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5OCUMENT DESCRIPTION: Dr. Lanza Publications and Presentations Denying that the US Asbestos Industry had an Excess of Cancer in its' Workers

July, 1950, a conference was held at Oxford dealing with cancer in relation to sociological and environmental factors other than occupation. Proceedings of this conference have been published.[51]

ABSTRACT OF DISCUSSION

DR. PAUL CARTIER, L'Annonciation, Que., Canada: I have been asked to describe our experience at the Thetford Industrial Clinic in Quebec, where we see men engaged in the asbestos-mining industry in Canada. Table 3 presents data on eight cases of primary cancer of the lung which we have detected among 4,000 asbestos workers between 1940 and 1950.

In addition to those listed in the table, there was a case in which there was quite a definite clinical and radiological history of cancer of the lung but for which, unfortunately, no autopsy was performed. Also there were three other cases with a strong suspicion in favor of a cancer of the lung but for which no sufficient data are available.

On analyzing these data it seems obvious that many points would need discussion before anyone will be able to establish a causal relationship between these pathological findings and the asbestos factor.

Is it not more logical to think that the same causal factor will produce the same type of tumor, and, therefore, why do we observe such a variety of malignant tumors?

TABLE 3.—*Cases of Carcinoma of the Lungs Detected Among 4,000 Asbestos Workers 1940-1950*

Patient	Years of Exposure	Years in Industry	Age at Death	Degree of Asbestosis	Type of Tumor
[illegible]	30	34	60	Minimal	Bronchogenic carcinoma
A. A.	25	25	61	Minimal	Bronchogenic carcinoma
A. D.	21	21	53	Advanced	Mediastinal lymphosarcoma with pulmonary metastasis
L. G.	11	17	60	None	Bronchogenic carcinoma
L. T.	10	20	63	Minimal	Pleural mesothelioma*
Z. G.	2	14	64	None	Bronchogenic carcinoma
U. B.	None significant	27	50		Bronchogenic carcinoma (thoracotomy)
W. C.	None	28	65	None	Pleural mesothelioma*

* "Standard Nomenclature of Diseases and Operations" published by the American Medical Association (New York, The Blakiston Company, 1952) suggests the term "mesothelial sarcoma."

If for a moment we may assume that the asbestos fibers might produce a bronchogenic carcinoma in asbestotic employees with significant exposure, then only two cases of the series would serve as evidence because the cases of mesothelioma or lymphosarcoma and cases without exposure or without asbestosis do not have the conditions required.

As a last remark, it would appear necessary that any statistics on occupational cancer of the lung, to be conclusive, should indicate the precise variety of lung cancer.

MR. EDWARD A. LEW, New York: The difference in the frequency of lung cancer in persons with asbestotic lungs as compared with the large group of silicotics provided by the Pneumoconiosis Board seems impressive. However, one might wonder whether the two groups had been examined for cancer with equal care. I am impressed by the fact that when different groups of lungs were studied by the same observer, Dr. Gloyne, the differences in frequency of lung cancer were much less. If we restrict our attention solely to Dr. Gloyne's series, I am not sure that the differences are statistically significant.

DR. A. J. LANZA, New York: I think it is important to distinguish between cases of clinically recognizable and fatal lung cancer, on one hand, and cases in which the diagnosis of lung cancer has been made as more or less of an incidental finding at autopsy, on the other. The English claim for an association between lung cancer and asbestosis has been based, it seems to me, on data obtained from lungs that a pathologist has searched with a microscope. I wonder how many

51. Conference on Geographical Pathology and Demography of Cancer, J. Nat. Cancer Inst. 11:627-662. 1950.

cases of lung cancer would be found if lungs from any sort of population were subjected to the same minute scrutiny?

DR. SMITH: In regard to Dr. Cartier's query as to the significance of different types of lung cancer, it may be pertinent to note that a diversity of tumors was found in the lungs of chromate workers reviewed by Dr. Anna Baetjer. Experimentally, the polycyclic hydrocarbons evoke a great variety of tumor types. If asbestos is carcinogenic, I would not expect to see it produce only one type of tumor. I am interested in your observation of two cases of pleural mesothelioma. This is a rather rare tumor. In examining pathological material sent us from England by Dr. Hinson, we found among six cancerous asbestotic lungs two presenting alveolar cell carcinoma. These tumors are often diagnosed as "pleural mesothelioma." I should very much like to exchange slides with you.

