

A P P E N D I X

A.L. COPLEY: CURRICULUM VITAE AND PUBLICATIONS

PREAMBLE

Upon the wishes of Alex Silberberg, information is provided concerning A.L. Copley's activities (I) as scientist and (II) as artist.

The Curriculum Vitae refers mainly to A.L. Copley's career as a scientist (IA). Certain information is included concerning his activities as an artist (IIA) under the name L. Alcopley.

The list of books and other science publications (IB) is limited to studies pertaining to biorheology and certain biorheological phenomena. Included are several overviews concerning various fields of biorheology. However, the experimental studies are in the field of hemorheology with the exception of a paper on hair.

Not listed are scientific publications on: lipid antibodies; carbohydrate metabolism of the liver and brain in B<sub>1</sub>-avitaminotic rats; cholinesterase activity in different organs of cattle; lability reactions including alcohol-gelation test of serum; the physiology of the spleen; splenectomy and transplantation of the spleen in dogs; vein and arterial grafts from chickens and turkeys

in dogs; many contributions to blood coagulation, fibrinolysis, hemorrhage, thrombosis, thromboembolism and blood platelets; geloplastin, isolated from human placenta and plasma; introduction of the 'prothrombin complex' as a new concept in his theory of blood coagulation, proposed in 1942 (Am.J.Physiol.); studies on capillary permeability and capillary fragility; the ecchymosis test; the microcirculation (mesoappendix and mesentery of rats, cremaster muscle of rats, cheek pouch of Chinese and Syrian hamsters, bat's wing, nictitating membrane of rabbit's eye, gingiva of hamsters and other animals); heparin assay with Azure A and toluidine blue; heparin excretion by the kidneys in dogs; lymph time; dicumarol; ionizing radiation (whole body x-irradiation of mice, rats and rabbits); peptone shock in dogs; blood of *limulus polyphemus* (horseshoe crab); mycobacteria (BCG, human, bovine); staphylococci; streptococci; pneumococci; anticoagulant therapy; experimental production of vascular purpura in guinea-pigs and hamsters, employing rabbit anti-fibrin serum; bursa pastoris (Shepherd's Purse); vascular studies in scorbutic guinea-pigs; esterase activity; collagenase; elastase; mediators (histamine, bradykinin, serotonin); snake venoms of viperidae, crotalidae, elapidae, and hydrophidae; aconite; density studies of blood, plasma and serum; needle device for repeated blood withdrawals; sympathectomized and adrenalectomized animals; maternal and fetal blue whale red cells and platelets; age and growth of balaenoptera; different immunological responses to BCG in plasma and serum from same blood withdrawal in humans and rabbits; experimental tuberculosis in rabbits; genesis of mammalian pulmonary tuberculosis; atherosclerosis in patients; guanidium pentacyano-ferrate reaction; gel permeation chromatography; hexose content determination as criterion of fibrinogen purity; vascular prosthesis.

Also not listed are A.L. Copley's publications of his clinical investigations on hemophilia, vascular purpura and dextran infusion in patients.

Under IIB, Alcopley's lists of his books on art as well as of his publications on art and science are included.

Finally, in section III, several publications of tributes by different authors are listed.

## I. ALFRED L. COPLEY, Scientist

A. Curriculum Vitae

BORN: 19. June 1910, Germany.

## EDUCATION

Non-academic: Dresden (Germany).

Academic: Basic Sciences. Medicine. Philosophy.

1930-33 Universities of Freiburg, Berlin, Königsberg, Frankfurt, Würzburg (Germany).

1933-35 University of Heidelberg (Germany).

## Physical Chemistry

1936-37 University of Basel (Switzerland).

## Philosophy

1938 Columbia University, New York (USA).

Degrees

1935 MD, Heidelberg (Germany).

1936 MD, Basel (Switzerland).

## MAJOR RESEARCH INTERESTS

Biorheology, hemorheology, mechanisms of thrombosis, hemorrhage and hemostasis, circulation, blood vessel wall physiology.

## RESEARCH AND PROFESSIONAL EXPERIENCE

1939-42 University of Kansas Medical School, Kansas City, Hixon Laboratory for Medical Research, Research Associate.

1943-44 University of Virginia Medical School, Charlottesville, Laboratory of Experimental Surgery, Research Fellow and Head.

1944-45 University of Virginia, Charlottesville, Department of Preventive Medicine and Bacteriology, Research Associate.

1945-49 New York University, New York, Laboratory of Cellular Physiology, Biology Department, Research Associate of Robert Chambers.

1945-46 New York University, New York, Biology Department, Visiting Research Associate.

1948-49 Mt. Sinai Hospital, New York, Research Associate in Hematology.

1948-49 College of Physicians and Surgeons, Columbia University, New York, Instructor in Post-Graduate Medicine.

1949-52 New York Medical College, Assistant Professor of Medicine & Research Associate.

1952-55 Research Laboratories, International Children's Center, Paris, France, Chargé de recherches and Head, Laboratory of Blood and Vascular Physiology.

