

FILE NAME: Insurance Industry (INS)

DATE: 1957 Apr

DOC#: INS060

DOCUMENT DESCRIPTION: Proceedings of the Home Office Life Underwriters Assoc. Meeting with Member List & Presentation [The Asbestos Industry - Certain Health Experiences Among Asbestos Workers]

AAA COURT REPORTING
DEPOSITION
EXHIBIT 10

1957-

PLAINTIFF'S
EXHIBIT
115.0

PROCEEDINGS
OF THE
Home Office
Life Underwriters Association
AND THE
Occupational Committee

APRIL, 1957, MEETING

VOLUME XXXVIII

The Association is not responsible for remarks made
or opinions expressed in the articles, criticisms, and dis-
cussions published in these Proceedings.

COMMONWEALTH PRESS
WORCESTER, MASSACHUSETTS

PLAINTIFF'S
EXHIBIT
WV-00057

TABLE OF CONTENTS OF VOLUME XXXVIII

Part I

THURSDAY, APRIL 11, 1957

MORNING SESSION

	PAGE
Meeting Called to Order, President Dorcas Arnold.....	5
"Presidential Address: Pioneers, Not Chambers," Deane Arnold.....	7
"A Look at the Future," O. Kelley Anderson.....	16
Report of Secretary.....	20
Obituary Notice, William M. Gentner.....	21
Report of Treasurer.....	25
Report of Joint Education and Examination Committee.....	26
Report of Nominating Committee.....	28

THURSDAY, APRIL 11, 1957

AFTERNOON SESSION

Panel Discussion: Underwriting Routines.....	32
Discussion Leader, Thomas W. Bead.....	32
Panel Discussion: Practical Problems of Substandard Insurances.....	36
Discussion Leader, Douglas C. Weir.....	36
Panel Discussion: Underwriting Brokerage Business.....	44
Discussion Leader, Gaylord L. Paine.....	44
Panel Discussion: Nonmedical Experience and Limits.....	47
Discussion Leader, William F. Ward.....	47

FRIDAY, APRIL 12, 1957

MORNING SESSION

Meeting Called to Order, President John Huebner.....	51
Minutes of the Executive Council Meeting, April 11, 1957.....	51
"Underwriting Changes over Twenty Years," Penven Shepherd.....	53
Discussion.....	71
"Assumption of Business Risk in Insurance Operations," John G. Kelly.....	83
Discussion.....	100

PART II

INDUSTRIAL UNDERWRITING SESSION

FRIDAY, APRIL 12, 1957

AFTERNOON SESSION

	PAGE
Meeting Called to Order, Chairman Russell L. Wagner.....	116
Remarks, President John Huebner.....	116
Industrial Quiz Panel: Samuel F. Shafron, Moderator; William W. Black, Jr.; Francis H. Kavanaugh; George L. Knowles.....	117
Acquisition Costs.....	119
Medical Information at Higher Ages.....	123
Attending Physician's Statement Versus Medical Examination.....	126
Limiting Industrial in a Family.....	129
Premature Infants.....	130
Industrial Case Clinic: Rex Metz, Moderator; Paul E. Choate; Maurice E. Comfort; Matthew W. Peterson.....	133
Report of Nominating Committee.....	131

PART III

OCCUPATIONAL COMMITTEE

SATURDAY, APRIL 13, 1957

MORNING SESSION

Meeting Called to Order, Chairman Donald H. Lawson.....	139
Remarks, President John Huebner.....	139
"Taconite—Ore Dressing and Processing," David F. Cartwright.....	141
Discussion.....	153
Panel Discussion: Morris Pitter, Moderator; Chester P. Barney; Leon B. Hovey; Paul Shea; John F. Wilson.....	153
Considerations Underlying Reductions in or Elimination of Occupational Ratings.....	161
"Nuclear Energy—A Twelve Months' Report," Reuel C. Stratton.....	185
"The Asbestos Industry—Certain Health Experiences Among Asbestos Workers," Kenneth W. Smith, M.D., and Hugh Jackson.....	187

JOINT EDUCATION AND EXAMINATION COMMITTEE

1957 Examination Questions.....	195
Students Awarded Certificates of Proficiency in 1957.....	202

EXECUTIVE COUNCIL

OFFICERS: 1957-1958

JOHN M. HUEBNER	President
WRAY M. BELL	Vice-President
EARL M. MACRAE	Vice-President
ARTHUR FAULKNER	Secretary
GEORGE A. PULMAN	Treasurer
ARTHUR A. WINDECKER	Editor

PAST PRESIDENTS:

	Term Expires
JOHN C. ARCHWALD	1959
THOMAS K. DODD	1960
HARRY F. GUNBY	1961
DOANE ARNOLD	1962

ELECTED:

CHESTER F. BARNEY	1958
BARTON S. PAULEY	1958
THOMAS W. REED	1958
DOUGLAS T. WEIR	1958
ROBERT B. CAPLINGER	1959
WILLIAM H. GREENWOOD, JR.	1959
ARTHUR C. KEVIN	1959
DONALD B. SEMANS	1959

COMMITTEES

OCCUPATIONAL

DONALD H. LAWSON, *Chairman*
 REUEL C. STRYTON, *Consultant*

CHESTER F. BARNEY	WILLIAM C. HARRISON
DAVID W. BELL	VICTOR HENDRY
ERNEST A. CARLSON	LEON B. HOVEY
HAROLD DAVIES	MORRIS PITLER
WILLIAM FEERY	JULES V. QUINT

PAUL SHRA

PROGRAM

WILLIAM F. WARD, *Chairman*
 WALTER A. MERRIAM GAYLORD L. PAINE
 DOUGLAS T. WEIR

JOINT EDUCATION AND EXAMINATION COMMITTEE OF THE HOME OFFICE LIFE UNDERWRITERS ASSOCIATION AND THE INSTITUTE OF HOME OFFICE UNDERWRITERS

DAVID P. CARTWRIGHT, *Chairman*
 DONALD J. VAN KEULEN, *Secretary-Treasurer*

<i>Home Office Life Underwriters Association</i>	<i>Institute of Home Office Underwriters</i>
--	--

MAURICE E. COMFORT	WALLACE E. BIDELMAN
WILLIAM H. GREENWOOD, JR.	W. R. CONDON
J. S. MCCOLLUM	HAROLD A. MUNSON
ERNEST Y. ROWE	M. D. THOMAS
ARTHUR W. WILLCOX	WILLIAM T. WARREN, JR.
JOHN S. WYPER	KEITH R. VEGLAIN

