BARRINGER RESEARCH

ANNUAL REPORT 1970

Officers:

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DR. D. RICHARD CLEWS, EXECUTIVE VICE PRESIDENT

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ROBERT J. ARMSTRONG, SECRETARY

HERBERT RADDA, TREASURER AND CONTROLLER

Directors:

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DR. ANTHONY R. BARRINGER

DANIEL R. BERESKIN

DR. D. RICHARD CLEWS

SHOLLY KAGAN

THURNE PARKS

ROGER C. WILSON

Transfer Agents:

CHEMICAL BANK, 277 Park Avenue, New York, New York 10017

Auditors:

DELOITTE, HASKINS & SELLS, Toronto-Dominion Centre, Toronto 111, Ontario, Canada

Corporate Counsels:

BLACKWELL, LAW, TREADGOLD & ARMSTRONG, Suite 1501, 110 Younge Street, Toronto 1, Ontario, Canada
SATTERLEE, WARFIELD & STEPHENS, 277 Park Avenue, New York, New York 10017

Corporate Offices:

BARRINGER RESEARCH, 304 Carlingview Drive, Metropolitan Toronto, Rexdale, Ontario, Canada
Phone: (416) 677-2491 — Cable: Baresearch, Toronto
TWX: (610) 492-4244 — Telex: 06-217893

D. R. Clews, A. R. Barringer, D. A. Whiteman in conference

Dear Shareholder:

DURING THE tumultuous economic events of 1970 the Company was able to expand its sales volume, profit, and its activity. Last year's annual report enumerated three policies we have followed—the effect of this planning has been a growth year. The long term corporate goals, to obtain significant equity positions in commercial mineral deposits and to establish proprietary instruments which measure man's environment, have been moved closer. We are very encouraged.

Barringer Research has become an acknowledged entity in exploration. This has been recognized in the two on-going major programs financed by TRW, Inc. and Roan Selection Trust's subsidiary Contifinance, S.A. (RST is an affiliate of American Metals Climax Inc.) to the extent of $1,500,000 in 1970. These programs were conceived, managed and operated by Barringer geoscientists. The Company owns between one-fifth and one-third of any findings in these regional exploration surveys. In both cases, the broad scale and subsequent detailed geological, geophysical, and geochemical surveys have delineated target sites for exploratory drilling. In the Fiji Islands, Barringer Fiji Ltd. has been granted a special prospecting license for 2,500 square miles until March 31, 1972; thereafter approximately 1,000 square miles will be retained until October, 1973.

Initial drilling was carried out at two sites in 1970, one in Fiji and one in Manitoba, and showed the presence of mineralization. However, the grade was insufficient to be of commercial quality. This factor demonstrates the difficulty in obtaining ore, and the speculative nature of all mining exploration ventures. Drilling and continued exploration is planned for both the Fiji and Canadian programs, and the estimated 1971 aggregate funding of $1,500,000 has been allocated by our partners. If the results warrant, total expenditures of $2,000,000 per year are anticipated through 1973. We are particularly encouraged by the continued confidence of our funding partners.

Barringer Geosurveys Ltd. was incorporated in Australia during the year. This affiliated company, in which we anticipate eventual minority holdings of 40% after a planned public offering in the near future, is seeking to participate in mines discovered in Australia with the use of our proprietary suite of geophysical and geochemical instruments. Barringer Research Ltd. also established an office in England to receive contracts for surveys with these same instruments and to sell Barringer instruments and services throughout Europe.

The formula for guiding and managing exploration activities at cost for a share of the return, seemed to be the proper course of action for the initial implementation of our unique systems and techniques. The equity positions we now have will bear a significant return if ore is located. Additional joint ventures were in the negotiation stages as 1970 closed, and, significantly we believe, our credibility has increased to the extent that we are including a profit in these future operations rather than operating at cost.

As chronicled in the Highlights, the instrument side of our business bore fruit this year. Finished Radiophase® and E-Phase™ Geophysical Systems, an Airborne Mercury Spectrometer and a refined second-generation Correlation Spectrometer were introduced and successfully field tested. The policy of concentrated in-house research and development has succeeded, and during 1970, we were able to discontinue spending our own money on such efforts. Each major program had matured into saleable products or techniques.

In June, funding commenced from General Electric Company under a NASA Langley Research Center Award. The subcontract, expected to total $560,000, is to build a correlation interferometer for spacecraft use. The Atomic Energy Commission of Canada continued support of liquid analyses by electro-optical means.

