Lung Residues.—*Electron Microscopy.*—A number of substances were observed to be present on the prepared grids: chrysotile asbestos (fibrils and fibers); polygonal platy particles (clay and talc minerals); electron-dense fibrous particles (resembling amiphibole asbestos minerals); fibrous glass; asbestos bodies; and diatom fragments. The occurrence of chrysotile in our cases is shown in Table 3.

There are characteristic morphological appearances to the chrysotile particles found in human lung tissue. The fibrils range from those with relatively undeformed internal capillaries, thick crystalline electron-dense walls, and thin amorphous edges (Fig 2, *A*) to others with thinner crystalline walls surrounding slightly deformed capillaries which are in turn surrounded by thicker edges of amorphous material Fig 2, *B*. Some fibrils are highly deformed and are encapsulated by thick-walled amorphous material (Fig 2, *C*). Many of the fibrils observed appear deformed. The size of the fibrils found in human lung range from several hundred Angstroms to several microns in length. The average size of fibrils observed from human lung tissue appears to be 0.2μ to 0.3μ in length.

We have also found chrysotile fibers to be present. A fiber is defined as any chrysotile aggregate greater than one fibril in thickness. The range in morphological characteristics of the fibers may be seen in Fig 3. It is of interest to note that some of the morphological characteristics of the fibers are similar to those described by Suzuki and Churg in their study of the origin of asbestos bodies in hamsters.[25] Tables 2 and 3 demonstrate that 24 of the 28 cases had asbestos fibers in their lungs in numbers higher than background counts could explain. Those with high fiber counts had high fibril counts as well. Three of the four "negative" cases were observed by light microscopy to possess asbestos bodies (Table 2).

Chrysotile fibers and fibrils tend to occur in fields. Fibrils and small thin fibers, which apparently consist of only two or three unit fibrils still bonded, predominate the fields.

We found only three cases to contain more than 200 chrysotile fibers and fibrils in the grids studied by us (Tables 2 and 3). It may be of interest that we have observed these highly positive cases only among men.



Fig 6.—Example of association of platy particles with chrysotile asbestos. Arrows indicate location of chrysotile fibrils. Note also presence of partially digested tissue.

Fig 7.—Asbestos body observed by means of EM. Photomicrograph shows parallel bundle of chrysotile fibrils coated with electron-dense material which resembles incipient bodies described in Suzuki and Churg.[25]



Scanning and Counting.—Photographic recording of EM fields consistently gave more accurate counts than simple visual scanning of the EM screen, a function of increased magnification, contrast, particle size, and search in partially digested debris.

Figure 4 demonstrates the difference in

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