NOMINATING

HARRY F. GUNBY, *Chairman*
 DOANE ARNOLD THOMAS K. DODD

AUDITING

CHARLES H. EDWARDS CARL W. HUBER

INDUSTRIAL UNDERWRITING

GEORGE E. VALPI, *Chairman*

OFFICERS OF THE ASSOCIATION SINCE ORGANIZATION

<i>Presidents</i>	
Austin D. Reiley	1930-1932
William F. Roulphs	1932-1933
William H. Dallas	1933-1934
F. Phelps Todd	1934-1935
Malcolm Adam	1935-1936
Howard Goodwin	1936-1937
Harold F. Larkin	1937-1938
John M. Laird	1938-1939
Leigh Cruess	1939-1940
John D. Williamson	1940-1941
Henry H. Jackson	1941-1943
Ross B. Gordon	1943-1944
Ronald C. McCankie	1944-1945
Peace Shepherd	1945-1946
Douglas S. Craig	1946-1947
Walter O. Menge	1947-1948
Alton P. Morton	1948-1950
George W. Cheney	1950-1951
Andrew C. Webster	1951-1952
Marshall L. Cleaves	1952-1953
John C. Archibald	1953-1954
Thomas K. Dorr	1954-1955
Harry F. Gundy	1955-1956
Doane Arnold	1956-1957
John M. Hyvener	1957-

<i>Vice-Presidents</i>	
William F. Roulphs	1930-1932
William H. Dallas	1932-1933
F. Phelps Todd	1933-1934
Malcolm Adam	1934-1935
Howard Goodwin	1935-1936
Harold F. Larkin	1936-1937
John M. Laird	1937-1938
Leigh Cruess	1938-1939
John D. Williamson	1939-1940
Henry H. Jackson	1940-1941
Ross B. Gordon	1941-1943
Ronald C. McCankie	1943-1944
Peace Shepherd	1944-1945
Douglas S. Craig	1945-1946
Walter O. Menge	1946-1947
Alton P. Morton	1947-1950
George W. Cheney	1950-1951
Andrew C. Webster	1951-1952
Marshall L. Cleaves	1952-1953
John C. Archibald	1953-1954
Herbert R. Laurie	1954-1955
Thomas K. Dorr	1955-1956

<i>Vice-Presidents (Continued)</i>	
Harry F. Gundy	1953-1955
Doane Arnold	1954-1956
John M. Hyvener	1955-1957
Wray M. Bell	1956-
Darl M. MacLear	1957-
<i>Secretaries</i>	
Leigh Cruess	1930-1937
Douglas S. Craig	1937-1943
Andrew C. Webster	1943-1948
Thomas K. Dorr	1948-1953
Arthur Faulkner	1953-
<i>Treasurers</i>	
F. Phelps Todd	1930-1932
Almond J. Reiley	1932-1937
George E. Rogers, Jr.	1937-1943
Marshall L. Cleaves	1943-1950
George A. Pillman	1950-
<i>Editors</i>	
Malcolm Adam	1930-1933
Harold F. Larkin	1933-1935
Ross B. Gordon	1935-1939
George W. Cheney	1939-1947
H. Arnold Houghton	1947-1949
Arthur Faulkner	1950-1953
Henry W. Coor, Jr.	1953-1956
Arthur A. Windetler	1956-

ROLL OF ACTIVE MEMBERS

Listed by Company Affiliation

ACACIA MUTUAL LIFE INSURANCE COMPANY, 51 Louisiana Avenue, N.W., Washington 6, D.C.
William B. Penn, *Chief Underwriter*

AETNA LIFE INSURANCE COMPANY, 151 Farmington Avenue, Hartford, Connecticut
George L. Hogeman, *Assistant Vice-President*
Earle R. Carter, *Assistant Secretary*
Carl G. Josephson, *Assistant Secretary, Life Underwriting Division*
Frederick G. Vogel, *Chairman, Substandard Committee*
William H. Allen, *Underwriting Manager*
Charles H. Norris, *Assistant Chief Underwriter*

ALLIANCE NATIONAL, 680 Avenue des Sherbrooke, Montreal, Quebec, Canada
Norman Perry, *Assistant Secretary*

AMERICAN LIFE CONVENTION, 230 North Michigan Avenue, Chicago, Illinois
Ralph H. Kestner, *Associate General Counsel*
Lace N. Parker, *Administrative Vice-President*

AMERICAN SERVICE BUREAU, 63 East South Water Street, Chicago 1, Illinois
Otto V. Ebel, *Vice President*

AMERICAN UNITED LIFE INSURANCE COMPANY, 30 West Full Creek Parkway, Indianapolis, Indiana
Chester F. Barney, *Underwriting Vice-President*
John F. Munch, *Chief Underwriter*

AMICABLE LIFE INSURANCE COMPANY, Amicable Life Building, Waco, Texas
L. A. Dryden, Jr., *Vice-President and Manager of Underwriting*

ATLANTIC LIFE INSURANCE COMPANY, Main and Sixth Streets, Richmond 12, Virginia
Montgomery M. Blair, *Vice-President*

THE BALTIMORE LIFE INSURANCE COMPANY, Charles and Saratoga Streets, Baltimore, Maryland
J. Carroll Rhodes, *Vice-President*
Mrs. Elizabeth B. Brooks, *Underwriting Secretary*

BANKERS LIFE COMPANY, 711 High Street, Des Moines 7, Iowa
John C. Archibald, *Vice-President*
R. P. Peterson, *Assistant Secretary*
George A. Booth, *Supervisor, Underwriting Department*
James S. McCallum, *Underwriting Assistant*

BANKERS LIFE INSURANCE COMPANY OF NEBRASKA, 1315 "N" Street, Lincoln 8, Nebraska
W. E. Piro, *Director, Risk Selection and Underwriting*

ROLL OF MEMBERS

xi

BANKERS NATIONAL LIFE INSURANCE COMPANY, 1 Sunset Avenue, Montclair, New Jersey
Carl W. Huber, *Vice-President, Underwriting*

BERKSHIRE LIFE INSURANCE COMPANY, 7 North Street, Pittsfield, Massachusetts
Bruce D. Shepherd, *Underwriting Secretary*

BUSINESS MEN'S ASSURANCE COMPANY, H.M.A. Building, Kansas City 41, Missouri
Jack D. Norton, *Chief Underwriter, Reinsurance*

CALIFORNIA-WESTERN STATES LIFE INSURANCE COMPANY, Tenth and J Streets, Sacramento, California
Walter C. Kennedy, *Vice-President and Chief Underwriter*

CANADA LIFE ASSURANCE COMPANY, 220 University Avenue, Toronto 1, Ontario, Canada
G. Gerald Daly, *Underwriting Executive*
R. E. Spittel, *Chief Underwriter*
J. R. Gray, *Associate Actuary*