In reply to Mr. Lew and Dr. Lanza, it was my understanding that the English cases of silicosis and their cases of asbestosis were handled in the same general fashion through the Pneumoconiosis Board and that the lung cancer rate found in silicotics could therefore serve as a reasonably satisfactory control for the lung cancer rate in cases of asbestosis. In Dr. Gloyne's series of 81 cases of lung cancer in the several pneumoconiosis groups and in the control group, the tumor was evident in the gross in all except 6. Some of his material was destroyed during the bombing of London, but his recollection was that all of the cancers in asbestotics were recognizable in the gross.

DR. JOHN L. POOL, New York: Have experimental studies thrown any light on the question of lung cancer in relation to asbestosis?

DR. SMITH: In 1941, Nordmann and Sorge in Germany claimed to have produced cancer in the lungs of mice by exposing them repeatedly to asbestos dust. Their statement that cancer had resulted in 20% of their exposed animals is occasionally quoted. Actually, their "20%" figure referred only to two mice, one of which [illegible] their lesions commonly as a spontaneous growth in mice. [illegible] photography does not impress [illegible] merely an area of squamous cell [illegible]

SEVENTH SARANAC SYMPOSIUM

SEPTEMBER 22
TO
SEPTEMBER 26
1952

65221

THE SARANAC LABORATORY
of the
Edward L. Trudeau Foundation
Saranac Lake, New York

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Foreword

The Saranac Symposiums, of which this session is the Seventh, have been organized periodically for the discussion of health problems pertaining to workers exposed by inhalation to industrial substances. The subjects to be discussed at the Seventh Saranac Symposium will be limited but many have broad application. The topics will not be restricted to individual companies or industries, nor will they concern only a single group such as the employer or the employee, the insurer or the insured. The problems to be considered involve a host of diverse interests — engineering, medical, legal, administrative, social. At the symposium representatives of each of those groups and interests will have the opportunity to explore and discuss common problems with the objective that industrial health be improved. If that objective is attained, the symposium will be a successful one.

Participants in Program

AMBERSON, J. BURNS, M.D., Professor of Medicine, Columbia University — College of P & S, Visiting Physician-in-Charge, Chest Service, Bellevue Hospital, Member, Board of Chest Consultants, Workman's Compensation Board of New York State, New York, N.Y.

ANDREWS, EARLE T., Vice-President in Charge of Operations, Pennsylvania Glass Sand Corporation, Hancock, W. Va.

BAETJER, ANNA M., Sc.D., Associate Professor of Environmental Medicine, The Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.

BARNAKO, FRANK, Manager of Compensation and Safety, Bethlehem Steel Company, Bethlehem, Pa.

BRAUN, DANIEL C., M.D. Medical Director, Industrial Hygiene Foundation of America, Pittsburgh, Pa.

BRISTOL, LEONARD J., M.D., Head, Department of Radiology, The Trudeau Foundation, Saranac Lake, N.Y.

CARTIER, PAUL, M.D., Medical Director, Thetford Industrial Clinic, Thetford Mines, Quebec, Canada

CONNOLLY, WILLIAM L., Director of Bureau of Labor Standards, U. S. Department of Labor, Washington, D. C.

DONLON, MARY, Chairman, Workman's Compensation Board of New York State, Albany, N.Y.

DRINKER, PHILIP, Sc.D., Professor of Industrial Hygiene, Harvard University School of Public Health, Boston, Mass.

DURKAN, THOMAS M., Assistant Director, The Saranac Laboratory, Saranac Lake, N.Y.

EISENBUD, MERRIL, Director, Health and Safety Division, U. S. Atomic Energy Commission, New York Operation's Office, New York, N.Y.

FLETCHER, CHARLES M., M.D., Director, Pneumoconiosis Research Unit, The Medical Research Council, Llandough Hospital, near Penarth, Cardiff, Wales, Senior Lecturer, Postgraduate School of Medicine, University of London, London, England

FRIEDMAN, LOUIS, M.D., Friedman Diagnostic Clinic, Birmingham, Ala.

GENTHOLTS, A. J., Assistant Counsel, Republic Steel Corporation, Cleveland, Ohio

GREENBURG, LEONARD, M.D., Director, Division of Industrial Hygiene and Safety Standards, New York State Department of Labor, New York, N.Y.

GREGOIRE, FERNAND, M.D., Medical Director, Lavoisier Institute, Montreal, Quebec, Canada

HAMLIN, LLOYD E., M.D., Medical Director, American Brake Shoe Company, Chicago, Ill.