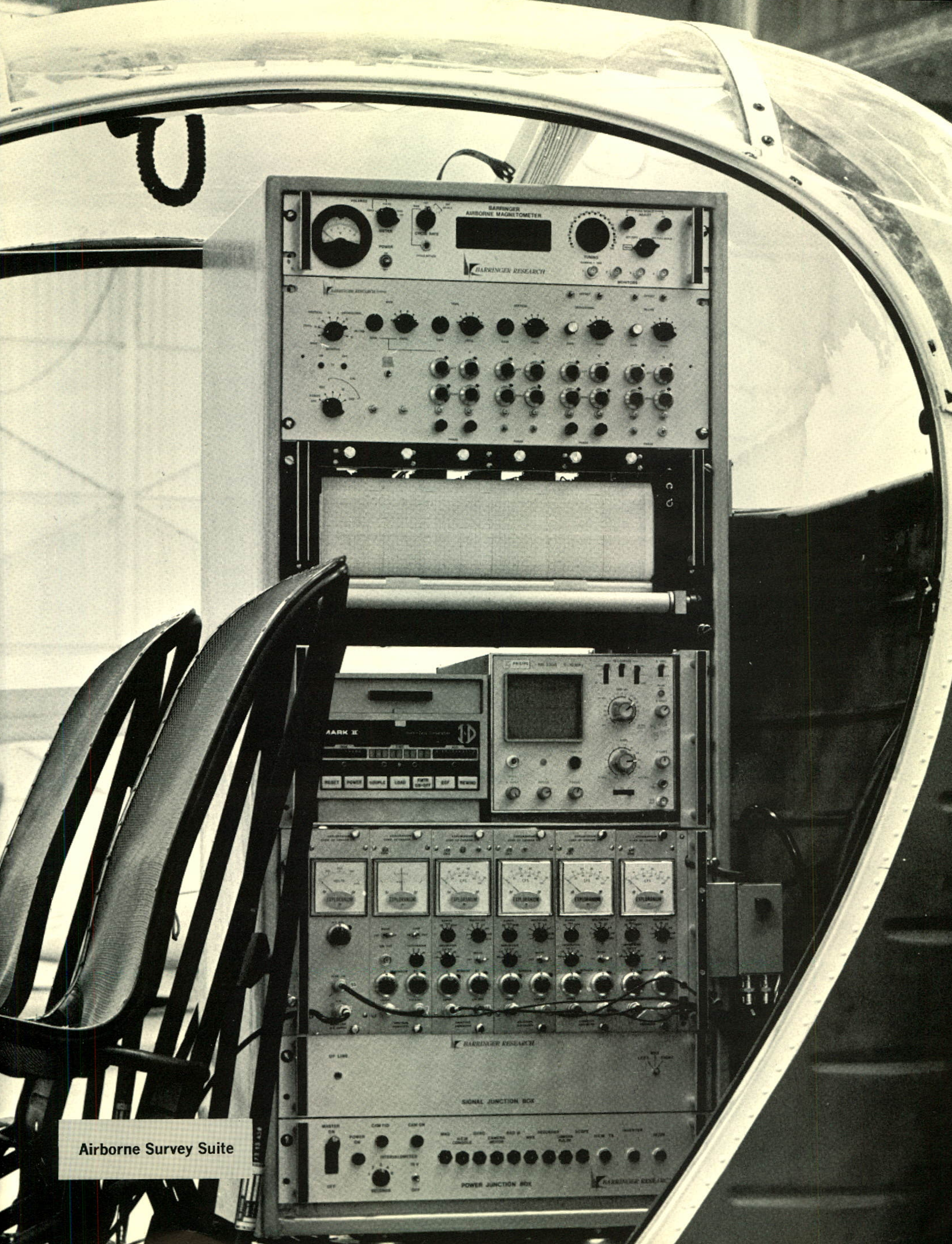
A new Barringer INPUT® Airborne Electromagnetic Prospecting System was ordered for use by our licensees while existing units returned nearly one-third of a million dollars this year from worldwide use.

Other licensees continued making inroads into the new pollution monitoring market. Combustion Equipment Associates Inc. (New York) introduced the In-Stack SO_2 Monitor at the annual exhibition of the Air Pollution Control Association. Environmental Measurements Inc. (San Francisco) conducted surveys delineating pollution conditions and emission levels with our SO_2 and NO_2 remote sensor.

