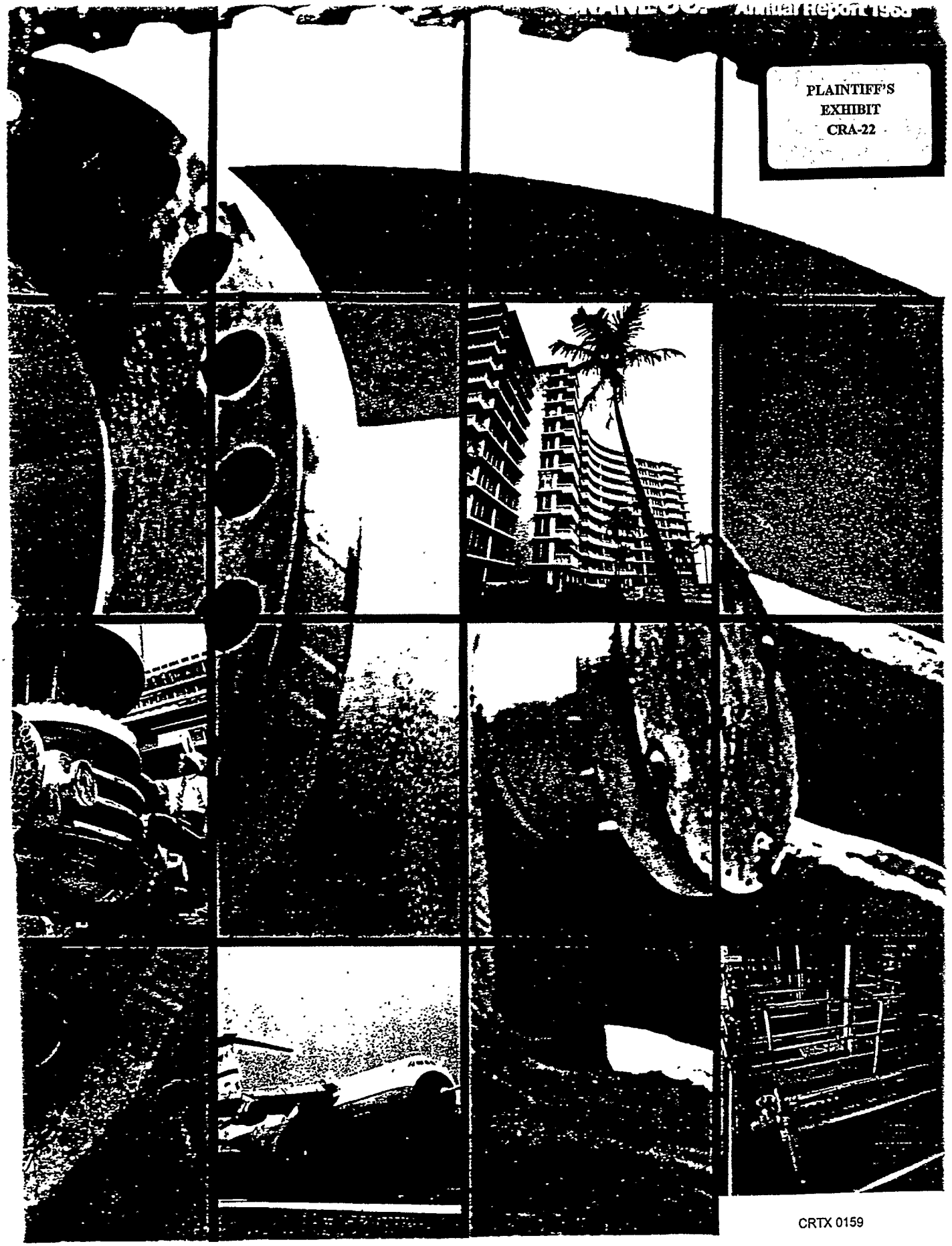
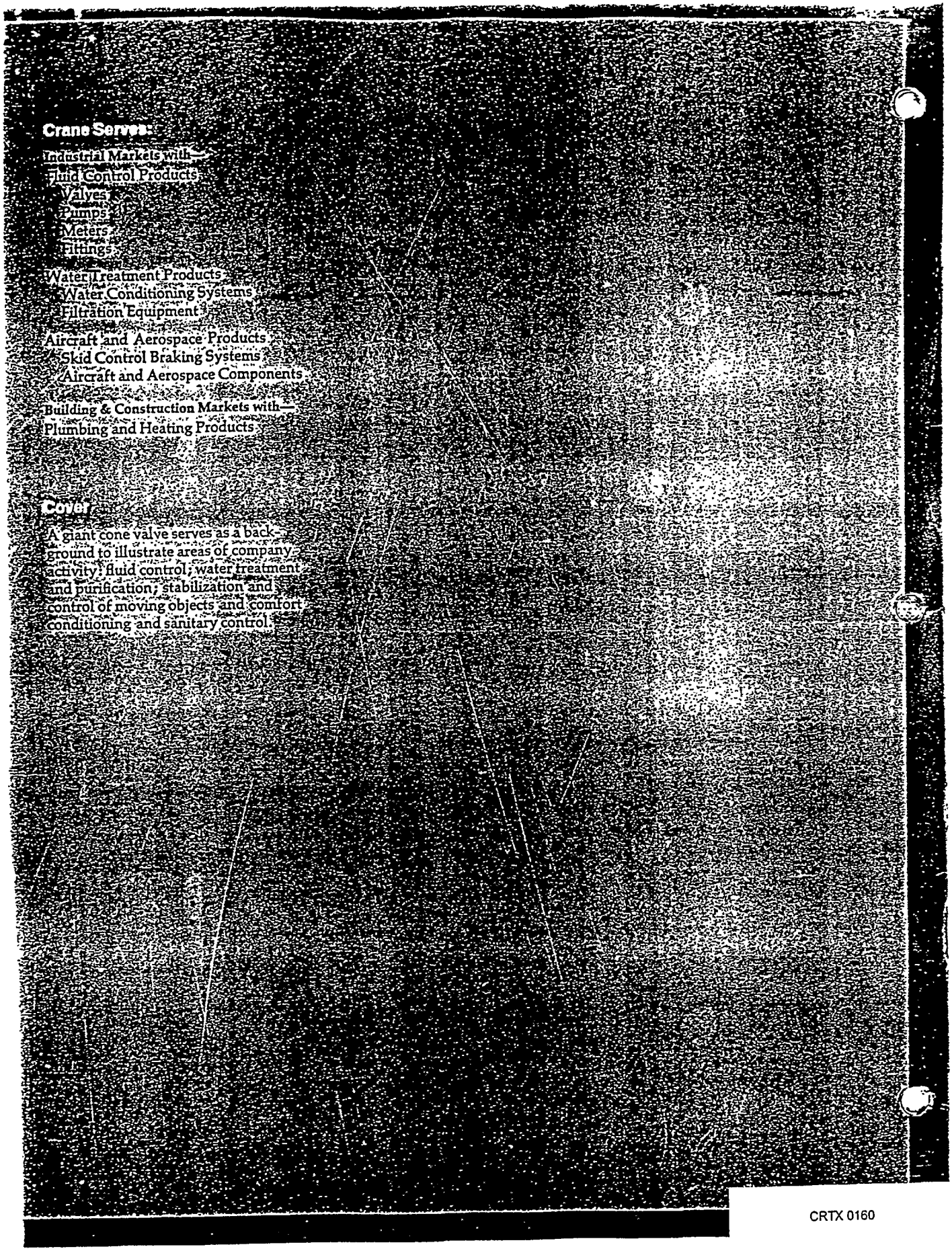
PLAINTIFF'S
EXHIBIT
CRA-22





Crane Serves:

Industrial Markets with—

- Fluid Control Products
  - Valves
  - Pumps
  - Meters
  - Fittings
- Water Treatment Products
  - Water Conditioning Systems
  - Filtration Equipment
- Aircraft and Aerospace Products
  - Skid Control Braking Systems
  - Aircraft and Aerospace Components

Building & Construction Markets with—

- Plumbing and Heating Products

Cover

A giant cone valve serves as a background to illustrate areas of company activity: fluid control; water treatment and purification; stabilization and control of moving objects and comfort conditioning and sanitary control.

