contribute their skills in 219 plants and laboratories, and 1,508 other facilities, located in 35 countries.

Litton growth is thus sustained by a foundation of advanced new product lines, increasing production capacity and a strong financial position. We are confident that 1969 will be the most successful year in Litton's history.

Sincerely yours,



Charles B. Thornton,
Chairman of the Board of Directors



Roy L. Ash, President

The Litton Industries, Inc., 1968 Annual Report depicts our products and systems of today and tomorrow, briefly reviews outstanding operating highlights and presents detailed financial statements for the year. Products, systems and financial statements follow in this order:

Business Systems and Equipment: $\frac{\text{BSE}}{1}$

$\frac{\text{BSE}}{2}$

$\frac{\text{BSE}}{3}$

Professional Services and Equipment: $\frac{\text{PSE}}{1}$

$\frac{\text{PSE}}{2}$

$\frac{\text{PSE}}{3}$

Industrial Systems and Equipment: $\frac{\text{ISE}}{1}$

$\frac{\text{ISE}}{2}$

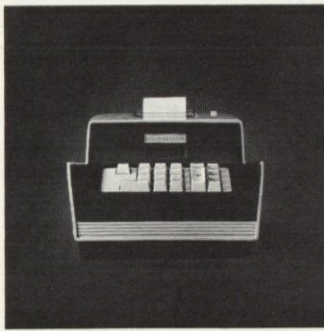
$\frac{\text{ISE}}{3}$

Defense and Marine Systems: $\frac{\text{DMS}}{1}$

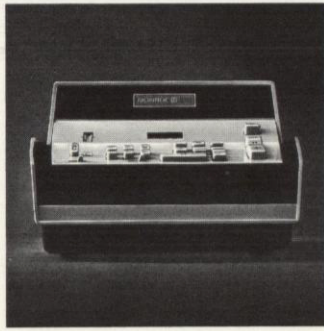
$\frac{\text{DMS}}{2}$

$\frac{\text{DMS}}{3}$

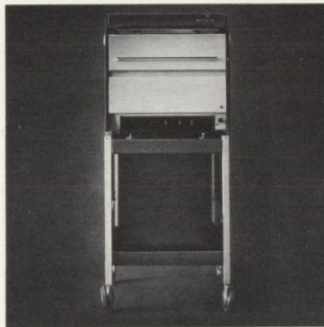
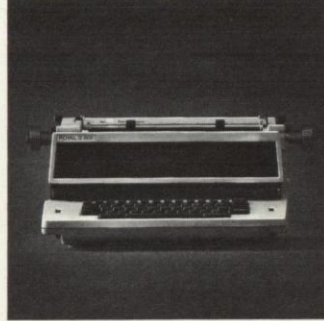
Financial Statements: $\frac{\text{F}}{1-12}$



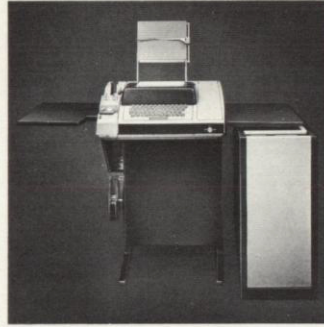
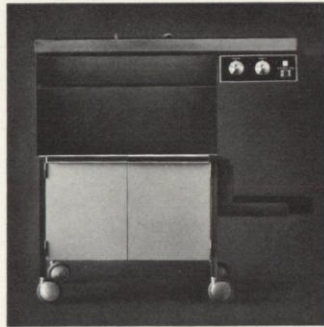
a



b



c



Model 150 represents the latest in Monroe division's durable line of 10-key and full-keyboard electric adding machines. The 150 adds, subtracts, multiplies and automatically prints credit balances in red. It has a 13-digit totaling capacity.

a

Monroe's new 570, combining adding machine and high-speed calculator functions, is the fastest of the low-cost printing calculators. Ideally suited for jobs such as invoicing, the 570 multiplies at a speed of 800 cycles a minute.

The 580 is the fastest electromechanical printing calculator on the market. This machine uniquely features a special key that enables the operator to handle numbers with varying decimal places and to obtain an answer with the decimal correct.

Monroe's 740 and 770 are the newest and most advanced electronic display calculators in the industry. Model 740 computes and displays an answer of up to 30 digits in milliseconds, automatically positioning a decimal point.

Royal Office Typewriter division's 440 is one of the most popular manuals ever built. Its light touch appeals to typists all over the world. The 440 is available in more than 100 type styles and a variety of technical and foreign language keyboards.

b

The 550 brings to small offices a durable electric which costs less than comparable models. Royal's 550 produces letters, reports, memos, bills, forms. The rugged machine is used increasingly by schools for typing classes.

Royal's Executive 660 is the prestige machine in the office electric typewriter market. With its automatic monitor for control of type impression on a single sheet or multiple carbons, the 660 produces work of sustained high quality.

The new Royal 665 Optical Character Printer and numerical input device advance typewriter technology into the automation field. The simplified keyboard on the input device enables the operator to type numbers faster than on the typewriter keyboard.

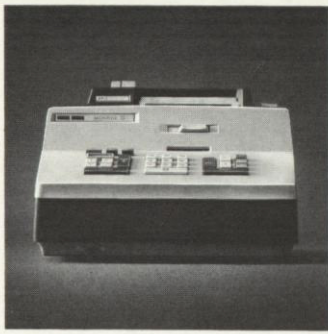
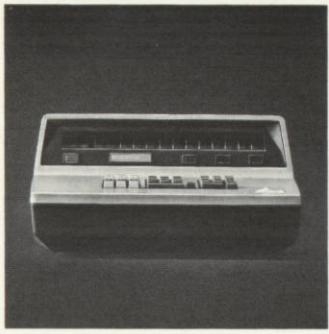
Royfax® 12, the fastest copying machine in its price class, commands a wide market. It can reproduce long sheets of printed matter. Hospitals use the 12 to make facsimiles of electrocardiograms, petroleum companies to copy oil well logs.

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Royfax's 1700 book copier duplicates a page up to 11 by 17 inches, a feature not offered by competing models of comparable size and speed. The 1700 copies books, art work and engineers' drawings as well as regular correspondence.

Automated Business Systems designs and produces accounting, production, inventory and financial reporting systems. This new McBee Card Converter processes Keysort cards to translate the data into punched tape or cards for computer input.

EBS 1210 is the foremost electronic business system of its type for automated billing and statistical analysis. The 1210 renders daily totals for sales, cost, profit, per-cent margin and taxes. It punches the data on tape for computer processing.



Model 770 has three separate memories to store constants or calculated results. In invoicing, for example, the 770 can accumulate units sold as well as dollar value. This calculator handles the most advanced statistical and engineering problems.

Monroe's Epic® 3000 desktop electronic printing calculator can be programmed to perform complex computations, yet is simple to operate. Aircraft designers use Epic 3000's to calculate stress, weight and loft variables of supersonic transport planes.

This new Litton system automates accounting and billing in a desk-sized installation. Electronic Business System 1230 is designed to meet present and future needs of users— industrial, financial, institutional and governmental—in managing paperwork that grows more complex each year. Produced by Automated Business Systems division, EBS 1230 is being marketed in North America, Western Europe, Australia and New Zealand. The system is comprised of: a processor that stores programs and data and monitors the entire operation; a photoelectric keyboard; a high-speed printer; a reader and punch that accept both paper tape and edge-punched cards. The EBS 1230 typically processes a wide range of business data and provides statistics on a continuing basis for management analysis.

Business Systems and Equipment, 1968 Highlights: Throughout Litton's Business Equipment divisions, 1968 was a major year of new product introduction. For the business and office machine user, Monroe, Royal and Royfax divisions marketed many new models. These broadened product lines strengthened Litton's position in world markets. For the explosively growing electronic calculator field, Monroe introduced the 740 and 770 models. In addition, Monroe introduced the 570 and 580 electromechanical printing calculators. The four new additions helped Monroe achieve its best selling year in history . . . Newly introduced by Royal is the electric Model 665 which prints optically readable characters for input into computers. Royal also kept pace with the swiftly accelerating demand for portable typewriters by starting production of six new models . . .

With a seven-transistor radio built into its case, the Royal Swinger is the newest idea in portables. This easy-typing machine appeals to today's young set. The Swinger carries Royal's five-year guarantee.

The Royal Sprite, a compact light portable for people who travel, has a full-size keyboard. Other features include a touch regulator, automatic ribbon reverse, and a pre-set tabulator. The wide carriage accommodates standard business envelopes.

Eureka division produces for retailers a variety of graphic merchandising aids, including premium and promotional materials and sales catalogs. Eureka recently opened a \$10.5 million graphics facility to serve the retail market.

Carlisle division designs and produces a wide line of graphic materials for the manufacturing and retailing industries. The Creative Marketing Management division designs merchandising campaigns for consumer goods.

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Royal's Mercury weighs only 10 pounds including case. Yet the size and arrangement of the keyboard match that of an office manual. The bottom is enclosed to protect the mechanism from dust and damage.

Royal's new Sabre is the industry's outstanding full-size, full-featured portable. The machine is available in Pica, Elite or Script type, with a standard 88-character keyboard. Sabre's price includes a luggage-style carrying case.

Roytype Twin-Pak® fabric typewriter ribbons serve all Royal typewriters—electric, standard and portable. Twin-Pak's dual cartridge enables a typist to make a swift change of ribbon without soiling her fingers. Roytype supplies include Park Lane® carbon papers.

Roypack supplies, marketed by Litton Business Equipment Centers, meet every continuing need of a modern office. Thirty-four Business Equipment Centers throughout the U.S. also furnish the business world with equipment, furniture, stationery and engraving.

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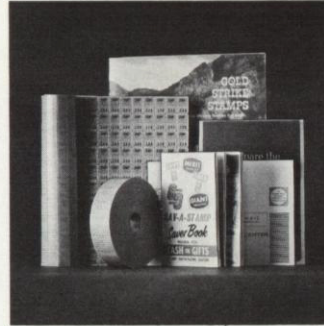
The 'All-Electric' is Royal's newest entry in the fully electric portable field. The lightweight portable is ideal for students, writers, people who work at home, and executives on the move.

Jetstar, a new model from the Royal Consumer Products division, is a home-size electric with the features of an office typewriter. Jetstar has an extra-wide 11¾-inch carriage, electric carriage return and tabulator, margin controls and on-off light.

