

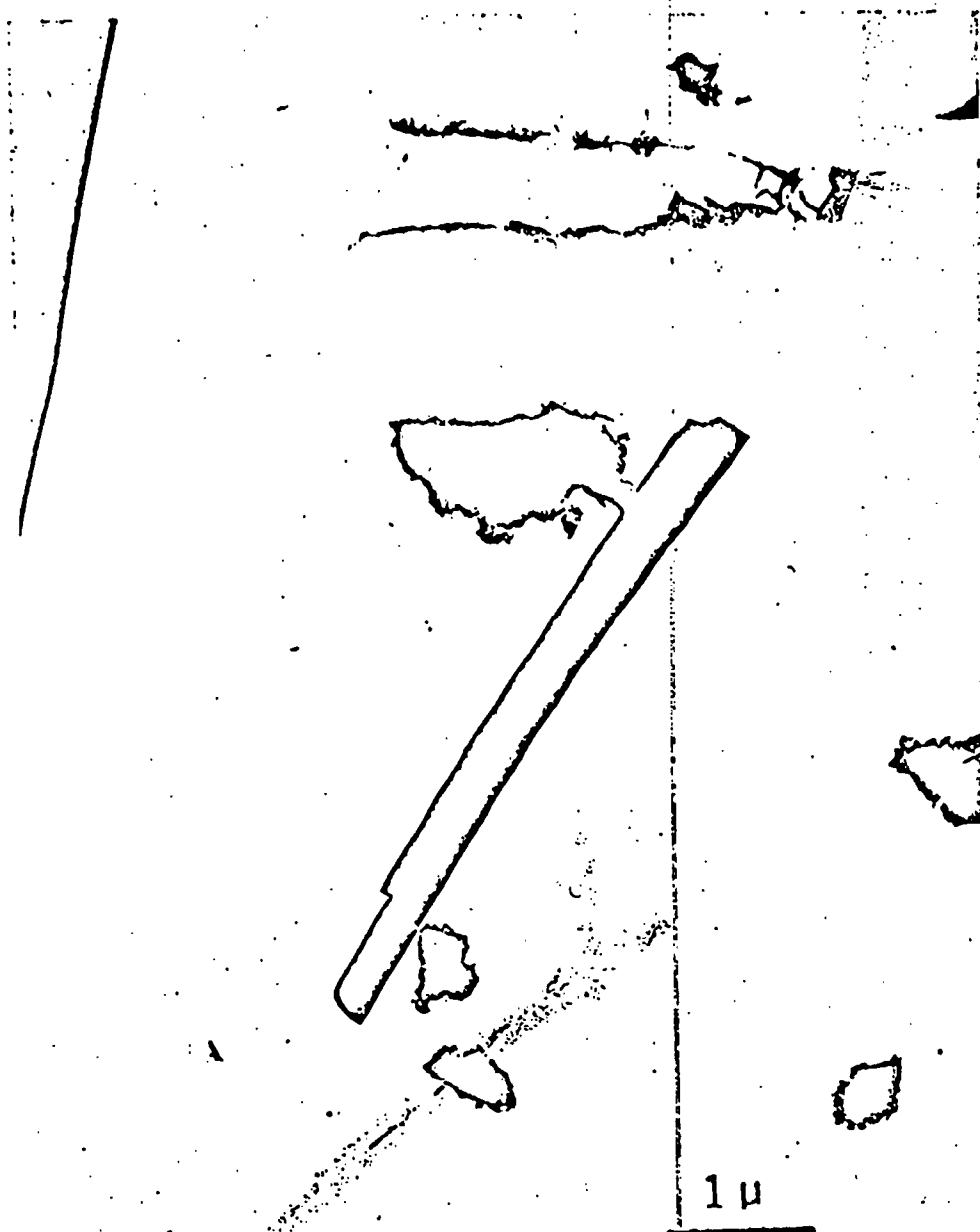


Fig 5.—Two parallel glass fibers in apposition which show one-step profile; paucity of steps and width of uninterrupted rectilinear or curvilinear profile indicates nonasbestos fiber ($\times 20,000$).

of ferruginous bodies isolated from urban dwellers in sufficient number to provide statistically significant data.

Although identification of the nature of ferruginous bodies and of the type of fibers has been accomplished by fractionation¹⁰ and electron microscopy,¹¹ these techniques are both time consuming. Furthermore, the large scale investigation necessary to obtain statistically reliable data, extensive use of these techniques could prove expensive, since it would tend to require the costly equipment involved and the training of technicians.

Also, the need exists for a method that would facilitate acquisition of data rapidly and economically. Identification suggests a means to meet these needs. A procedure, essentially a new method, is described for classifying fibers and the central filamentous bodies into asbestos or nonasbestos fibers. The cores of ferruginous bodies made accessible for such classification by freeing them from the encrusting shell by chemical or physical means, either with oxalic acid or ultrasonication.

Materials and Methods

The classification of inhaled fibers from lungs¹² is based on the fact that asbestos fibers are composed of compactly packed fibrils, whereas nonasbestos fibers are composed of loosely packed fibrils. Because of this difference in structure, the fractured ends of these fibers differ in a very important way: that of an asbestos fiber is irregular, resembling a bundle of fragile sticks broken transversely. As might be expected, different fibers of the bundle break at different points. At an appropriate magnification, therefore, (as described in the section on electron microscopy) the fractured end of an asbestos fiber presents an irregular profile with many small, like projections and depressions. In contrast, inhaled transparent fibers, although they may be of similar diameter to asbestos but of similar character, and, because they are more homogeneous in character, and, because they are more homogeneous in character, tend to fracture so as to present uniform profiles at the fractured ends.

Another important difference between inhaled asbestos and nonasbestos

Arch