CRTX 0160

Crane Co. Annual Report 1968

Contents

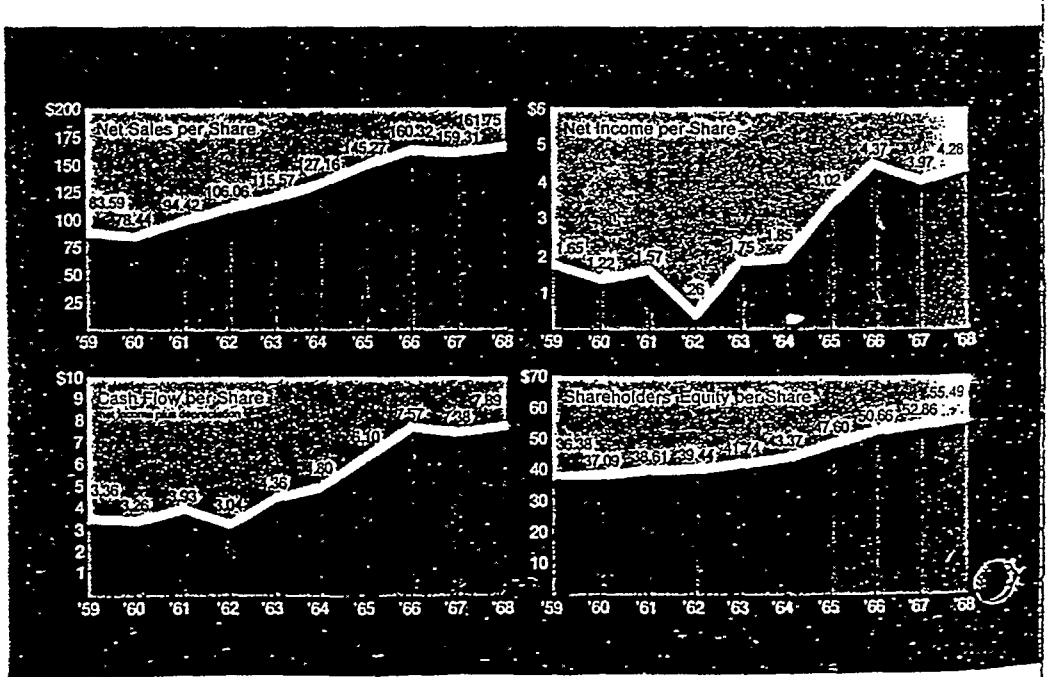
Annual Meeting

CRTX 0161

	1968	1967
Sales	$409,549,000	$403,361,000
Income before Net Extraordinary Credit	8,495,000	10,228,000
Net Income	10,998,000	10,228,000
Cash Dividends	4,136,000	4,160,000
Net Working Capital	122,103,000	118,839,000
Total Assets	295,315,000	246,672,000
Common Shareholders' Equity	140,514,000	133,831,000
Common Shares Outstanding at Year End	2,532,012	2,531,809*
Ratios at Year End:		
Net Income to Sales	2.7%	2.5%
Common Shareholders' Net Income to Average Equity	7.9%	7.7%
Current Ratio	4.1	4.0
Per Common Share:		
Income before Net Extraordinary Credit	$ 3.29	$ 3.97*
Net Extraordinary Credit	.99	—
Net Income	4.28†	3.97*
Depreciation	3.61	3.41*
Cash Flow from Operations	7.89	7.38*
Cash Dividends	1.60	1.60
Common Shareholders' Equity	55.49	52.86*

*Adjusted for 2% Stock Dividend in December 1968.

†Assuming full conversion of 5% Subordinated Debentures, Net Income per Common Share would amount to $4.03.



*In dollars per common share outstanding at end of year.

To our shareholders:

Crane Co. last year made substantial progress and moved in new directions to provide for future growth.

Net sales of Crane Co. in 1968 totaled $409,549,000, compared with $403,361,000 for 1967. Net income was $10,998,000, equal to $4.28 per common share including a net extraordinary credit of 99 cents per share, compared with $10,228,000, equal to $3.97 per share for 1967. The income achieved in 1968 was our second highest in the past decade.

Cash flow (net income plus depreciation) amounted to $20 million, or $7.89 per share, compared with $18.9 million, or $7.38 per share in 1967. Net working capital at December 31, 1968 was $122,103,000, compared with $118,839,000 at the end of the prior year. During 1968, a 2 per cent stock dividend was paid and the cash dividend of $1.60 per share was maintained. All per share statistics have been adjusted to reflect this stock dividend.

Operations outside of North America contributed net sales of $54,560,000, compared with $61,525,000 in 1967, and net income of $978,000, compared with $3,304,000 for the prior year. The decline occurred principally in the United Kingdom and Western Europe and resulted, in part, from the devaluation of the British pound and the general strike in France. Operations outside of North America represented 16.2 per cent of shareholders' equity, compared with 16.6 per cent at the end of 1967.

The net extraordinary credit of $2,503,000, or 99 cents per common share, represented an after tax gain of $5,027,000 on the sale of securities less an after tax loss of $2,524,000 on start up costs of new plants and the disposal costs sustained in closing old plants.

As previously reported, Crane accelerated its program to update and to modernize its manufacturing facilities. By year end new plants were in operation in Washington, Iowa; Brantford, Ontario; Armentières, France; and Herne, Germany. As part of this program, certain older plants were closed and less profitable product lines were discontinued.

To meet a growing demand for vitreous china plumbing products in the central Canadian market, construction on a new plant was started at Trenton, Ontario, in September, 1968. Operations here are planned for the second quarter of this year. Late in 1968, Crane entered into an agreement for the construction and lease of a new $4 million plumbing products plant in Nevada, Missouri, a project financed through the sale of municipal industrial revenue bonds. The plant is expected to be completed by late 1969. Crane is obligated, under long-term leases expiring between 1972 and 2008, for maximum annual rentals aggregating $3,078,000.

During the year, Crane and Ordway Co., of St. Paul, Minnesota, a wholesale distributor of building and industrial products, was purchased. In June, through a tender offer, Crane increased its investment in the Huttig Sash & Door Company of St. Louis, Missouri, to approximately 52 per cent. Equity in Huttig income before taxes amounted to $892,000 and after taxes amounted to $474,000.

To provide closer coordination of domestic manufacturing, marketing, distribution and administration, all U.S. operations except the Hydro-Aire Division were consolidated under a vice president and general manager. As a result, some sales functions have been realigned to more closely parallel the markets served. Further, product engineering has been moved from central Research and Development to plant levels to provide for more rapid response to customer needs. We believe this domestic unification will enable Crane to take full advantage of growth opportunities.

In early February of this year, the managements of Crane and CF&I Steel Corporation announced that they were exploring the possibility of a combination of the two companies, and that Crane had purchased shares of CF&I common stock. Shareholders will be kept informed as the situation develops.