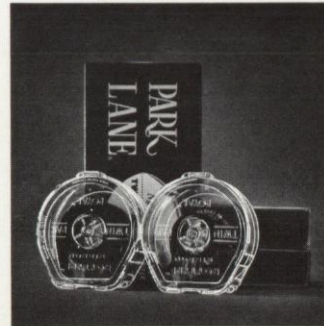
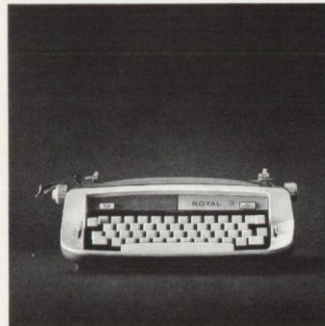
Kimball tags serve manufacturer, retailer and shopper. Graphic tags promote brand names at the point of sale. Others identify products through the cycles of manufacturing, shipping and storage. Another type of Kimball tag identifies air luggage.

Production of continuous computer forms for processing many types of data is an important part of Sturgis Newport's operation. The forms include payroll checks, payroll and personnel information, tax records, accounts receivable and student record systems.

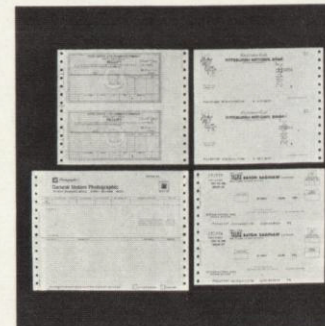
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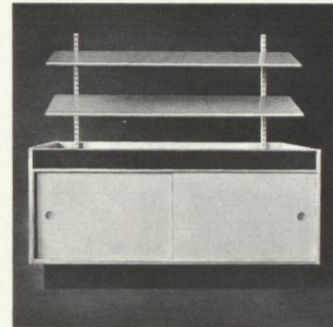
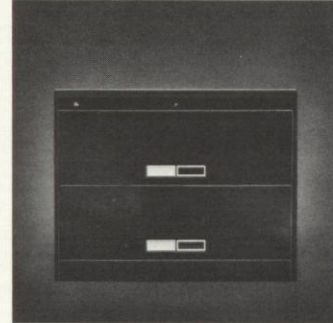
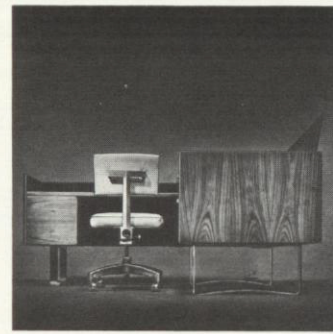


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BSE 2



In another rapid-growth market, office copiers, our Royfax division introduced the 1700 book copier. The 1700, with its unique ability to reproduce pages up to 11 by 17 inches, plus its high reliability, received rapid customer approval . . . Litton's broad range of capabilities in the business equipment field was strengthened by the addition of Saphier, Lerner and Schindler division. SLS is a leader in the planning and designing of total office environments in which people, systems and equipment are integrated . . . 1968 was a particularly strong year at Litton for introduction of new equipment to the burgeoning retail market. Kimball strengthened its retail marking systems by introducing the Cardset System which is capable of mass imprinting and encoding of sales and inventory data tags from computer-produced punched cards . . .

Cole division designs and manufactures a complete line of office furnishings which blend modern design, comfort and function. This executive desk, with enamel finish and mirror chrome trim, also serves as a conference table.

Standard Desk division, Montreal, has evolved a unique blend of form and specialized function in its Task II furniture. This prestige line offers fine complementary furnishings to three professional levels—clerical, managerial and executive.

Lehigh-Leopold division designs furnishings for executive offices and reception rooms. Fabrics and vinyls of high quality communicate the comfort and efficiency of Lehigh-Leopold's designs.

Cole horizontal drawer files make every folder immediately accessible. Available in two, three and five-drawer tiers, files are compactly designed to conserve office space. The units accommodate conventional or hanging folders.

A new concept in modularized bank furnishings, Centriform was conceived by Exchange National Bank of Chicago and built by Lehigh-Leopold division. Each unit takes less space than a bank officer's traditional desk and provides privacy for customers.

Streater division is a leading national company involved in integrating retail store equipment and merchandising systems. Its services include interior design of stores and production of fixtures for a wide range of merchandising.

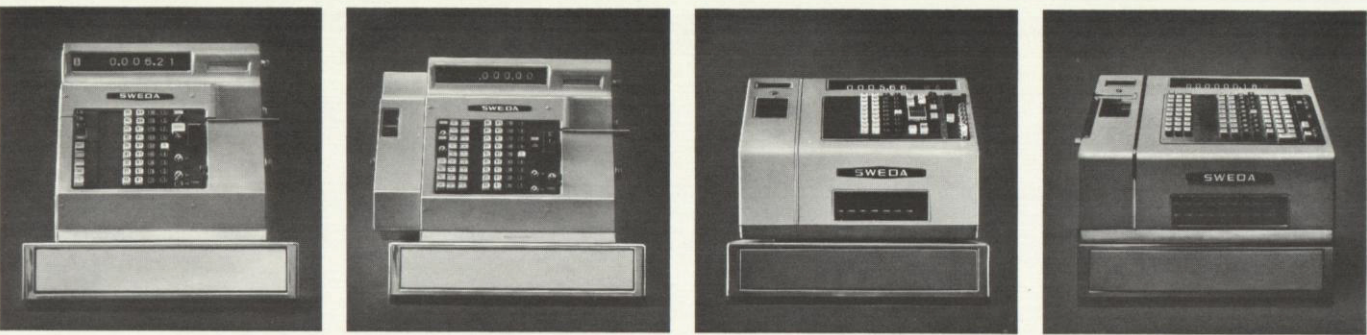


Sweda division's steady increase of sales to retailers was stimulated by the introduction of a new line of low-priced sales registers, Series 6. Also introduced were four new models in the Dataregister line. Retailers' increasing demand for point-of-sales devices that can be incorporated into data processing systems was met by a Sweda innovation, the Dataregister 1000 with an OCR (Optical Character Recognition) printed sales journal... Litton's Advance Data Systems division, a leader in automatic revenue control for the transportation industry, was awarded a contract to build a computerized system for a Philadelphia area rapid transit line. Installed during the year was the revenue control system for London Underground's new Victoria Line.

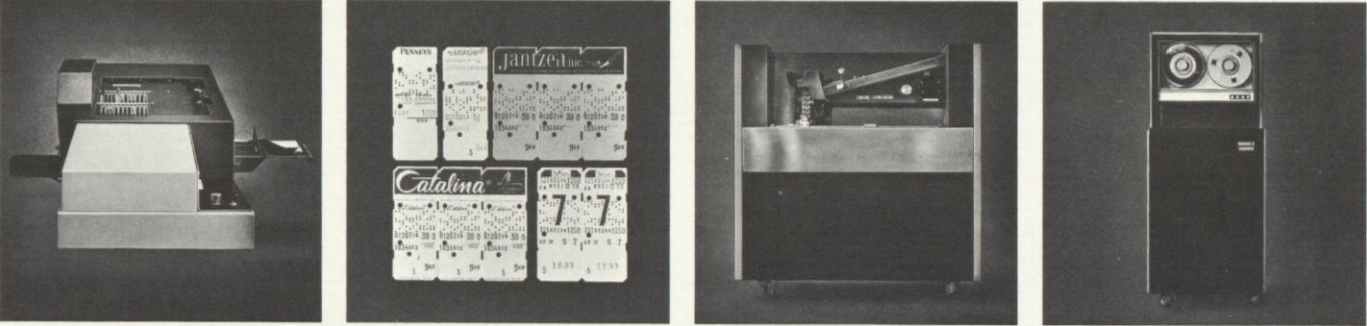
Sweda's Series 6 register provides the retailer with a system that gives information, revenue control and protection at the point of sale. The modular design permits Sweda service personnel to adapt the keyboard to a store's specific needs.

Developed for high-volume retail stores, Sweda's Model 46 offers more inventory and cash control features than comparably priced registers. Advantages such as automatic separation of taxable items help clerks reduce ring-up time by 30 per cent.

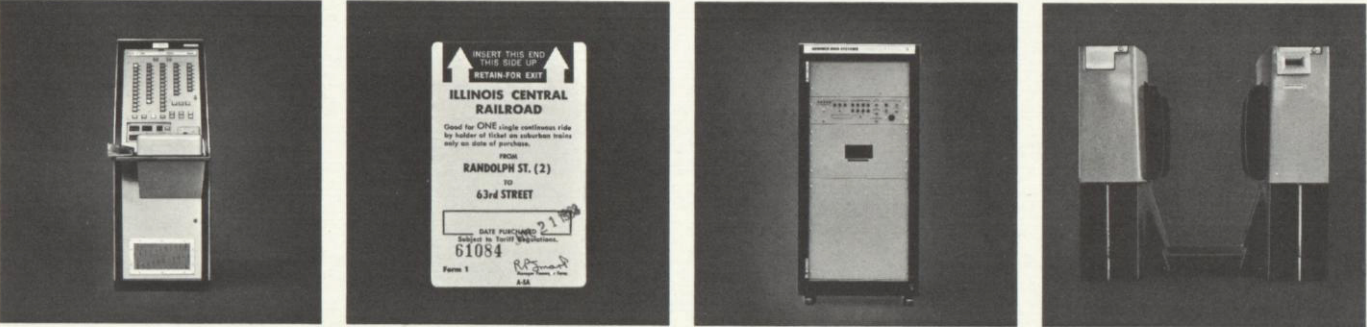
Kimball's new SPAN (Source Point Acoustic Network) system enables a retailer with multiple stores to swiftly collect and process sales information for trend analysis and inventory control. It eliminates rehandling and mailing of tags. SPAN combines a tag reader, input keyboard, magnetic tape recorder, acoustical transmitter and receiver. In a store equipped with SPAN, the reading device scans detached portions of coded print-punch tags and records the information on magnetic tape. Store personnel can insert additional variable data by keyboard input. The acoustical transmitter sends via ordinary telephone lines the taped information to the retailer's data processing center. There, the receiver converts the information to magnetic or punched tape for processing in a computer.



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Sweda International division designed Model 76, an itemizing sales register, to serve retailing operations of any size. The register totals sales by clerk and department. It either certifies a sales slip or issues a receipt.

