kept in solution by such a mechanism. The chalcone-protein complex was found to be easily reduced by sodium hyposulfite and to be reoxidized by oxygen.

The chalcone-protein and its prosthetic group, hesperidin chalcone, can serve as hydrogen transporters in mammalian tissue. This was demonstrated in the l(+)-glutamic acid dehydrogenase system obtained from liver by the method of v. Euler, Adler, Günther and Das.[6] This system involves l(+)-glutamic acid, apodehydrogenase, codehydrogenase I or II and diaphorase; whether the chalcone is reduced by diaphorase or directly by the codehydrogenase we do not know at the present time. As previously mentioned, the chalcone is autoxidizable and, hence, under aerobic conditions can increase the oxygen consumption of such a respiratory system. Work is now in progress to determine the various respiratory systems in which the chalcone-protein may play a role and the exact location of this substance in the hydrogen transport chain. We believe that this material and perhaps similar substances play a part in tissue respiration of both plant and animal cells.

Finally, preliminary experiments have shown that the chalcone exerts a beneficial effect upon the state of the capillaries, decreasing the fragility and preventing localized hemorrhages.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN APPARATUS FOR CONTINUOUS FILTRATION IN BLOOD AND PLASMA TRANSFUSIONS

DESPITE the use of adequate amounts of anticoagulant, fibrin clots will form in stored blood or plasma. The amount of fibrin will increase with the time of storage, but may be present in blood shortly after it is drawn. The blood and plasma, therefore, must be filtered before administration to prevent embolism.

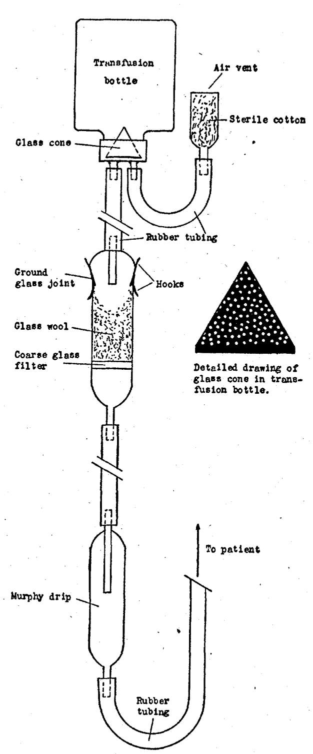

FIG. 1. Diagrammatic sketch of transfusion system, showing apparatus for continuous filtration.

In the methods employed at present, the most widely used materials are cotton gauze and metal screening. In many cases filtration through cotton gauze is carried out in the open air, permitting air contamination with bacteria. Furthermore, cotton gauze offers no uniformity for standardization, and no evaluation as to its pore size is possible. Metal screens, aside from the usual objection to metals for intravenous fluids, have been too coarse to retain all fibrin particles.

We have successfully used a filtering system which is fine enough to remove all fibrin particles. It consists first of a glass cone with coarse openings which holds back the large clots and prevents plugging of the rubber tubing. The blood is then filtered through glass wool (or glass cloth), and a fused glass filter which removes the remaining particles. "Pyrex" glass wool is adequate for this purpose, and, together with the fused glass filter, may be cleaned before use with cleaning fluid. The fused glass filter may be as fine as desired. It may retain the red cells or it may permit their easy passage. We have found that a filter made of fused glass particles, size 80 to 100 mesh, allows the rapid passage of the red cells and is still fine enough to hold back the fibrin particles.

The filtering apparatus permits administration in a closed system from the bottle into which the blood or plasma was drawn originally. This type of filter may be used to filter plasma in the field, either with the transfusion set as illustrated or by any other method. It satisfies the need for an adequate filter in the emergency treatment of shock with plasma.

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[6] H. v. Euler, E. Adler, G. Günther and N. Das, *Zeit. f. physiol. Chem.*, 254: 61, 1938.