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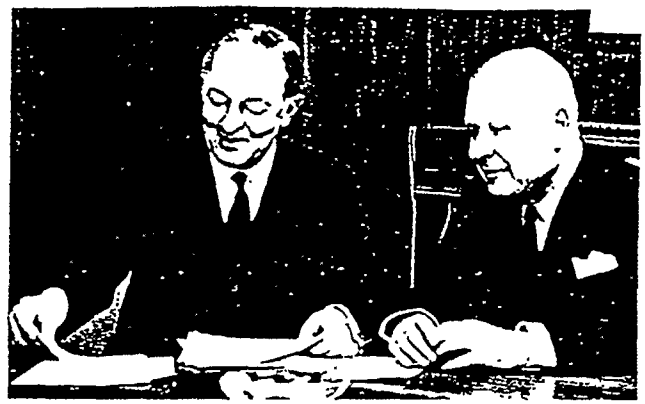
During 1968, Crane made several major investments to put its financial resources to use.

After selling the 730,312 preferred shares of American Standard, Inc., which the Company received from this competitor when the merger with Westinghouse Air Brake Company was consummated, Crane purchased 1,000,000 shares of Southern Pacific Company. In addition, 525,000 shares of Alcan Aluminium Limited were purchased at approximately the same time. It is felt that both of these companies represent attractive investment opportunities. At the end of the year, Crane acquired an interest in Hudson County National Bank of New Jersey. Crane presently owns approximately 20 per cent of the outstanding shares.

The capital spending and investment programs had a favorable effect on the amount of income taxes paid. The 1968 effective income tax rate was approximately 36 per cent, compared with 41 per cent for 1967, principally because investment credits and domestic dividends of $906,000 and $1,438,000, respectively, exceeded comparable amounts for 1967 by $656,000 and $1,152,000.

Crane and its subsidiaries have formal trusteed and other retirement plans for a majority of employees, and have followed the practice of charging against income the payments made under pension plans. In the case of formal trusteed plans, the payments represent normal cost and interest on unfunded prior service liability. Investment gains, which have been substantial, are used to reduce payments to the trustee under an averaging method. Pension costs charged against operations in 1968 were $1,294,000 compared with $2,303,000 in 1967. The reduction in 1968 pension costs was attributable to substantially higher average investment gains.

As reported last year, Crane was indicted in 1966 by a federal grand jury charging certain violations of the Sherman Anti-Trust Act. In order to avoid the time, effort, and expense of continuing litigation, we entered a plea of *nolo contendere* to both actions and we are no longer a party to these suits. Still pending, however, are various private civil suits which



D.C. Fabiani, President and T.M. Evans, Chairman

have also been filed based upon the same allegations. Crane is defending all of these remaining actions, and continues to be advised by counsel that the final decision should not materially affect the Company's financial position and earnings.

As you have been previously informed, Crane was unable to prevent the merger of Westinghouse Air Brake Company into American Standard, Inc. As a result of the merger, American Standard and certain stockholders have commenced suit against Crane under the so-called "insider rules" to recover any profits made by the Company on the final sale of our American Standard stock. Our counsel have advised us that they believe these suits to be without merit, and Crane shall defend itself vigorously.

On behalf of the Board of Directors, we want to thank our employees, as well as our stockholders and customers, for their continued help and support during 1968.

Respectfully submitted,

D. C. Fabiani
President

T. M. Evans
Chairman

February 24, 1969

	1968	1967
Net Sales	$409,548,665	$403,360,619
Operating Costs and Expenses:		
Cost of sales	338,839,859	329,859,812
Selling, general and administrative	55,451,143	54,335,527
	394,291,002	384,195,339
Operating Profit	15,257,663	19,165,280
Other Income (Deductions):		
Interest—net	(4,675,658)	(2,314,957)
Gain on disposal of capital assets—net	481,312	734,493
Dividend income on investments	1,514,090	296,896
Miscellaneous	746,322	(554,575)
	(1,933,934)	(1,838,143)
Income Before Income Taxes	13,323,729	17,327,137
Provision for Income Taxes	4,829,222	7,098,887
Income Before Net Extraordinary Credit	8,494,507	10,228,250
Net Extraordinary Credit	2,503,047	—
Net Income	$ 10,997,554	$ 10,228,250
Per common share:		
Income before net extraordinary credit	$3.29	$3.97
Net Income	4.28	3.97

	1968	1967
Balance at Beginning of Year	$ 68,674,272	$ 63,098,488
Net Income	10,997,554	10,228,250
	79,671,826	73,326,738
Dividends:		
Preferred Shares—$3.75 per share	165,129	178,564
Common Shares:		
Cash—$1.60 per share	3,970,462	3,981,809
Stock—Market value of 49,627 shares issued in December 1968 as 2% stock dividend	2,767,203	—
Excess of Cost Over Par Value of Reacquired Shares—Net:		
8,530 preferred (3,660 in 1967) and 16,500 common reacquired, less 16,559 issued under stock options (20,600 and 20,614, respectively, in 1967)	188,296	492,093
	7,091,090	4,652,466
Balance at End of Year	$ 72,580,736	$ 68,674,272

See comments in letter to shareholders.

CRTX 0165

ASSETS	1968	1967
Current Assets:		
Cash	$ 13,959,603	$ 18,435,599
Marketable securities, at cost which approximates market, and delayed delivery contracts in 1967	4,767,815	9,954,383
Accounts receivable, less allowances of $1,220,755 in 1968 and $1,248,641 in 1967	63,691,441	57,595,402
Inventories, at lower of cost or market (after deducting reserves of $22,373,877 in 1968 and $22,314,609 in 1967 to state the principal inventories in the U.S. on a LIFO basis):		
Finished goods	41,492,762	30,803,948
Work in process	27,034,313	27,774,423
Raw materials and supplies	9,848,331	12,971,735
	78,375,406	71,550,106
Prepaid expenses	1,033,785	1,504,729
Total Current Assets	161,828,050	159,040,219
Investments and Other Assets:		
Investments at cost (see details on page 8)	56,808,643	17,423,820
Investment in Huttig Sash & Door Company at cost plus equity in undistributed net income in 1968	6,626,430	2,012,275
Other assets	2,540,884	2,383,480
	65,975,957	21,819,575
Property, Plant and Equipment at Cost:		
Land	4,720,096	4,814,288
Buildings and improvements	59,489,569	60,522,962
Machinery and equipment	131,659,823	126,462,458
	195,869,488	191,799,708
Less accumulated depreciation	128,358,391	125,987,012
	67,511,097	65,812,696
	$295,315,104	$246,672,490

LIABILITIES AND SHAREHOLDERS' EQUITY	1968	1967
Current Liabilities:		
Current maturities of long-term debt	$ 1,129,400	$ 360,811
Loans payable by foreign subsidiaries	2,465,823	3,140,450
Accounts payable	18,543,707	16,323,852
Accrued payrolls, taxes and other liabilities	12,735,263	16,099,851
U.S. and foreign taxes on income	4,851,025	4,276,397
Total Current Liabilities	39,725,218	40,201,361
Long-Term Debt (see details on page 8)	106,458,484	62,035,875
Minority Interest in Foreign Subsidiaries	1,764,777	3,170,152
Deferred Credit from Acquisitions	763,072	491,690
Shareholders' Equity:		
Preference Stock of Glenfield & Kennedy Holdings Limited, 5½%	2,400,000	2,400,000
Cumulative preferred shares, 3¾% par value $100 (redeemable at the option of the Company and subject to sinking fund requirements): Authorized—81,056 shares in 1968 (84,656 in 1967); outstanding—36,896 shares in 1968 and 45,426 shares in 1967 (after deducting 44,160 shares in treasury in 1968 and 39,230 in 1967)	3,689,600	4,542,600
Serial preferred shares, par value $5: Authorized—600,000 shares in 1968 and 1967	—	—
Common Shareholders' Equity:		
Common shares, par value $25: Authorized—5,000,000 shares; outstanding—2,532,012 shares in 1968 and 2,482,166 shares in 1967 (after deducting 153,090 shares in treasury in 1968 and 147,330 shares in 1967)	63,300,300	62,054,150
Capital surplus (see details on page 9)	4,632,917	3,102,390
Earned surplus—$16,671,310 in 1968 ($11,422,115 in 1967) is not restricted as to payment of common dividends	72,580,736	68,674,272
Total Common Shareholders' Equity	140,513,953	133,830,812
Total Shareholders' Equity	146,603,553	140,773,412
	$295,315,104	$246,672,490

See comments in letter to shareholders.