Sweda 76 TMT is an automation control register for stores selling many different items in volume. The 76 punches a tape for computer processing, and furnishes management with up-to-the-minute accounts receivable, sales analysis and inventory control data.

Power-engineered to make every supermarket check stand an express lane, Sweda Dateregister® 2700 automatically computes change in one step, sorts taxable merchandise, and controls refunds and credits. It generates data that measures departmental efficiency.

Sweda's Pre-set Dateregister makes it possible for the prices of up to 27 fast-moving items to be pre-set in restaurants, other eating facilities and retail stores. This system also provides automatic inventory control, instantly or at day's end.

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Kimball Systems division produces retail tags, marking systems and equipment that improve selling and inventory management techniques. Using computer language, the new Cardset System prints and punches tags with vital data — quantity, size, style, price.

A Kimball coded print-punch tag carries essential information about the retail item to which it is attached. When items are sold, detached tags are processed by computer. Retailers control inventory by monitoring sales rather than unsold stock.

Kimball's high-speed electronic reader for on-line computer input transmits the data from 1200 print-punch tags a minute into the main frame of a computer. The reader features continuous load and automatic selection programmed by the computer.

Kimball's Krome system converts to magnetic tape the coded data on print-punch tags used in retailing. At a rate of 18,000 tag entries per minute, a computer reads the tape and rapidly provides the retailer with sales management information.

b

Advance Data Systems division designed and built, for the Illinois Central Railroad, the world's first automatic fare collection system. ADS encoding machines in the central station place magnetic data on tickets sold for use in computer-controlled gates.

One side of the ticket is printed with information for the passenger. The other side contains information for the computer encoded on a magnetic iron oxide coating. The coding determines the validity of the ticket and its conditions of use.

An ADS computer controlling the gates in each station inspects the magnetically encoded ticket, and subtracts a ride or reduces its value. The computer can be programmed to provide accounting data for the railroad.

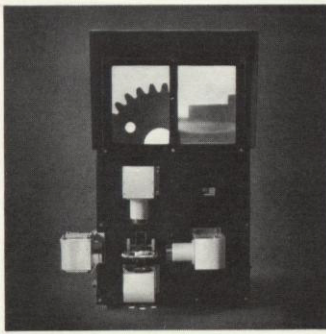
A passenger inserts his ticket in a slot on the gate. The gate automatically opens to a valid ticket, which is returned with magnetic data revised. ADS systems have applications in other forms of transportation, including airlines.

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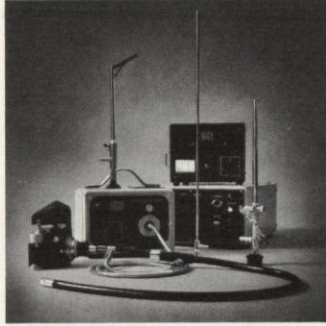
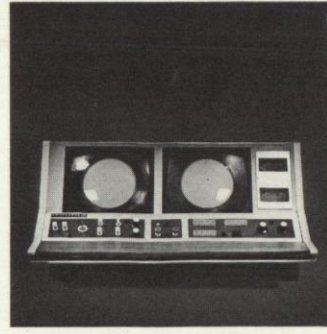
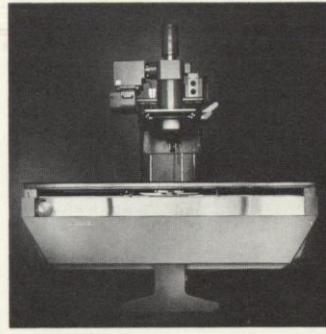
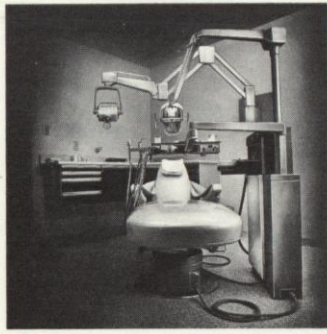




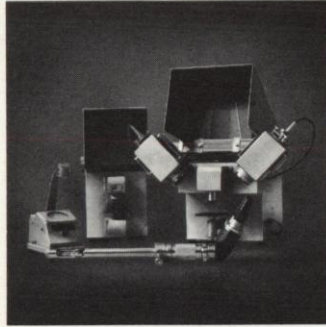
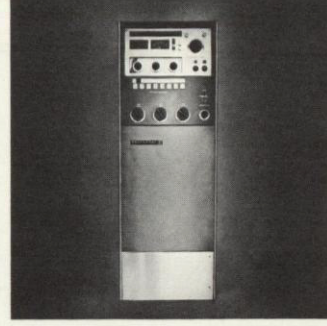
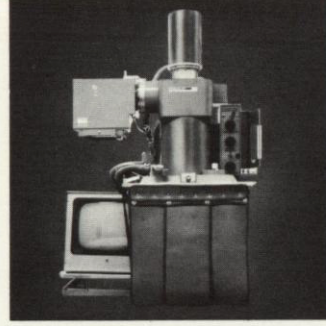
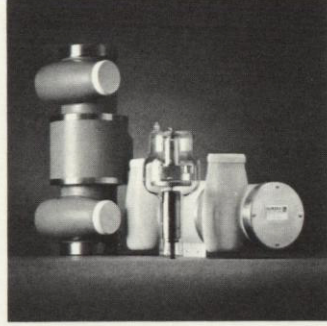
By supplying pertinent information vital to business operations, Litton Business Systems and Equipment of Tomorrow will enable decision-makers to meet future challenges of the world market place.



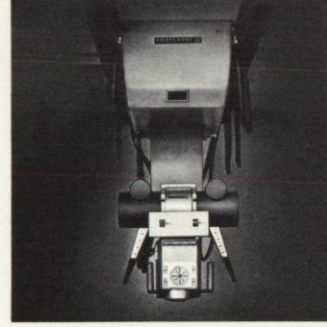
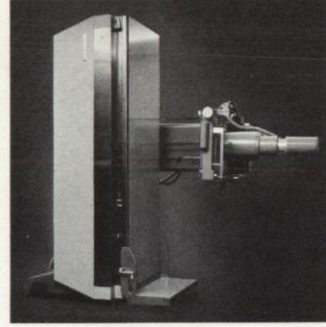
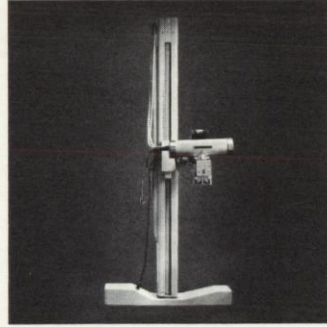
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In Berlin, West Germany, Litton's Sass-Wolf facility produces optical testing devices for medicine and industry. This projector with two screens permits visual inspection of miniaturized tools and parts, aiding in their adjustment and mounting.

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Litton's Dental division offers dentists a development program for new facilities, including office design, purchase of equipment and installation. The division has perfected an X-ray tube unit for the new technique of prone-patient dentistry.

Diagnostic X-ray tables and equipment produced by Profexray division of Litton are designed to accommodate a variety of radiological techniques. Profexray's newest and largest table is the Emperor 90-360.

Profexray's remote control console, an engineering innovation, operates the most advanced X-ray diagnostic systems. With this console, the radiologist has the option of viewing the image and controlling equipment from a station outside the X-ray chamber.

Fiber-optic or cold-light illumination and a camera (left) are essential to medical endoscopy. Litton manufactures generators to provide power for its endoscopes. These instruments are used in bronchial and abdominal examinations.

b

Eureka X-Ray Tube division manufactures a complete line of X-ray tube units, cables and rectifiers for medicine and industry. The heavy-duty Sapphire (left) serves in advanced heart surgery. The glass insert fits the Diamond unit, used daily throughout the U. S.

Profexray's Intensified Image Recorder Systems increase X-ray brightness up to 5000 times and transmit the image to film. Sharpness is improved, and patient exposure reduced. This 6-inch system particularly adapts to tilt-table diagnosis.

The new line of Jupiter generators for X-ray equipment guarantees extreme accuracy of timing. A back-up system for every circuit assures a long service life and minimum downtime. Design considerations were heavy use and limited floor space in hospitals.

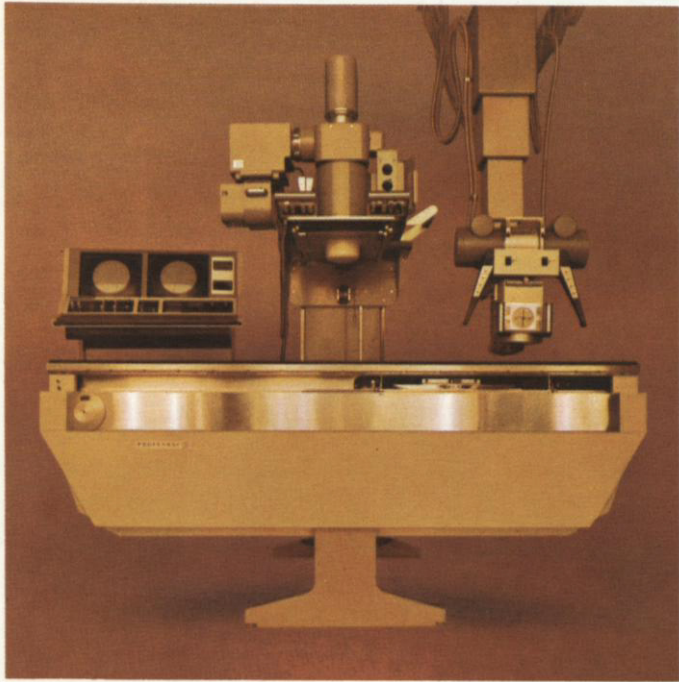
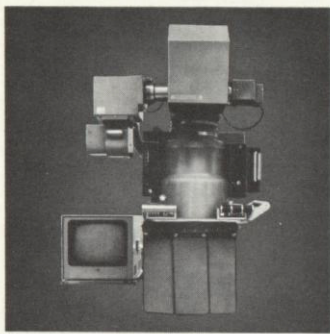
Devices and projectors made in Berlin by Sass-Wolf test tension in the glass parts of medical instruments. These stress testers also are employed in the manufacture of vacuum valves, burettes and other glassware for laboratories.

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Profexray division's floor-to-ceiling X-ray tubestand offers mechanical simplicity and perfect support of tube units. The stand can be used with any diagnostic table.