- 1955-57 Laboratory on Microcirculation, Centre National de Transfusion Sanguine, Paris, France, Head.
- 1955-57 Institut National d'Hygiène, Paris, France, Chargé de recherches.
- 1957-59 Medical Research Laboratories (MRL), Charing Cross Hospital, University of London, London, England, Director, MRL and Director of Experimental Research in Vascular Diseases.
- 1959 Royal College of Surgeons of England, London, England, Visiting Professor of Pathology.
- 1960-65 Hemorheology Laboratory, New York Medical College (NYMC) Director.
- 1960-61 New York Medical College, New York, Associate Professor of Physiology.
- 1962-65 New York Medical College, New York, Professor of Physiology.
- 1965-67 VA Hospital, East Orange, NJ, Associate Chief of Staff for Research & Education.
- 1965-74 Hemorrhage and Thrombosis Research Laboratories, VA Hospital, East Orange, NJ, 1965-71; Bronx VA Hospital 1971-72; NYMC 1972-74, Director.
- 1967- Newark College of Engineering, now: New Jersey Institute of Technology, Newark, NJ, Adjunct Research Professor of Biomedical Engineering.
- 1965-74 New York Medical College, New York, Research Professor of Pharmacology.
- 1972-74 New York Medical College, New York, Research Professor of Medicine.
- 1974- Polytechnic Institute of New York, Research Professor of Life Science and of Bioengineering; Director, Laboratory of Biorheology.

## HONORS

- 1948 General Lecturer, 1. International Congress on Rheology, Scheveningen, Holland.
- 1949 Fellow, New York Academy of Sciences.
- 1959 Honorary Secretary, Organizing Committee, Conference entitled: 'Flow Properties of Blood and Other Biological Systems', Oxford University, England (September).
- 1960 General Lecturer, 8. International Congress of Hematology, Tokyo, Japan (September).
- 1960 Special Lecturer, 8. International Congress of the International Society of Blood Transfusion, Tokyo, Japan (September).
- 1962- Co-Editor-in-Chief and Co-Founder (with G.W. Scott Blair, Oxford), Biorheology. An International Journal. (Pergamon Press, Oxford - New York). Official J. Internat. Soc. Biorheology. 1962-1973: quarterly, Jan. 1974-: bi-monthly.

- 1963 Chairman, Symposium on Biorheology, as part of IV. International Congress on Rheology, held at Brown University, Providence, RI, USA (August).
- 1966-69 President, The International Society of Hemorheology.
- 1967-81 Member of Editorial Advisory Board, Journal of Biomechanics, USA.
- 1966 Conference Chairman and Chairman, Organizing Committee, 1. International Conference on Hemorheology, University of Iceland, Reykjavik (July).
- 1968 Invited Lecturer, 5. International Congress on Rheology, Kyoto, Japan (October).
- 1969-72 President, The International Society of Biorheology.
- 1970- Co-Editor, Editorial Board, "Rheologica Acta. An International Journal of Rheology". Official organ of the British Society of Rheology and five other national societies of rheology in Germany, Austria, France, Italy, Netherlands. (Dr. Dietrich Steinkopff, Darmstadt, Federal Republic of Germany).
- 1972 Poiseuille Gold Medal Award, First International Congress of Biorheology, Lyon, France.
- 1972 Doctor of Medicine honoris causa, University of Heidelberg, F.R. Germany.
- 1972- Founder and Co-Editor-in-Chief (with Birger Blombäck, Karolinska Institutet, Stockholm), Thrombosis Research. An International Journal of Vascular Obstruction, Hemorrhage and Hemostasis. (Pergamon Press, New York - Oxford). 1972: Bi-monthly. Since January 1973 monthly, since January 1980 bi-weekly.
- 1972 Chairman, Symposium on Biorheology, IV. International Biophysics Congress, Moscow, USSR (7.-14. August).
- 1972 Invited Lecturer, Symposium: "Interactions of Blood and Endothelium", International Microcirculation Meeting, Aberdeen, Scotland (26. August - 1. September).
- 1972-78 Past President, The International Society of Biorheology. Affiliated Commission of the International Union of Pure and Applied Biophysics.
- 1972 General Lecturer, 6. International Congress on Rheology, Lyon, France (September).
- 1972 Chairman, Organizing Committee, and President, 1. International Congress of Biorheology (held in association with the 6. International Congress on Rheology), Université Claude-Bernard and Institut des Sciences Appliquées, Lyon, France (4.-8. September).
- 1973 Biorheology, June issue (10:81-292) dedicated to A.L. Copley.
- 1975 Co-Chairman (with Shosuke Okamoto, Kobe) and U.S. Coordinator, United States-Japan Cooperative Seminar on Hemorheology and Thrombosis, Kobe, Japan (April 28 - May 2).