CRTX 0167

Details of Investments at Cost at December 31

	1968	1967
Southern Pacific Company, 1,000,000 shares of common stock	$ 41,779,984	$ —
Alcan Aluminium Limited, 525,000 shares of common stock	13,571,161	—
Hudson County National Bank, 5,584 shares of common stock	223,360	—
Westinghouse Air Brake Company	—	16,607,544
Other	1,234,138	816,276
	$ 56,808,643	$ 17,423,820

Details of Long-Term Debt at December 31

	1968	1967
Crane Co.:		
Sinking fund debentures due June 1992, redeemable through a mandatory sinking fund commencing June 1973 at $2,000,000 annually, plus interest at 6½%. The indenture imposes certain limitations relating to additional borrowings, declaration of dividends and acquisition of capital stock	$ 40,000,000	$ 40,000,000
Sinking fund subordinated debentures due April 1993, redeemable through a mandatory sinking fund commencing April 1974 at the lesser of 5% of the then outstanding principal amount or $1,000,000, plus interest at 7%	20,204,400	—
Convertible subordinated debentures due April 1993, redeemable at the option of the holder, on or before maturity by conversion into Crane Co. common shares at $50 per share (403,992 common shares reserved), plus interest at 5%	20,199,600	—
Serial promissory notes due March 1973 and November 1977, payable annually, plus interest at 6% and 6½%	3,372,499	1,431,562
Miscellaneous	400,000	400,000
	84,176,499	41,831,562
Crane Canada Limited sinking fund debentures (secured by a general claim on property and assets), due May 1985, redeemable through a mandatory sinking fund payable at $407,000 annually, plus interest at 5¾%	8,547,000	8,954,000
Crane Ltd. (England) term bank loans due:		
August 1972, interest currently at 8¼% (8¾% in 1967)	2,473,522	2,464,464
March 1973, interest currently at 8½% (8½% in 1967)—replaced term loan due February 1969	4,320,000	4,320,000
Glenfield & Kennedy Holdings Limited unsecured loan stock due 1982, interest at 5¾%	3,748,860	3,760,860
Miscellaneous	3,192,603	704,989
	22,281,985	20,204,313
	$106,458,484	$ 62,035,875

CRTX 0168

Consolidated Statement of Capital Surplus for Years Ended December 31

	1968	1967
Balance at Beginning of Year	$ 3,102,390	$ 3,102,390
Excess of market value over par value of 49,627 common shares issued in December 1968 as 2% stock dividend	1,526,527	—
Excess of principal amount of subordinated debentures over par value of 160 common shares issued on conversion	4,000	—
Balance at End of Year	$ 4,632,917	$ 3,102,390

Consolidated Statement of Changes in Net Working Capital for Years Ended December 31

Source of Net Working Capital	1968	1967
Net income	$10,997,554	$10,228,250
Depreciation (principally accelerated methods)	9,145,942	8,632,062
Cash flow from operations	20,143,496	18,860,312
Disposals of property, plant and equipment	4,173,033	1,277,731
Long-term debt—net (see details on page 8)	44,422,609	23,731,318
Other	—	1,332,001
	$68,739,138	$45,201,362
Use of Net Working Capital		
Acquisition of new business facilities	$ 1,182,469	$ 131,278
Additions to existing plant and equipment	13,834,907	13,536,581
Investments and other assets	44,156,382	14,720,752
Reacquisition of shares (less options exercised)	1,031,822	857,743
Cash dividends paid	4,135,591	4,160,373
Other	1,133,993	—
Increase in net working capital	3,263,974	11,794,635
	$68,739,138	$45,201,362

Stock Option Plans at December 31, 1968

Plan Adopted in 1951	Number of Shares	Price per Share
Balance outstanding January 1, 1968	15,170	$17.50-$29.07
Options exercised (4,980 shares issued from treasury)	(8,620)	17.50- 29.07
Adjustment for 2% Stock Dividend in December 1968	129	
Balance outstanding December 31, 1968	6,679	18.51- 26.75

Of the balance outstanding at December 31, 1968, options for 6,190 shares were exercisable. No additional options are to be granted under this plan.

Plan Adopted in 1965		
Balance outstanding January 1, 1968	20,916	$24.58-$53.75
Options granted	20,300	44.75- 57.25
Options cancelled	(220)	29.58
Options exercised (5,760 shares issued from treasury)	(7,939)	24.58- 27.08
Adjustment for 2% Stock Dividend in December 1968	681	
Balance outstanding December 31, 1968	33,738	24.10- 56.13

At December 31, 1968, options for 5,751 shares were exercisable and options as to 72,599 shares could be granted (compared with 93,085 at December 31, 1967).

CRTX 0169

Ten-Year Consolidated Financial Summary

	Net Sales	Income Before Income Taxes	Net Income	Net Working Capital	Depreciation	Preferred Shares	Common Shareholders' Equity		
							Total	Per Share†	Net Income Per Share†
1959	$310,172,639	$13,585,161	$ 6,517,746	$ 84,626,580	$6,369,811	$10,941,523	$135,003,440	$36.38	$1.65
1960	285,618,712	7,216,250	4,824,463	89,560,647	7,457,676	10,459,300	135,064,791	37.09	1.22
1961	319,556,202	9,121,253	5,675,770	99,371,959	8,000,070	10,009,300	130,649,983	38.61	1.57
1962	333,766,863	6,926,092	1,176,184	88,226,079	8,383,196	9,109,300	124,105,295	39.44	.26
1963	337,365,571	10,703,634	5,447,378	92,081,379	7,606,845	8,441,300	121,833,594	41.74	1.75
1964	357,823,354	10,028,987	5,529,829	96,098,246	8,316,181	8,069,300	122,086,670	43.37	1.85
1965	370,084,039	13,836,113	7,991,351	105,843,822	7,846,942	6,318,600	121,256,497	47.60	3.02
1966	405,906,737	20,284,865	11,251,085	107,044,223	8,124,427	4,908,600	128,254,678	50.66	4.37
1967	403,360,619	17,327,137	10,228,250	118,838,858	8,632,062	4,542,600	133,830,812	52.86	3.97
1968	409,548,665	13,323,729	10,997,554	122,102,832	9,145,942	3,689,600	140,513,953	55.49	4.28

†Adjusted for 2% stock dividend in December 1968.

Report of Independent Accountants

To the Shareholders of Crane Co.:

We have examined the consolidated balance sheet of Crane Co. and subsidiaries as of December 31, 1968, and the related consolidated statements of income, earned surplus, capital surplus and changes in net working 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 auditing procedures as we considered necessary in the circumstances. The financial statements for the preceding year were examined by other independent accountants.