HARDY, HARRIET L., M.D., Associate Physician, Occupational Medical Clinic, Massachusetts General Hospital, Boston, Mass.

HATCH, THEODORE F., School of Public Health, University of Pittsburgh, and Industrial Hygiene Foundation, Mellon Institute, Pittsburgh, Pa.

HILFINGER, MARTIN F., President, Associated Industries of New York State, Buffalo, N.Y.

HILL, JAMES L., Commissioner, Workmen's Compensation Commission, State of Michigan, Lansing, Mich.

HUEPER, W. C., M.D., Chief, Cancerigenic Research Studies Section, Cancer Control Branch, National Cancer Institute, National Institutes of Health, Bethesda, Md.

HUGH-JONES, PHILIP, M.D., Senior Lecturer in Medicine, University College of the West Indies, Mona St. Andrews, Jamaica, B. W. I.

KALMYKOW, ANDREW, Assistant Manager, Casualty Department, Association of Casualty and Surety Companies, New York, N.Y.

KUECHLE, B. E., Vice-President and Claims Manager, Employers Mutual Liability Insurance Co. of Wisconsin, Wausau, Wis.

LANZA, ANTHONY J., M.D., Chairman, Institute of Industrial Medicine, New York University, Bellevue Medical Center, New York, N.Y.

LEVIN, MORTON L., M.D., Assistant Commissioner for Medical Services, New York State Department of Health, Albany, N.Y.

LYNCH, KENNETH M., M.D. Professor of Pathology and Dean, Medical College of the State of South Carolina, Charleston, S. C.

MCCANN, WILLIAM S., M.D., Professor of Medicine, University of Rochester, Physician-in-Chief, Strong Memorial Hospital, Rochester, N.Y.

MCGEE, LEMUEL C., M.D., Medical Director, Hercules Powder Company, Wilmington, Del.

MAYER, EDGAR, M.D., Clinical Professor of Industrial Medicine, New York University Postgraduate Medical School, Member, Board of Chest Consultants, Workmen's Compensation Board of New York State, New York, N.Y.

MEREDITH, GEORGE E., Vice-President and General Attorney, New Jersey Manufacturers' Casualty Insurance Co., Trenton, N. J.

MEREWETHER, E. R. A., M.D., H. M. Senior Medical Inspector of Factories, Ministry of Labour and National Service, St. James Square, London, England

MIDER, G. BURROUGHS, M.D., Associate Director in Charge of Research, National Cancer Institute, National Institutes of Health, Bethesda, Md.

MOTLEY, HURLEY L., M.D., Director, Cardio-Respiratory Laboratory, Jefferson Medical College Hospital, Barton Memorial Division, Philadelphia, Pa.

ORENSTEIN, A. J., M.D., Chief Medical Officer, Rand Mines, Ltd., Johannesburg, Union of South Africa

PRATT, PHILIP C., M.D., Associate Pathologist, The Saranac Laboratory, Saranac Lake, N.Y.

RHOADS, C. P., M.D., Director, Memorial Center for Cancer and Allied Diseases, New York, N.Y.

SABOURIN, IVAN, Queen's Counsel, Counsel to Quebec Asbestos Producers Association, Montreal, Quebec, Canada

SANDER, O. A., M.D., Associate in Medicine, Marquette University Medical School, Consultant in Industrial Medicine, Milwaukee, Wis.

SHAVER, C. G., M.D., Superintendent, Niagara Peninsula Sanatorium, St. Catherines, Ontario, Canada

SOLANDT, DONALD, M.D., Professor of Physiology and of Physiological Hygiene, Faculty of Medicine, Toronto, Canada

THOMPSON, M. W., Treasurer and General Manager, Hall China Company, East Liverpool, Ohio

TRUDEAU, FRANCIS B., M.D., President, Board of Trustees of the Trudeau Corporation, Saranac Lake, N.Y.

URBAN, E. C. J., Industrial Hygiene Engineer, The Saranac Laboratory, Saranac Lake, N.Y.

VORWALD, ARTHUR J., M.D., Director, The Trudeau Foundation and The Saranac Laboratory, Saranac Lake, N.Y.

WAGNER, RICHARD, Manager, Casualty Department, Association of Casualty and Surety Companies, New York, N.Y.

WARING, JAMES J., M.D., Professor of Medicine, University of Colorado School of Medicine, Denver, Colo.

WATERS, THEODORE C., Counsel to Industrial Hygiene Foundation, Industrial Counsel, Mullikin, Stockbridge and Waters, Baltimore, Md.

