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REPORT OF THE PHYSICAL EXAMINATIONS
EXAMINATIONS OF ASBESTOS WORKERS IN Asbestos
AND THETFORD MINES, QUEBEC

The report herewith presented deals with the examination of 141 employees of the Canadian Johns-Manville Co., Asbestos, Que. and 54 employees of the Asbestos Corporation of Canada, the Keasby-Mattison Co. and Johnson's Mine, all of Thetford Mines, Que. 40 of the men of the Canadiam Johns-Manville Co. were examinaed by Dr. D. M. Stevenson and Dr. Joseph Wyatt, who performed the physical examinations and X-ray examinations respectively. The other examinations were all performed by me, except the X-ray examinations. Actually, Drs. Stevenson and Wyatt examined 57 men; but since 17 of these men were re-examined by me I am including them in my list. Drs. Stevenson and Wyatt carried on their work in November 1929. My examinations were done in July 1930 in Asbestos, and in September 1930 in Thetford Mines.

The Asbestos andThetford groups are very dissimilar with respect to age distribution and length of service in the asbestos industry, but racially and economically the two groups are much alike.

Table I gives the age distribution of the men and Table II the distribution according to length of service in the asbestoe industry.

REPORT OF THE MEDICAL EXAMINATIONS OF ASBESTOS WORKERS IN ASBESTON AND THETFORD MINES, QUE.

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Table I gives the age distribution of the men and Table II the distribution according to length of service in the asbestos industry.

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Exhibit N

REPORT OF THE PHYSICAL EXAMINATIONS OF ASBESTOS WORKERS IN ASBESTOS AND THETFORD MINES, QUEBEC.

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Exhibit N.

T A B L E I.

AGE DISTRIBUTION OF ASBESTOS WORKERS

	Asbestos		Textile Mill	
[illegible]	Number	Percentage	Number	Percentage
15 - 19	5	3.1		
20 - 24	24	17.0	2	3.7
25 - 29	24	17.0	5	9.2
30 - 34	26	18.5	6	11.1
35 - 39	25	17.7	4	7.4
40 - 44	18	12.8	15	27.1
45 - 49	14	10.0	7	13.0
50 - 54	3	2.1	6	11.1
55 - 59	1	0.7	4	7.4
60 - 64	1	0.7	6	11.1
65 - 69	1	0.7	1	1.9
[illegible]	1	0.7		
[illegible]	141	100.00	54	100.0

T A B L E II

LENGTH OF SERVICE IN ASBESTOS INDUSTRY

Years of service.	Asbestos		Thetford Mines	
	Number	Percentage	Number	Percentage
0 - 4	44	31.2	1	1.85
5 - 9	65	46.1	8	14.8
10 - 14	11	7.8	8	14.8
15 - 19	10	7.1	16	29.6
20 - 24	6	4.3	9	16.7
25 - 29	2	1.4	9	16.7
30 - 34	2	1.4	1	1.85
35 - 39	1	.7		
40 - 44			2	3.7
T O T A L	141	100.0	54	100.0

It will be noted that while 68 percent of the men in Thetford Mines were over 40 years of age only 28 percent of the men in Asbestos were over 40. And further with respect to length of service 83.4 percent of the men examined in Thetford Mines had worked in the asbestos industry for 10 years or more, but in Asbestos only 22 percent had worked for more than ten years.

Table III shows the disposition of the men in various parts of the industry. Since the numbers are

small broad occupational groupings are used. In Asbestos the occupations are divided into 3 groups - mill, pit and factory; in Thetford Mines only the first two occupational groups are used, since no asbestos manufacturing is carried on there. All the men of the Thetford Mines group could be so classified, but 5 men were excluded from the Asbestos group since they did not appear to be exposed to an unusual amount of dust.

T A B L E III

LENGTH OF SERVICE IN DIFFERENT OCCUPATIONS IN ASBESTOS [illegible]

	Asbestos			Thetford Mines	
Term of service	Mill	Drilling pit	Factory	Mill	Drilling pit
0- 4	14	7	24	1	
5- 9	36	8	16	3	5
10-14	6	6		7	1
15-19	7	3		12	4
20-24	3	1		6	1
25-29	1	1		6	1
30-34	1	1		1	
35-39	1				
40+					2
TOTAL	69	27	40	40	14

The past occupational history in industries other than the asbestos industry was significant only in 5 cases. Of these one had been a grain inspector

for 6 years and so exposed to very dusty conditions, one had been an underground copper miner for 18 years, one a copper miner for 2 years, a fourth had worked in a cement plant for 9 years, and the fifth had operated a drill in an iron mine. This last individual showed X-ray evidence of pneumoconiosis, the others did not have pneumoconiosis.