In our opinion, the accompanying balance sheet and statements of income, earned surplus, capital surplus and changes in net working capital present fairly the consolidated financial position of Crane Co. and subsidiaries at December 31, 1968, the consolidated results of their operations, changes in shareholders' equity and changes in their net working capital for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

New York, N.Y.
January 28, 1969

Ernst + Ernst

CRTX 0170


CRTX 0171

Fluid Control

Crane continues to concentrate its effort in fluid control, an area that represents a major growth opportunity as industry handles fluids under increasingly sophisticated circumstances, especially in chemical processing, petroleum refining, pulp and paper, power generation and shipbuilding.

Crane fluid control products—valves, pumps, meters, automatic operators, fittings and related equipment—are used to control, transfer, measure, channel, meter and govern the flow of all types of fluids. In fact, the Company offers the broadest valve line in the world.

In 1968, the Company completed a $10 million valve plant in Washington, Iowa, and began production. This new facility will help meet the demand for iron gate valves, one of the most versatile general-purpose valves used in all industries for handling and controlling steam, water and other noncorrosive fluids.

A new valve plant in Brantford, Ontario also came on stream last year. The addition of this technologically advanced plant enables Crane Canada Limited to increase its flow of quality brass products to Canadian markets.

New valve capacity overseas was also added last year. In Germany, construction of a plant to produce forged steel valves was completed at Herne. In France, a new plant near Armentières is handling production of stainless steel, steel, bronze and iron body valves. In Spain, a plant is almost completed near Madrid for the 1969 production of steel valves used by the petroleum, petrochemical, and shipbuilding industries.

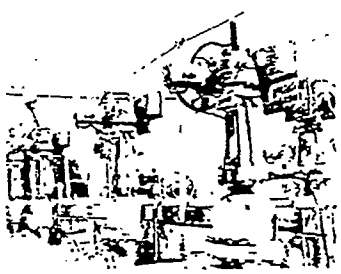
Through an agreement with Gulde Regel-Armaturen KG of Ludwigshafen, the largest maker of control valves and related equipment in West Germany, Crane has been licensed to manufacture and market Gulde control valves and operators in North America and the United Kingdom. These will be produced at Folsom, California and Kilmarnock, Scotland.

During 1968, Flomatics introduced a versatile new line of high-performance control valves. This design, which uses "modular" interchangeable parts, reduces engineering and assembly time, resulting in sophisticated products that are delivered quickly and economically.

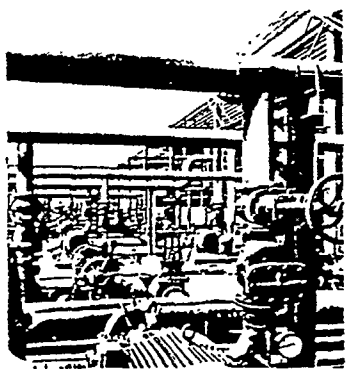
The market for Crane's Deming and *Chem-pump* lines continued to expand, with particular emphasis placed on industrial applications.

During the year, all Deming marketing, engineering and manufacturing operations were brought together at the Salem, Ohio plant, and a separate field sales organization devoted exclusively to pump marketing was established. Since the Deming name is already well established in domestic water systems, the major effort is being directed to increasing industrial business.

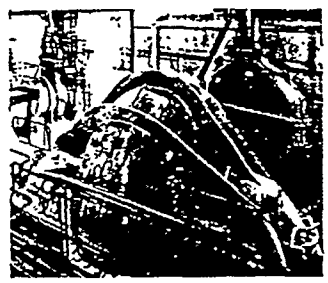
A Deming turbine pump is being used most successfully for overhead irrigation in a continuing research project conducted by Rutgers University. With the world's population growing so rapidly, the expanded use of irrigation to increase the yield of food crops in areas where underground water is present can mean new market opportunities for pumps.



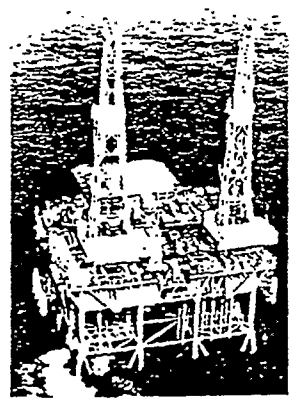
Crane valves are remotely controlled by *Crane Teledyne* operators in this southeastern U.S. refinery complex.



A large continuous casting plant in South Africa installed Crane valves in its water-cooling pump station.



Hydraulically and electrically operated Crane gate valves on a circulating water pump in a nuclear power station, Wales.



Australia's rapidly expanding offshore gas and oil production has created demand for a variety of Crane valves.

During the year, *Chempump* introduced a two-stage regenerative turbine unit. It is most applicable to process industry use, where the leakproof design features of the *Chempump* are gaining wide acceptance.

New, larger water meter sizes were brought out in 1968. Expansion of meter sales volume necessitated moving all production and test facilities from Chicago to the Rogers, Arkansas plant.

With the rapid growth of the offshore petroleum industry, a special group has been established to coordinate and expand Crane's technical and product skills serving this market. While initial activities are being concentrated on valve-pump-oriented systems, the knowledge gained will be valuable in solving future problems in oceanology.

Outside the U.S., Crane Canada Limited showed gains in waterworks and sewage projects after a lower volume the year before. The pulp and paper market also improved. New products introduced included a butterfly valve and a butterfly valve operator as well as a new cast steel gate valve design that received very encouraging acceptance throughout industry.

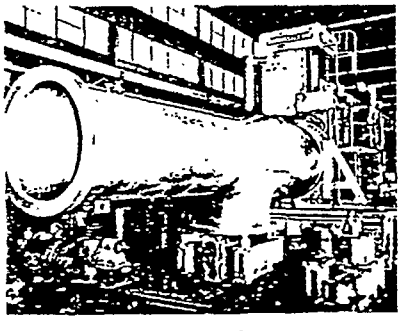
Despite severe competition throughout industrial markets in England, incoming orders showed a gradual improvement for Crane Ltd., particularly during the second half. Deming sewage, sump and AVS pump designs were introduced from the U.S. for manufacture and distribution in United Kingdom markets. Major investments were made in new production facilities. An automated valve-machining center is being installed at Kilmarnock, Scotland. The addition of automatic foundry equipment for molding malleable iron fittings will give the Ipswich plant one of the most modern fitting production operations in the world when completed.

In Europe, Crane Nederland N.V. increased its output of malleable fittings with the addition of a new annealing furnace. A new check valve for small water lines and a ball valve for gas service were brought out in Holland. Crane G.m.b.H. markets in Germany are expanding, following the introduction of a new line of forged steel valves made to ASA and DIN specifications.

Crane S.A. focused development efforts in France on new valves for the oil industry, high-pressure valves for power plants and stainless steel ball valves for the chemical and food processing industries. Spain's depressed economy caused some softening in the chemical and steel industry markets for Crane-FISA, S.A., but valve sales to shipbuilding, refinery and petrochemical plants improved slightly.

Crane-Deming de Mexico S.A. remains a leader in water system pump sales in that country. During 1968, increased emphasis was put on improving the share of municipal and industrial valve markets.

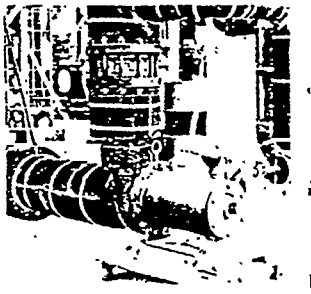
Crane Australia Pty. Limited completed its sixth year of manufacturing operations with record volume. During the year, discoveries were made of vast resources of iron ore, nickel, copper, oil and natural gas. These represent new market opportunities for Crane valves and pumps.