- 1976- Co-Founder (with Editor-in-Chief Yoshiaki Omura, New York) and Editorial Consultant, *Acupuncture & Electro-Therapeutic Research*. An International Journal. (Pergamon Press) Quarterly.
- 1976 Co-Chairman (with Syoten Oka), Symposium 'Hemorheological Aspects of Thrombosis', 16. International Congress of Hematology, Kyoto, Japan (5.-11. September).
- 1977 Co-Chairman (with C.-R. Huang), International Symposium on Biorheology, 70. Annual Meeting of the American Institute of Chemical Engineering (November 13-17), New York, USA.
- 1979 General Lecturer, XII. Erfurt Conference on Hemostasis and Thrombosis, Erfurt, German Democratic Republic (May 25-26).
- 1979 Invited Lecturer, Medizinische Akademie, Erfurt (May 29).
- 1979 General Lecturer, Annual Meeting, Société Française de Biophysique et de Médecine Nucléaire. Upon invitation by the C.N.R.S., Paris, France (June 14-15).
- 1979 Chairman, Symposium: Relations Between Blood Cells and Haemorheology. V. Meeting of the International Society of Haematology, European and African Division, Hamburg, Federal Republic of Germany (August 26-31).
- 1979 Medal of the Ville de Nancy, bestowed for medical research in a ceremony at City Hall, Nancy, France (October 17).
- 1979 Honorary Président, European Symposium on Clinical Haemorheology, Nancy, France (16.-19. October).
- 1980 Honorary Guest, International Symposium on Red Blood Cell Filterability, Göteborg, Sweden (September 11-13).
- 1980 Invited Lecturer, Karolinska Institutet and Karolinska Sjukhuset, Stockholm, Sweden (16. and 18. September).
- 1981 General Lecturer, Fourth International Congress of Biorheology, Tokyo, Japan (July 27 - August 1).
- 1981 Honorary Vice President, Second European Conference on Clinical Hemorheology, organized by the Royal Society of Medicine, London, England (September 30 - October 2).
- 1981- Founder and co-Editor-in-Chief (with Siegfried Witte, Karlsruhe, F.R. Germany), *CLINICAL HEMORHEOLOGY*. A Companion Journal of 'BIORHEOLOGY', bi-monthly.

#### LECTURESHIPS

Lectures in USA, England, France, Germany, Switzerland, Austria, Italy, Israel, USSR, Mexico, Belgium, Holland, Denmark, Sweden, Iceland, and Japan in universities, research institutions, medical schools and hospitals, as well as at meetings of national and international scientific societies.

#### SOCIETIES

American Physiological Society (since 1944), Society of Rheology (USA), American Institute of Physics, Association of the History

of Medicine, Society for Experimental Biology and Medicine, New York Academy of Sciences (Fellow), International Hematological Society (Fellow), International Society of Hemorheology (later called Biorheology), Marine Biological Laboratory Corp., Woods Hole, MA, USA, Sigma Xi Research Society (USA), American Heart Association Council on Thrombosis, American Association for the Advancement of Science, International Society on Thrombosis and Haemostasis, American Society of Hematology, British Society of Rheology, Society of Microcirculation (USA), European Society of Microcirculation, Association des Physiologistes (France), Deutsche Arbeitsgemeinschaft für Blutgerinnungsforschung (F.R. Germany) and National Geographic Society (USA).

#### BIOGRAPHIES

"World Who's Who in Science. A Biographical Dictionary of Notable Scientists from Antiquity to the Present". 1968, Marquis Who's Who, Chicago, IL.; "American Men of Science". (In each edition beginning with the 8th.); "Who's Important in Medicine", 1952, Institute for Research in Biography, Hicksville, New York. In several other biographical dictionaries, including "Who's Who in the East. Eastern United States and Canada", 1969; Dictionary of International Biography, London, England, 1971.

#### B. Publications pertaining to biorheology

##### (a) Books

A.L. Copley and G. Stainsby (Eds.). Flow Properties of Blood and Other Biological Systems, Oxford University, 1959. London - New York: Pergamon Press, 1960, 464 pp.

A.L. Copley (Ed.). Symposium on Biorheology, Brown University, 1963. New York: Interscience Publ. - John Wiley & Sons, 1965, 645 pp.

E.H. Lee and A.L. Copley (Eds.). Proc. 4 Int. Congr. Rheology. Brown University, 1963. Part 1. New York: Interscience Publ. - John Wiley & Sons, 1966, 382 pp.

A.L. Copley (Ed.). Hemorheology. Proc. 1. Internat. Conf. Univ. of Iceland, 1966, Oxford - New York: Pergamon Press, 1968, 869 pp.

H.H. Hartert and A.L. Copley (Eds.). Theoretical and Clinical Hemorheology, Univ. of Heidelberg, 1969. Berlin - Heidelberg - New York: Springer-Verlag, 1971, 426 pp.

A.L. Copley and S. Okamoto (Eds.). Hemorheology and Thrombosis, New York - Oxford: Pergamon Press, 1975-76, also as Suppl. II, Thrombosis Research (Dec.) 1975, 440 pp.

C.-R. Huang and A.L. Copley (Eds.). Biorheology. New York, American Institute of Chemical Engineers, 1978, (AIChE Symposium Series, Number 182, volume 74) 141 pp.

##### (b) Other communications (including on biorheological phenomena)

##### 1. Articles

COPLEY, A.L. The phenomenon of thixotropy in hemophilic and heparinized blood. Science, 94, 543-544, 1941.

