hand, albumin is a poor binder of calcium; the ratio is only one to one.

Because of recent interest in the use of cold for anesthesia and in other fields, the effects of lowered temperature on the blood were considered. The cryoglobulins do not contribute much to the total properties of blood, so a drop in temperature has relatively little effect on whole blood.

The normal viscosity of blood has an index of 3. In certain pathologic states this can go up to as high as 10. Fibrinogen is responsible for roughly 20 percent of the total viscosity of the blood. Deviation in viscosity can usually be readily handled by the homeostatic mechanisms of the blood.

Polyamino acids have potential value as a blood expander.

Reconstituted preserved plasma must be used rapidly, especially because the lipoprotein linkage has been broken down. In contrast to plasma, albumin can be frozen and thawed repeatedly without change. The major requirements in plasma expanders are freedom from antigenicity and homogenity of molecular size. Since a blood substitute must fulfill a number of functions, there is no single measurement that can be used to establish desirable criteria.

A much-discussed question was whether it is better, in order to obtain molecules of optimal size (about 35 angstroms) for use as blood substitutes, to split preexisting long molecules or to synthesize smaller molecules to a polymer.

Dextran is slightly antigenic. About 4 percent of normal persons react because of cross immunity. Dextran may slightly prolong bleeding time, but this is not serious or lasting. It rarely occurs if less than 1500 cubic centimeters of a 6-percent suspension are used. A greater disadvantage in the use of dextran is the difficulty of obtaining proper and uniform molecular size. Dextran is slowly metabolized, and the bulk is excreted in 2 to 4 weeks. Polyvinyl pyrrolidone is effective and cheap; however, it does persist in the liver. Because of the risk of serum hepatitis from whole-blood transfusions, it is quite possible that the use of whole blood is more dangerous than utilization of dextran or even polyvinyl pyrrolidone.

A number of plasma products are available. Four units of plasma are roughly equivalent to one unit of albumin. It was pointed out that despeciated bovine or equine plasma is used widely throughout the world.

There was extensive discussion of the preservation of blood by freezing, and of the role of glycerol in the protection of red blood cells during the freezing and thawing processes. The method developed by the Protein Foundation and the Chelsea Naval Hospital and utilized at the Naval Hospital has proved of great value. The mean period of survival of transfused washed red cells preserved by glycerol and freezing is over 30 days in the recipient's body. Glycerol is effective for successful freezing of washed red cells. Only 1 percent of the blood cells are lost with each successive freezing and thawing.

The plasma expanders are of very little use in civilian practice; their chief usefulness is in emergencies. One of the basic questions is, "Can one increase the supply and lower the cost of human albumin?"

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Forthcoming Events

March

5–9. Analytical Chemistry and Applied Spectroscopy, conf. and exposition of modern laboratory equipment, Pittsburgh, Pa. (C. F. Glick, Applied Research Laboratory, United States Steel Corp., Monroeville, Pa.)

5–16. United Nations Economic and

Social Council, Committee for Industrial Development, New York, N.Y. (U.N., New York)

8. Problems Relating to Food and Feed Additives, Assoc. of Vitamin Chemists, Chicago, Ill. (H. S. Perdue, Abbott Laboratories, N. Chicago)

9–14. National Science Teachers Assoc., annual, San Francisco, Calif. (R. H. Carlton, NSTA, 1201 16th St., Washington, D.C.)

10–13. Microminiaturization Congr., New York, N.Y. (C. G. Sedan, American Watchmakers Inst., 18465 James Couzens Hwy., Detroit 35, Mich.)

11–17. American Congr. on Surveying and Mapping—Amer. Soc. of Photogrammetry, annual, Washington, D.C. (G. K. Emminizer, Jr., 106 Valley Rd., Ellicott City, Md.)