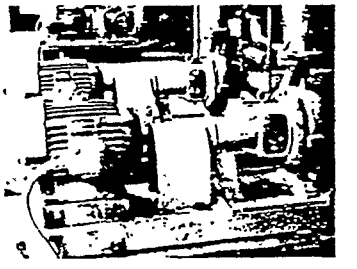
Large Crane reducing tee for a turbine crossover in a nuclear power station receives its final machining at the fabricator's plant.



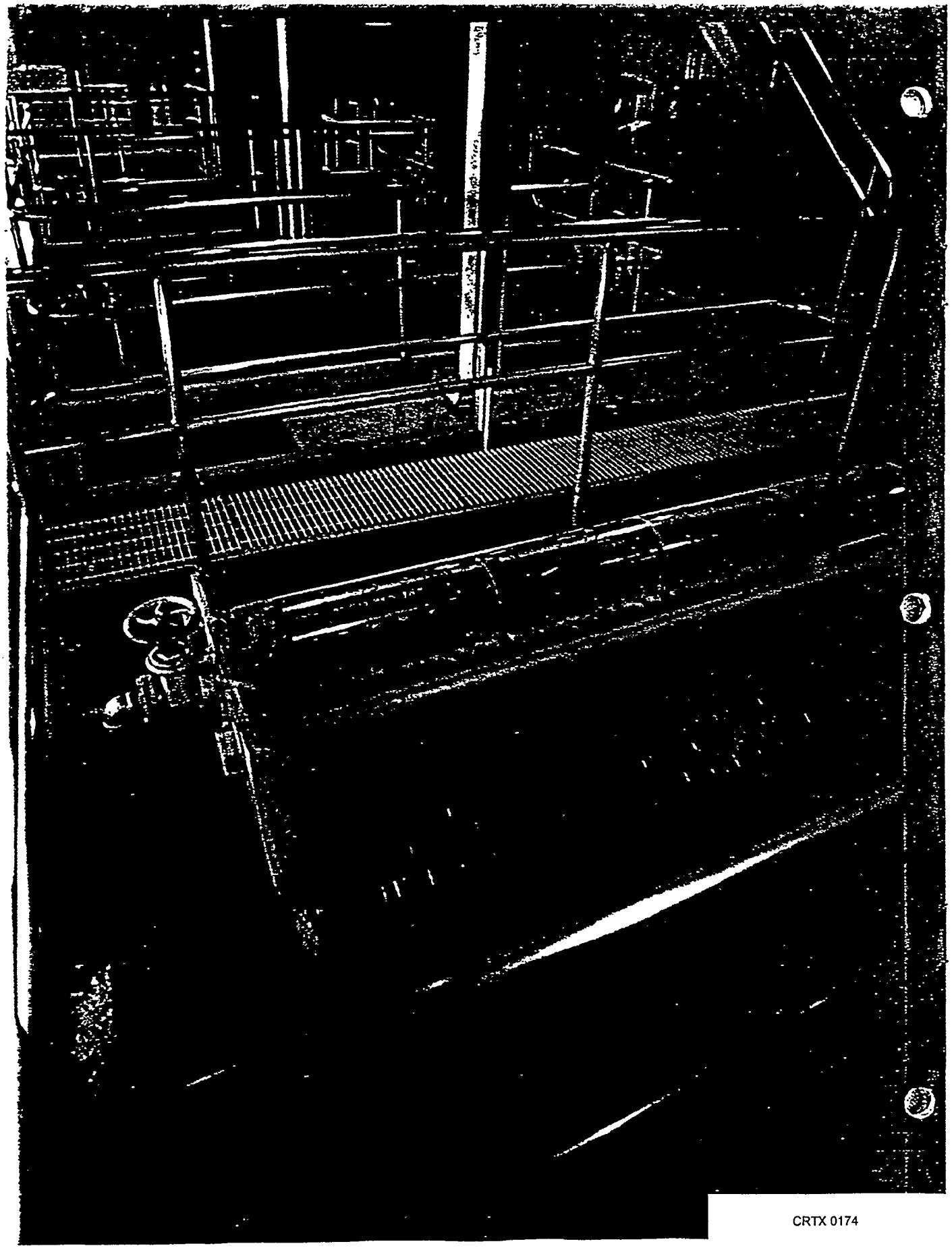
Register trains for water meters in final assembly at the Rogers, Arkansas plant.



Chempump canned-motor pump circulates freon used for processing in a West Coast refinery.



Deming AVS pumps handle electrolyte used in the processing of copper-bearing silicate ore.



CRTX 0174

Water Reclamation and Purification

The world is in danger of running out of usable water. This is true even though the earth is four-fifths covered with oceans. Crane is helping to combat the deterioration of the world's water supply through the capabilities present in its Cochrane and Glenfield & Kennedy operations.

Several important developments were realized last year in the areas of water reclamation and water pollution control—markets which are expanding as a result of the growing concern on the part of industry and government. In order to meet these demands, Crane formed the Municipal and Waste Water Department. It will coordinate research, design, manufacturing and application of water and waste treatment systems, including filters and clarifiers, with Microstrainers, ozonators and auxiliary equipment—valves, pumps, water meters and control panels.

In 1968, major test installations using Crane equipment went into operation. At Chicago's Hanover Park treatment plant, a Microstrainer was installed for tertiary treatment of sewage. Preliminary results showed that this system can meet standards set for the next decade.

A pilot plant has been completed in Philadelphia and tests have begun on the effectiveness of a Microstrainer, in combination with ozonation and chlorination processes, in controlling pollution that occurs when flash storms cause untreated water and sanitary wastes to overflow into waterways.

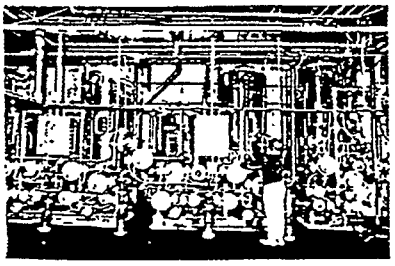
Crane continued to expand its participation in the water conditioning and industrial waste treatment markets with such Cochrane products as hot process softeners, deaerators, demineralizers, ion exchangers, filtration and clarification equipment.

To facilitate penetration into the waste treatment field, Cochrane developed a line of clarifiers which can be used for the removal of suspended solids, softening, clarification and decolorizing of industrial effluents. In many instances, valuable waste products as well as water can be recovered, returned and reused for processing.

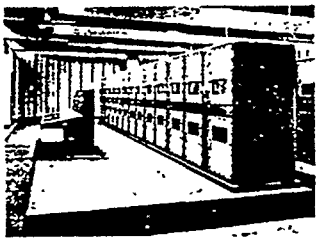
During 1968, patents were issued to Crane covering the Ammonex process for treating condensate in high-pressure steam generation in power stations.

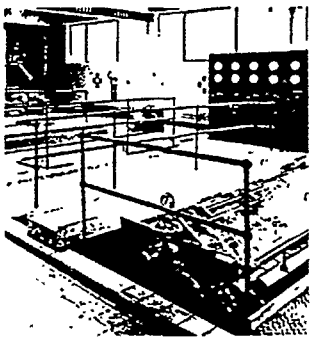
The expansion of Cochrane water conditioning sales in the nuclear market continues to grow with equipment being sold for the removal of radioactive wastes from condensate; water conditioning demineralizers for naval nuclear vessels; make-up water preparation for high temperature gas-cooled nuclear reactors; and pretreatment equipment and demineralizers for boiling water reactors.