We look forward to a continuation of last year's progress in 1971.

A. R. Barringer

A. R. BARRINGER
President



Airborne Survey Suite

Field crew in Fiji

1970 Highlights

Geochemistry lab, Baffin Island

Canadian soil sampling

INPUT® Installation on Canso (PBY)

1970 WAS a year of expansion into exploration ventures. Programs continued in Manitoba, Saskatchewan, and in the Fijian Islands. Initial drilling was started and, while no commercial mineralization was encountered, drilling will be far more extensive in 1971.

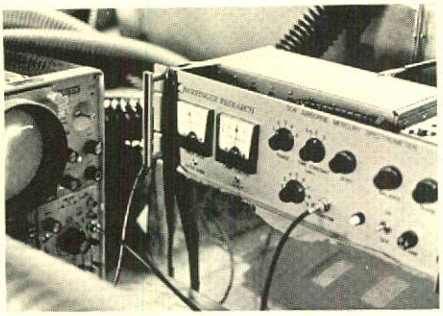
Comprehensive multi-sensor geophysical exploration packages were installed in helicopters in Canada and in England. These include simultaneous operation of up-to-five proprietary Barringer exploration instruments described below, and all of the data were brought together on multichannel recorders and with magnetic tape storage for subsequent computer analyses. A photograph of one installation is shown on the previous page.

The *Radiophase® Electromagnetic Detector* responds to changes in the radiated broadcast signals propagated from high power, very low frequency (VLF) broadcast stations. It measures the changing conductivity of the earth's subsurface and is indicative of the presence of metalliferous ores. The *E-Phase™ System* operates entirely on the electric-field components of these same global communication signals. Using this equipment, apparent resistivity maps have been produced for the first time at the low cost and high speed of an airborne method. The Barringer *Free Precession Magnetometer* is compatible with the electromagnetc equipment and reflects the magnetic nature of the subsurface, in the search for ferrous materials or telltail guides to geology and structure.

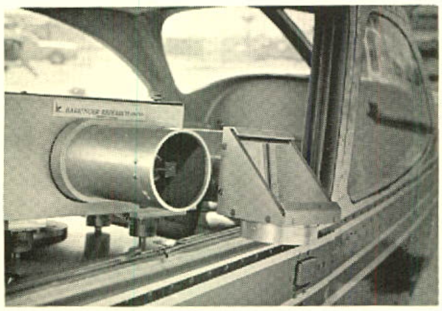
Three versions of the Barringer *Helicopter Electromagnetic (HEM) System* can be selected. HEM is a technique in which an electromagnetic signal is radiated from one end of a large cylindrical "bird" which is towed by a helicopter. The effect of the near-surface geology's electrical character is monitored through receiver coils on the other end of this same bird.

Added to these strictly geophysical techniques, where appropriate, were two geochemical sensors. The first is an Exploranium *Gamma-Ray Spectrometer* which monitors the total radiation and that particular radiation which results from naturally occurring potassium, uranium, and thorium. Second is the Barringer *Airborne Mercury Spectrometer*. One of these dramatic instruments was delivered during the year to the U.S. Geological Survey. The USGS and Barringer have flown the equipment in Canada, the United States, and Australia demonstrating its usefulness in monitoring atmospheric mercury. Anomalies have been shown to exist over certain ore occurrences.

Remote Geochemical Measurements

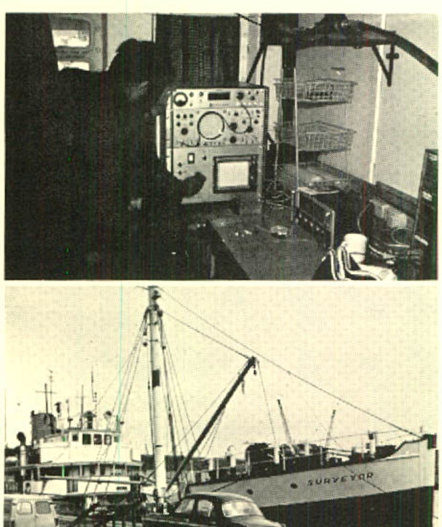


Mercury Spectrometer in aircraft



COSPEC Remote Sensor in aircraft

Nuclear Power Plant D_2O Monitor



R/V Surveyor with Magnetometer

1970 Highlights

Ground geophysical and geochemical contract services increased during the year, as did our geochemical analyses through the additional work from our field laboratories in Vancouver and Whitehorse. The INPUT® Prospecting System continued in use by licensees as the preeminent electromagnetic survey system.