COLONIAL LIFE INSURANCE COMPANY OF AMERICA, 111 Prospect Street, East Orange, New Jersey
Joseph B. Corbett, *Underwriting Secretary*

COLUMBIAN NATIONAL LIFE INSURANCE COMPANY, 57 Franklin Street, Boston, Massachusetts
Duane L. Callahan, *Underwriter*

COLUMBUS MUTUAL LIFE INSURANCE COMPANY, 303 East Broad Street, Columbus 10, Ohio
Glen M. Craft, *Chief Underwriter*

COMMONWEALTH LIFE INSURANCE COMPANY, 106-110 South Fifth Street, Louisville, Kentucky
William W. Black, Jr., *Manager, Underwriting Department*

COMPANION LIFE INSURANCE COMPANY, 245 Madison Avenue, New York 17, New York
John S. Cook, *Vice-President and Secretary*
Bernard M. Brady, *Assistant Underwriting Secretary*

CONFEDERATION LIFE ASSOCIATION, 12 Richmond Street, East, Toronto 1, Ontario, Canada
George A. Skelding, *Underwriting Executive*

CONNECTICUT GENERAL LIFE INSURANCE COMPANY, Hartford, Connecticut
Dr. Albert J. Robinson, *Vice-President*
Richard T. Sexton, *Second Vice-President, Reinsurance Department*
T. B. Anderson, Jr., *Secretary, Reinsurance Underwriting*
John S. Wyper, *Secretary, Life Underwriting Department*
Earl P. Parmelee, *Assistant Secretary, Life Underwriting Department*

CONNECTICUT MUTUAL LIFE INSURANCE COMPANY, 110 Garden Street, Hartford 16, Connecticut
Thomas K. Dadd, *Vice-President, Underwriting*
Carl H. Anderson, *Underwriting Secretary*
Gaylord L. Paine, *Underwriting Secretary*
T. John Hill, Jr., *Superior of Applications*

CONTINENTAL AMERICAN LIFE INSURANCE COMPANY, Rodney Square,
Wilmington, Delaware
Thomas W. Reed, *Underwriting Vice-President*

CONTINENTAL ASSURANCE COMPANY, 310 South Michigan Avenue, Chi-
cago 1, Illinois
Robert J. Campbell, *Assistant Vice-President*
C. Edwin Carlson, *Chief Underwriter*

CROWN LIFE INSURANCE COMPANY, 120 Bloor Street, East, Toronto,
Ontario, Canada
Ewart F. Vardon, *Underwriting Secretary*
R. W. Hutcheon, *Underwriting Assistant*

DUNSMUIR LIFE ASSURANCE COMPANY, 1 Albert Street, Waterloo, Ontario,
Canada
Arthur J. Himmegard, *Actuary*

EDMUNDS OF CANADA GENERAL INSURANCE COMPANY, Toronto, Ontario,
Canada
John Shortt, *Supervisor, Life Underwriting*

EMPIRE LIFE INSURANCE COMPANY, 213-251 King Street, East, Kingston,
Ontario, Canada
N. G. Burnside, *Underwriting Secretary*

EQUITABLE LIFE ASSURANCE SOCIETY, 383 Seventh Avenue, New York 1,
New York

William E. Walsh, *Vice-President*
William J. November, *Vice-President and Associate Actuary*
Arthur A. Winkoeker, *Manager, Underwriting Department*
Francis X. Cassidy, *Chief Underwriter*
Harold Davies, *Senior Underwriter*

EQUITABLE LIFE INSURANCE COMPANY, Sixth Avenue and Loquist Street,
Des Moines, Iowa

John F. Dunton, *Underwriting Secretary*
Will D. MacKinnon, *Underwriting Vice-President*
Kenneth R. Austin, *Assistant Secretary*

EQUITABLE LIFE INSURANCE COMPANY, 818 Fourteenth Street, N.W.,
Washington 5, D.C.
Clyde R. de Haas, *Assistant Secretary*

EVERELSON LIFE INSURANCE COMPANY, 36 Toronto Street, Toronto 2,
Ontario, Canada
J. D. Hiddle, *Underwriting Executive*

FIDELITY MUTUAL LIFE INSURANCE COMPANY, The Parkway at Fairmount
Avenue, Philadelphia, Pennsylvania
Arthur H. Evans, *Second Vice-President, Underwriting*
P. A. H. Schmeisser, *Underwriting Officer*

FRANKLIN LIFE INSURANCE COMPANY, 312 South Sixth Street, Springfield,
Illinois

Floyd G. Short, *Vice-President*
Ralph Bond, *Assistant Vice-President*

GENERAL AMERICAN LIFE INSURANCE COMPANY, 1501 Loquist Street,
St. Louis, Missouri
Douglas Wood, *Manager, Underwriting Department*

GOLDEN STATE MUTUAL LIFE INSURANCE COMPANY, 1939 West Adams
Boulevard, Los Angeles, California
Isaiah S. Blocker, Jr., *Underwriting Secretary*

GREAT-WEST LIFE ASSURANCE COMPANY, Rerie and Lombard Streets,
Winnipeg, Manitoba, Canada
J. E. Morrison, *Assistant General Manager and Actuary*
W. A. Keltie, *Underwriting Officer*
John W. Brice, *Underwriting Secretary*
H. B. Whitrap, *Manager, Life Underwriting*

GUARANTEE MUTUAL LIFE COMPANY, 1505 Douglas Street, Omaha,
Nebraska
George M. Stanley, *Underwriting Secretary*

GUARDIAN LIFE INSURANCE COMPANY, 50 Union Square, New York,
New York
Charles H. Edwards, *Underwriting Secretary*
Charles A. Will, *Assistant Underwriting Secretary*

HAWAIIAN LIFE INSURANCE COMPANY, LTD., Post Office Box 3149, Hono-
lulu, Hawaii
Robert E. Anderson, *Secretary*

HOME LIFE INSURANCE COMPANY, 240 Broadway, New York, New York
Robert B. Cunningham, *Underwriting Secretary*
George S. Haushalter, *Assistant Underwriting Secretary*
Daniel G. Stewart, *Assistant Underwriting Secretary*

HOME LIFE INSURANCE COMPANY OF AMERICA, 306 Walnut Street, Phila-
delphia, Pennsylvania
George L. Knowles, *Vice-President*

HOOVER-HOLMES BUREAU, INC., 231 Madison Avenue, Morristown,
New Jersey
Vernon W. Forkel, *Vice-President*
Albert E. Thyrahus, *Vice-President*

IMPERIAL LIFE ASSURANCE COMPANY, 20 Victoria Street, Toronto, Ontario,
Canada
David W. Bell, *Underwriting Executive*
Donald E. Sunderson, *Manager, Underwriting Department*