Emperor 90-15 diagnostic table is ideal for hospitals and clinics with limited space. The fluoroscopic assembly is self-contained and does not have to be suspended from the ceiling. An ingenious mechanism assures smooth lifting.

Profexray's new overhead tube conveyor supports any combination of standard X-ray tubes and beam-focusing devices. The conveyor freely positions the X-ray tube, horizontally and vertically. Two X-ray units can be mounted and used in special procedures.



Profexray introduced this automatic X-ray film processor, featuring simplicity of operation and ruggedness, after two years of field testing. The new design eliminates gears, chains and sprockets. An electronic system controls chemicals and film handling.

Profexray's 9-inch Intensified Image Recorder System features dual-field electron magnification. Television permits remote monitoring and group viewing by consulting doctors. The system accommodates 16 and 35 mm ciné cameras and a rapid-exposure 90 mm unit.

Profexray's all-new radiological system incorporates standard elements with exclusive technological innovations. The heavy-duty, motor-driven Emperor 90-360 diagnostic table of welded steel components performs all clinical functions of radiology and fluoroscopy. The Intensified Image Recorder, a system that is replacing spot film techniques, reduces exposure time 90 per cent and lessens the radiation risk to patients. The remote control console and overhead tube conveyor provide the specialist with important new tools. In exceeding the present-day needs of hospitals and therapists, Profexray delivers a system that will serve well into the future.

Professional Services and Equipment, 1968 Highlights: Litton expanded its products for the worldwide medical field. Profexray division developed and marketed an entirely new line of heavy-duty X-ray diagnostic equipment. Profexray's new Intensified Image Recorder System, offering greatly shortened exposure time, promises to replace present equipment. Eureka X-Ray Tube division, a leading manufacturer of tubes for dental and industrial X-ray use, is broadening its line for the medical field with the powerful new Model 2000 unit for such special procedures as advanced arterial and cardiac diagnosis and research . . . Litton introduced to North American markets a new generation of solid-state electronic diagnostic, recording and patient monitoring systems built by Hellige division at Freiburg, Germany . . .

Hellige division develops medical electronic equipment for diagnosis, treatment and research. The German firm's Simpliscriptor T 20 is one of the world's smallest electrocardiographs. Battery-operated, it can be used even in a car to test driving stress.

Hellige's Multiscriptor EK 21 is a programmed, transistorized diagnostic recorder of 6 and 8 channels for combined heart and circulation studies. It records not only usual electrocardiograph measurements but pulse rate and heart sound as well.

Simpliscriptor EK 100, a new solid-state electrocardiograph recorder that weighs 18 pounds, is based on the American Heart Association's high standards. This Hellige ECG serves as a stationary instrument or as a mobile unit for visits to homes and hospital wards.

The Thromb-Elastograph,[®] made by Hellige division, is a device for investigating the coagulation process of blood. The instrument provides vital information—visually and by kymograph—for control of thrombosis and the diagnosis of hemorrhagic diseases.

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An amplifier for measuring direct blood pressure, Hellige's Electromanometer MA 83 functions with any pressure transducer. The MA 83 is the only amplifier of its kind that automatically compensates for transducer and cable resistance.

The Hellige-Erymat, a photoelectric device for counting red blood cells (erythrocytes), gives a far more rapid and accurate analysis than a conventional microscope. The easy-to-operate Erymat also measures the hemoglobin content of blood samples.

This Hellige preamplifier is a plug-in modular device that amplifies low-level direct current signals. Essential to various types of advanced medical research equipment, the device ensures high-stability, low-drift amplification.

Servocard SC 87 is a Hellige modular system for cardiac monitoring and electrotherapy. Available in several combinations, SC 87 is utilized as a pacemaker for heart patients, to observe the seriously ill and to restore heart action in extreme cases.

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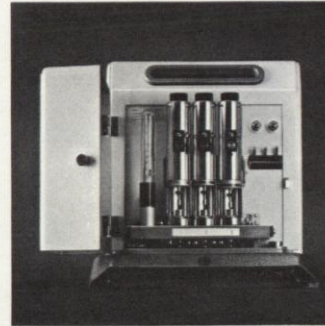
Neuroscript EE 97, used for brain wave recording in neurological clinics and research centers, is a major advance in electroencephalographs. Hellige consulted with Europe's leading neurologists in its development of the 8- and 12-channel recorder.

Engineered especially for the cardiac research laboratory, Hellige's Multicardiotest EK 139 is an eight-channel photographic recorder for electrocardiogram, heart sound and pulse. Completed charts are stored in detachable lightproof cassettes.

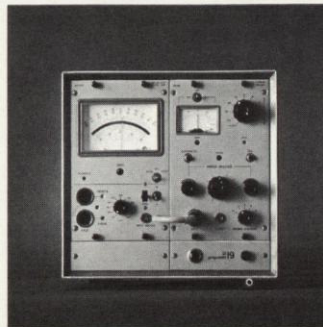
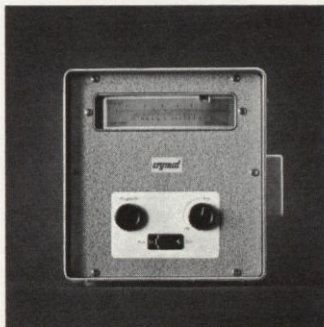
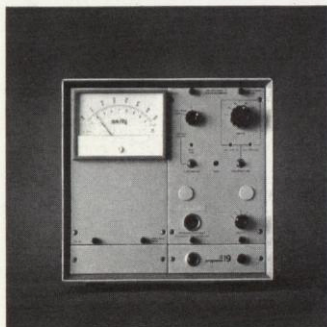
Hellige's new Telemetry System enables physicians to make wireless recordings of electrocardiograms and pulse readings. Comprised of a miniature transmitter and receiver package, the system can be used to test people in many situations.

Hellige's new electronic system can continuously monitor eight or more patients at one time. Bedside subsystems contain modularized instruments for recording ECG and other measurements. The data is displayed on a central console at a nurse's station.

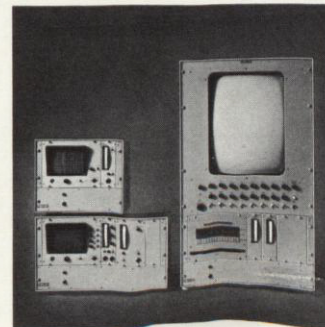
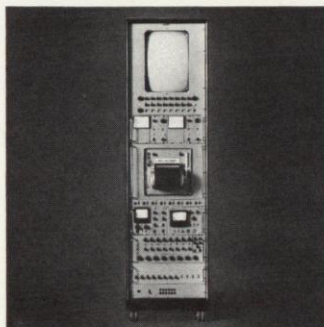
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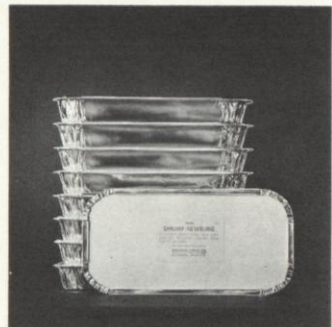
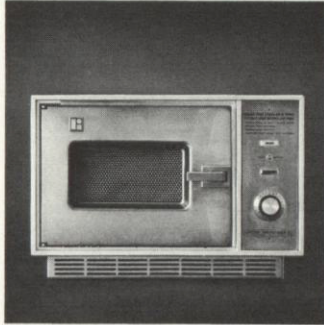
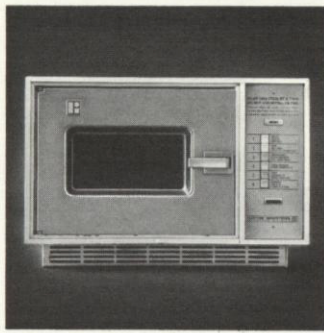


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PSE 2



Atherton division, a foremost producer of microwave cooking units, introduced the new Model 800 for high-volume restaurants and institutions. Stouffer division expanded its operation of food facilities to include 70 hospitals, schools and industrial plants. Stouffer division also opened a new \$9 million frozen food processing plant, one of the most modern and highly automated in the world. Stouffer marketed 32 retail food products and 141 for institutions, gaining in the \$3.3 billion frozen food market . . . Serving the growing demand for natural resources, Aero Service division perfected a special technique for nighttime aerial mapping with infrared cameras. It increases accuracy while doubling the division's capability to perform airborne geophysical surveys. These planes are equipped with gradiometer systems to gather magnetic data for locating mineral deposits.

Atherton division is a leading manufacturer of microwave cooking units for the restaurant and food vending industry. Model 500 heats sandwiches and snacks from vending machines in tens of thousands of commercial, industrial and institutional food facilities.

Stouffer Foods division processes, packages and markets the highest quality pre-prepared frozen foods. The retail line offers 32 products including casseroles, soufflés, special side dishes and entrées.

Microwave Model 550 defrosts, heats and cooks a variety of foods, enabling restaurants to serve customers swiftly without waste. It eliminates slow defrosting of bulk foods. A single portion or one order can be cooked in seconds.

New recipes are constantly being evaluated at Stouffer for frozen foods with a wide, sustained appeal. The division is developing food products especially prepared for cooking in microwave units.

Model 800, a new heavy-duty microwave cooking unit with a large interior, defrosts five pounds of frozen vegetables in six minutes. Its heating capacity was designed for high-volume restaurants, hospitals and other institutions.

Stouffer produces 141 frozen foods in quantity for hospitals, schools, hotels, clubs and airlines. Using prepared foods and microwave cooking, Stouffer has made a major advance in serving hot, appetizing meals swiftly in hospitals and other institutions.

Aero Service division conducts a wide range of airborne measurements of the earth's surface and strata in its preparation of maps for governments, land developers and utilities. Aerial photos are measured in stereo devices to obtain precise ground details.