In our continuing work to develop instruments which provide meaningful environmental measurements, three achievements occurred in 1970. The Airborne Mercury Spectrometer was also used to demonstrate its ability to trace mercury pollution in the air. This work resulted in contracts for our company and our licensee, one being with the U.S. Water Quality Office to investigate the potential use of this equipment to trace mercury pollution in water.

Continued use of the Barringer Correlation Spectrometer resulted in precise measurements of the emissions downwind of stationary sources of pollution. Field measurements were made throughout the continental United States during the year, commercially and for U. S. government agencies, and at year's end the *Cospec Remote Sensor* was announced. This dual-gas correlation spectrometer is able to monitor sulfur dioxide and nitrogen dioxide simultaneously and continuously for display on a stripchart recorder. As the year closed, the first production units were being field tested, and early 1971 results proved these tests highly successful.

The year contained important research and development projects. The General Electric Company's (Philadelphia) support to build a high sensitivity correlation interferometer to measure carbon monoxide has enabled our engineers to extend new techniques into the infrared region of the spectrum. The eventual outcome of this work is intended to enable spacecraft to monitor this critical gas on a global scale. The continuation of the Atomic Energy Commission of Canada's support in the improvements of liquid chemical analysers by electro-optical techniques has expanded our knowledge in this area, and two instruments were delivered to measure heavy water loss at nuclear power plants.

In the Fall, the new correlation spectrometer was honored as one of the 100 most significant new technical products of 1970. This was the second consecutive year Barringer received the IR-100 Award in recognition of innovations in science and the product engineering of outstanding technical advances.

These many events have been reported in our quarterly journal, *Barringer Research*. This publication is available on request and describes in greater detail these and other projects.

Correlation Spectrometer Display
Ontario Science Center

BARRINGER RESEARCH INC. AND CONSOLIDATED SUBSIDIARIES

CONSOLIDATED BALANCE SHEET AS AT DECEMBER 31, 1970
(with 1969 figures for comparison)

ASSETS

	1970	1969
CURRENT ASSETS:		
Cash	$ 27,889	$ 234,277
Accounts receivable:		
Trade (less allowance for doubtful accounts, 1970—$27,084; 1969—$18,172)	493,793	480,428
Government grants	—	79,050
Inventories (Note 2)	193,113	114,796
Deposits, advances and prepaid expenses	21,775	18,830
Total current assets	736,570	927,381
INVESTMENTS AND ADVANCES:		
Subsidiaries not consolidated (Note 1)	10,352	13,921
Associated companies (Note 1)	4,541	654
Non-associated companies—at cost (Note 3)	845,456	845,456
Total investments and advances	860,349	860,031
FIXED ASSETS—at cost (Note 4)	697,506	609,110
Less accumulated depreciation and amortization	422,395	332,252
Net fixed assets	275,111	276,858
OTHER ASSETS—at cost less amortization (Note 5):		
Patents and trademarks	67,719	69,828
Research and development expenditures	1,052,807	963,545
Total other assets	1,120,526	1,033,373
TOTAL	$2,992,556	$3,097,643

The accompanying notes are an integral part of the financial statements.

LIABILITIES AND STOCKHOLDERS' EQUITY

	1970	1969
CURRENT LIABILITIES:		
Bank loan	$ —	$ 232,500
Debenture instalments due within one year	49,500	93,000
Convertible subordinated promissory notes due within one year	60,000	15,000
Accounts payable and accrued charges	608,433	423,092
Total current liabilities	717,933	763,592
LONG-TERM DEBT (Note 6)—less amounts included in current liabilities:		
Debenture	—	46,500
Convertible subordinated promissory notes	425,000	485,000
Total long-term debt	425,000	531,500
COMMITMENTS AND CONTINGENT LIABILITIES (Note 11)		
STOCKHOLDERS' EQUITY:		
Capital stock (Notes 7 and 8):		
Authorized:		
2,000,000 shares of common stock of 1¢ par value each		
Issued and fully paid:		
855,000 shares	8,550	8,550
Paid-in surplus (no transactions during the year)	1,832,112	1,832,112
Retained earnings (deficit)	15,508	(38,111)
	1,856,170	1,802,551
Less common stock in Treasury—at cost—90,400 shares (Note 9)	6,547	—
Total stockholders' equity	1,849,623	1,802,551
TOTAL	$2,992,556	$3,097,643

The accompanying notes are an integral part of the financial statements.