INDEPENDENT ORDER OF FORESTERS, Temple Building, Toronto 1, Ontario,
Canada
Edward A. Watson, *Manager of Underwriting*

INDUSTRIAL LIFE INSURANCE COMPANY, 1081 St. Louis Road, Quebec,
Quebec, Canada
S. W. Boyle, *Actuary*

IOWA LIFE INSURANCE COMPANY, 10th & Grand Streets, Des Moines, Iowa
Wallace E. Bidelman, *Chief Underwriter*

JEFFERSON STANDARD LIFE INSURANCE COMPANY, Jefferson Square,
Greensboro, North Carolina
D. J. Tribble, *Chief Underwriter*
R. Bain Alexander, *Assistant Chief Underwriter*

- JOHN HANCOCK MUTUAL LIFE INSURANCE COMPANY, 200 Berkeley Street, Boston, Massachusetts
Eos E. Mayer, Vice-President
Ned S. Baker, Vice-President
Lash B. Hovey, Assistant Secretary, Underwriting Department
H. Arnold Houghton, Second Vice-President, Underwriting
John P. Sheridan, Assistant Underwriting Director
Thomas A. Walsh, Assistant Underwriting Director
- LIBERTY LIFE INSURANCE COMPANY, Liberty Life Building, Greenville, South Carolina
Cady B. Hupp, Executive Vice-President
- LIFE AND CASUALTY COMPANY OF TENNESSEE, 639 Fourth Avenue, North, Nashville 3, Tennessee
Cannell Russell, Jr., Vice-President
- LIFE INSURANCE COMPANY OF GEORGIA, 574 W. Peachtree Street, N.E., Atlanta 2, Georgia
Everett W. Wilson, Chief Underwriter
- LIFE INSURANCE COMPANY OF NORTH AMERICA, 1921 Arch Street, Philadelphia, Pennsylvania
Henry W. Cook, Jr., Vice-President
- LIFE INSURANCE COMPANY OF VIRGINIA, 301 Capitol Street, Richmond, Virginia
William H. Leach, Vice-President
- LISCOR NATIONAL LIFE INSURANCE COMPANY, 1310-27 South Harrison Street, Fort Wayne, Indiana
Walter O. Mong, President
Donald R. S. ... Second Vice-President
Frank G. W. ... Third Vice-President
- LONDON LIFE INSURANCE COMPANY, Dunlop Avenue, London, Ontario, Canada
Walter M. Bell, Chief Underwriter
Ned E. Bailey, Assistant Underwriting Executive
Maurice E. Cantfort, Assistant Secretary
- LUTHERAN BROTHERHOOD, 605 South Avenue, South, Minneapolis 2, Minnesota
M. Kingdon, Chief Underwriter
- THE MACY LIFE, 507 Woodland Avenue, Detroit 2, Michigan
Joseph F. Collins, Chief Underwriter, Underwriting Department
- MAINE FIDELITY LIFE INSURANCE COMPANY, Portland, Maine
Raymond W. Hillman, Vice-President
- METROPOLITAN LIFE INSURANCE COMPANY, 120 West 57th Street, New York 19, New York
Samuel A. Lehman, Chief Underwriter and First Assistant Secretary
Clara E. Fuchsberg, Director, Underwriting Department
Edward S. Soltzberg, Underwriter
- MANLY FIDELITY LIFE INSURANCE COMPANY, 200 Blain Street, East, Toronto 4, Ontario, Canada
John F. Wilson, Manager, Medical Department
Dr. T. C. Dunlop, A. C. ... Medical Officer

- MASSACHUSETTS INDIGNITY AND LIFE INSURANCE COMPANY, 661 Beacon Street, Boston 15, Massachusetts
Clare J. Malt, Assistant Secretary
- MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY, 126 State Street, Springfield, Massachusetts
Michael Marchese, Vice-President
Arthur Faulkner, Underwriting Executive
Ernest A. Carlson, Assistant Secretary
Henry H. Pinsky, Assistant Underwriting Secretary
- McCURRY INSPECTION SERVICE, 1715 E. 14th Building, Detroit, Michigan
Henry E. McCurry, President
- METROPOLITAN LIFE INSURANCE COMPANY, 1 Madison Avenue, New York 10, New York
Douglas S. Craig, Second Vice-President
Edward A. Low, Assistant Secretary
Ransom H. House, Third Vice-President
Richard E. O'Keefe, Third Vice-President
Walter A. Merriam, Third Vice-President
Russell G. Demmett, Assistant Secretary
- MIDLAND MUTUAL LIFE INSURANCE COMPANY, 250 East Broad Street, Columbus 16, Ohio
Byron F. Shickly, Chief
- MINNESOTA MUTUAL LIFE INSURANCE COMPANY, 100 East Fifth Street, St. Paul, Minnesota
Charles L. O'Brien, Vice-President
David P. Cartwright, Assistant Secretary
Frank Somers, Assistant Secretary
- MONARCH LIFE ASSURANCE COMPANY, 100 West 2nd Street, St. Paul, Minnesota
Harold Thompson, Chief
- MONARCH LIFE ASSURANCE COMPANY, 100 West 2nd Street, Springfield, Massachusetts
W. Phillip Underwood, Chief Underwriter
- MONUMENTAL LIFE INSURANCE COMPANY, 100 West 2nd Street, Baltimore 2, Maryland
Millard D. Wheeler, Manager
- MUTUAL BENEFIT LIFE INSURANCE COMPANY, 100 West 2nd Street, New York 19, New York
William F. Ward, Vice-President
W. Franklin White, Underwriting Executive
George A. Billman, Assistant Secretary
Harry Petty, Manager
- MUTUAL LIFE ASSURANCE COMPANY, 100 West 2nd Street, Waterloo, Ontario, Canada
Howard W. Brown, Chief
- MUTUAL LIFE INSURANCE COMPANY, 100 West 2nd Street, New York 19, New York
Andrew C. Webster, Vice-President
George McNamara, Assistant Secretary
Edward G. Walker, Assistant Secretary
Morris Miller, Assistant Secretary
Manby E. Littlefield, Jr., Assistant Secretary