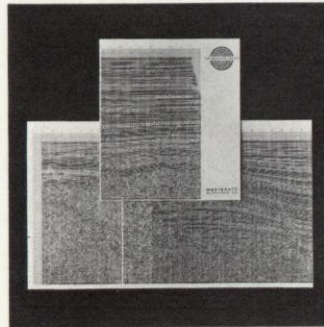
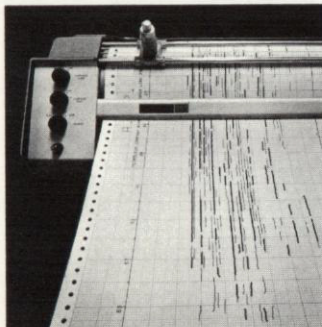
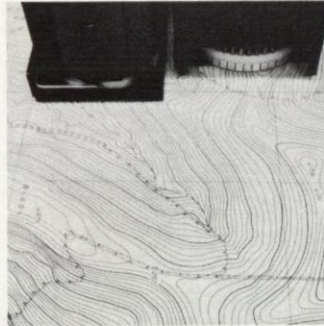
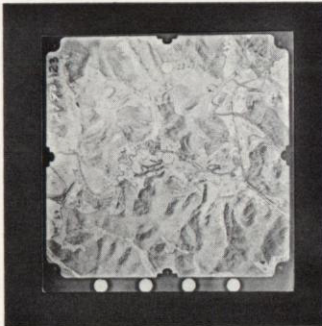
Computer techniques are employed by Aero Service to process and interpret data for its maps, which are automatically compiled. The division's worldwide airborne surveys help determine the location of large deposits of oil and minerals.

Seismic data is analyzed at four digital computer centers to produce oil location information. Western Geophysical maintains a research and development group of more than 50 mathematicians, geophysicists and digital analysts.

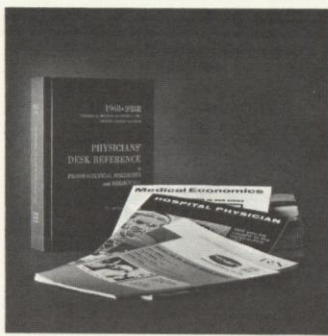
Western Geophysical division performs seismic explorations at sea for oil companies. Data gathered aboard ship by digital recorders is translated into seismic record sections such as these showing subsurface features suggesting the presence of oil.

Westrex division designs and supplies recording equipment to motion picture studios and disk recording companies throughout the world. This new recorder-reproducer has the capability of recording sound on either 35 mm or 16 mm magnetic film.

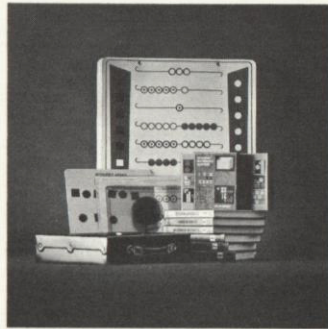
Westrex's new StereoDisk recorder transfers sound from a magnetic tape to the lacquer disk used as the master in producing stereo records for sale to the public. Westrex developed the standard technique of recording two channels of sound in a single groove.



Concentrating on marine exploration for oil companies, Western Geophysical developed Hydrosein, a technique utilizing a ship's fuel to provide a marine implosion energy source. Since other energy sources require special fuel, Hydrosein is ideal for oil exploration in remote areas...Litton broadened its position in the education market with the acquisition of Chapman-Reinhold, Inc. This division's professional journals and reference materials provide continuous knowledge to many fields; for example, about 10 million Chapman-Reinhold medical journals were printed in 1968. This Litton division also serves the architectural and engineering disciplines and the air transport, machine tool and metal industries. Our American Book division, which is developing and publishing teaching materials for preschool through college levels, introduced new series in science, math, reading and English. These are being widely adopted by schools throughout the U.S.



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Litton is a major publisher of periodicals, directories and reference material for the scientific, professional and industrial disciplines. Litton Publications also furnishes advertising management for 16 chemical journals.

Litton Publications' famed 'Physicians' Desk Reference' is the definitive compendium of drug and medical supply information in the U.S. More than 475,000 copies have been distributed. Periodicals are published for medical specialists.

American Book division, a pioneer in developing new teaching materials and systems, offers 2300 titles. Books, slides and 'learning charts' represent the pre-school Early Learning Program. Photos on the learning charts portray the child's everyday environment.

The READ system (Reading Experience and Development) for grades 1-6 makes American Book a major factor in shaping modern elementary school education. 'And So You Go!' is a new pre-primer. 'Launchings and Landings' introduces sixth-graders to space.

a

Litton's new science teaching system awakens the student and his senses—seeing, hearing, touching, tasting, smelling—to the experience of learning. We provide correlated science materials for school, college and the professions. 'Beginning Science' acquaints kindergarten children with their technology-oriented world. Grade by grade, the many materials of American Book division develop scientific understanding in depth. The systems concept modularizes picture texts, workbooks, class texts, individual units, color slides in motion, laboratory manuals and equipment. The young science student personally experiences the scientific force of magnets, light, sound, heat and harmless chemicals. From grade 10 through college, texts explore specific disciplines such as physics and chemistry.

Modern Mathematics Series, grades 1-8, combines workbooks, filmstrips and manipulative materials from an activities kit. The new series, emphasizing discovery of math, comprehension and computational skill, prepares children for life in an age of creative technology.

American Book creates music textbooks, records and slides. The basic course, Music for Young Americans, and three supplemental courses, Music 100, 200 and 300, comprise a total music program for kindergarten to college students.

b

Seven textbooks with supplements provide high school students with a comprehensive view of U.S. history. New titles include 'History USA'; 'Documents USA' (35 pamphlets in 9 sections); and 'Viewpoints USA' (16 booklets).

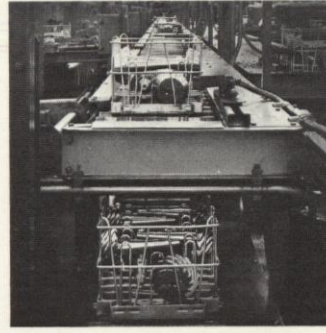
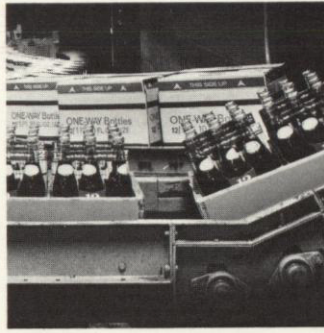
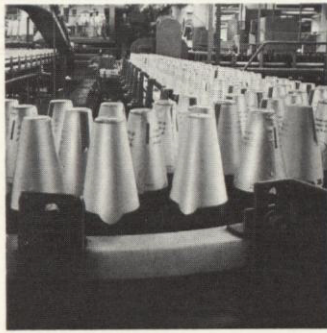
American Book's science teaching programs evolve from the systems approach. Educators structure a course with interrelated units—text materials, slides, laboratory equipment and teacher's guide. Schools may order the total package or individual components.

c

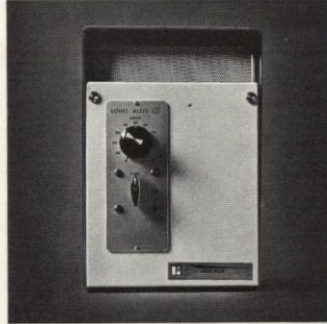
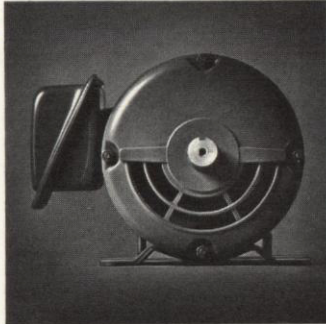


*By maximizing the impact of technology
in such fields as education and
medicine, Litton Professional Services
and Equipment of Tomorrow will
contribute to longer and more mean-
ingful lives for future generations.*

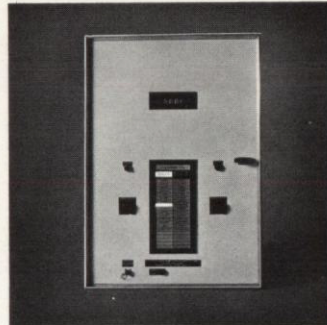
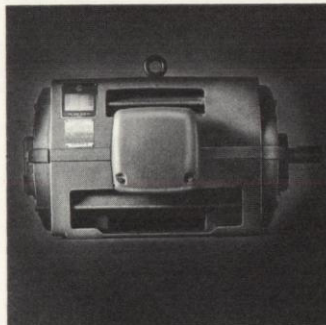




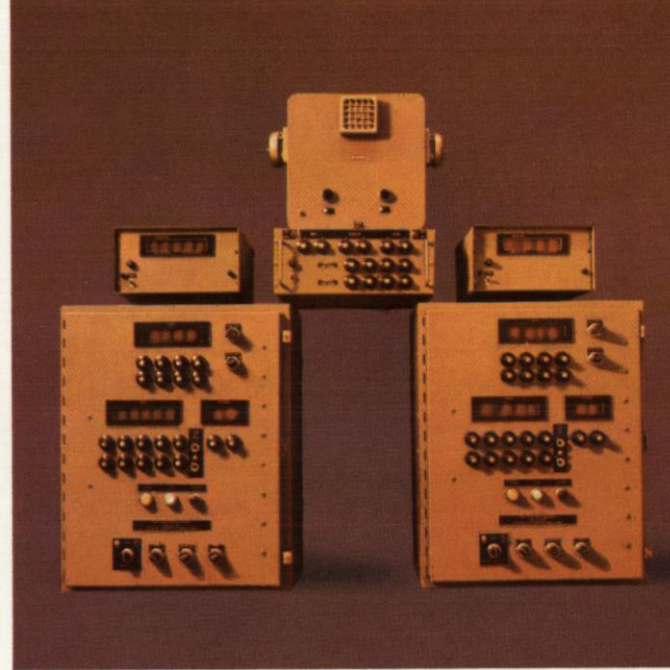
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Hewitt-Robins division engineers unit handling systems to meet the requirements of any industry. In this health products plant, cases of finished supplies are stored efficiently, then assembled via a network of conveyors for shipment.

At the world's largest brewery, Hewitt-Robins installed 17 miles of conveyors which transport 14 million cans and bottles daily. Conveyors maintain a steady flow of bottles to washing and filling machines, and carry full cases to loading docks.

Hewitt-Robins designs highly automated unit handling systems. At this Pepsi-Cola Co. plant, the division has automated its conveyors with electronic controls to move filled cases to storage and loading points.

A Hewitt-Robins conveyor in this large automobile plant automatically brings gears in baskets to a machine tool operator for finishing. Six interconnected subsystems deliver mechanical parts throughout the plant, reducing handling and storage.

a

Louis Allis manufactures a line of Pacer® 500 motors for pumps, fans, blowers, air-conditioning equipment and similar applications. The Pacer 500 is ideal for industrial plants requiring high-volume repetitive motors up to 7½ HP.