- COPLEY, A.L., KRCHMA, L.C. and WHITNEY, M.E. Humoral rheology. I. Viscosity studies and anomalous flow properties of human blood systems with heparin and other anticoagulants. J. Gen. Physiol., 26, 49-64, 1942.
- COPLEY, A.L. and LALICH, J.J. Bleeding time, lymph time and clot resistance in man. J. Clin. Invest., 21, 145-152, 1942.
- LALICH, J.J. and COPLEY, A.L. A study of clot firmness in viscometer tubes. Proc. Soc. Exper. Biol. Med., 51, 232-235, 1942.
- LALICH, J.J. and COPLEY, A.L. Clot resistance in mice and the mechanism of hemostasis. Arch. Surgery, 46, 224-237, 1943.
- COPLEY, A.L. Pilometric measurements and the rheological properties of hair. Science, 105, 341-342, 1947.
- COPLEY, A.L. Rheological problems in biorheology. Preprints. International Congress on Rheology. Scheveningen, 1948, pp. 47-61.
- COPLEY, A.L. The ecchymosis test for capillary hemorrhagic diathesis. Science, 107, 201-202, 1948.
- COPLEY, A.L. Rheological problems in biology. In: Proceedings of the International Congress on Rheology, Holland, 1948. J.M. Burgers et al (Eds.) Amsterdam: North-Holland Publishing Co., 1949, Part I-47 to I-61; Part III-8 to III-11.
- COPLEY, A.L. and KOZAM, G. Studies on capillary fragility and the ecchymosis test in man. J. Applied Physiol., 4, 311-327, 1951.
- COPLEY, A.L. The rheology of blood. A survey. J. Colloid Sc., 7, 323-333, 1952.
- Effet capillorrrhagique de la fibrinolysine et de l'antifibrinolysine sur la membrane nictitante du lapin normal et exposé aux rayons X. Arch. Internat. Pharmacodyn. Thé., 99, 426-434, 1954.
- COPLEY, A.L. Adherence and viscosity of blood contacting foreign surfaces and the plasmatic zone in blood circulation. Nature (London), 181, 551-552, 1958.
- COPLEY, A.L. and SCOTT BLAIR, G.W. Comparative observations on adherence and consistency of various blood systems in living and artificial capillaries. Rheol. Acta, 1, 170-176, 1958; 665-668, 1961.
- COPLEY, A.L., SCOTT BLAIR, G.W., BALEÁ, T. and STAPLE, P.M. The marginal plasmatic zone and the flow of blood in living capillary vessels. In: Flow Properties of Blood and Other Biological Systems. A.L. Copley and G. Stainsby (Eds.) Oxford - New York: Pergamon Press, 1960, pp. 418-422.
- COPLEY, A.L., SCOTT BLAIR, G.W., GLOVER, F.A. and THORLEY, R.S. Capillary flow and wall adherence of bovine blood, plasma and serum in contact with glass and fibrin surfaces. Kolloid Ztschr., 168, 101-107, 1960.
- COPLEY, A.L. and SCOTT BLAIR, G.W. Haemorheological methods for the study of flow properties of blood and of processes in blood coagulation. Proceedings of the 7. Congress of the European Society of Haematology, London, September 1959. Basel - New York: S. Karger, Part II, 941-942, 1960.
- COPLEY, A.L. Apparent viscosity and wall adherence of blood systems. In: Flow Properties of Blood and Other Biological Systems.



A.L. Copley and G. Stainsby (Eds.) Oxford - New York: Pergamon Press, 1960, pp. 97-121.

COPLEY, A.L. and THORLEY, R.S. Apparatus for measurement of viscosity and wall adherence. In: Flow Properties of Blood and Other Biological Systems. A.L. Copley and G. Stainsby (Eds.) Oxford - New York: Pergamon Press, 1960, pp. 361-368.

COPLEY, A.L. and SCOTT BLAIR, G.W. Haemorheological methods for the study of blood systems and of processes in blood coagulation. In: Flow Properties of Blood and Other Biological Systems. A.L. Copley and G. Stainsby (Eds.) Oxford - New York: Pergamon Press, 1960, pp. 412-417.

COPLEY, A.L. Discussion remarks to contributions by A. Katchalsky et al (p. 171), G.W. Scott Blair (pp. 183-185) and H. Hartert (pp. 196-198). In: Flow Properties of Blood and Other Biological Systems. Oxford - New York: Pergamon Press, 1960.

COPLEY, A.L. Hemorheological studies in tubes coated with fibrin and the flow of blood in relation to the living vessel wall. Proc. VII. Internat. Congress Internat. Society of Hematology, Rome, 7-13 September 1958. Roma, Il Pensiero Scientifico, 1960, vol. II, part 2, pp. 1313-1318.

COPLEY, A.L. Discussion remarks (in English) to article (in German, pp. 656-663) by R. Fåhræus, Die intravaskuläre Erythrozytenaggregation und ihre Einwirkung auf die Rheologie des Blutes. Rheologica Acta (Suppl. Kolloid Ztschr.), 1, 663-665, 1961.

COPLEY, A.L. and SCOTT BLAIR, G.W. Comparative observations on adherence and consistency of various blood systems in living and artificial capillaries. II. Additional note to a previous paper. Rheologica Acta, 1, 665-668, 1961.

COPLEY, A.L. and STAPLE, P.H. Haemorheological studies on the plasmatic zone in the microcirculation of the cheek pouch of Chinese and Syrian hamsters. Biorheology, 1, 3-14, 1962.

COPLEY, A.L. and SCOTT BLAIR, G.W. Hemorheology. An Introduction. Proceedings of the 8. International Congress of Blood Transfusion, Tokyo, September 1960, Basel: S. Karger, 1962, pp. 6-23.

COPLEY, A.L. and THORLEY, R.S. Fibrinization and coating with other materials of glass surface for haemorheologic studies. Laboratory Practice, (London), 11, 283- , 1962.

COPLEY, A.L. The endo-endothelial fibrin film and fibrinolysis. Proc. VIII. Internat. Congr. Hematology, Tokyo, Japan, September 1960. Tokyo: Pan-Pacific Press, 1962, vol. 3, pp. 1648-1666.