- NATIONAL LIFE AND ACCIDENT INSURANCE COMPANY**, National Building, Nashville, Tennessee
 Jesse L. Wills, *Executive Vice-President*
 Norman M. Hughes, *Vice-President and Chief Actuary*
 J. E. Taylor, *Actuary*
 Russell L. Wagner, *Actuary*
 Robert E. Stamps, Jr., *Manager, Ocala, Orlando, New Business Division and Senior Underwriter*
- NATIONAL LIFE AND CASUALTY INSURANCE COMPANY**, Phoenix, Arizona
 Robert C. Baderman, Jr., *Executive*
- NATIONAL LIFE INSURANCE COMPANY OF CANADA**, 522 University Avenue, Toronto 2, Ontario, Canada
 W. Buchanan, *Underwriting Secretary*
- NATIONAL LIFE INSURANCE COMPANY**, 431 State Street, Montpelier, Vermont
 Arthur C. Keith, *Director of Selection*
 Meredith E. Boncher, *Assistant Director of Selection*
 William F. Fitzsimmons, *Assistant Director of Selection*
 William J. Thibault, *Assistant Actuary*
- NATIONAL LIFE INSURANCE COMPANY**, 216 South High Street, Columbus 16, Ohio
 Eule B. Tison, *Director of Underwriting - Personal Lines*
 John A. Howe, Jr., *Chief Staff Life Underwriter*
 Lee C. Stephenson, *Manager, Life Underwriting and Service Department*
- NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY**, 301 Boylston Street, Boston, Massachusetts
 John L. Stearns, *Vice-President*
 Duane Arnold, *Senior Vice-President and Manager of the Underwriting Department*
 William A. Townsend, *Second Vice-President and Underwriting Secretary*
 Robert S. Andrews, *Chief Underwriting Secretary*
 Frank W. French, Jr., *Assistant Underwriting Secretary*
 Ernest V. Rowe, *Manager, Underwriting Department*
- NEW WOMAN LIFE INSURANCE COMPANY**, 618 Second Avenue, Seattle 1, Washington
 Howard Olson, *Assistant Secretary*
- NEW YORK LIFE INSURANCE COMPANY**, 31 Madison Avenue, New York, New York
 James T. Plubitz, *Senior Vice-President and Chief Actuary*
 John F. Ryan, *Vice-President and Actuary*
 Carl M. Muecke, *Vice-President*
 Ralph H. Bawles, *Assistant Vice-President*
 John J. McDonnell, *Senior Underwriter*
 William C. Harrison, *Senior Underwriter*
- NORTH AMERICAN ACCIDENT INSURANCE COMPANY**, 209 South LaSalle Street, Chicago 4, Illinois
 Miss Violet Drake, *Life Underwriter*

- NORTH AMERICAN LIFE AND CASUALTY COMPANY**, 1750 Hennepin Avenue, Minneapolis 5, Minnesota
 Ward H. Beall, *Underwriting Vice-President*
- NORTH AMERICAN LIFE ASSURANCE COMPANY**, 412-418 King Street, West, Toronto 1, Ontario, Canada
 Douglas T. Worr, *Underwriting Executive*
 H. E. Harding, *Underwriting Secretary*
- NORTH AMERICAN LIFE INSURANCE COMPANY**, 26 South State Street, Chicago 3, Illinois
 Frank R. Thomas, *Assistant Vice-President*
- NORTH AMERICAN REINSURANCE COMPANY**, 161 East 126th Street, New York, New York
 A. H. McAnally, *President*
 Raymond A. Burke, *Vice-President*
 Charles J. Rozza, *Assistant Secretary*
 Robert R. Gallagher, *Executive Actuary*
 John A. Carr, Jr., *Underwriter*
- NORTHERN LIFE ASSURANCE COMPANY**, London, Ontario, Canada
 Armand L. Manning, *Chief Underwriting Executive*
- NORTHERN LIFE INSURANCE COMPANY**, Third St University, Seattle 1, Washington
 A. L. Whitson, *Assistant Secretary*
- NORTHWESTERN MUTUAL LIFE INSURANCE COMPANY**, 720 East Wisconsin Avenue, Milwaukee 2, Wisconsin
 Paul K. Frazer, *Director of Underwriting*
 Keith C. Caspell, *Assistant Director of Underwriting*
 Leonard J. Schommer, *Assistant Director of Underwriting*
 Roy H. Boerth, *Superintendent, Underwriting Department*
 Elgin G. Fassel, *Senior Actuary*
 W. C. McCarter, *Assistant Actuary*
- NORTHWESTERN NATIONAL LIFE INSURANCE COMPANY**, 430 Oak Grove Street, Minneapolis 3, Minnesota
 Walter K. Fritz, *Underwriting Director*
- OCCIDENTAL LIFE INSURANCE COMPANY**, 1151 South Broadway, Los Angeles 31, California
 Memo T. Lake, *Actuary*
 John R. Pulliam, *Assistant Secretary*
- OHIO NATIONAL LIFE INSURANCE COMPANY**, 2100 Reading Road, Cincinnati, Ohio
 Robert M. Kidd, *Chief Underwriting Officer*
 W. R. Condon, *Underwriting Secretary*
- PACIFIC MUTUAL LIFE INSURANCE COMPANY**, 521 West Sixth Street, Los Angeles 55, California
 J. D. Rockafellow, *Manager, Underwriting Department*
 A. H. Strubhar, *Special Underwriter*
- PAN-AMERICAN LIFE INSURANCE COMPANY**, 290 Canal Street, New Orleans, Louisiana
 Charles J. Smith, *Underwriting Secretary*

QUAKER LIFE INSURANCE COMPANY, 18 Chestnut Street, Worcester, Massachusetts

W. Donald Marshall, *Superintendent, Life Department*

PRINCETON LIFE INSURANCE COMPANY, Independence Square, Philadelphia, Pennsylvania

Malcolm Adams, *President*

Thos. M. Hudson, *Senior Vice-President*

C. Robert Jones, Jr., *Superintendent of Applications*

W. Lewis S. Johnson, *Executive Superintendent of Applications*

M. Carl Stone, *Vice-President of Applications*

W. C. Stone, *Underwriter*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, Philadelphia, 7 Temple Lane, Philadelphia, Pennsylvania

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

THE FARMERS' LIFE INSURANCE COMPANY, 1111 H Street, N.W., Washington, D.C.