WHIPPLE, EDWARD G., M.D., Consultant Physician, Strong Memorial Hospital, Member Board of Chest Consultants, Workmen's Compensation Board of New York State, Rochester, N.Y.

WRIGHT, GEORGE W., M.D., Head, Department of Physiology, The Trudeau Foundation, Saranac Lake, N.Y.

— Notes —

Wednesday, September 24

9:00 A.M. — 1:00 P.M.

Pneumoconiosis and Pulmonary Cancer

Introduction Chairman: C. P. RHOADS, M.D.

Philosophy of Biostatistics as Applied to Environmental Pulmonary Cancer — Morton L. Levin, M.D.

Discussion

General Review — W. C. Hueper, M.D.

Discussion

Asbestos Miners — Paul Cartier, M.D.

Discussion

Asbestos Weavers — Kenneth M. Lynch, M.D.

Discussion, led by

E. R. A. Merewether, M.D.

Group Photograph

— Notes —

Wednesday, September 24

2:30 P.M. — 5:30 P.M.

Pneumoconiosis and Pulmonary Cancer
(Continued)

Chromate Workers Anthony J. Lanza, M.D.

Discussion

Experimental Pulmonary Cancer — General Review
G. Burroughs Mider, M.D.

Discussion

Pulmonary Cancer in Experimental Exposures to Chromate
Anna Baetjer, Sc.D.

Discussion

Pulmonary Cancer in Experimental Exposures to Beryllium
Arthur J. Vorwald, M.D.

Discussion

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— Notes —

Thursday, September 25

2:30 P.M. — 5:30 P.M.

Workmen's Compensation — Medical and Legal Aspects

Chairman: M. W. THOMPSON

Concepts of Disability Under Workmen's Compensation Statutes

Theodore C. Waters

Compensation for Disability and Death Resulting from the Pneumoconioses

George W. Wright, M.D.
George E. Meredith
Martin F. Hilfinger

Discussion, led by Andrew Kalmykow

7:30 P.M.

Banquet — Hotel Saranac

Introduction of Guests — Arthur J. Vorwald, M.D.

Remarks — Francis B. Trudeau, M.D.

Leroy U. Gardner Memorial Lecture

Anthony J. Lanza, M.D.

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— Notes —

Thursday, September 25

9:00 A.M. — 1:00 P.M.

Clinical Aspects of Pneumoconiosis

Chairman: WILLIAM S. MCCANN, M.D.

Incidence of Clinically Manifest Diffuse Obstructive Emphysema

Leonard J. Bristol, M.D.

Discussion

Pulmonary Function Studies in Men Exposed for Ten or More Years to Inhalation of Asbestos Fibers

Fernand Gregoire, M.D.

Discussion

Maximum Ability for Physical Work of Moderate Duration Correlated with Various Tests of Pulmonary Function

George W. Wright, M.D.

Discussion

Cardio-Circulatory Aspects of the Pneumoconioses

William S. McCann, M.D.

Discussion, led by James J. Waring, M.D.

— Notes —

Friday, September 26

9:00 A.M. — 1:00 P.M.

Viewpoints on Compensation for Pulmonary and Other Occupational Diseases

Chairman: Hon. MARY DONLON

The Functions and Value of Medical Boards and Medical Examiners in Controverted Compensation Cases

Lemuel C. McGee, M.D.

Board of Chest Consultants, Workmen's Compensation Board, New York State
Edgar Mayer, M.D.
J. Burns Amberson, M.D.
Edward G. Whipple, M.D.

A. J. Gentholts

Discussion

The Presentation of Medical Evidence in Controverted Compensation Cases

Daniel C. Braun, M.D.
Frank Barnako
Ivan Sabourin

Discussion

Group Photograph

— Notes —

Friday, September 26

2:00 P.M. — 5:30 P.M.

Administration of Workmen's Compensation Laws as They Relate to the Pneumoconioses

Moderator: THEODORE C. WATERS

Panel Members:

James L. Hill
William L. Connolly
B. E. Keuchle
Earle T. Andrews
Lloyd E. Hamlin, M.D.

Summary

Workmen's Compensation Sessions

Theodore C. Waters

Conclusion of the Symposium

Summary of the Medical Sessions and Remarks

Arthur J. Vorwald, M.D.

— Notes —

Monday, September 22

9:00 A.M.

Registration:
John Black Room, The Saranac Laboratory
7 Church Street, Saranac Lake New York

Early arrivals are requested to register on Sunday, September 21.

9:45 A.M.

Address of Welcome

Arthur J. Vorwald, M.D.