COPLEY, A.L. Leonard E. Bayliss. Obituary. Biorheology, 2, 229, 1965.

COPLEY, A.L. and LUCHINI, B.W. The binding of human fibrinogen to native and fraction fibrins and the inhibition of polymerization of a new human fibrin monomer by fibrinogen. Life Sciences, 2, 1293-1305, 1964.

COPLEY, A.L. and CAROL, B. Inhibiting action of epsilon amino caproic acid on capillary permeability in guinea-pigs tested with a new quantitative method based on Straus' peroxidase procedure. Variance and covariance analyses. Life Sciences, 2, 65-76, 1964.

COPLEY, A.L. Capillary permeability versus fragility and the significance of fibrin as a physiologic cement of the blood vessel wall. Bibl. Anat., 4, 3-19, 1964.

COPLEY, A.L., GLOVER, F.A. and SCOTT BLAIR, G.W. The wettability of fibrinized surfaces and of living vascular endothelium by blood. Biorheology, 2, 29-35, 121, 1964.

COPLEY, A.L. Capillary permeability, capillary incontinence, compaction stasis and basement membrane breakdown. Bibl. Anat., 7, 148-155, 1965.

COPLEY, A.L. Opening Address. On the validity of classical fluid mechanics in biorheology. In: Symposium on Biorheology. A.L. Copley (Ed.) Proc. 4. International Congress on Rheology, Brown University, Providence, RI, August 26-30, 1963. Part 4. New York - London: Interscience Publ.-John Wiley & Sons, 1965, pp. 3-10.

COPLEY, A.L., HANIG, J.P., LUCHINI, B.W. and ALLEN, R.L., Jr. On the capillary permeability enhancing activity of isolated fibrinopeptides and their role in the physiology of the blood capillary wall. Proc. 4. Europ. Conf. Microcirculation, Cambridge, England, 1966. H. Harders (Ed.) Basel - New York: S. Karger, 1967, pp. 475-481; Bibl. Anat., 9, 475-481, 1967.

COPLEY, A.L. On hemorheology. Inaugural address. In: Hemorheology. Proc. 1. Internat. Conf., Univ. of Iceland, Reykjavik, July 1966. A.L. Copley (Ed.) Oxford - New York: Pergamon Press, 1968, pp. 11-16.

COPLEY, A.L. Presentation of Poiseuille Award to Robin Fåhræus. In: Hemorheology. Proc. 1. Internat. Conf., Univ. of Iceland, Reykjavik, July 1966. A.L. Copley (Ed.) Oxford - New York: Pergamon Press, 1968, pp. 35-36.

COPLEY, A.L., LUCHINI, B.W. and WHELAN, E.W. On the role of fibrinogen-fibrin complexes in flow properties and suspension stability of blood systems. In: Hemorheology. Proc. 1. Internat. Conf., Univ. of Iceland, Reykjavik, July 1966. A.L. Copley (Ed.) Oxford - New York: Pergamon Press, 1968, pp. 375-388.

COPLEY, A.L. On cement fibrin, a proposed constituent of the capillary basement membrane, and on lesions in the capillary wall in diabetes mellitus. In: Diabetes. Proc. 6. Congr. Internat. Diabetes Fed., Stockholm, Sweden, 1967. J. Östman and R.D.G. Milner (Eds.) Amsterdam: Excerpta Medica Foundation, 1969, pp. 606-609.

KING, R.G. and COPLEY, A.L. Modifications to the Weissenberg rheogoniometer for hemorheological and other biorheological studies. Biorheology, 7, 1-4, 1970.

COPLEY, A.L., KING, R.G. and SCHEINTHAL, B.M. Rigidity moduli of bovine fibrin gels initiated by thrombin. Biorheology, 7, 81-84, 1970.

COPLEY, A.L. Some problems in hemorheology. Proc. 5. Internat. Congr. Rheology. S. Onogi (Ed.) Tokyo, Japan, Baltimore, MD, USA and Manchester, England, Univ. of Tokyo Press and University Park Press, 1970, Vol. 2., pp. 3-25.

COPLEY, A.L. and KING, R.G. Rheogoniometric viscosity measurements of whole human blood at minimal shear rates down to 0.0009 sec<sup>-1</sup>. Experientia, 26, 904-905, 1970.

SCHEINTHAL, B.M., KING, R.G. and COPLEY, A.L. The effect of temperature on the rigidity modulus of fibrin gels produced by Bothrops atrox venom. Biochimica et Biophysica Acta, (Amsterdam), 214, 260-264. 1970.

WHELAN, J.A., HUANG, C.-R. and COPLEY, A.L. Concentration profiles in erythrocyte sedimentation in human whole blood. Biorheology, 7, 205-212, 1971.

HUANG, C.-R., WHELAN, J.A., WANG, H.-H. and COPLEY, A.L. A mathematical model of sedimentation analysis applied to human whole blood. Biorheology, 8, 157-163, 1971; 10, 291, 1973.

COPLEY, A.L. Opening address by the President of the Society. In: Theoretical and Clinical Hemorheology. Proc. 2. Internat. Conf. Internat. Soc. of Hemorheology, University of Heidelberg, F.R.G., 27.7.-1.8.1969. H.H. Hartert and A.L. Copley (Eds.) Berlin - Heidelberg - New York: Springer-Verlag, 1971, pp. 2-4.

