

philosophy and in other disciplines depending on deductive thinking. Some of this development has been difficult for outsiders to follow, both because of the precision of the analysis used, and because of the complexity of the symbolic formulations necessary. There has long been a need for a clear-cut introduction to the new logic, which would state in an elementary but precise language the fundamental problems studied, and which would at the same time be free from an undue dependence upon traditional logic or upon special and controversial doctrines. The need has now been admirably met by this book, written by a distinguished Polish mathematician and logician who is widely known for his own fundamental contributions to logic.

Tarski's book begins with an elementary discussion of the notion of a variable and of the sentential calculus, which treats the properties of the basic logical connectives "and," "or," "not" and "implies"; subsequent chapters deal with the properties of identity, with the analysis of classes and with the calculus of relations. The chapter on axiomatic methods gives a careful elucidation of such fundamental concepts as the completeness and the consistency of a formalized deductive theory. It includes a discussion of some of Tarski's own recent results on the completeness of the ordinary system of Euclidean geometry. Roughly speaking, these results mean that every problem of *elementary* high-school geometry can be resolved by using the

ordinary procedures in a systematic manner. The second part of Tarski's book illustrates the previously developed concepts of logic and methodology by setting up two equivalent systems of axioms for the real numbers. These are the axioms which lie at the basis of calculus and higher mathematical analysis.

Throughout the book the symbolism is held to a minimum. The explanations are admirably clear and objective. The book itself is a considerably enlarged and improved version of a monograph previously published both in Polish and in German; the translation has been done by Olaf Helmer. This English edition contains much new material: many new and well-chosen exercises, some with hints and suggestions of further problems; some apt historical notes on the essential contributions of various logicians; a good critical bibliography; some eminently fair discussions of controversial issues, such as the distinction between the use and the mention of an expression and the divergent claims for "strict" and "material" implication. (On page 182 there is a disturbing misprint. In the second italicized statement, $z : x$ should be replaced by $z \cdot x$). All in all, this book is to be heartily recommended, both to the interested scientist who would like to discover what this logic business is all about and to the teacher searching for a dependable and accurate text for college courses in logic.

SAUNDERS MACLANE

HARVARD UNIVERSITY

REPORTS

THE ELLA SACHS PLOTZ FOUNDATION FOR THE ADVANCEMENT OF SCIENTIFIC INVESTIGATION

DURING the seventeenth year of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation, eighty-one applications for grants were received by the trustees, fifty-one of which came from the United States, the other thirty coming from fifteen different countries in Europe, Asia, North and South America. The total number of grants made during this year was twenty-three, one of these being a continued annual grant.

In the seventeen years of its existence the foundation has made three hundred and ninety-four grants which have been distributed to investigators in Arabia, Argentina, Austria, Belgium, Brazil, Canada, Chile, China, Czecho-Slovakia, Denmark, Egypt, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, India, Iraq, Italy, Latvia, Lebanon, Netherlands, North Africa, Norway, Palestine, Poland, Portugal, Roumania, South Africa, Sweden, Switzerland, Syria, Venezuela, Yugoslavia and the United States.

The list of the investigators and the purposes of the research aided in the current year is as follows:

Professor William H. Adolph, Peiping, China, studies in calcium and oxalate metabolism.

Dr. Kenneth T. Bainbridge, Harvard University, biological research with radioactive isotopes.

Dr. Georg Barkan, Boston University School of Medicine, investigations in the field of hemoglobin determinations.

Dr. E. L. Borkon, Southern Illinois State Normal University, Carbondale, study of the compensatory hypertrophy occurring in a remaining kidney in hypothyroid, normal and hyperthyroid albino rats.

Dr. Siegbert Bornstein, Beth Israel Hospital, New York, continuation of investigations on the chemical constitution of the antigens within the Salmonella group.

Dr. Austin M. Brues, Collis P. Huntington Memorial Hospital, Boston, studies on regulation of growth in tissue cultures.

Professor D. R. Drury, University of Southern California School of Medicine, Los Angeles, continuation of work on the kidney and hypertension.

Professor Herbert Elias, New York Medical College, study of the influence of various ductless glands on the threshold of the kidney.

Dr. George Fahr, University of Minnesota Medical School, investigation of the effect of strophanthosid K upon the heart failure produced by chloroform, potassium ion and chloral hydrate; and investigation of the effect of narrowing the circumflex branch and the descending branch of the left coronary artery upon cardiac hypertrophy.