For applications requiring varying yet precisely controlled machine speeds, Louis Allis' new Model 3100 static DC drive is available from ¼ through 1 HP. Like Model 3200 (1 through 5 HP), the drive can be mounted in minutes on machinery or a wall.

Louis Allis division designs and builds Dynapar digital controls for industrial processes. The control systems facilitate production in such industries as paper and textile making where machinery feeds sheets or rolls of taut material which must be cut to precise length. This Dynapar system controls the cutting of corrugated board for containers. The controller senses length and regulates the speed of a rotary knife. Automatically, the controller monitors sheet length, size and count, rejects out-of-tolerance units, and continuously displays the information. The programmed digital device initiates a change in length when required. Dynapar systems increase economy by virtually eliminating scrap and reducing downtime.

b

This new Louis Allis 447 frame motor offers more horsepower in a smaller frame than comparable motors. The 447 provides up to 200 HP in a compact unit that is totally enclosed, fan-cooled and explosion-proof.

A control and monitoring device for machinery, Louis Allis' Dynapar C-600 facilitates processes such as papermaking where tension and smoothness are critical. C-600, a draw and speed indicator with integrated circuit computer, is an industrial first.

c



Electron Tube division is a leading producer of magnetron tubes that generate microwave energy for cooking. This division's mass-produced quality tubes will be the basis for economical microwave cooking in the home.

This Electron Tube klystron amplifies microwaves in electronic subsystems for space, air and surface communications, and telemetry. The device focuses an electron beam electrostatically, hence is smaller and lighter than conventional klystrons using magnets.

a

Electron Tube's backward wave oscillator converts conventional electrical power into high-frequency microwave energy. In defense uses, this powerful component's microwave energy can be made to jam the operation of an enemy radar installation.

Electron Tube is developing for advanced radar systems a new generation of crossed field amplifiers to amplify high-frequency microwave signals. These devices will increase the range of radar in both ground and highly sophisticated airborne installations.

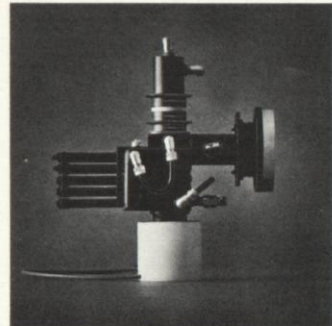
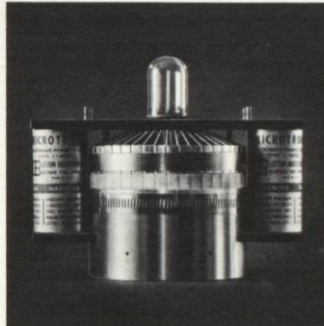
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Airtron division produces antenna arrays for doppler navigation systems used worldwide on commercial jets to control spacing and direction on overseas flights. This array radiates a precise beam which measures speed and drift to pinpoint a jet's position.

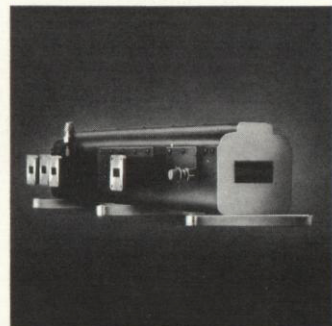
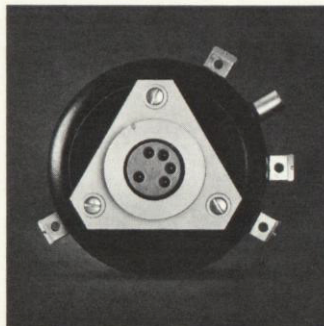
Airtron division designs and builds microwave subsystems and hardware for radar and communications. Waveguides serve as electronic pipes to transport high-frequency signals. Airtron makes this flexible new Elliptaguide in continuous lengths up to 500 feet.

c

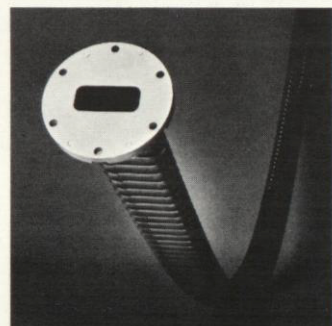
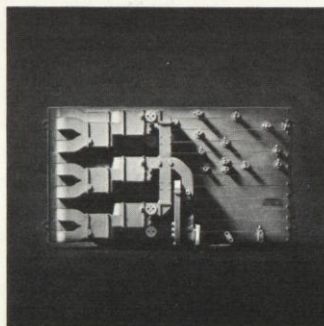
Industrial Systems and Equipment, 1968 Highlights: Litton's Hewitt-Robins division strengthened its position as a leader in providing systems for swift and efficient movement of materials and products. In 1968 Hewitt-Robins received orders to design and build more than 400 materials handling installations throughout the world. Hewitt-Robins offers substantial economies to such industries as automotive, mining, beverage and retail. For Anaconda Copper Co., Hewitt-Robins is now completing the largest bulk materials handling installation in the world. Other notable projects include an installation for a major steel producer, encompassing the computer-controlled transport, storage and retrieval of all raw materials; a totally new concept in barge-unloading for a power plant; and a fully automated production and packaging system for a large bakery...



a



b



c

Clifton division builds more than 2000 electromechanical rotating components for industrial, space and military systems. This Silverline synchro represents new precision devices that generate electromechanical data. On aircraft, synchros report engine performance.

This Clifton synchro transmits angular position to computers. Readout may show, for example, whether a jet is flying level at high altitudes. The design makes possible an optimum combination of size and precision performance.

Potentiometer division produces for industrial and flight data systems electro-mechanical devices that convert mechanical movement into electrical signals. A typical use is detecting fuel flow variations in jet aircraft.

Clifton's servo amplifiers boost and transmit signals in airborne navigation systems. The signals report the aircraft's range, bearing and related data. Servo amplifiers perform a similar function in industry by amplifying signals to computers in automated control systems.

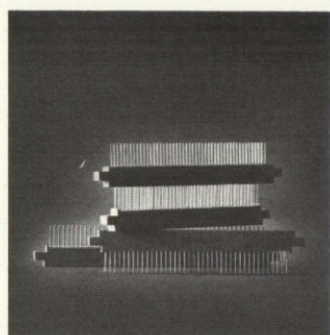
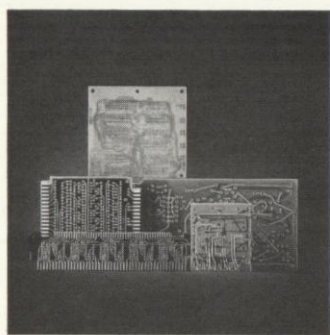
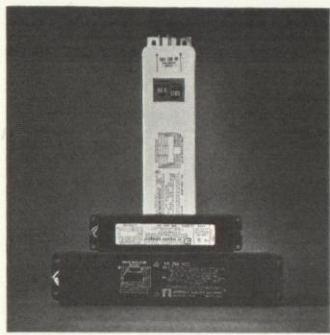
Poly-Scientific division produces slip ring assemblies for missile and aircraft navigation systems and space vehicle control. The large assembly transmits power in helicopter blade deicing systems. The slip ring capsule serves ship navigation systems.

Encoder division is the nation's major supplier of shaft encoders, devices that convert mechanical rotation into computer data. Litton's pin contact encoder is integral to flight control, weather radar, weapons delivery, map display and other avionics systems.

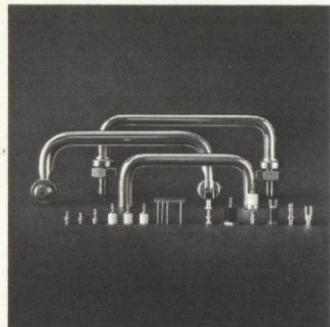
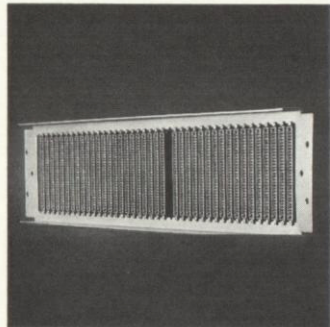
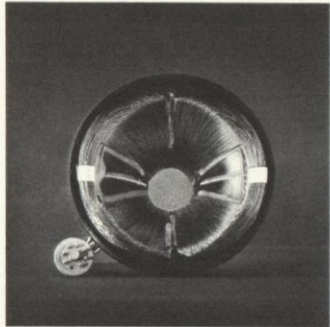
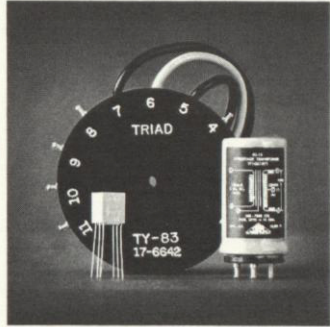
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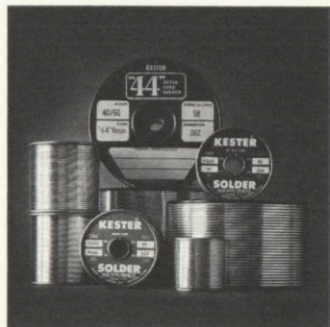
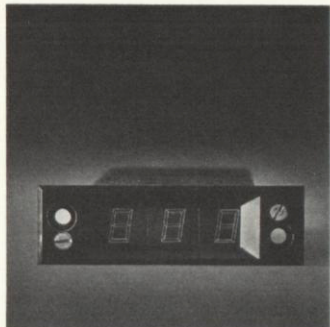
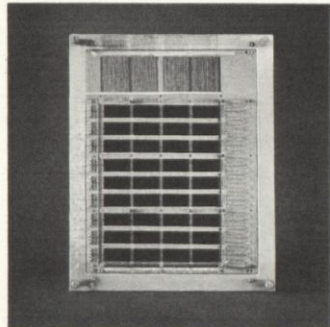
Litton's component divisions supply precision electronic devices to many growth markets. For the computer industry, Memory Products division manufactures memory planes and stacks for major computer companies, and new, low-cost magnetic recording heads. In addition, these heads have great potential for the rapidly expanding video tape equipment market. Other 1968 highlights include Advanced Circuitry division's new printed circuit plant to serve West Coast markets, and introduction by Encoder division of the first industrial optical encoder employed as an ultra-precision measurement device on machine tools...



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Jefferson Electric division manufactures more than 300 different ballasts for fluorescent and mercury lighting. The ballasts are necessary to maintain a proper flow of current in the circuits of industrial, commercial and outdoor lighting systems.

