corpuscles may diverge or converge only in a gradual manner.

The case is otherwise in superconductive electrodynamics. The possible velocity distributions (and magnetic fields) associated with a given electric field are much more restricted. Here an eigen-function problem presents itself which will be dealt with elsewhere.

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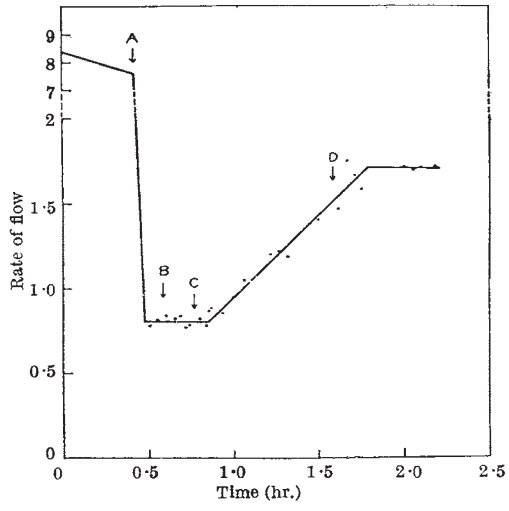
Formation of Silicotic Tissue

Electron micrographs of normal connective tissue reveal a very fine protein network superimposed on a much coarser network[1]. The interstices are filled with protofibrils and mucopolysaccharidic acids of high molecular weight. Fibrous connective tissue is produced when lung tissue is degenerated by silica particles, the silicic acid formed by the dissolution of the silica probably being involved, and the possible analogy between the role of silicic acid and that of the mucopolysaccharides is evident.

Day[2,3] has shown that the resistance of thin sheets of tissue to the passage of saline is markedly decreased when mucopolysaccharides are removed by hyalase hydrolysis, but that subsequent treatment with chondroitin sulphuric acid again reduces the tissue permeability. Using Day's technique, we find that dilute silicic acid solutions behave in a similar manner to chondroitin sulphuric acid.

The lower orifice of a vertical tube was covered with a membrane of loose connective tissue taken from a rat. Filling the tube with saline, the time required for the passage through the membrane of a predetermined volume of the solution was measured.



A, Hyaluronidase added; *B*, saline added; *C*, silicic acid added; *D*, saline added

The permeability of the membrane was low. The addition of hyaluronidase to the saline caused a considerable increase in flow; but subsequent addition of a dilute silicic acid sol restored the original low rate of flow or even rendered the membrane less permeable than it was originally. A typical result is shown in the accompanying graph.

It is possible that when pathological changes are initiated by the inhalation of silica, silicic acid functions as an interfibrillary substance analogous to the mucopolysaccharides. The silica particle may thus take the role of the cell producing the macromolecules. In normal fibrous tissue, the mucopolysaccharides are being constantly destroyed by the mucopolysaccharases present in the tissue but are replaced by fresh mucopolysaccharides synthesized by fibroblasts[4,5]. Since there is no enzyme capable of hydrolysing the polysilicic acids formed, the polymers can be removed only by the slow process of physical solution, which is retarded as the silicic acid accumulates. Aluminium and beryllia, both producing macromolecules analogous to the polysilicic acids, can cause similar pathological changes.

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The Department of Scientific and Industrial Research and Aslib

The leading article in *Nature* of April 25 points out that the report for 1951–52 of the Department of Scientific and Industrial Research does not include a justification for the Department's grant to Aslib, and suggests the possibility of overlapping between Aslib and the Intelligence Division of the Department. It is right to say at once that this possibility is constantly borne in mind by the Council of Aslib, which has the advantage of close and continual contact with the Intelligence Division. Part of Aslib's activity is as a clearing-house between its own members, who include those concerned with information and library techniques in scientific and industrial and also in other fields; part consists in organizing the exchange of information on methods of documentation and publishing the results of investigations into them; part again in the promotion of training in these techniques. These things, it is believed, are outside the present scope of the Intelligence Division. In other activities—some of them carried out under contract with the Department of Scientific and Industrial Research—there is danger of overlapping; but it has been kept in mind, and it is hoped with some confidence that it has been avoided.

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