W. C. Stone, *Executive Superintendent*

QUAKER CITY LIFE INSURANCE COMPANY, 1815 Locust Street, Philadelphia, Pennsylvania

Arthur W. Wilson, *President*

REPUBLIC NATIONAL LIFE INSURANCE COMPANY, P.O. Box 210, Tarrant, Texas

L. I. Brewer, *Vice-President*

RESERVE LIFE INSURANCE COMPANY, 1111 H Street, Dallas, Texas

W. C. Kelton, *Chief Executive Officer*

RETAIL CHURCH COMPANY, P.O. Box 210, Tarrant, Texas

Louis R. Stone, *Vice-President*

William M. Stallborn, *President*

Grand Union P.O. Box 210, Tarrant, Texas

SAVINGS FUND LIFE INSURANCE COMPANY, 1111 H Street, Dallas, Texas

Harold G. Compton, *President*

W. C. Kelton, *Chief Executive Officer*

SAVINGS FUND LIFE INSURANCE COMPANY, 1111 H Street, Dallas, Texas

Harold G. Compton, *President*

W. C. Kelton, *Chief Executive Officer*

SECURITY LIFE INSURANCE COMPANY, 1111 H Street, Dallas, Texas

William H. Henson, *President*

SHENANDOAH LIFE INSURANCE COMPANY, 221 Randolph Avenue, S.W., Roanoke, Virginia

Floyd N. Bailey, *Chief Executive Officer*

SOUTHWESTERN LIFE INSURANCE COMPANY, 1111 H Street, Dallas, Texas

Robert B. Caplinger, *President*

W. C. Kelton, *Chief Executive Officer*

SOUTHWESTERN LIFE INSURANCE COMPANY, 1111 H Street, Dallas, Texas

Arthur Colburn, *Vice-President*

Ernest G. Brown, *Vice-President*

Douglas M. Tolbert, *Chief Executive Officer*

STANDARD INSURANCE COMPANY, 711 Portland 7, St. Paul, Minnesota

G. E. Cannon, *President*

John F. Hook, *Assistant Vice-President*

THE STANDARD LIFE ASSURANCE COMPANY, 1111 H Street, Montreal 25, Canada

J. C. Burns, *Associate Vice-President*

STATE FARM LIFE INSURANCE COMPANY, 1111 H Street, Bloomington, Illinois

I. M. Spear, *Vice-President*

J. H. Miller, *Senior Vice-President*

STATE LIFE INSURANCE COMPANY, 1111 H Street, Indianapolis, Indiana

William Sullivan, *Associate Vice-President*

Theodore I. Steele, *Secretary*

STATE MUTUAL LIFE ASSURANCE COMPANY OF AMERICA, 310 Main Street,
Worcester, Massachusetts
Charles F. Harris, *Vice-President*
Robert H. Woodford, *Underwriting Manager*
Robert H. Carey, *Assistant Underwriting Manager*
Donald E. Treadwell, *Assistant Underwriting Manager*

SEX LIFE ASSURANCE COMPANY OF CANADA, Dominion Square, Montreal,
Quebec, Canada
Harry R. Gundy, *Underwriting Executive*
John F. A. MacIntosh, *Assistant Superintendent of Underwriting*
George W. Wilson, *Underwriting Officer*

SIX LIFE ASSURANCE COMPANY OF AMERICA, Sun Life Building, Balti-
more 2, Maryland
George F. Smith, *Chief Underwriter*

T. EAYON LIFE ASSURANCE COMPANY, 1 Hayer Street, Toronto 2, Ontario,
Canada
Hamilton Mater, *Underwriting Secretary*

TEACHERS INSURANCE AND ASSURANCE ASSOCIATION OF AMERICA, 522 Fifth
Avenue, New York 11, New York
Robert M. Duran, *Vice-President and Actuary*
Walter A. Carter, *Assistant Actuary*

TRAVELERS INSURANCE COMPANY, 700 Main Street, Hartford 15, Con-
necticut
R. C. Dinan, *Vice-President, Life Department*
Louis R. Lyman, *Second Vice-President, Life Department*
Donald H. Lawson, *Secretary, Life Department*

UNION CENTRAL LIFE ASSURANCE COMPANY, 3-5 West Fourth Street,
Cincinnati 2, Ohio
Richard S. Rust, *Vice-President and Secretary*
Richard S. Rust, Jr., *Assistant Vice-President*
William J. Fritsch, *Assistant Secretary*
Wendell F. Hunsman, *First Vice-President*

UNION LABOR LIFE ASSURANCE COMPANY, 200 East 70th Street, New York
21, New York
Alfred C. Backhaus, *Assistant Actuary*

UNION MUTUAL LIFE ASSURANCE COMPANY, 306 Congress Street, Port-
land, Maine
Henry J. Southern, Jr., *Vice-President*

UNITED BENEFIT LIFE ASSURANCE COMPANY, 3316 Farnam Street, Omaha,
Nebraska
R. S. Wagner, *Vice-President*

UNITED LIFE AND ACCIDENT INSURANCE COMPANY, Concord, New Hamp-
shire
Dr. Philip M. L. Forsberg, *Medical Director*
William C. Ingham, *Director of Underwriting*

UNITED STATES LIFE ASSURANCE COMPANY, 81 William Street, New York
39, New York
John E. Shedd, *Assistant Secretary*

VOLUNTEER STATE LIFE ASSURANCE COMPANY, Volunteer Building, Club-
Innogo, Tennessee
H. Maxwell Shoemaker, *Chief Underwriter*

THE WESTERN AND SOUTHERN LIFE ASSURANCE COMPANY, 400 Broadway,
Cincinnati, Ohio
Robert P. Edwards, *Secretary*
J. J. Biering, *Manager, Industrial Department*
W. T. White, *Manager, Ordinary Underwriting Department*
George E. Biesack, *General Manager, Ordinary Department*

WISCONSIN NATIONAL LIFE ASSURANCE COMPANY, Oshkosh, Wisconsin
Homer L. Pratt, *Assistant Secretary*

WOODMEN ACCIDENT AND LIFE COMPANY, Lincoln, Nebraska
G. Selden Davey, *Assistant Secretary*

WOODMEN OF THE WORLD LIFE ASSURANCE SOCIETY, 1705 Farnam Street,
Omaha 2, Nebraska
Robert W. Deems, *Senior Underwriter*
Raymond M. Miller, *Underwriter*
Jack R. Smith, *Senior Underwriter*

HONORARY MEMBERS

- | | |
|----------------------|-----------------------|
| EDGAR C. BROWN | JAMES G. LATE |
| T. FREDERICK BRUNTON | J. BERTRAM MAHON |
| GEORGE E. BUNLEY | REGINALD C. McCANNE |
| MARSHALL L. CLEAVES | T. J. McKESSA |
| CHARLES V. CORNELL | HARRY McMAHON |
| LEIGH CHURCH | JAMES K. McPHERSON |
| WILLIAM H. DALLAS | SAMUEL MILLIGAN |
| ROY F. EDWARDS | LAWRENCE W. MORGAN |
| PERCY H. EVANS | HAY D. MURPHY |
| WILLIAM H. FLANIGAN | AUSTIN D. REILEY |
| HOWARD GOODWIN | LEWIS J. ROTHMAN |
| ROSS B. GORDON | GEORGE L. ROGERS, JR. |
| C. ARTHUR HACKNEY | WILLIAM F. ROUFFERS |
| FRANK J. HALLIDAY | PEARCE SHEPHERD |
| SAMUEL G. HOPKINS | RAUEL C. SEATON |
| VALENTINE HOWELL | JAMES C. TAYLOR |
| DR. ARTHUR HUNTER | WALTER TERRETTIS |
| FRANK J. KEEFE | JOHN S. THOMPSON |
| HAROLD F. LARKIN | RUDOLPH F. TULL |
| | J. D. WILLIAMSON |

Fuel fabrication plants—that is, the manufacture of fuel elements for reactors and the chemical processing of source materials and special nuclear materials for them—are coming to the fore and being built. Probably in another year it will be possible to review these plants which at the present time do not involve too many persons; in a year or two there may be enough lives exposed so that the insurance industry will want to know more about them.

