commonly present in the lungs of adults in N.Y.C., their occurrence is not a random event but, to an important extent, occupationally related.

Second, that the construction and ship building industries are rich potential sources of direct and indirect occupational asbestos exposure[16-20] and, especially if possible neighborhood and family contacts are considered, could be responsible for a large proportion of the asbestos bodies found in routine autopsies.

Secular Changes in Asbestos Bodies in New York City, 1934-1967: Preliminary Observations

We have investigated the incidence of asbestos bodies in the lungs of individuals examined at autopsy at the Mount Sinai Hospital in 2 years: 1934 and 1967.

Table 6: Asbestos Bodies by Occupation: Quantitative Results

	Examined	*0*	*1+*	*2+, 3+*
'White collar' males	206	109	87	10 (5%)
'Blue collar' males (no construction nor shipyard)	246	125	101	20 (8%)
Construction or shipyard	129	39	61	29 (23%)

Table 7: Estimated U.S. Asbestos Consumption
construction industries vs non-construction industries
(short tons)

	Construction Industry		*Non-Construction Industry*		*Total*
	Tons	%	*Tons*	%	
1920	63,600	40.8	92,400	59.2	156,000
1925	141,600	69·1	63,200	30·9	204,800
1930	136,200	66·0	70,300	34·0	206,500
1935	101,700	58·2	73,000	41·8	174,700
1940	160,200	61·1	102,000	38·9	262,200
1945	214,500	56·7	163,500	43·3	378,000
1950	354,300	48·6	374,400	51·4	728,700
1955	444,300	60·0	296,100	40·0	740,400
1960	437,400	65·3	232,100	34·7	669,500
1965	532,300	74·0	187,400	26·0	719,700

These conclusions are consistent with commercial data concerning asbestos use. *In the past 40 years from one-half to three-quarters of all asbestos consumed in the United States was used in the construction industry* (Table 7, Fig. 2).[21] In 1965, 532,300 tons (74%) of the 719,700 tons of asbestos consumed in the United States, were used in construction.

Method: 100 consecutive cases were selected from the autopsy files of our hospital in each of 2 years, 1934 and 1967. We did not use our 7-site procedure, since these were not available for 1934. Instead, from both years we prepared 175 μ × 1 cm² sections from the routine block taken by the prosector. The sections were ashed and examined as described.

Table 8: Secular Changes: Asbestos Bodies in Ashed Tissue Sections (NYC)

	1934			1967		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*
0–9	1·4	0·4	1·8	0·0	0·0	0·0
10–29	0·4	2·7	2·11	0·1	3·6	3.7
30–59	17·29	8·11	25·40	9·16	15·25	24·41
60+	16·22	6·9	23·31	23·37	10·15	33·52
Age Unknown	2·5	1·5	3·10			
	36/64	17·36	53·100	32·54	28·46	60/100

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ale	Total
	0/0
	3/7
5	24/41
5	33/52
6	60/100

Source identification was removed from all slides; each was given a random number. The sequence of examination ensured thorough admixture of both sets. All readings were the responsibility of one individual, using criteria previously established and tested.[32]

There was no significant difference in the percentage of cases having asbestos bodies in 1967 or 1934. While 53 of 100 were positive in 1934 compared with 60 of 100 in 1967 (Table 8), this may be attributed to sampling variation or differences in age distribution in the two groups. For individuals 30 or over, 50 of 81 (62%) were positive in 1934, as against 57 of 93 in 1967 (61%). Nor were there qualitative differences; 13 were positive, 5+ asbestos bodies in 1934, against 12 in 1967 (Table 9). Incidentally, the failure to have found asbestos bodies in the past is easily explained—it is very difficult to find these in routine 5 μ H & E sections even in retrospect. We examined such routine stained, unashed sections in the 200 cases. In only 3 of 335 slides were asbestos bodies found; none in the 100 1934 cases although we knew 53 of the 100 showed bodies in ashed 175 μ sections (Table 10).

TABLE 9: SECULAR CHANGES: ASBESTOS BODIES IN ASHED TISSUE SECTIONS (NYC)

Number of Asbestos Bodies	1934	1967
0	47	40
1–4	40	48
5–14	10	10
15+	3	2
	100	100

DISCUSSION

The 1934 findings are not inconsistent with the hypothesis developed from the current (1966-1968) study: that the construction industry is a major source of occupational asbestos exposure and may be responsible for a large proportion of asbestos bodies in routine autopsies. In 1935, for example, almost 60% of asbestos used in the U.S. was used in this industry. But even more germane is the fact that building materials in which asbestos fibers were not firmly bonded, and

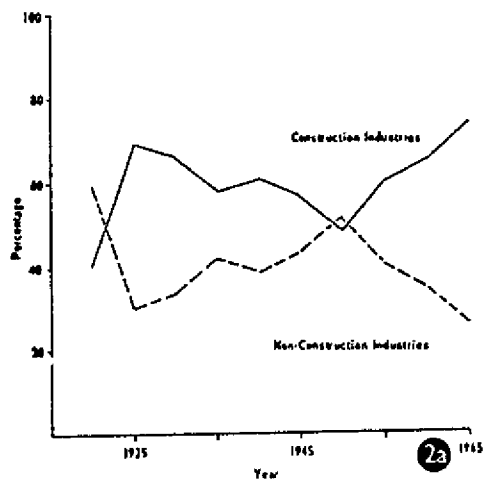

Fig. 2A. Estimated U.S. asbestos consumption.

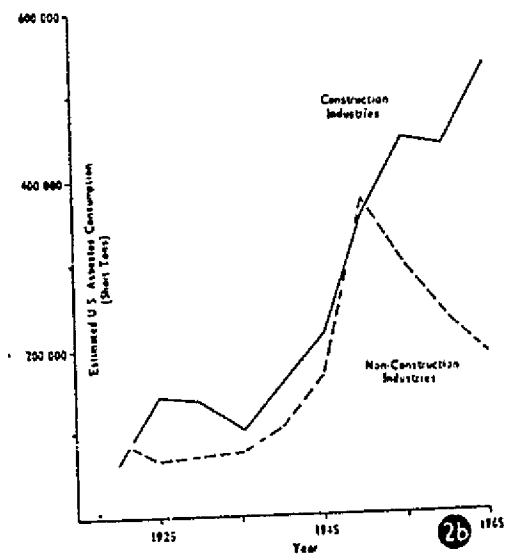

Fig. 2B. Estimated U.S. asbestos consumption.

TABLE 10: ASBESTOS BODIES: ASHED SECTION AND ROUTINE H & E SECTIONS

	1934		1967	
Total Sections	100			100
	+	0	+	0
Ashed Section*	53	47	60	40
H & E Section**	4	0	3	0

*200 blocks of 200 cases. **335 blocks of 200 cases.