10:00 A.M. — 12:00 Noon

Definitions and Clarification of Terms Pertaining to Pneumoconiosis

Moderator: ARTHUR J. VORWALD, M.D.

Panel Members:
Anthony J. Lanza, M.D.
Leonard Greenburg, M.D.
O. A. Sander, M.D.
Richard Wagner
Charles M. Fletcher, M.D.

Discussion, led by A. J. Orenstein, M.D.

— Notes —

Monday, September 22

2:00 P.M. — 5:30 P.M.

The Inhalation of Certain Industrial Substances

Chairman: THEODORE F. HATCH

Brief Reviews

Silica	Thomas M. Durkan
Asbestos	Arthur J. Vorwald, M.D.
Beryllium	Harriet L. Hardy, M.D.
Bauxite	C. G. Shaver, M.D. and Donald Solandt, M.D.

Discussion

New Synthetic Silicas

Philip C. Pratt, M.D.

The Fate of Inhaled Particulates

Merril Eisenbud

Discussion, led by Theodore F. Hatch

— Notes —

Tuesday, September 23

9:00 A.M. — 1:00 P.M.

Pneumoconiosis in Coal Miners

Chairman: PHILIP DRINKER, Sc.D.

Industrial Hygiene Studies of Coal Miners in Two Geographical Areas in the United States

E. C. J. Urban

Discussion

Radiological Classification

Charles M. Fletcher, M.D.

Discussion

Pathology of Coal Workers' Pneumoconiosis

Arthur J. Vorwald, M.D.

Discussion

Epidemiology of Coal Workers' Pneumoconiosis in Wales

Charles M. Fletcher, M.D.

Discussion

— Notes —

Tuesday, September 23

2:30 P.M. — 5:30 P.M.

Pneumoconiosis in Coal Miners
(Continued)

Chairman: O. A. SANDER, M.D.

Pneumoconiosis in Coal Miners in Alabama
Louis Friedman, M.D.

Discussion

Pulmonary Function Studies of Coal Miners in Pennsylvania and West Virginia
Hurley L. Motley, M.D.

Pulmonary Function Studies of Coal Miners in Wales
Philip Hugh-Jones, M.D.

Discussion

BY DOCTOR RHOADS:

Thank you, Doctor Merewether. Is there a comment about the Merewether discussion? (No response).

Doctor Lanza, I think you can make some comment on this.

BY DOCTOR LANZA:

Mr. Chairman, Ladies and Gentlemen, before going into this brief statement of mine on chromates, I would like to make a few comments on Doctor Merewether's observations.

I was very much impressed with what Doctor Merewether said, and there is no question but what a very careful, painstaking job has been done in Great Britain on the subject of trying to determine what the hazard might be in the asbestos industry with respect to cancer.

There are just a couple of comments, I'm not saying one way or the other, that it may or may not influence the incidence of cancer. I would raise a couple of points which I think all of us might keep in mind, and which might possibly have some bearing on the situation in England.

Now, I have visited, somewhat extensively, I think, nearly all the asbestos plants of the United States, and the mines and the mills in Canada and have spent quite a lot of

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time there, and have spent a lot of time reviewing films, and not long ago, spent several days with Doctor Kenneth Smith on asbestos, reading his films.

I find it difficult to believe that our cancer incidence among asbestos workers could be anything like as large as it seems to be in England, because while I'm perfectly free to admit that we may have missed cancer cases which we should have not, on the other hand, I don't think we could have missed all of them if they had occurred, into the same extent that apparently they do in England.

Now, that is simply an observation of mine. Of course, it is true that as soon as the business of the harmful effects of asbestos once took hold in the American industry, they did start to clean up their plants and, while I wouldn't say that all the asbestos plants in the country were marvels of industrial hygiene perfection, nevertheless great strides have been made, and particularly, for instance, in the plant in Doctor Kenneth Lynch's town in Charlotte, South Carolina, where they have done a very beautiful job, so that with the small number of people in the industry, it's obvious that we are never going to have the clinical experience with asbestosis that we have, for instance, with silicosis, because there is not going to be the material to work on.

Now, back of that, there is still one more question.

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That is the nature of the asbestos itself. Now, when I first used to go to Canada, I used to hear frequently that, up there, that the Canadian asbestos was less damaging than the kind they used in England, I believe, and I have put that comment down to what we might call the national or local patriotism, you know, like the rivalry between towns, so that you so frequently see, but the fact remains the same, that in this country, we do use the asbestos, mostly the asbestos that we get from Canada, and I believe, from what I hear from our English friends, that a great deal, if not the major part of the asbestos used in England, is Rhodesian asbestos, which is quite dissimilar in its construction and in its formation, its physical characteristics, to the kind that comes from Thetford and from asbestos in Canada.