CONSOLIDATED STATEMENT OF INCOME AND RETAINED EARNINGS
FOR THE YEAR ENDED DECEMBER 31, 1970
(with 1969 figures for comparison)

	1970	1969
NET SALES	$2,755,769	$2,045,627
REVENUES FROM RESEARCH CONTRACTS	497,513	387,050
Total revenue	3,253,282	2,432,677
COST OF SALES	1,897,866	1,482,570
COST OF RESEARCH CONTRACTS	399,446	312,307
SELLING, GENERAL AND ADMINISTRATIVE EXPENSES	625,215	438,986
AMORTIZATION OF RESEARCH AND DEVELOPMENT EXPENDITURES (Note 5)	217,670	111,046
Total costs and expenses	3,140,197	2,344,909
OPERATING INCOME	113,085	87,768
OTHER INCOME CHARGES (CREDITS):		
(Gain) loss on disposals of fixed assets and investments	(2,209)	3,166
Interest expense:		
Long-term debt	53,987	50,334
Other—net	7,544	14,779
Increase (decrease) in provision for losses of non-consolidated subsidiaries and associated companies (Note 1)	144	(15,877)
Net other income charges	59,466	52,402
INCOME BEFORE INCOME TAXES AND EXTRAORDINARY CREDIT	53,619	35,366
INCOME TAXES (Note 10)	47,000	39,500
INCOME (LOSS) BEFORE EXTRAORDINARY CREDIT	6,619	(4,134)
BENEFIT OF TAX LOSS CARRYFORWARD (Note 10)	47,000	39,500
NET INCOME FOR THE YEAR	53,619	35,366
DEFICIT AT BEGINNING OF THE YEAR	38,111	73,477
RETAINED EARNINGS (DEFICIT) AT END OF THE YEAR	$ 15,508	$ (38,111)
EARNINGS PER SHARE:*		
Income (loss) before extraordinary credit	$ 0.008	$ (0.005)
Extraordinary credit	0.056	0.046
Net income for the year	$ 0.064	$ 0.041

*Earnings per share are based on the average number of shares outstanding during the year, with shares issuable upon exercise of options and warrants being included using the treasury stock method. Shares issuable upon conversion of the convertible promissory notes are not included since such conversion would have an anti-dilutive effect upon earnings per share.

The accompanying notes are an integral part of the financial statements.

CONSOLIDATED STATEMENT OF SOURCE AND APPLICATION OF FUNDS
FOR THE YEAR ENDED DECEMBER 31, 1970
(with 1969 figures for comparison)

FUNDS PROVIDED:	1970	1969
From operations:		
Net income for the year	$ 53,619	$ 35,366
Operating items not involving an outlay of funds:		
Depreciation and amortization	312,751	210,599
Other	965	(917)
Funds provided from operations	367,335	245,048
Promissory notes issued	—	245,000
Investments and advances	(462)	21,739
Sale of patents	6,547	—
Disposal of fixed assets	1,537	5,711
Total funds provided	374,957	517,498

FUNDS APPLIED:		
Deferred research and development expenditures	306,932	486,240
Additions to fixed assets	92,607	102,498
Reduction in long-term debt	106,500	61,500
Additions to patents and trademarks	7,523	9,505
Treasury stock acquired	6,547	—
Total funds applied	520,109	659,343
DECREASE IN WORKING CAPITAL	$ (145,152)	$ (142,245)

REPRESENTED BY:		
(Decrease) increase in cash	$ (206,388)	$ 102,956
Decrease in receivables	(65,685)	(237,421)
Increase in other current assets	81,262	4,889
Decrease in bank loan	232,500	—
(Increase) decrease in debt instalments	(1,500)	31,500
Increase in other current liabilities	(185,341)	(44,169)
Decrease in working capital	$ (145,152)	$ (142,245)

The accompanying notes are an integral part of the financial statements.

BARRINGER RESEARCH INC. AND CONSOLIDATED SUBSIDIARIES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 1970

1. Principles of Consolidation

The accompanying consolidated financial statements comprise the accounts of the Company and its wholly-owned subsidiary companies, Barringer Research Limited (Limited). a Canadian company, and Barringer Instruments Inc. Inactive subsidiaries of Limited, none of which is significant, have not been consolidated. Investments in and advances to these subsidiaries and to associated companies are accounted for on the equity method.