Having a paper written for me by the AEC in much better form than I could give it to you, I will now introduce the guest speaker, with whom I have been acquainted for a number of years.

Dr. Smith graduated from McGill University, and after spending some time in the profession, became the chief medical officer of the Johns-Manville Corporation, Canadian Division. In 1952 he was promoted to Medical Director of all the Johns-Manville plants in both the United States and Canada.

I can speak for his experience and his knowledge of the types of exposure in which you are interested, because I have been privileged to work very closely with Dr. Smith and his associate, Mr. Hugh Jackson, who jointly carry out the Industrial Health Program of the Johns-Manville Corporation.

I think we are fortunate in having had both Johns-Manville and Dr. Smith accept your invitation to participate in this program, and to bring to you such data as is available to them. Preparation of this material has been a joint project of Dr. Smith and Mr. Jackson as co-authors. Here to present their material is Dr. Kenneth W. Smith.

THE ASBESTOS INDUSTRY— CERTAIN HEALTH EXPERIENCES AMONG ASBESTOS WORKERS

BY KENNETH W. SMITH, M.D., AND HUGH JACKSON

In this presentation I shall try to outline certain health experiences which we have seen in asbestos workers, not only in my own company but in many other associated companies.

While asbestosis is a well recognized occupational disease, there are relatively few people in the working populations of the United States and Canada who are exposed to asbestos dust, and, actually, very few ever develop the disease. It will be shown that the lives of the asbestos workers are not shortened by their occupation, and also that work in these trades does not predispose the individual to other pulmonary diseases of nonoccupational nature.

The word "asbestos" is generally used to describe several fibrous magnesium silicates which are entirely different in their chemical composition and in their physical properties. There are several types of these fibers. The most important are the chrysotile, amosite, and crocidolite. Deposits of these various types of fibers are found throughout the world. The largest deposits are in eastern Canada and Africa.

These asbestos fibers are highly resistant to heat and some are resistant to acids. They have great tensile strength and large surface areas. Because of these properties, as well as their filamented structure, the industrial use of these fibers throughout the world is increasing. The textile industry has used these fibers for generations to produce blankets, clothing, threads, ropes, tapes, braided tubing, and filters.

In recent years, however, there has been an increasing use of asbestos in the insulation, building, and friction material trades. In addition, the fiber can be found in wallboard, shingles, pipe covering, floor tiles, brake linings and brake blocks, cements, putties, and extensively in plastics.

Historically the material has been used for many years. Those who are biblical students will recall that in the third chapter of Daniel the three men, Shadrach, Meshach and Abednego were thrown into the fiery furnace by Nebuchadnezzar.

zar, the king of Babylon. They emerged from the fire completely unharmed, and archeologists today lead us to believe that they were protected from the flame by a blanket of woven asbestos fiber. Thus we can see that the mineral has been used for many centuries, but it was not until 1927—thirty years ago—that a definite occupational pulmonary disease was associated with the inhalation of this fiber.

As previously indicated, the industry is finding many new uses for the fiber when mixed with other materials. It is an established fact that when asbestos fiber is mixed with silica or diatomaceous earth or other potentially toxic dusts, the pulmonary changes resulting from the inhalation of these mixtures are not typical of asbestosis. The X-ray pattern is different; the clinical course of the patient is changed, or the susceptibility to intercurrent infection is increased or decreased.

Thus, in making a diagnosis of occupational pulmonary disease, it is highly important to obtain a detailed occupational history; not only the job title, but also a complete list of raw materials used in the particular job, so that asbestosis, silicosis, or the mixed pneumoconioses can be differentiated.

We believe that there are fewer than 15,000 people in the United States and Canada who are employed today in mines and mills where their potential exposure is only to asbestos fiber. In this industry the various mining, milling, and manufacturing operations create some dusts which are capable of being inhaled. If asbestos fibers from ten to fifty microns in length are inhaled continuously and in sufficient quantities over a period of many years, a typical pulmonary fibrosis will develop. It has been demonstrated that this fibrosis is not due to the chemical, but rather to the mechanical action of the fibers.

The fibers are deposited in the terminal bronchioles of the lungs. Then the tissue reacts, coating the fiber and forming what is known as the asbestos body. This appears to be a defense mechanism of the lung.

Many individuals who have these asbestos bodies in their sputum have had only intermittent exposures to the dust and have absolutely no evidence of the disease. So it seems more appropriate to use the term "asbestos bodies" rather

than "asbestosis bodies," signifying an exposure to the fiber but not necessarily indicating disease.

If increasing quantities of the fiber are continually inhaled, the tissue reaction progresses and a generalized, diffuse fibrosis or scarring appears throughout the lower lobes of the lungs. With additional exposure this fibrosis may spread to the other lobes of the lungs, resulting in respiratory embarrassment, and eventually cardiac failure.

The pulmonary fibrosis resulting from prolonged inhalation of the fiber will produce a very typical X-ray pattern which does not resemble that produced by any of the other known toxic dusts. The X-ray picture should never be used to estimate the presence or extent of an impaired pulmonary function or disability. Many cases with X-ray evidence of advanced asbestosis have been known to carry on their work and live very comfortable lives for several years.

There's no typical clinical picture of asbestosis. The disease is very slow and insidious in its onset, and very slowly progressive with continued inhalation of the fiber. The textbook signs of cyanosis and clubbing of the fingers are virtually non-existent in the cases of asbestosis we see today.

An X-ray survey was made of 708 employees working in an asbestos mill where the ore was dried, crushed, separated and graded, packed and then shipped. Operations in this plant required the employees to rotate through various jobs, so that it was impossible to relate any X-ray changes to a particular job or to a specified dust concentration. At the same time, it could be assumed that all members of the group had been exposed to varying concentrations of the dust.

The X-rays of these employees were divided into three groups: essentially normal; those with exaggerated markings, but not typical of any disease; and those with definite asbestosis. Of the 708 employees studied, 649 or 91 per cent had normal X-rays. This is of interest, because 204 of the employees, or 29 per cent of the total, had more than ten years of service. Two men actually worked over forty years in varying dust concentrations with absolutely no evidence of any increased markings in their X-rays.