Now, that may have nothing to do with it, and up until two or three years ago, I dismissed that. I thought that was just purile, but since we have in the last few years, learned that different types of silica, for instance, produce entirely distinct pathological effect, I am beginning to wonder if we have not failed to pay sufficient attention to the type of asbestos which varies even, as I am informed, there is a difference between the asbestos that is mined in the town of Asbestos and the kind that is mined not far away in Thetford, and yet both of these, in turn,

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are quite different from the asbestos that come from Rhodesia, and possibly from other parts of the world with which I'm not acquainted.

And, having in mind the lesson we've learned in the silica dust, I think that is something perhaps that we should pay more attention to. Now, I simply raise that point, because I think it may have a great deal more significance than we have been inclined to give it.

Now, I have summarized - I have summarized my remarks here very briefly, because the topic of chrome is going to be handled by Doctor Anna Baetjer, who has done the experimental work in chrome, and has a more intimate knowledge of it from that point of view than I do.

The available evidence is that chromate workers do have an incidence of cancer of the lungs in excess of what might be expected. Beyond this, we do not as yet know a great deal.

Interest in chrome as a possible carcinogenic agent, with particular respect to lung cancer, is comparatively recent. The officials of one of the largest chrome producing companies in this country supplied the impetus that started interest in this subject in the United States, their apprehensions to tangible form, in setting on foot the statistical survey conducted by Machle and Gregorius, and published in the Public Health Reports on August 27th, 19[illegible].

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Efforts were made to reduce exposure in chromium plants and more intensive medical service was inaugurated with a much more free use of X-ray examination, and I venture Doctor Baetjer will tell you of her work in Baltimore with experimental animals.

Now, Doctor Baetjer published a comprehensive paper on pulmonary carcinoma in chromate workers in the Archieves of Industrial History in 1950, and up to now, there is not much more to say that was not said in her paper. In a word, as the saying goes, she covered the subject 'from soup to nuts' and as far as our question stated along that line, goes.

Now, fortunately, during 1952, the Division of Occupational Health of the United States Public Health Service , with the assistance and cooperation of the industry, conducted a survey of the whole chrome industry. Through the courtesy of Doctor Seward E. Miller, in charge of the Division of Occupational Health, I have been given a copy of the medical portion of their admirable report. Doctor Miller was kind enough to make that available to me when I asked him if he was going to present his findings here and he said no.

The report, however, is in the press now, and as it will be presently available, I will only refer to it in a very brief summary. I quote from the Public Health

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Service Report: All specific causes of mortality in chrome workers, the chrome workers had frequency rates that were not greatly different from other workers. However, cancer with a rate of 7.1 compared with .7 stands out as markedly in excess for chromate workers. For cancer of all sites, the actual number of deaths of chromate workers was approximately four and a half times the number that would have been expected had the cancer rate for all males in the United States prevailed. When cancer of the respiratory system was observed separately for chromate workers, nearly twenty-nine times as many deaths as were expected were found. All other types of cancer failed to show an excess among chromate workers.

It is obvious -- that's the end of the quote -- it is obvious that much research and experimentation remain to be done before we can talk with more assurance of this situation. In the meantime, the industrial plants are being cleaned up and in some cases re-built with the hope and expectation of steadying this tide of cancer cases.

Before leaving this topic, I again would like to make a plea for the more careful and precise use and association of words. The evidence of the relationship of chrome exposure and pulmonary cancer appears conclusive. This cancer of the lungs in chrome workers does not follow, as far as I can ascertain, does not follow, nor is it dependent

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upon a pre-existing pneumonoconiosis. I mention this so that there may not be any false conclusions drawn from the association of these two terms as they are used in heading up our program. Thank you.

BY DOCTOR REOADS:

With very characteristic precision, Doctor Lanza has laid to rest any illusions or questions that might be raised concerning the relation of chrome to pulmonary cancer. Is there a comment on Doctor Lanza's presentation?

BY DOCTOR RICHARDSON:

Who were the workers that were effected in this?

BY DOCTOR LANZA:

As far as I know now, I can't tell you positively until I have had a chance to digest the Public Health Service report, but you know these are small plants and in small plants, men shift around, so that not only do we not know what particular chrome substance or what particular process in the manufacture of chrome is responsible, if it is a cancer, but we do not know or you can't depend on this group of men in this department or that group of men in that department, unfortunately, we can't do it.