Cochrane recently sold the largest deaerator ever offered. A large southern central station nuclear plant will deaerate more than 11,000,000 lbs. of feedwater per hour for steam generation in a pressurized water reactor.

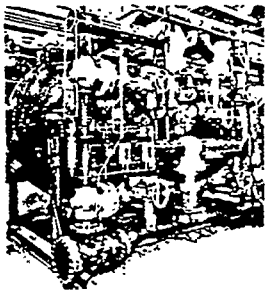


Cochrane demineralizing plant prepares make-up water in steam-generating system of nuclear power station.

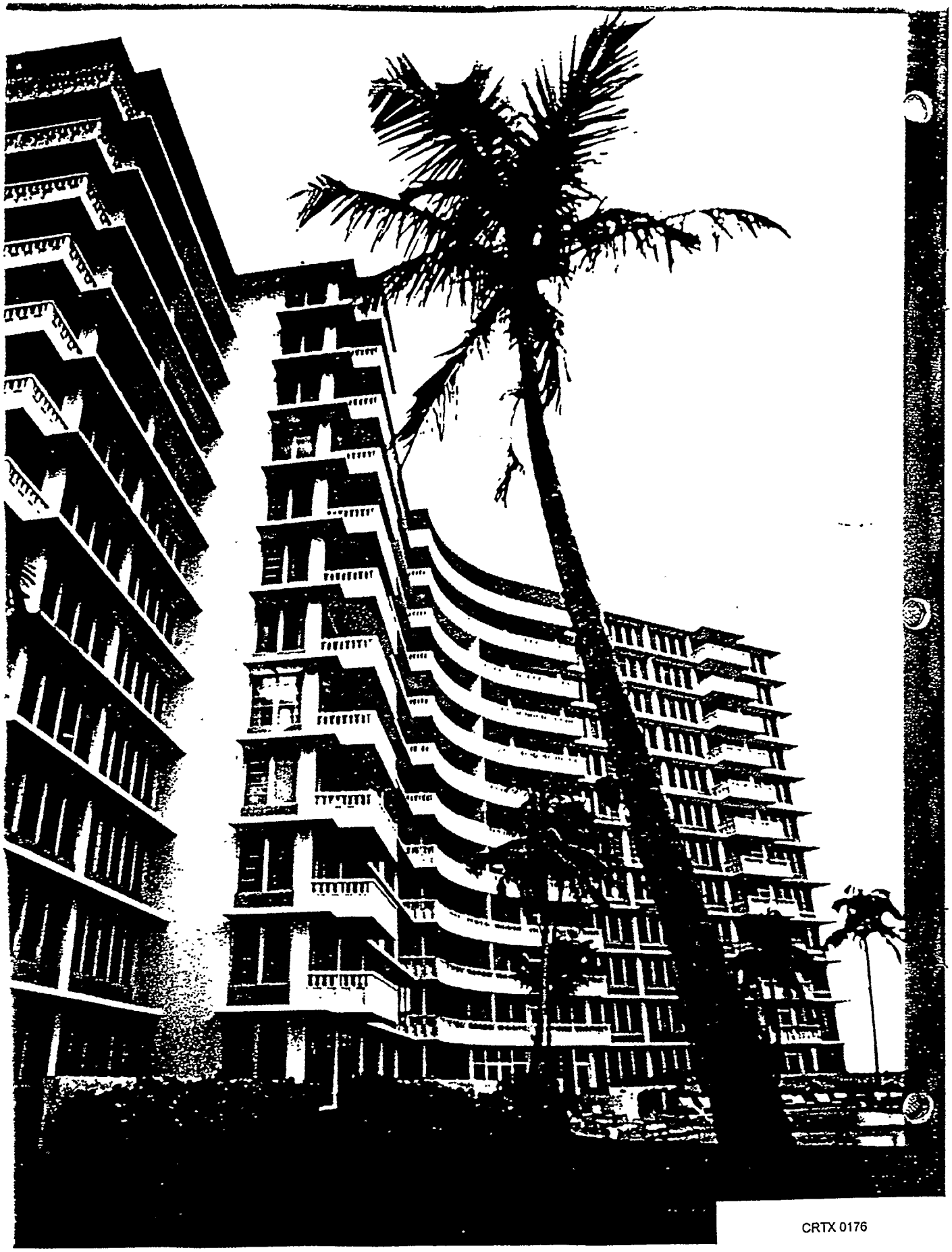




Clear water is being supplied at Loch Turret, Scotland by a process in which Microstrainers (right) remove minute particles. Ozone, produced from oxygen in the air (above), then sterilizes the water. Highly economical, the system can treat up to 27,000,000 gallons per day.



Specially designed spherical demineralizers each handle 2,440 gallons per minute at a new steam-generating plant in Puerto Rico.



CRTX 0176

Last year, more Crane plumbing products were sold than ever before. This continues Crane's traditional position of leadership as a supplier of quality plumbing and heating in the building and construction industry.

As Crane styled its products to create greater consumer acceptance, a new line of lavatories with an exclusive rim-flush feature for easier cleaning was introduced. Other new products were a "color-on-color" decorated line of lavatories and a fiberglass-reinforced tub-wall combination designed to accept a conventional shower door.

Crane Canada Limited introduced an innovation in bathroom furnishings with cultured marble vanity tops called "Marbeline." Molded in one piece from mineral-filled polyester resins, these tops are highly resistant to chipping and staining and impervious to water.

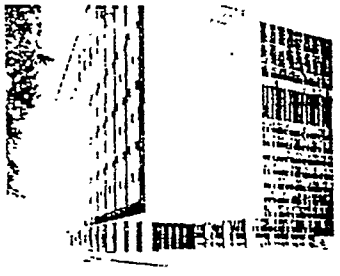
Two new hot water boiler designs introduced late in the year won immediate acceptance from the trade. One line is comprised of oil-fired residential models; the other of gas-fired units for light commercial installations.

In the Netherlands, introduction of a new small residential heating unit at the time when natural gas was receiving wide distribution enabled Crane Nederland N.V. to increase its sales significantly last year.

Crane Canada Limited received a Canadian federal government grant to investigate three proposals for the modernization of bathrooms. The first seeks to develop a compact, inexpensive bathroom where the whole room would be a shower, with arrangements for washbasin and toilet, for use in remote settlements. The second calls for Crane to develop the use of inexpensive materials such as "grass or other vegetable fibers" in bathroom construction. A third proposal calls for new arrangements and new devices to make the use of bathroom facilities safer.

Crane's new modular bathroom, the Unette, has been specified in the Indianapolis "Home Towne I," the initial step in a massive city rehabilitation program. It has also been selected for use on an experimental basis in the rehabilitation of the Lincoln Park section of Chicago.

The Unette received further recognition as a possible solution to the problems involved in achieving high quality in the design and building of low-cost housing. It was selected for use in a model interior design project for a typical low-cost housing three-bedroom apartment sponsored by the New York City Planning Commission, the New York City Housing Authority and Model Cities committees. Pointing up the enormous need for low-cost housing, the multibillion dollar 1968 Federal Housing Bill recently passed by Congress authorized funds for the building of some six million housing units during the next decade.



New Ministry of Justice Building in Montreal uses Crane plumbing fixtures and trim exclusively.