Triad's transformers are produced in large volume for manufacturers of consumer products. This unit is typical of transformers which power television, radio, high fidelity sets and electronic musical instruments.

Advanced Circuitry division supplies a wide line of custom-specification printed circuit boards. Applications include medical electronics and manned space projects. Litton's special technique in connecting multiple layer circuits ensures high reliability of operation.

Winchester Electronics division designs and builds electronic and electrical connectors for computers and other industrial, commercial and military uses. These printed circuit board connectors simplify new automated wiring techniques.

a

Triad division manufactures a complete line of transformers for electronic equipment. The toroidal TY-83 converts and increases DC voltage. The interstage transformer is used in high fidelity amplifiers, and the miniature is essential to printed circuitry.

Utrad division's magnetic components for the electronics industry include deflection yokes for color television sets. These yokes deflect electron beams vertically and horizontally to produce an image on the screen.

AccurFrame packaging, developed by Winchester Electronics, provides computer manufacturers with a simplified new system for mounting components in computers. Designed for automated wiring, this frame accommodates 40 printed circuit boards.

USECO division produces thousands of types of mechanical and electrical components such as small electrical terminals. USECO parts are immediately available to manufacturers in 68 cities. The division also custom-designs electronic hardware.

b

Memory Products division designs and manufactures the most advanced data storage memory stacks available to the computer and electronic data processing industries. This memory stack will be installed in a third-generation computer.

Clifton's Deci-Line® represents a new generation of solid-state digital display devices. Designed for commercial jets, it gives the pilot a visual reading of such computer-generated information as latitude and longitude. One future use is in industrial monitoring systems.

Kester Solder division supplies industry with 200,000 soldering products, the broadest selection of any manufacturer. It markets in 60 countries. Kester solder secures billions of connections in electronic and electromechanical systems.

Kester's soldering flux cleanses metal surfaces of oxides and particles to permit soldering. The division also produces rosin-residue removers, protective coatings, cleaners and solvents.

c

Industries such as shipping and mining require heavy-duty conveyors to move raw materials and finished products of enormous weight. Hewitt-Robins produces steel cable conveyor belting up to 10 feet wide.

A Hewitt-Robins barge unloading system for a utility firm transfers 4500 tons of coal an hour to storage. Fully automated shielded conveyors carry processed coal to the power plant. The system is operated and monitored from a console in the plant.

Landis Tool division manufactures precision cylindrical grinders, one of the seven basic machine tools that make or help make every product of industry. This numerically controlled grinder is programmed by punched cards to grind a shaft with many diameters.

This newly developed Landis grinder will rough-grind an automobile camshaft, then finish-grind its exacting contours with the utmost precision. Heretofore, camshafts had to be roughed on one grinder, then moved to another for finishing.

a

For systems which handle bulk raw materials in industry, Hewitt-Robins division designs and builds conveyors and related processing equipment. In this building materials plant, 34 conveyors stretch 3600 feet to carry rock to crushing, sizing and washing stations.

Hewitt-Robins is the only builder of handling systems which also manufactures idlers and conveyor belting. This conveyor, equipped with new rubber-coated rayon-nylon belting, handles up to 3000 tons an hour.

The largest grinders produced by Landis weigh 115 tons. These grind to mirror finish the huge rolls employed in manufacturing steel and aluminum sheets. Used in many U. S. mills, Landis grinders produce rolls up to 5 feet in diameter and 35 feet long.

Landis' new piston grinder fully automates the grinding of automobile pistons. The machine utilizes an electronic sizing gage with a size selector to automatically produce 148 pistons per hour in any of eight sizes to a .00025-inch tolerance.

b

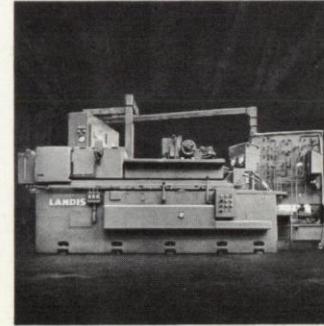
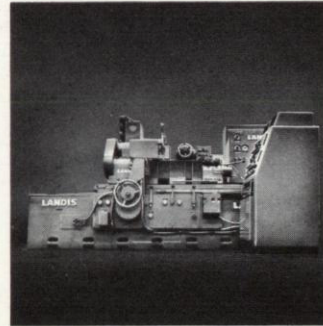
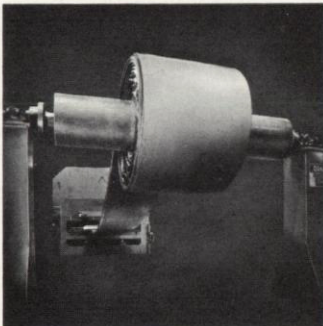
A network of heavy-duty conveyors engineered by Hewitt-Robins keeps material flowing to and from processing stations at Livingston-Graham's plant in the Los Angeles area. The entire operation is controlled and monitored from a central console room.

Conveyors bring one of the plant's finished products to a large bin for loading into trucks waiting underneath. Hewitt-Robins custom-designs materials handling systems from standard components for many heavy industries — shipping, mining, steel and utilities.

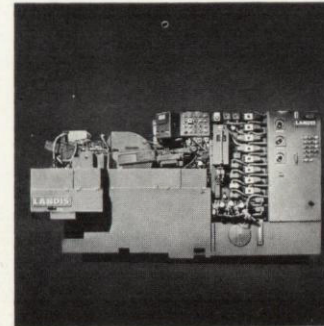
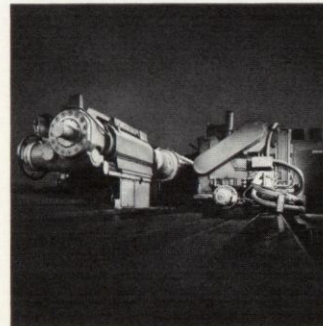
Mono-mooring hose systems, developed by Hewitt-Robins, enable giant oil tankers to unload fuel throughout the world without docking. Flexible lines, up to 24 inches in diameter, are installed with protective floats.

Hewitt-Robins designs and builds, in addition to handling systems, enclosed gear drives that transfer power from a motor to a machine to perform a specific task. The HLD parallel shaft reducer operates conveyors, large kilns and hoists in heavy industry.

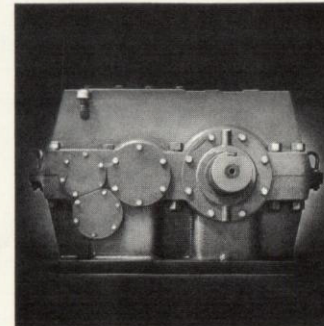
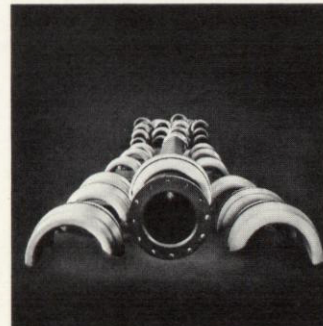
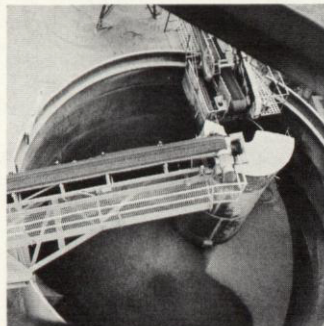
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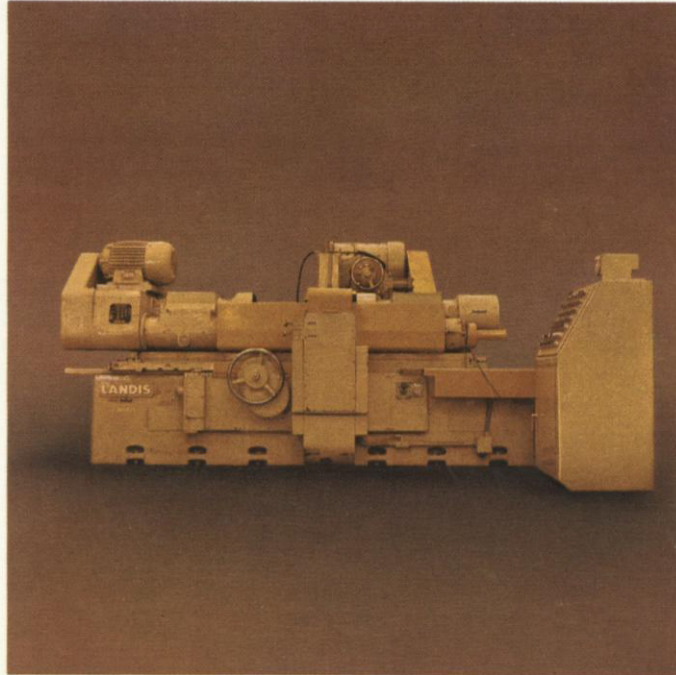
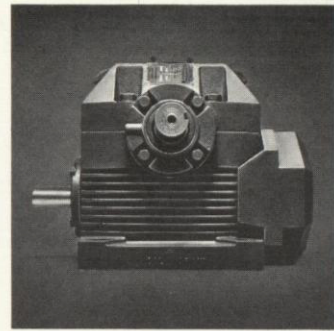
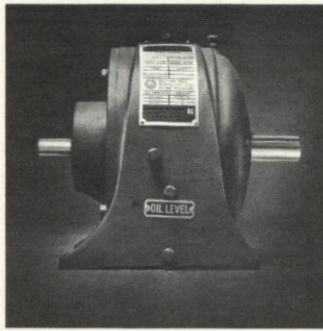
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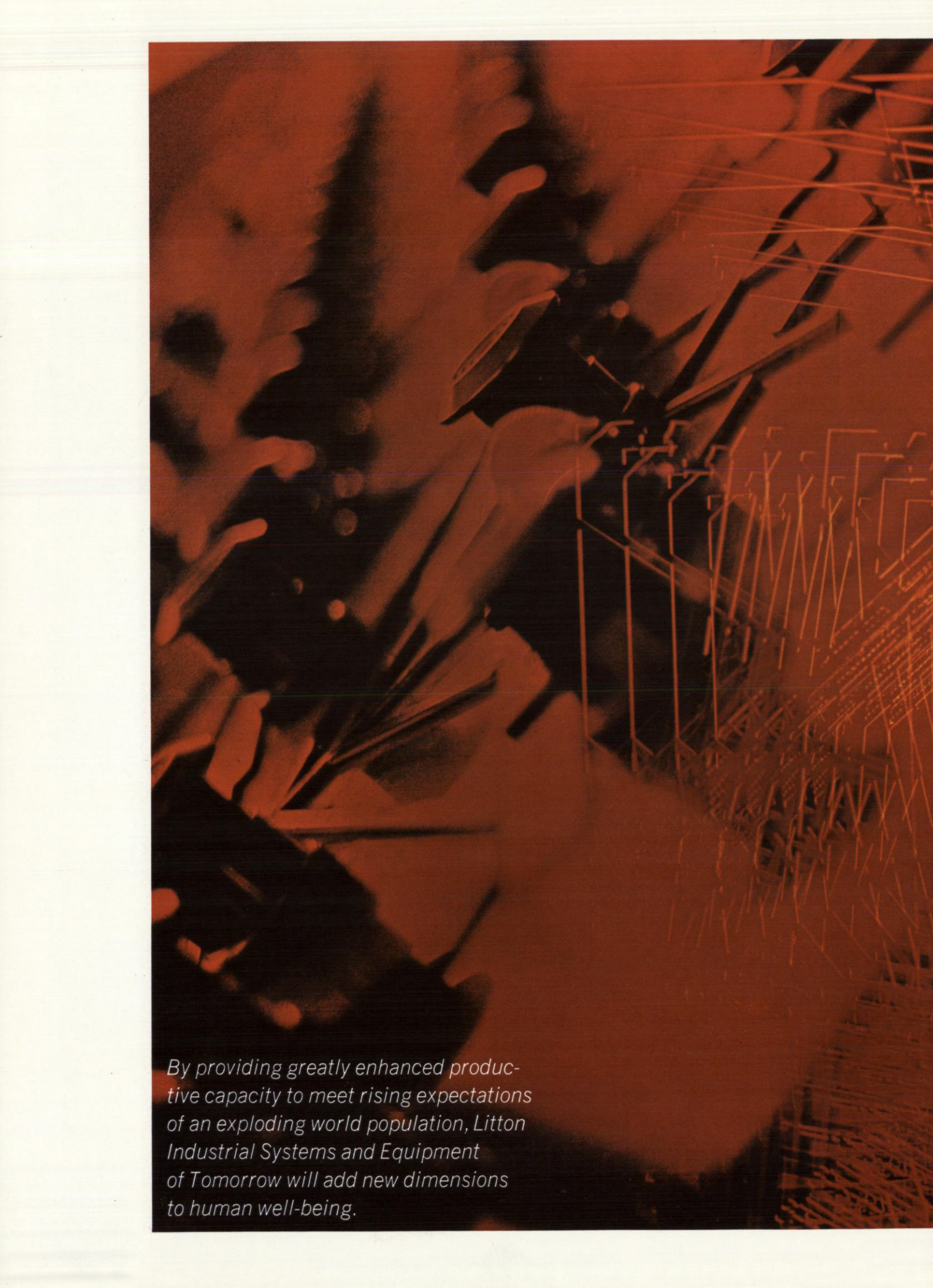