KING, R.G. and COPLEY, A.L. Some modifications of the Weissenberg rheogoniometer for adaptation to hemorheological studies. In: Theoretical and Clinical Hemorheology. Proc. 2. Internat. Conf. Internat. Soc. of Hemorheology, University of Heidelberg, F.R.G., 27.7.-1.8.1969. H.H. Hartert and A.L. Copley (Eds.) Berlin - Heidelberg - New York: Springer-Verlag, 1971, pp. 386-387.

COPLEY, A.L. Presidential address honoring George William Scott Blair. Ceremony of Poiseuille award. In: Theoretical and Clinical Hemorheology. Proc. 2. Internat. Conf. Internat. Soc. of Hemorheology, University of Heidelberg, F.R.G., 27.7.-1.8.1969. H.H. Hartert and A.L. Copley (Eds.) Berlin - Heidelberg - New York: Springer-Verlag, 1971, pp. 5-9.

COPLEY, A.L. Non-Newtonian behavior of surface layers of human plasma protein systems and a new concept of the initiation of thrombosis. Biorheology, 8, 79-84, 1971.

COPLEY, A.L., DEVI, A., KING, R.G., SCHEINTHAL, B.M. and OHLMEYER, P. Gelation of fibrinogen and plasma systems studied by light scattering and rheogoniometric methods. In: Theoretical and Clinical Hemorheology. H.H. Hartert and A.L. Copley (Eds.) Berlin - Heidelberg - New York: Springer-Verlag, 1971, pp. 154-164.

COPLEY, A.L. and KING, R.G. Viscous resistance of thromboid (thrombus-like) surface layers in systems of plasma proteins including fibrinogen. Thrombosis Res., 1, 5-17, 1972.

COPLEY, A.L. Aharon Katchalsky. 1914-1972. Biorheology, 9, 127-129, 1972.

COPLEY, A.L. and SCOTT BLAIR, G.W. Professor Karl Weissenberg's eightieth birthday. Biorheology, 10, 293, 1973.

COPLEY, A.L., HUANG, C.R. and KING, R.G. Rheogoniometric studies of whole human blood at shear rates from 1000 to 0.0009 sec<sup>-1</sup>. Part I - Experimental findings. Biorheology, 10, 17-22, 1973.

HUANG, C.R., KING, R.G. and COPLEY, A.L. Rheogoniometric studies of whole human blood at shear rates down to 0.0009 sec<sup>-1</sup>. Part II - Mathematical interpretation. Biorheology, 10, 23-28, 1973.

COPLEY, A.L. Biorheology as an organized science. Joint Inaugural Address. VI. International Congress on Rheology. First Inter-

- national Congress of Biorheology. Lyon, France, September 1972. Rheologica Acta, 12, 89-91, 1973; Biorheology, 10, 83-86, 1973.
- COPLEY, A.L. On Biorheology. Joint Plenary Lecture. VI. International Congress on Rheology. First International Congress of Biorheology. Lyon, France, September 1972. Biorheology, 10, 87-105, 1973; Rheologica Acta, 13, 845-858, 1974.
- COPLEY, A.L. The President's Opening address. Plenary sessions dedicated to the memory of Aharon Katchalsky. 1. Internat. Congress of Biorheology, Lyon, France 5.9.1972, Biorheology, 10, 107-108, 1973.
- COPLEY, A.L. Acceptance speech, Poiseuille Award Ceremony. 1. International Congress of Biorheology, Lyon, France, 5.9.1972. Biorheology, 10, 265-266, 1973.
- COPLEY, A.L. and KING, R.G. An accessory to the Weissenberg rheogoniometer for the measurement of viscoelasticity of surface layers of protein solutions. Biorheology, 10, 541-543, 1973.
- COPLEY, A.L. Biorheology as an organized science: A brief survey. In: IV. International Biophysics Congress, Moscow, 1972, vol. IV. Symposial Papers. Pushchino, Academy of Sciences of USSR, 1973, pp. 409-411.
- COPLEY, A.L., HUANG, C.-R., and KING, R.G. Flow properties of whole human blood at minimal shear rates down to  $0.0009 \text{ sec}^{-1}$ . In: IV. International Biophysics Congress, Moscow, 1972, vol. IV. Symposial Papers. Pushchino, Academy of Sciences of USSR, 1973, pp. 438-448.
- COPLEY, A.L. and KING, R.G. The Weissenberg rheogoniometer adapted for biorheological studies. In: The Karl Weissenberg 80th Birthday Essays. J. Harris (Ed.) East African Literature Bureau, Kampala-Nairobi-Dar Es Salem, 1973, pp. 127-143.
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- COPLEY, A.L. Prospects of biorheology in the future. Biorheology, 15, 442-443, 1978 (Abstract).
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- COPLEY, A.L. The future of the science of biorheology. Biorheology, 18, 274-275, 1981 (Abstract).

## II. L. ALCOPLEY, Artist

### A. Curriculum Vitae

#### EDUCATION

- 1920-29 Early art education, Dresden (Germany). Mainly self-taught.
- 1939 Started professional career in Kansas City, MO, USA.
- 1946-47 Study of print making, Atelier 17, under S.W. Hayter, New York, USA.

#### ART SHOWS

More than 36 one-man shows, beginning in 1946, in USA, Switzerland, Japan, France, F.R. Germany, Holland, England, Norway, Israel, Iceland. Group shows in numerous countries.