Fifty-two of the 708 employees showed some increase of all peribronchial markings although none had any evidence

of asbestosis. Sixty-nine per cent of this group had more than ten years of service.

Of the original group of 708, only 7 had developed X-ray evidence which could be diagnosed positively as asbestosis. These men exhibited various stages of pulmonary involvement. All were working steadily at their jobs with no signs of disability. It is of interest to note here that none of the men developed X-ray evidence of asbestosis with under twenty years of exposure.

Medical literature has given considerable attention to occupational pulmonary disease, but very little has been reported on the occurrence of nonoccupational respiratory disease among employees in the dusty trades.

In order to determine the incidence of nonoccupational disease in a group of 1,561 men and women working in the asbestos industry, it was decided to study the claims submitted for sickness and accident insurance. All employees in the survey group participated in the plan operated by an independent insurance company. Indemnification was made only after the nature of the illness had been certified by the treating physician.

The study included claims submitted over a five-year period for such illnesses as the common cold, sinusitis, pharyngitis, grippe, bronchitis, pneumonia, asthma, and pleurisy. Occupational pulmonary diseases such as asbestosis were excluded from the report.

Of the 1,561 employees in the survey group, there were approximately equal numbers in the dusty and nondusty occupations. Of all claims filed for respiratory diseases, only 15 per cent were for employees who had a dust exposure. Not only did this survey show that the incidence of disease over the five-year period was approximately the same in each group, but it also established that there was no appreciable difference in the duration of illness in either group. Also clinical observations for many years had given the impression that a dusty occupation in itself would not predispose a person to more nonoccupational respiratory disease than would a dust-free job.

Animal experiments and clinical observations have shown that asbestosis does not predispose a person to the develop-

ment of pulmonary tuberculosis, nor does it aggravate an apparently healed tuberculous lesion. In two isolated one-industry towns in the Province of Quebec where asbestos was mined and processed, the incidence of tuberculosis over a period of many years was no greater than that of other isolated towns with comparable population, but without a dusty trade. In addition, the incidence of tuberculosis among asbestos workers was lower than that in the general population in these mining towns.

Conflicting opinions and different reports make it extremely difficult to confirm or deny conclusively the causal relationship of asbestosis and carcinoma of the lungs. Too often a common conclusion is drawn from observations and experiences with different racial groups living in different parts of the world, under variable socio-economic conditions and working in diverse occupational exposures. To these variables I'd like to add the fact that there are the various types of asbestos fibers, which may have different actions on the lungs.

The Canadian experience with asbestosis has been limited to the chrysotile fiber. The majority of industrial processes in the United States use this fiber, but recently there has been some increase in the use of amosite and crocidolite. On the other hand, the British and other European industries use greater quantities of the harsher fibers, amosite and crocidolite. Therefore, in trying to clarify the causal relationship of asbestosis in cancer, many variable facts should be clearly identified, especially the type of fiber used and whether or not other dusts, such as silica or diatomite, were present in the industrial or environmental atmosphere.

To amplify this point I'd like to take a few moments to describe the three types of asbestos fibers most commonly used today.

An electron micrograph of the South African blue or crocidolite fiber would show that it is composed of many short, sharp spicules which are rather brittle.

Amosite fiber is brownish yellow in appearance and found in Africa and Australia. Seen under the electron microscope at the same magnification as above, the fibers would appear longer, less sharp, and they actually are less brittle than the crocidolite.

Crude chrysotile fiber found chiefly in Canada is greenish white in appearance. Electron micrographs show that this fiber is long, soft and silky.

I think that it is reasonable to assume that the short, sharp and brittle fibers such as crocidolite and amosite could cause much more extensive damage to the lung than could the long, soft, silky chrysotile fiber. Therefore, I think it is unfair to compare the experience of some of the European operations with our North American operations, using different types of fibers with different actions.

To amplify my statement that there are different occupational diseases having different X-ray pictures and different clinical patterns, I would like to describe the X-ray appearances of some of these diseases.

The X-ray in asbestosis shows a fine, diffuse, infiltration, bilateral in both lower lung fields. The heart outline is sluggy or completely obliterated. The nodular or conglomerate patterns of other pneumoconioses are not seen in asbestosis.

In silicosis the X-ray reveals a nodular infiltration which is bilateral and appears in all lung fields from apex to base. Conglomerate shadows can appear in any of the various lung fields. The homogeneous or ground glass appearance of asbestosis is not seen here.

The X-ray of diatomite pneumoconiosis can show an exaggeration of all linear markings, a very fine nodular or granular pattern, and frequent large coalescent shadows usually in the apices.

The X-ray pictures resulting from the inhalation of a mixture of dusts never follow the same pattern and certainly are not typical of either of the inhaled dusts. In present-day working environments a man might be exposed to mixtures of silica and coal, asbestos and silica, or diatomite and silica. Thus you could have many bizarre X-ray shadows changing from fine granular infiltrations to homogeneous and later to coalescent shadows in the same individual.

Several years ago, anyone who installed insulation materials was called an asbestos worker, because asbestos was practically the only material used for this purpose. Today, however, there are mineral fibers, synthetic fibers, clays, cement, magnetite, and a host of other substances used in the insulating

trades. The majority of these materials are relatively non-toxic, and it is obviously incorrect to label the insulation installer today as an asbestos worker.

There are numerous articles in the medical literature today reporting the incidence of asbestosis or asbestosis and lung cancer among asbestos workers. The conclusions of the authors should not be accepted implicitly unless the report clearly indicates that the so-called asbestos worker was exposed only to asbestos fibers and not to a mixture of dusts.

One company in the group I am reporting has a retirement plan which has been in effect for sixteen years. They have a total enrollment of slightly over 21,000 people; but, of course, this figure has varied slightly through the years. Since they started to use asbestos fibers just about 100 years ago, the following review of the pension plan will include employees who have had an exposure to the fiber over a long period of time.

In the past sixteen years there were 1,185 employees who retired under the provisions of the pension plan. The average length of employment for this group was 24 years. Although we are unable to determine specifically how many of these had extensive exposures to asbestos fiber, it is reasonable to assume that the majority had, since asbestos is used in nearly all of the product lines. Of the 1,185 there were 180 who retired for disability before reaching the age of 65. Only 6 of these had asbestosis.

This low incidence based on long employment with potential exposure would seem to indicate that the asbestos trade is not as hazardous as may have been indicated in the past.

Conclusions

1. Asbestosis is a recognized occupational pulmonary disease, slow and insidious in its onset. It takes many years of exposure to develop, it does not progress after exposure ceases, and there is very little disability until it is far advanced.
2. There are relatively few workers exposed only to this dust in industry today.