Rust Engineering division received 328 new contracts in 1968, many of which involve multimillion-dollar facilities. Rust provides clients with complete service, including site selection, and full-scale engineering design and construction of entire manufacturing complexes. Recent projects nearing completion are a \$75 million steel facility at Canton, Ohio, and a \$55 million paper mill at Orange, Texas . . . During the year the company entered the \$6 billion worldwide machine tool industry when Landis Tool Co. joined Litton. A recognized leader in supplying precision machine tools to industry, Landis in 1968 marketed the most advanced numerically controlled grinder for general purpose use. Simplicity of programming makes this machine particularly effective in performing short-run production jobs.

The concentric shaft speed reducer is used throughout industry for a multitude of applications. Hewitt-Robins' concentric shaft speed reducers range from 1/2 to more than 500 HP. The division builds reducers to meet any space or mounting requirement.

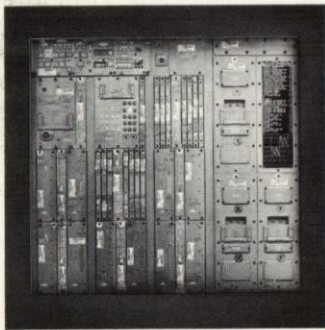
Hewitt-Robins division produces worm-gear reducers which transmit power at right angles. These drives are used for many commercial and industrial functions, including lifting the mammoth gates of a dam.

Litton's numerically controlled machine tools expedite production by automating the grinding of crankpins in a single grinding cycle. Crankpin grinding is the most critical machining operation on an automotive crankshaft. Landis Tool division utilizes automatic sizing and machine control in building this crankpin grinder which loads, positions, holds, grinds, indexes and unloads the shaft with no machine manipulation by the operator. Landis crankpin grinders are used worldwide by manufacturers of cars, trucks and commercial engines. These grinders often are arrayed in multiple and interconnected with automatic loaders, inspection stations and conveyors. With a minimum of attention, the machines grind uniform crankpins to precise tolerances.

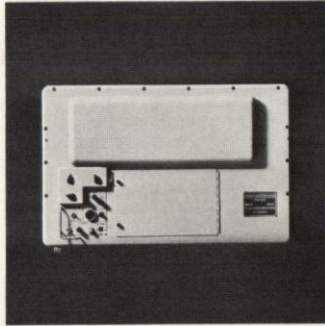
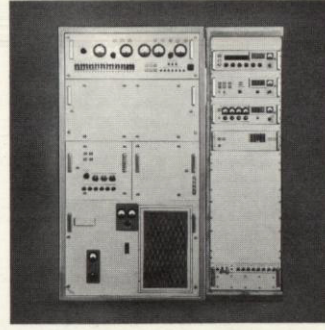
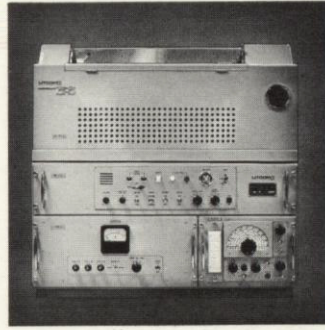


By providing greatly enhanced productive capacity to meet rising expectations of an exploding world population, Litton Industrial Systems and Equipment of Tomorrow will add new dimensions to human well-being.

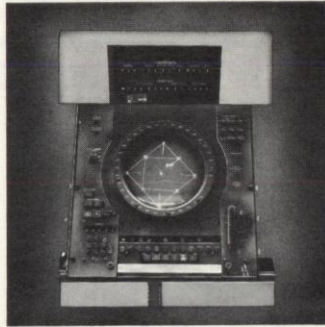
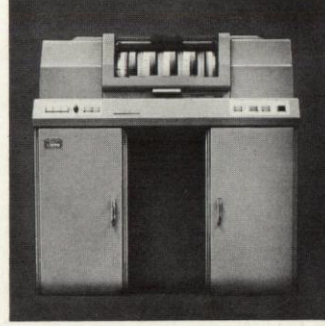




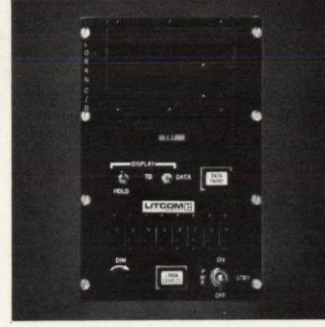
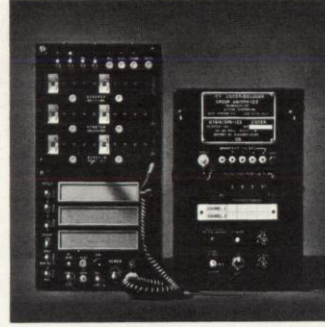
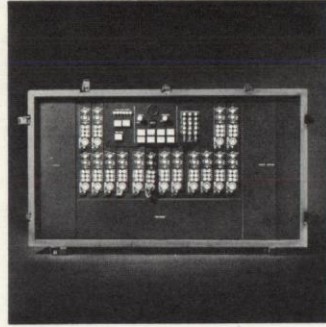
a



b



c



Data Systems division's L-304F general purpose microelectronic computer has military applications including ship, ground and air command and control. It can be reprogrammed to meet varying requirements without equipment changes.

a

A two-way airborne data link, ASW-27 makes extensive use of microelectronic integrated circuits. It provides both pilot and ground-station personnel with digital data, including navigational information and fuel and weaponry status.

Among the family of Litcom communications products is a line of facsimile systems produced by Litcom division. Weatherfax® LD-40, a facsimile recorder used by meteorologists and airlines, reproduces high-quality weather maps sent by wire or radio.

Litcom division's high frequency 10 kw radio transmitter operates as part of a worldwide communications network. It can transmit four separate channels simultaneously and be tuned automatically from a remote site.

BTE (Battery-Terminal Equipment) is a microelectronic data processor built by Data Systems division for the U.S. Army's surface-to-air missile batteries. Weighing only 128 pounds, BTE replaces 5300 pounds of equipment.

b

DMES (Digital Message Entry System) allows forward military observers to send instantaneous detailed combat information to command posts. At its heart is DMED, a device that transmits prearranged, coded messages over voice communication links.

Litcom's Pressfax® is a facsimile system that permits newspapers to publish editions simultaneously in widely separated locations. Within 10 minutes, over phone lines or by microwave, it can transmit full-sized page proofs.

Policefax is a high-speed facsimile network that transmits fingerprints and other graphic material from precincts to headquarters. It reduces suspect identification time from 12 hours to 30 minutes.

To be used aboard Royal Canadian Navy destroyers, CCS-280 is the world's first microelectronic shipboard command and control system. It collates, analyzes and displays data in split seconds, enabling commanders to meet fast-changing tactical situations.

c

The DTAS (Digital Transmission and Switching) system, based on using computer processing and coded digital data rather than spoken words, will permit forward observers to send tactical field messages with greatly increased speed and reliability.

The GPA-122 microelectronic coder-decoder increases effectiveness of radar operators controlling U.S. Air Force tactical aircraft. Produced by Data Systems division, it identifies friendly craft and provides visual and audible warning of any emergency.

The Litcom Loran C/D radio navigation system provides precise positions 80 per cent faster than conventional systems. It is half the size and weight of competing units.

The Litton Industries, Inc., 1968 annual report,
Financial Statements for the fiscal year ended
July 31, 1968.