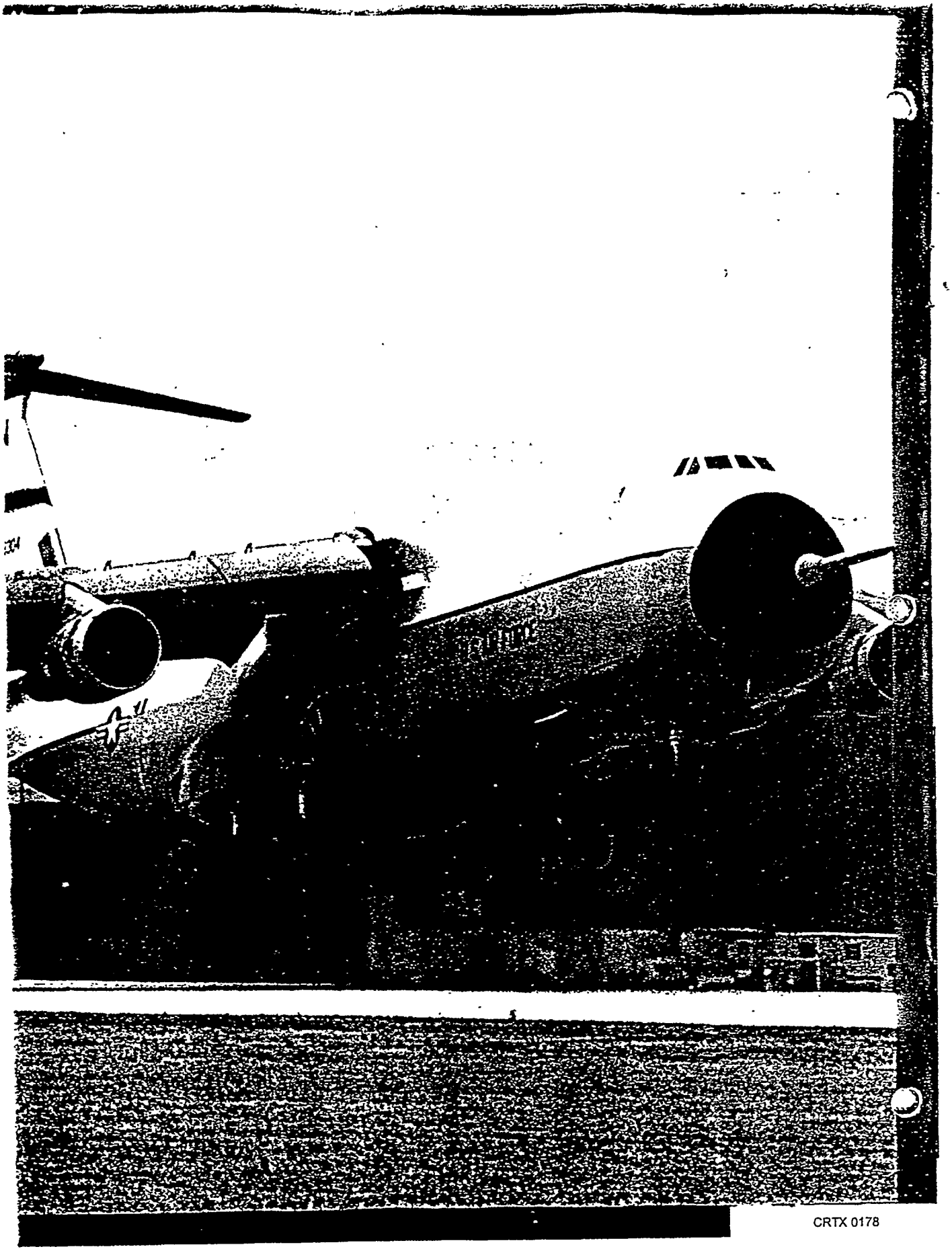


Empress tub, Corona lavatory, ventilated Radcliffe closet and Servitor urinal in a bathroom decorated in early American motif.





Light weight and ease of installation are two of the features that make the Unette modular bathroom ideally suited to either new construction or remodeling in projects like hotels, motels and college dormitories, hospitals and nursing homes.



CRTX 0178

Crane's Hydro-Aire Division continues to be a major supplier of skid control braking systems, as well as hydraulic components, pneumatic subsystems and fuel pumps to aircraft manufacturers. Various configurations of its *Hytrol* system are used on virtually every U.S.-built commercial and military aircraft, as well as several foreign commercial transports, for skid control braking.

Among the most dramatic is the system on the new C-5 Galaxy, the world's largest airplane. The C-5's primary job will be to deploy all types of combat and support forces, often with take-off or landing on relatively unprepared airfields. *Hytrol* systems, tuned to adapt and react according to runway conditions, are part of this landing adaptability.

In addition to *Hytrol* braking, the Boeing 747, the largest airplane ever built for commercial service, will have 14 Hydro-Aire booster and transfer pumps aboard.

A self-priming pumping element, in addition to the normal centrifugal pump, was developed for the 747. The self-priming mechanism, representing a significant advance in Hydro-Aire's technology, can lift fuel many feet up a dry inlet line.

Another engineering breakthrough is the "plug-in" feature of these pumps. The pumping element with electric motor can be removed and replaced on the aircraft in several minutes without draining the fuel tank.

In 1967, Crane licensed Kelsey-Hayes Co. to manufacture and market skid control braking systems for the automotive market. Engineers from Ford and Kelsey-Hayes, working closely with Hydro-Aire, developed the new anti-locking rear brake system which Ford is now offering as an option on the Lincoln Continental Mark III. It has been called "probably one of the most significant new safety features in American cars aimed at preventing accidents."

In the aerospace program, Hydro-Aire's freon- and water-recirculating pumps are being used in the Air Force's Manned Orbital Laboratory (MOL). Three coolant pumps also help provide environmental control aboard the Apollos.

Seeking opportunities for new product development, Crane has purchased some English patents for flight data recorders. Recorders have many technological similarities to *Hytrol* systems and Crane already has considerable experience with such equipment.

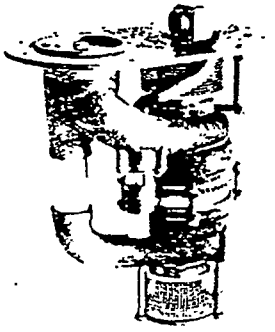
Hydro-Aire is one of the few companies in the U.S. which has capabilities in the areas of electronics, pneumatics, hydraulics and electro-mechanical devices. Combining its manufacturing and technical functions, Crane views this overall in-house capability as helping to point the way to future growth.



Assembly and testing of highly sophisticated products require rigidly controlled clean room conditions.



Test track trials show what happens in a "panic" stop to the same car without (above) and with skid control braking.



Hydro-Aire double-end fuel booster pump in the F4C Phantom gives a positive supply of fuel no matter what the plane's position in flight.

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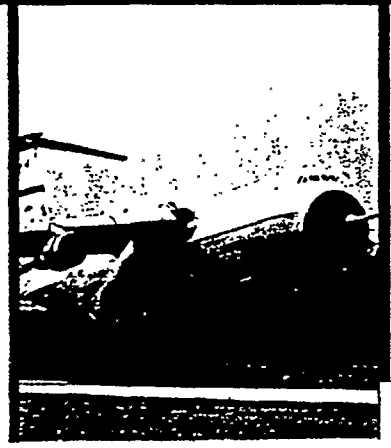
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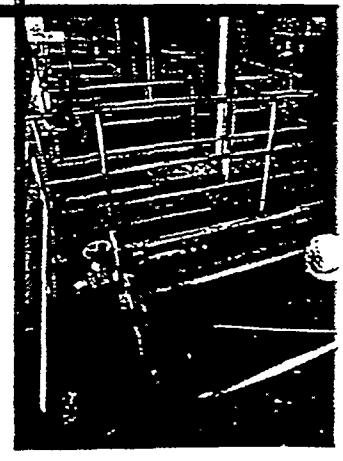
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CRANE









CRTX 0182