Dr. Allan L. Grafflin, Harvard Medical School, analysis of functions of living organs *in situ*, study of frozen sections, tissue spreads, blood smears, etc., with and without the addition of fluorescent compounds.

Dr. David E. Green, Harvard Medical School, work on the isolation of enzymes.

Dr. F. B. Gordon, University of Chicago, search for an etiological agent in rheumatic fever by means of inoculation of fetal animals and by culture.

Dr. Irvin M. Korr, New York University, research on the relation between tissue metabolism and physiological activity.

Dr. Fritz Lipman, Cornell University Medical College, New York, continuation of work on pyruvic acid oxidation.

Dr. Romano H. de Meio, Rosario, Argentina, South America, work on the action of sympathomimetic drugs on tissue respiration.

Dr. Ernst P. Pick, New York, investigation of brain tissue *in vitro*.

Dr. J. P. Quigley, Western Reserve University School of Medicine, Cleveland, study of the process of gastric evacuation.

Dr. George J. Scheff, New Haven, study of fluorescence.

Dr. A. K. Solomon, Harvard University, biological studies making use of artificial radioactive tracers.

Professor Barnett Sure, University of Arkansas College of Agriculture, Fayetteville, continuation of research on the vitamin C phase of the hyperthyroid problem.

Thorndike Memorial Laboratory, Boston City Hospital (Professor George R. Minot, Director), in recognition of Dr. Francis W. Peabody's services to the foundation.

Professor Charles W. Turner, University of Missouri College of Agriculture, Columbia, research on the endocrinology of lactation.

Dr. Earl Walker, University of Chicago, investigation of the eye movements elicitable from electrical stimulation on the striate, para- and peristriate cortex of the macaque monkey.

In their first statement regarding the purposes for

which the Fund would be used, the trustees expressed themselves as follows:

For the present, researches will be favored that are directed towards the solution of problems in medicine and surgery or in the branches of science bearing on medicine and surgery.

As a rule, preference will be given to researches on a single problem or on closely allied problems; it is hoped that investigators in this and in other countries may be found, whose work on similar or related problems may be assisted so that more rapid progress may be made possible.

Grants may be used for the purchase of apparatus and supplies that are needed for special investigations and for the payment of unusual expenses incident to such investigations, including technical assistance, but not for providing apparatus or materials which are ordinarily a part of laboratory equipment. Stipends for the support of investigators will be granted only under exceptional circumstances.

In the past few years the policy outlined in paragraph 2 has been neglected. During the present great need for funds, grants will be given in the sciences closely related to medicine without reference to special fields. The maximum size of grants will usually be less than \$500.

Members of the executive committee are: Drs. George B. Wislocki, *chairman*; A. Baird Hastings, Harry Plotz, Bernard Sachs, Paul J. Sachs, Soma Weiss, Joseph C. Aub, *Secretary*.

Applications for grants must state definitely the qualifications of the investigator, an accurate description of the research, the size of the grant requested and the specific use of the money to be expended. In their requests for aid, applicants should state whether or not they have approached other foundations for financial assistance. It is highly desirable to include letters of recommendation from the directors of the departments in which the work is to be done. Only applications complying with the above conditions will be considered.

Applications should be sent to Dr. Joseph C. Aub, Collis P. Huntington Memorial Hospital, 695 Huntington Avenue, Boston, Massachusetts, U. S. A.

SPECIAL ARTICLES

THE PREVENTION BY ALPHA-TOCOPHEROL OF "COD LIVER OIL MUSCULAR DYSTROPHY" IN THE RABBIT¹

THE injurious effect of cod liver oil in the herbivora has been demonstrated by the extensive investigations of Madsen, McCay and Maynard,² and Davis, May-

¹ Supported by grants from the Research Corporation of New York and the Carnegie Institution of Washington.

² L. L. Madsen, C. M. McCay and L. A. Maynard,

nard and McCay.³ Lesions of the skeletal muscles were observed in rabbits, guinea pigs, goats and sheep fed cod liver oil. The possible role of vitamin E was discussed, but no definite conclusion was reached.

Memoir 178 of the Cornell University Agricultural Experiment Station, 1935.

³ G. Davis, L. A. Maynard and C. M. McCay, Memoir 217 of the Cornell University Agricultural Experiment Station, 1938.