Amounts applicable to Limited have been translated into United States dollars from Canadian dollars at rates approximating the prevailing free rate of exchange.

2. Inventories

The major categories of inventories are as follows:

	December 31, 1970	1969
Finished goods	$ 93,457	$ 35,188
Work in progress	14,741	61,974
Materials and supplies	2,965	3,467
Contracts in progress	81,950	14,167
Total	$193,113	$114,796

Inventories other than contracts in progress are stated at the lower of average cost or net realizable value for finished goods and work in progress, and at the lower of average cost or replacement cost for materials and supplies. The percentage-of-completion method of accruing profit on contracts in progress is used, with anticipated losses being provided for in full.

3. Non-associated Companies

Investment in non-associated companies includes unregistered shares, at cost of $820,000, of Combustion Equipment Associates, Inc., a company whose stock is traded publicly. The quoted market value of a like number of registered shares of this company as at December 31, 1970 was $543,250. In the opinion of management of the Company, the decline in market value since acquisition is temporary, and there has been no permanent impairment in the value of its investment in Combustion Equipment Associates, Inc., and therefore the carrying value has not been written down. As at March 19, 1971, such market value was $794,375.

The balance of the investment in non-associated companies is represented by stock in closely-held companies.

4. Fixed Assets

The major categories of fixed assets are as follows:

	December 31, 1970	1969
Rental equipment	$215,878	$215,060
Survey equipment	180,020	115,302
Laboratory equipment	179,384	177,454
Other	122,224	101,294
Total	$697,506	$609,110

Depreciation is provided on the straight-line basis over the estimated useful lives of the assets, principally four to ten years. Depreciation so provided and charged in the accompanying consolidated statement of income and retained earnings amounted to $91,996 (1969—$86,731).

5. Other Assets

Patents and trademarks are amortized over their related lives, which range from five to seventeen years. Amortization charged in the accompanying consolidated statement of income and retained earnings amounted to $3,085 (1969—$2,325).

Research and development costs incurred during the year (other than in connection with research contracts) in excess of government grants and other outside support therefor are amortized over the following five years. These costs include all applicable overhead expenses.

6. Long-term Debt

The final debenture instalment of $49,500 ($50,000 Canadian) is payable on March 31, 1971, and is secured by a pledge of all of the assets of Limited. The book value as at December 31, 1970 of the assets pledged was $2,162,940. Interest has been paid at varying rates, the rate as at December 31, 1970 being 8¾% per annum.

The convertible subordinated promissory notes are payable in semi-annual instalments of $30,000. Interest is payable at fluctuating rates, the rate as at December 31, 1970 being 7¾% per annum. These notes are convertible on the basis (subject to adjustment under certain conditions) of $20 principal amount of notes for one share of common stock.

7. Capital Stock

Shares of common stock reserved for issuance as at December 31, 1970 were as follows:

For stock options:	
Options outstanding	60,550
Available for granting future options	9,450
For warrants	25,000
For conversion of promissory notes	24,250
Total	119,250

8. Stock Options and Warrants

On March 14, 1968, the Company adopted a Qualified Stock Option Plan covering 30,000 shares of common stock of the Company. Options may be granted to key employees of the Company or its subsidiaries at a price not less than the market value of the common stock at the time of the grant of the option. Each option is exercisable two years from the date of the grant, providing the employee remains in the continuous employ of the Company or a subsidiary, and expires five years from the date of the grant. Information with respect to this Stock Option Plan is summarized as follows:

	Shares	Amount
Options outstanding, December 31, 1969 ($5.50 to $8.00 per share)	23,900	$139,612
Changes during 1970:		
Options granted ($2.00 per share)	11,100	22,200
Options cancelled ($5.50/share)	(5,150)	(28,325)
Options outstanding, December 31, 1970 ($2.00 to $8.00 per share)	29,850	$133,487

Under two employment agreements dated October 1, 1967, the Company has also granted, as options not under the Plan, rights to purchase an aggregate of 10,000 shares of common stock of the Company at a price of $5.00 per share during the period from October 1, 1969 to September 30, 1972. The agreements contain other provisions relating to options similar to those contained in the Qualified Stock Option Plan. As at December 31, 1970, these options have not been exercised, and are outstanding.