BY DOCTOR RICHARDS:

Well, could we say when does the exposure to chrome begin and when does it end in the process of the handling of chrome?

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BY DOCTOR LANZA:

Well, you would have to then. We had, I think, the engineering portion of the Public Health Service report, which will give the details of the process, the dust studies, and so forth, at different stages all along the line, from the time they get their ore out until it is shipped out of the plant.

BY DOCTOR RICHARDS:

Well, then, is there any hazard after it is shipped out of the plant?

BY DOCTOR LANZA:

As far as I know, there has been no complaint from any source, but that again is something we don't know.

BY DOCTOR RHOADS:

Doctor Hueper has comment.

BY DOCTOR HUEPER:

You asked the question whether the material shipped out of the plant will become carcinogenic. There have been reports from Germary that zinc pigment workers have developed carcinogen. The zinc chromate, the yellow die with which we spray our airplanes and with which we spray the oil tanks and oil pipe lines, if you see those beautiful bright yellow colors in the landscape of our refineries, that's zinc chromate. We are quite a bit interested to find out whether the painters who sprayed the zinc

BY DOCTOR RHOADS:

Doctor Merewether, would you comment on these remarks?

BY DOCTOR MEREWETHER:

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I couldn't comment on some of them, but I think I can partially answer some of these, sir, and I think Doctor Knox can answer conslusively one of them.

First of all, I think Doctor Lanza is misinformed about the proportions of asbestos used and where they are used in England. The original cases of asbestosis, fifty years ago, were all Canadian asbestos. The earliest asbestos work in England was either seventy-eight or eighty-two and there may have been some crystalline fiber then, but very quickly the asbestos trade concentrated on the white Canadian crystalline.

Later on, the Rhodesian asbestos and the Rhodesian - the South African blue, and the third one which is also an iron silica, the amacite, came in. Now, of all of these, the amacite is definitely the most brittle. It has short fibers, it's brown and it's got fibers as long as that (indicating) whereas the best Canadian spinning fibers have only got fibers as long as that (indicating) and the best blue is about that.

Well, there is no doubt about the dustiness of the amacite. That is the brown long fibered stuff, to such an extent that it's very little used today, so it's at the period where some of these cases are concerned, or where the cases of asbestosis occurred - some of my old friend Glynn's cases occurred - there was a good deal of blue and

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a good deal of amacite used.

Now, I think Doctor Knox will be able to tell us, in his plant, which is the biggest in the country, what about the types of asbestos they use in that particular factory, and the - whether they have had any carcinoma of the lung.

Now, about the nickel cancer, it is perfectly correct that none of us think that nickel carbon has anything to do with it as such for the very simple reason that - well, one reason is that nickel carbon is so toxic that we should build a factory in order to get the - in order to get the little cancer, and of course, it might act in that proportion, then I should imagine a lot more people would have been effected.

Doctor Amore or Doctor Morgan and myself feel that the - that the re-building of the old calciners was the crucial change in the matter, though there was some operation in the constitution of the materials which are shipped from Port Home in Canada. The difference, as I know, because I saw it before and afterwards, between the old and extremely dusty calcincers and the modern build, is enormous. Therefore, there may be some hope in the fact that perhaps a lot of big dosage is necessary to produce some of these cancers.

BY DOCTOR REOADS:

MELLON INSTITUTE, PITTSBURGH, PA.

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The action of asbestosis on the body is briefly reviewed. It is pointed out that asbestosis is regarded much more seriously in Great Britain than in Canada or the United States; the British believe it is worse than silicosis and often leads to cancer, while in America cancer resulting from asbestosis is practically non-existent.

DATE EXAMINED ____ BY: ____ PURPOSE OF SEARCH: ____ CONT'D ____

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ASBESTOSIS*

by

Dr. A. J. Lanza

Chairman, Institute of Industrial Medicine
New York University Post-Graduate Medical School

In opening my discussion of asbestosis, I would like to say that while it has been presumably described by Herodotus in 450 B.C., the disease as we now know it is very new. It was first reported in England in 1900 and a comprehensive report was made in that country by Dr. Merewether (Chief Medical Inspector of Factories) and Dr. Price in 1930. The first cases in the United States were described by Lynch and Smith of Charleston, South Carolina in 1930. During 1930 and 1931, Drs. Lanza and McConnell of the Metropolitan Life Insurance Company conducted the first study of Asbestosis in the United States and Canada. This study included the mines in Canada and nearly all the fabricating plants in the United States. The reports of this study were published by the United States Public Health Service in 1935.