In Table IV are given observations of weight in relation to height by age. The average weights are taken from the figures compiled by the Association of Life Insurance Medical Directors and the Actuarial Society of America.

T A B L E IV.

WEIGHTS AND HEIGHTS ACCORDING TO AGE

		Pounds Under average				Pounds over average			
		20-29	10-19	5-9	-4 to +4	5-9	10-19	20-29	30+
[illegible]	No.	21	28	19	24	16	19	9	4
	%	15.0	20.0	13.6	17.1	11.4	13.6	6.4	2.9
[illegible]	No.	9	11	8	9	5	6	7	1
	%	16.7	20.4	14.8	16.7	9.6	11.1	13.0	1.9
[illegible] 10,000 male Industrial workers	%	17	18	11	21	9	14	10	5

The group of 10,000 male industrial workers referred to in the above table was studied by the United States Public Health Service (see Public Health Bulletin

No. 162). It will be noted that there is very little distinction between this large group and the group of asbestos workers so far as degrees of overweight or underweight are concerned.

In the consideration of individual defects some interesting facts have been found. In this study only the 101 men at Asbestos and the 54 men at Thetford Mines are considered, since the records of the men examined by Dr. Stevenson are not strictly comparable with mine.

TEETH:-

Dividing the men into two groups according to whether the teeth did or did not need attention, of the Asbestos group 49.5% required attention, and of the Thetford Mines group 51.8 %.

HEARING:-

Acuity of hearing was tested by means of a watch. (My own hearing, which has been tested by an audiometer, was considered normal, and used as a standard) The watch test is admittedly very rough. In noisy occupations impaired hearing is frequently found in the older employees. Of the 101 men at Asbestos 10 showed definite hearing loss. This is not an excess proportion since an:

group of adults will show a similar picture. In Thetford Mines 28 of the 54 men suffered from well marked hearing loss. This is a very high percentage, and comparable to what may be found in weaving sheds and boiler shops. All these men, except two, had been exposed to loud noise in their work for 10 years or more, and it is reasonable to suppose that noise played a part in their hearing disability.

The number of men with infected TONSILS was 27 in Asbestos and 13 in Thetford Mines, and almost indetical ratio to the total in both groups.

Defects of the THYROID were rare. 4 men in Asbestos and 1 in Thetford Mines had enlarged thyroids.

BLOOD PRESSURE:-

Readings were recorded in all men over 40 years of age. Except in exceptional circumstances the blood pressure was not taken in the younger men. Consequently although the groups examined in Thetford Mines was smaller than that in Asbestos more blood pressure readings were taken there. 2 men in Asbestos had blood pressures of over 150 and 2 blood pressures under 100 m.m. of mercury. 8 men in Thetford Mines had blood pressures of over 150 and 2 blood pressures under 100.

The incidence of HERNIA is of interest from the compensation standpoint. In Asbestos all new employees must pass a physical examination before employment. There were 4 cases of inguinal hernia discovered among the 101 men examined there. In addition to these 5 men had been operated upon for this condition

In Thetford Mines physical examination is not required before employment. There were 5 cases of inguinal hernia among the 54 men examined and 2 cases which had been operated upon.

Some interest has arisen in connection with the occurrence of the so-called ASBESTOS CORNS. These are usually pin head sized elevations of the skin, somewhat like minute warts. None of these were detected in the Asbestos men probably due to my ignorance of their appearance. 8 of the Thetford Mines men had these growths on their hands and several others reported having had them at one time or another.

L U N G S

Of the 101 men examined by me at Asbestos only 4 suffered from definite first stage pneumoconiosis. These will not be considered on account of the doubtful diagnosis.

