effect by virtue of these and perhaps other related properties, the mind turns to the asbestos body which, lying in the lung tissues for long periods, might have some significance other than that usually attributed to them of being a structure in which the enclosed asbestos fibre can lie innocuous. In the experiments of Gardner and his school the injection of isolated asbestos bodies did not produce fibrotic reactions. But this need not deter us.

Cooke (1930), who, with MacDonald, discovered the asbestosis body, made the following comment: "they consist of central nuclei of asbestos spicules upon which colloidal aggregates of blood proteins, plus, possibly, soluble fractions of asbestos, and, in the case of chrysotile workers, iron salt, have been absorbed and moulded by currents in the bronchi and alveoli".

In recent work Champeix and Bouteville (1950) examined asbestosis bodies in the electron microscope at magnifications of 25,000. It may be recalled that Champeix was associated with the view opposing a chemical factor in the aetiology of asbestosis (Luton and his colleagues).

Electron microscopy

The procedure to examine an object as delicate as an asbestosis body in the electron microscope presents much difficulty, and the interpretation of the photographs obtained should be correspondingly cautious.

Champeix and Bouteville treated expectorated material as follows:

Alkaline digestion of the diluted sputum with NaOH (equal volumes). After 10 minutes' warming in a porcelain dish, allowed to cool.

Homogenized fluid divided among several centrifuge tubes and centrifuged cautiously to avoid disintegration of the asbestos bodies.

Decanted and residues spread on several slides.

To examine in the optical microscope, mount in Canada balsam

To examine in the electron microscope the smear allowed to dry and with a micro-manipulator a single asbestosis body is lifted on to the collodion membrane of the object carrier. This operation is difficult and delicate and the hazard of fracture of the asbestos body is great.

As regards the general morphology of the asbestosis body, the electron microscope confirms in greater detail and without deformation the findings with the optical method—the central, needled fibre ($\frac{1}{2}$–1 μ thick, length always > 10 μ) surrounded by an amorphous, somewhat opaque rounded envelope (2–3 μ thick) in parts appearing as if burst and giving a general impression of a colloidal, proteinous gel: the extremities ovoid, ellipsoid, fusiform or sometimes angular.

Two observations suggested solution of the asbestos fibre: (1) there were no fibres less than 10 μ in length in any asbestosis body; (2) removal of the colloidal envelope of the asbestosis body by means of the micro-manipulator shows the central fibre with one edge semi-transparent as if it were being dissolved away.

These facts lead the authors to some dubiety on whether the fibrosis is