Asbestosis, I would like to point out, is the only silicate dust capable of producing disability and death that does so to any marked or appreciable extent. The total number of persons involved in the industry probably does not exceed 12,000 and as far as can be borne out by clinical experience, tuberculosis is not a factor in this disease. Ever since the survey was started in 1930 the industry has carried on strenuous measures to control the dust in mine, mill and factory with a very marked degree of success. It would seem, therefore, there will never be available the clinical experience of asbestosis that has been a marked feature of silicosis in various industries throughout the world.

I would also like to point out that the experience with asbestosis in England appears to differ sharply with that in Canada and the United States. The authorities in Great Britain regard asbestosis as a very serious disease, much more so than silicosis, and they seem to be convinced that cancer of the lungs is a frequent sequela. This is not the experience in either Canada or in the United States. A great deal of information is available from the medical departments of the various industries that have for a long time maintained constant roentgenographic examinations of asbestos workers which, coupled with the efforts at dust control, may explain the difference in clinical findings. As far as we have been able to ascertain, there does not seem to be any undue prevalence of cancer among asbestos workers in this country and, as some of the mines and fabricating plants have been working extensively for over thirty years, it would seem that if cancer was a frequent complication of exposure to asbestos dust, this fact would have become evident long ago, especially as the medical supervision of asbestos workers is both thorough and comprehensive. I have, within the last couple of months, spent several days with Dr. Kenneth Smith in Asbestos reviewing a great many films covering a period of a number of years and I understood him to say that he had seen only one case of cancer of the lungs during that time. Dr. Cartier at Thetford has found only a very small number of cases of cancer of the lungs in the asbestos clinic in Thetford.

I would like to emphasize that none of us can afford to be too dogmatic in discussing these occupational diseases and because the experience in one country indicates one set of results, it does not necessarily follow that the same results are to be found in other countries. There are many circumstances and environmental conditions that may differ markedly and, unless all these divergent factors are known, comparisons can be made only with the greatest of caution. It is quite possible that the asbestos fibers themselves in various parts of the world may differ in their structure and composition and hence produce different pathological results when inhaled. We have recently learned to appreciate the importance of this phase of dust disease of the lungs in connection with the effects of the inhalation of diatomaceous earth. Diato-

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* *A paper read before the Fourth Conference of McINTYRE RESEARCH FOUNDATION on Silicosis, held in Noranda, Quebec, January 28th-30th, 1952.*

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maceous earth is chemically identical with crystalline silica, but the amorphous form of silica produces quite a different pathology in the lungs than does crystalline silica. In these dust diseases the matter of dosage also is important and unless the seriousness of the exposure in terms of dust in the inspired air can be determined with some degree of accuracy, one cannot compare one set of conditions with another without running the risk of serious error. The matter of asbestos as a carcinogenic agent deserves, and will receive, continuing extended study both in Canada and the United States. Industrial physicians have been alerted to be on the lookout for lung cancer among asbestos workers.

Some years ago the late Dr. Gardner of Saranac first ascribed the action of asbestos fibrosis in the lung to the larger particles rather than smaller ones. This is exactly opposite to the effect of silica where it has been demonstrated that the smaller the particles the more active they are in producing pulmonary fibrosis. Dr. Gardner was also of the opinion that the action of the asbestos fibers was mechanical rather than chemical which again is in contradistinction to the action of silica. However, some of the persons who have studied asbestosis are not in complete agreement with this and it is probable that the factor of asbestos particle size in producing pulmonary fibrosis will receive further extended study.

Tuberculosis does not appear to be a factor in asbestosis and there is general agreement on this both in Canada and the United States. Certainly there is nothing in the clinical observations on asbestos workers comparable to the experience with tuberculosis seen among industrial workers exposed to silica dust.

Aluminum prophylaxis has not been tried in the asbestos industry. The result of the work of Smith, Wooton and King published in THORAX in June 1951 indicates no amelioration of asbestosis in experimental animals as has been evidenced for silicosis.

To summarize: Hand in hand with continuing efforts to control air borne dust in mine, mill and factory goes a well developed and thorough medical supervision of asbestos workers, together with a research program involving not only experimental animals, but also clinical studies including pulmonary function evaluation tests (Saranac) on selected cases of asbestos workers showing roentgenographic evidence of asbestosis.

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