Of the 40 men examined by Drs. Stevenson and Wyatt 14 were diagnosed as first stage pneumoconiosis (asbestosis 1) (I am including the 17 men examined by Drs. Stevenson and Wyatt and subsequently re-examined by me in my group of 101). The much lesser incidence of pneumoconiosis in my group of men may seem surprising, but it must be remembered that the X-ray negatives were not read by the same men. In my group the X-ray diagnoses were made by Dr. Meriwether of Pitcher, Oklahoma, and in the other group the interpretations were by Drs. Wyatt and ~~Innocent~~ Meriwether. Further the ~~group~~ examined by Drs. Stevenson and Wyatt were, in general, older than those in my group.

Of the 54 men examined at Thetford Mines 24 were diagnosed by X-ray as suffering from pneumoconiosis (asbestosis), of these 4 were diagnosed as probably first stage asbestosis, 8 as early stage, 9 as definite first stage and 3 as second stage.

The pertinent facts regarding the definite cases of asbestosis are given in tables V and VI.

Table V

Case No.	Diagnosis	Age	Occupational history	Symptoms	Signs.
			Asbestos Group.		
66	A.1	50	Foreman 'cyclone' 16 years	coughs, not much loss of strength	deficient expansion occ, crepitations left apex.
71.	A.1	47	General operator knakt foreman 24 years	cough, dyspnoea frequent colds	poor expansion, percussion dullness left chest, crepitations all over both lungs.
72	A.1	47	loading cars in mill 2 foreman 28 years	no symptoms	no abnormal signs.
73	A.1	50	driller 7 years	no symptoms	no abnormal signs.
74	A.1	41	Millwright 21 years	dyspnoea, cough	no abnormal signs
75	A.1	7	motor attendant for 11 years	no symptoms	faint moist rales 2/3 rds in front.
76	A.1	51	millwright 16 years	no symptoms	no abnormal signs
77	A.1	50	labourer watchman in mill 7 years	no symptoms	slight dullness right base, left chest expansion more than right.
78	A.1	44	labourer to floor mill, 2 years	no symptoms	breath sounds at apices harsh
79	A.1	47	in mill 16 years	no symptoms	no abnormal signs
80	A.1	44	millwright 20 years	no symptoms	expansion slightly limited
81	A.1	61	[illegible] in mill 27 years	no symptoms	expansion limited
82	A.1	47	mine (work not stated) 14 years	no symptoms	no abnormal signs
83	A.1	41	driller 4 years	no symptoms	no abnormal signs
84	A.1	41	driller 20 years	no symptoms	no abnormal signs
85	A.1	60	driller 4 years engineman 2 years foreman 28 years	no symptoms	almost vocal fremitus
86	A.1	37	driller 7 years trackman 4 years	no symptoms	bronchial pulse left side
87	A.1	44	pipe coverer (factory) 4 years	no symptoms	no abnormal signs.

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Table VI

Thetford Mines Group

No.	Mine	Age	Occupational history	Symptoms	Signs.
1	A.I	55	filling boys 6 years oiler 15 years foreman 4 years	no symptoms	coarse crepitations over R apex & at both bases behind.
2	A.I	44	driller 23 years	no symptoms	no abnormal signs
3	A.I (probably)	39	cleaner in mill 3 yrs. filling box 4 yrs.	dyspnoea	no abnormal signs
4	A.I	52	millwright 27 years	dyspnoea	no abnormal signs
5	A.I (early)	43	sweeper 11 years	cough, expectoration, occ. blood in sputum, dyspnoea, loss of weight	coarse crepitations left apex behind
6	A.I	51	millwright 21 years	cough, expectoration, dyspnoea, loss of weight, ? ? strength	dry rales over Rt. chest behind, expiration prolonged
7	A.I (probably)	47	millwright 21 years	cough	occasional dry rales at left base
8	A.I	52	driller 11 years		
9	A.I (early)	43	driller 17 years	no symptoms, history of pleurisy, sister died of T.B., dyspnoea	no abnormal signs no abnormal signs
10	A.I (early)	52	millwright 19 years	dyspnoea	no abnormal signs
11	A.I (early)	61	driller 40 years	no symptoms	many crepitations right base.
12	A.I (early)	52	driller 6 years general work in pit 4 years	no symptoms	no abnormal signs
13	A.I	44	filling box 1 year last shot 4 years	history of bronchitis	no abnormal signs
14	A.I (early)	53	in mill 3 years in tunnel feeling	cough, dyspnoea.	no abnormal signs
15	A.I (early)	51	crusher 4 years crusher 11 years	mis. dental T.B.C in L. L.	
16	A.I	47	sweeper in mill 4 yrs. oiler in mill 3 years	no symptoms	no abnormal signs
17	A.I	47	loading boxes in pit 22 years, feeling bin mill 3 years	history of T.B.	Signs of fine crepitation both lungs behind fr. 3 vertebra down, expansion note diminished
18	A.I (early)	51	millwright 25 years foreman 27 years	dyspnoea	no abnormal signs
19	A.I	42	feeling crusher 10 yrs cleaning in mill 10 yrs.	dyspnoea	crepitations in R. axilla & L. base behind,
20	A.I (probably)	47	feeling crusher in mill 6 years, driers 4 year, foreman in mill 7 years	no symptoms	no abnormal signs