On May 13, 1970, the Company adopted the 1970 Qualified Stock Option Plan covering 30,000 shares of common stock of the Company. Options may be granted to directors, officers, and other key employees of the Company or its subsidiaries at a price not less than the market value of the common stock at the time of the grant of the option. Each option is exercisable two years from the date of the grant, provided the optionee continues as a director or remains in the employ of the Company or a subsidiary, and expires five years from the date of the grant. No optionee may exercise an option while there is outstanding any other stock option previously granted to the optionee. Information with respect to this Stock Option Plan is summarized as follows:

	Shares	Amount
Options granted in 1970 ($2.00 to $3.00 per share) and outstanding December 31, 1970	20,700	$50,400

Warrants to purchase 25,000 shares of common stock of the Company were issued in 1968. The warrants are exercisable at any time up to March 31, 1975 at prices ranging from $6.50 to $7.50 per share, depending upon the time of exercise.

9. Treasury Stock

On July 11, 1970, the Company entered into an agreement providing for the sale of certain patents in exchange for 90,400 common shares of the Company. The 90,400 shares are held in treasury, and are carried at the unamortized cost of the patents sold.

10. Income Taxes

(a) Canadian Income Taxes:

Income taxes otherwise payable by Limited have been eliminated by the application of prior years' loss carryforwards. As at December 31, 1970, loss carryforwards of approximately $1,047,000 were available for application against taxable income of future years. These losses expire $144,000 in 1971, $573,000 in 1973, and $330,000 in 1974.

As at December 31, 1970, the net book value of Limited's fixed assets, patents, and research and development expenditures exceeded their unclaimed value for tax purposes by approximately $869,000. Since this excess of book values over tax values is offset by available tax loss carryforwards, no provision for deferred income taxes has been made.

(b) United States Income Taxes:

No liability for United States income taxes has been incurred to date. As at December 31, 1970, loss carryforwards of approximately $79,000 are available for application against taxable income of future years. These losses expire $5,500 in 1973, $26,500 in 1974, and $47,000 in 1975. In addition, as at December 31, 1970, foreign income taxes paid of $21,527 are available for credit against future U. S. income taxes, and expire $2,773 in 1973, $6,960 in 1974, and $11,794 in 1975.

Retained earnings of Limited ($350,463 Cdn.) are considered to be permanently invested and not available for distribution to the Company. Accordingly, no provision has been made for United States income taxes thereon.

11. Commitments and Contingent Liabilities

Limited has participated in a program under which a portion of the cost of research and development projects involving the development of two instruments for the sensing of air pollution is borne by the Canadian Government, subject to repayment, as explained below, to the extent that the instruments prove to be commercially successful. Contributions of approximately $113,460 were received from the government in prior years, and have been accounted for in accordance with the regular practice with respect to research and development projects (see Note 5). Repayments are being made at a fixed rate per instrument sold or rented; the aggregate amount of such repayments is not to exceed the contributions received with interest thereon. A total of $720 has been repaid to date. Such repayments are an element of cost of sales, and are deductible in computing taxable income.

An annual rental of $16,500 Canadian is payable under a lease which expires January 14, 1986.

12. Pension Plan

Total expense with respect to Limited's insured pension plan for senior employees was $8,734 for the year (1969—$7,841). Pension costs are funded, and there was no unfunded liability as at December 31, 1970.

OPINION OF INDEPENDENT CHARTERED ACCOUNTANTS

DELOITTE, HASKINS & SELLS
Chartered Accountants

Toronto-Dominion Centre
Toronto 111, Ontario, Canada

To the Directors and Stockholders of
Barringer Research Inc.:

We have examined the consolidated balance sheet of Barringer Research Inc. and Consolidated Subsidiaries as at December 31, 1970 and the related consolidated statements of income and retained earnings and source and application of funds 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.

In our opinion, subject to the ultimate realization of the cost of the investment in a non-associated company (see Note 3), and the ultimate recovery of the deferred research and development expenditures (see Note 5), the consolidated financial statements present fairly the financial position of the Companies as at December 31, 1970 and the results of their operations and the source and application of their funds for the year ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Deloitte, Haskins & Sells

March 19, 1971

Printed in U.S.A.

BARRINGER RESEARCH, 304 Carlingview Drive, Metropolitan Toronto, Rexdale, Ontario