#### ORGANIZATIONAL ACTIVITIES

- 1949 Co-Founder with eleven New York artists of 'The Club' which for many years played a leading role as a cultural center of artists in USA

- 1952 Co-Founder with Michel Seuphor and Nina Tryggvadottir of 'Le Club', which for nearly five years provided artists, living in Paris and visiting from all over the globe, with a place of weekly meetings.
- 1955 Initiator of exhibition L'ENCRE DE CHINE DANS LA CALLIGRAPHIE ET L'ART JAPONAIS CONTEMPORAIN, organized by leading art historians and museum curators in Japan and sponsored by the Government of Japan. First shown in 1955 at the Stedelijk Museum, Amsterdam and circulated for about 3 years in leading museums in Europe in great part through Alcopley's efforts.
- 1968-73 Co-Editor, Leonardo, International Journal of the Contemporary Artist, since the foundation of this journal on art and science by Frank J. Malina, France.
- 1971 Advisor, Art and Science Exhibition, Tel Aviv Museum, Israel. Extended from two months to two years.

Who's Who in America, 40 ed., Chicago, Marquis Who's Who., 1978-1979, vol. 1, p. 34; Who's Who in American Art, New York - London, R.R. Bowker, 1976, p. 7; Dictionnaire de la Peinture Abstraite, M. Seuphor, Paris, Fernand Hazan, 1957, p. 119-120; Dictionary of Twentieth Century Art, Oxford - New York, Phaidon Press, 1977, p. 7.

#### MUSEUM COLLECTIONS (A Selection)

Museum of Modern Art, New York; National Museum of Modern Art, Tokyo; Stedelijk Museum, Amsterdam; University Art Museum, University of California, Berkeley; National Gallery of Iceland, Reykjavik; The Israel Museum, Jerusalem; Musée d'Art et d'Industrie, Saint-Étienne, France; The Art Institute, Chicago.

#### PRIVATE ART COLLECTIONS

In numerous collections in many countries.

#### B. Publications pertaining to art and science

##### (a) Art books

Écritures/Dessins d'Alcopley. Text in French by Michel Seuphor, Paris. Drawings by Alcopley. Book design and typography by Dick Elffers, Amsterdam. Translations into English by Louise Varèse, New York and into German by Paul Ohlmeyer, Tübingen, FRG. Paris, Les Nourritures Terrestres, 1954, 40 pp. (20.8 x 12.6 cm). Dutch translation published by Meijer-Wormerveer, Amsterdam, 1954. Translations of French text into other languages: Japanese, published by Shiryu Morita, Kyoto; Italian, in art magazine i 4 Soli (Torino) No. 5, 1956; Hebrew by Yehuda Amihai, published in: Alcopley (Catalogue No. 65) by the Israel Museum, Jerusalem, 1969.

Einsichten. Drawings by Alcopley to poems, in German, by S.E. Bröse. Dedicated to the 70. birthday of Martin Heidegger, the philosopher. With epilogue by S.E. Bröse. Freiburg i.Br., F.R. Germany, Eberhard Albert Verlag, 1959, 78 pp. (20.8 x 13 cm).

GROHMANN, WILL. Alcopley-Voies et Traces. Drawings by Alcopley. DeLuxe edition limited to 140 copies, numbered: (a) 1 to 75 and containing an original drawing, (b) I to LXV. Translations from German into: French by François Mathey (Musée des Arts Décoratifs, Louvre), Paris; English by Joseph Freeman, New York. Wuppertal,

F.R. Germany, R. Jährling-Galerie Parnass, 1961, 74 pp. including 32 drawings printed on loose leaf and boxed (21.5 x 15.0 x 1.5 cm).

Structures of Travels. Seven lithographs in black on white and a poem by Alcopley. Milano, Edizioni del Grattacielo, Stamperia d'Arte 'Il Torchio', 1962. Signed edition of 40 in folder (70 x 50 cm).

ALCOPLEY. Listening to Heidegger and Hisamatsu. Texts by Martin Heidegger, Hoseki Shin'ichi Hisamatsu and L. Alcopley in English, German and Japanese, including Proceedings of the Colloquy on Art and Thinking, held at the University of Freiburg im Breisgau, F.R. Germany (Chairman: Martin Heidegger) in 1958. Reproductions in color of watercolor-inks and of black on white drawings by Alcopley. The translations from German into English were mainly made by the philosopher Hannah Arendt, New York. The philosopher Koichi Tsujimura of Kyoto University translated all texts from German into Japanese and vice versa. The songs of the Zen Master Hisamatsu were translated into English (from the German) by the poet Joseph Freeman, New York. The handwritten contributions by the two thinkers Heidegger and Hisamatsu, to whom the book is dedicated, are also printed in facsimile as is Alcopley's text. Book design and typography by the calligraphic artist Shiryu Morita, Kyoto. Traditional Japanese folder (21.0 x 15.2 x 1.6 cm). Kyoto, Bokubi Press, 1963, 88 pp. Edition of 800, numbered copies.

Alcopley: You Don't Say. 101 drawings, each black on white and white on black, bound by a screw and boxed (4.5 x 25.0 x 4.5 cm). Book design and printed by Diter Rot in 150 copies. (No text.) Reykjavik, Iceland, Forlag ed - Diter Rot, 1963, 206 pp.