Table VI (continued)

No.	Diagnosis	Age	Occupational history	Symptoms	Signs
			Thetford Mines Area (cont'd)		
63	A.1 (early)	54	loading boxes in pit 7 yrs., driller 7 yrs.	no symptoms	no abnormal signs.
71	A.1 (probably)	71	operator in mill 7 yrs., millwright 11 years	no symptoms	[illegible] over right lung, [illegible] over left lung, [illegible]
77	A.1	57	oiler in mill 10 yrs. foreman mill 7 yrs.	non-specific T.B.C. daughter has tuberculosis.	[illegible] in R. axilla, [illegible] R. & L. lower [illegible] in both lungs.
78	A.1	41	mill repairs 11 yrs. mill foreman 1 yrs.	cough, dyspnoea	[illegible] poor air entry. no rales.
79	A.1 (late)	64	Foreman mill 17 yrs. millwright 7 yrs.	no symptoms	no abnormal signs.

It will be noted that of the 111 men examined at Asbestos 17 were diagnosed as first stage asbestosis, while of the 34 examined at Thetford Mines 21 were diagnosed as first stage asbestosis and 3 as second stage asbestosis. This is not to be interpreted as indicating an excess hazard in Thetford Mines. The increased incidence of asbestosis in Thetford Mines is simply a reflection of the different distribution with respect to age and length of service. Reference to tables 1 and 2 will recall the great differences in these two things.

In the great majority of cases the length of service in dusty work was more than 5 years an indication in the following table:

Length of service	Number of cases	Number of men examined.
0 - 4 yrs.	2	53
5 - 9	8	33
10 - 14	7	22
15 & over	1	7
Total	18	115

From this table one would conclude that asbestosis is not likely to develop with an exposure of less than 5 years, but that with exposure of more than 15 years there is a great possibility of it developing. It is, however, of interest to remember thirteen men with long periods of exposure do not develop any signs of asbestosis.

As to occupations of 41 drillers 15 were cases of asbestosis, of 11 mill workers 17 were cases of asbestosis and of 40 workers in the factory only 1 case showed x-ray evidence of the disease. Evidently there is little difference in the hazard in mill workers and drillers. The mill workers appear to be exposed to far greater dust concentrations than the drillers and it is rather difficult to understand why the high incidence of asbestosis among the drillers. However, it may or may not be of interest to note the

Tuberculosis did not play an important part in this study. Four of the cases of asbestosis appeared to be complicated with tuberculosis. However, this incidence of definite tuberculosis in the two groups of the individuals were very low. There were several suspected cases on clinical examination which were not confirmed by x-ray and several suspected cases by x-ray which showed no real evidence in the way of signs and symptoms. Only one case in the group can be considered as actively tuberculous.

It was difficult to obtain sputum from most of the men since very few of them were coughing. About 10 sputa were examined for tubercle bacilli and asbestos bodies. No tubercle bacilli were found but one case did have several asbestos bodies. This case was also diagnosed by x-ray as pulmonary tuberculosis (first stage) but is not included in the number of tuberculosis cases since the x-ray film was not satisfactory.

Conversation with physicians and plant managers in the area in which the individuals lived indicated that no hazard to health was suspected in connection with work in the asbestos mining and milling industry.

In general it may be said that the hazard of pneumoconiosis in the asbestos mining and milling industry has been demonstrated, but evidently the disease does not incapacitate to any great degree and apparently is not particularly associated with tuberculosis.

Jack J. Fidler 1930
Investigator