12. Wildlife Soc., Denver, Colo. (C. Gordon Fredine, 5921 Anniston Rd., Bethesda 14, Md.)

12–14. North American Wildlife and Natural Resources Conf., Denver, Colo. (Wildlife Management Inst., 709 Wire Bldg., Washington 5)

12–16. Society of Automotive Engineers Detroit, Mich. (R. W. Crory, SAE, 485 Lexington Ave., New York 17)

12–23. International Radio Consultative Committee, Study Group on Space Systems, Washington, D.C. (Palais Wilson, Geneva, Switzerland)

13–14. Packaging of Chemical Products, symp., annual, St. Louis, Mo. (Manufacturing Chemists' Assoc., 1825 Connecticut Ave., NW, Washington 9)

13–15. Application of Statistics and Computers to Fuels and Lubricants Research Programs, symp., San Antonio, Tex. (R. Quillian, Southwest Research Inst., 8500 Culebra Rd., San Antonio 6)

13–15. Electronic Industries Assoc., Washington, D.C. (Chief of Information, Dept. of the Army, Washington 25)

14–16. National Missiles and Space Conf., Washington, D.C. (Chief of Information, Dept. of the Army, Washington 25)

15–16. Textile Research Inst., annual, New York, N.Y. (P. C. Alford, TRI, Princeton, N.J.)

15–16. Western Industrial Writing Inst., 7th, Los Angeles, Calif. (R. M. Winters, American Industrial Writing Inst., P.O. Box 5453, Pasadena, Calif.)

15–17. Optical Soc. of America, Washington, D.C. (M. E. Warga, OSA, 1166 16 St., NW, Washington 6)

15–18. International Assoc. for Dental Research, St. Louis, Mo. (J. C. Muhler, Indiana Univ. Medical Center, 1120 W. Michigan St., Indianapolis 7)

15–23. American Soc. of Tool Engineers, annual, Detroit, Mich. (H. E. Conrad, ASTE, 10700 Puritan Ave., Detroit 38)

17–18. Etiology of the Neuroses, symp., Soc. of Medical Psychoanalysts, New York, N.Y. (D. B. Friedman, SMP, Fifth Ave. and 106 St., New York 29)

18–21. American Assoc. of Dental Schools, St. Louis, Mo. (R. Sullens, 840 N. Lake Shore Dr., Chicago 11, Ill.)

18–22. Bilharziasis, symp., Cairo, Egypt. (A. H. Mousa, Ciba Foundation, 41 Portland Pl., London, W.1, England)

18–22. International Anesthesia Research Soc., Bal Harbour, Fla. (Scientific Liaison Office, Natl. Research Council, Sussex Dr., Ottawa, Ont., Canada)

19–23. International Conf. on Equatorial Geophysics, Lima, Peru. (J. A. Broggi, Instituto Geofisico de Huancayo, Apdo. 46, Huancayo, Peru)

19–23. National Assoc. of Corrosion Engineers, Kansas City, Mo. (T. J. Hull, NACE, 1061 M&M Bldg., Houston, Tex.)

20–21. Hypervelocity Techniques, symp., Denver, Colo. (A. M. Krill, Mechanics Div., Univ. of Denver Research Inst., Denver 10)

20–23. American Assoc. of Anatomists, annual, Minneapolis, Minn. (C. B. Heggestad, Dept. of Anatomy, Univ. of Minnesota, Minneapolis 14)

20–23. High-Temperature Solution Chemistry, symp., Washington, D.C. (J. W. Cobble, Purdue Univ., Lafayette, Ind.)

20–23. Institute of Metals, London, England. (R. E. Moore, 17 Belgrave Sq., London, S.W.1)

20–29. American Chemical Soc., natl., Washington, D.C. (A. T. Winstead, ACS, 1155 16 St., NW, Washington 6)

21–23. Audio Engineering Soc., Los Angeles, Calif. (AES, P.O. Box 12, Old Chelsea Station, New York 11)

21–24. American Orthopsychiatric Assoc., annual, Los Angeles, Calif. (AOA, 1790 Broadway, New York 19)