Promenades With My Friend Will. 15 lithographs by Alcopley, dedicated to the 80. birthday of Will Grohmann. Printed on hand-made Rives Couronne paper at Emil Matthieu, Graphische Kunstwerke, Zürich, Switzerland. Numbered edition of 100, signed and placed between 2 Lucite sheets (3.8 x 75.0 x 0.7 cm). Texts by L. Alcopley and Will Grohmann. Typography by Noël Stevenson. New York, Una Editions, 1967, 20 sheets.

Poems of Pain - And Other Matters. Poems by Herman Cherry. Translations into drawings and epilogue (including epigram) by L. Alcopley. New York, Una Editions, 1976, 96 pp. (24.4 x 19.8 cm).

WEHMEYER, GRETE, Edgard Varèse. With 261 spontaneous line drawings by L. Alcopley, made with great rapidity on paper, while listening at concerts to all Varèse's works. (Text in German). Regensburg, F.R. Germany, Gustav Bosse Verlag, 1977, 252 pp. (24.4 x 19.8 cm).

ébauche d'une erreur (sketch of an error). A poem (in French) by Michel Seuphor. Translation into drawings by L. Alcopley. With a preface (in English) by L. Alcopley. Dedicated to the 80. birthday of Michel Seuphor. New York, Una Editions, 1981, 64 pp. (28 x 21.4 cm).

(b) Communications on art and science

ALCOPLEY. A reflection on position. Bokubi (Kyoto) No. 16, p. 12, 1952.

ALCOPLEY, L. Drawings as structures and non-structures. Leonardo, 1, 3-16, 1968.

ALCOPLEY, L. Edgard Varèse on Music and Art. A conversation between Varèse and Alcopley. Leonardo, 1, 187-195, 1968.

ALCOPLEY, L. On art fashions and the artist's preoccupation with science. Leonardo, 2, 161-162, 1969. Letters by P.K. Hoenich, J.J. Gibson, G. Oster and J. Mandelbrojt, discussing this article and replies by L. Alcopley, published under the heading: 'The battle-ground of art and science': Leonardo, 2, 328-331; ibid. 3, 131-132, 491, 1970.

ALCOPLEY, L. On the unity of art and science as formed in my pictures. The Israel Museum News, No. 9, 16-21, 1972.

ALCOPLEY, L. Art and science: Exhibition, film program and symposium at the Tel-Aviv Museum. With concluding remarks of the symposium by Aharon Katzir-Katchalsky. Leonardo, 6, 149-155, 1973.

COPLEY, A.L. Cover design for Biorheology. Newsletter, The International Society of Biorheology. G.V.F. Seaman (Ed.), Number 11, April 1973, p. 13.

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COPLEY, A.L. - ALCOPLEY, L. Art, science and human being. Life Science (Tokyo), 2, No. 8 (August), 1975, on outside and inside front cover.

ALCOPLEY, L. - COPLEY, A.L. Art and biorheology including some autobiographical remarks. Biorheology, 15, 403-410, 1978.

COPLEY, A.L. Alcopley art exhibit at the Mandeville Art Gallery, La Jolla, CA, USA, 27.8.-1.9.1978 - An activity of the Third International Congress of Biorheology. Biorheology, 15, 399-401, 1978.

### III. TRIBUTES

BOKUBI (Kyoto) Beauty of Black and White. Special Issue No. 16 (July) 1952, Kyoto, Japan, dedicated to L. Alcopley, containing many of his drawings and articles by several authors.

DE KOONING, WILLEM and KLINE, FRANZ. On works of Mr. Alcopley. Bokubi - Beauty of Black and White (Kyoto) No. 16, July, 1952, p. 11.

IJIMA, TSUTOMU. Science and art. Bokubi (Kyoto), Nr. 16, July, 1952, p. 2-4.

HASEGAWA, SABURO. Sho and new art. Bokubi (Kyoto), Nr. 16, July, 1952, p. 11.

BLUECHER, HEINRICH. Alcopley. New York: Byron Gallery, 1964. Publication No. 2.

TAYLOR, GORDON RATTRAY. Interview with L. Alcopley - A.L. Copley in film 'Man of Two Visions' (Director: P. Cantor) by the British Broadcasting Corporation (BBC). First shown in Great Britain on a Sunday in January 1966 at prime time in the Horizon Science Program of the BBC (Director: G.R. Taylor), and later in many countries. See: Anon. 'Moment of truth' - Relationship between art and science. The Observer (London), Sunday, 30.1.1966.

SEAMAN, G.V.F. First International Congress of Biorheology. Poiseuille Award Ceremony for A.L. Copley. Opening Address. Biorheology, 10, 261, 1973.

SCOTT BLAIR, G.W. First International Congress of Biorheology. Poiseuille Award Ceremony for A.L. Copley. Presentation Address. Biorheology, 10, 263-264, 1973; Acta Rheologica, 12, 85-87, 1973.

REUTER, H. A.L. Copley und L. Alcopley. Eine grosse Doppelbegabung: Wissenschaftler und Maler. Deutsches Ärzteblatt - Ärztliche Mitteilungen., 70, 1703-1707, 1973.

FUNG, Y.C. International Congress of Biorheology. Art Exhibit ALCOPLY, 27. August - 1. September, 1978. (Catalogue) p. 2; Biorheology, 15, 401, 1978.

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