

The
Rockefeller Foundation
Annual Report

1933

THE ROCKEFELLER
FOUNDATION

OCT 27 1934

LIBRARY

49 West 49th Street
New York

CONTENTS

	PAGE
FOREWORD.....	XVII
REPORT OF THE SECRETARY.....	1
REPORT OF THE WORK OF THE INTERNATIONAL HEALTH DIVISION..	15
REPORT OF WORK IN THE MEDICAL SCIENCES.....	161
REPORT OF WORK IN THE NATURAL SCIENCES.....	193
REPORT OF WORK IN THE SOCIAL SCIENCES.....	231
EMERGENCY GRANTS.....	281
REPORT OF WORK IN THE HUMANITIES.....	301
REPORT OF THE TREASURER.....	335
INDEX.....	423

THE NATURAL SCIENCES

CONTENTS

	PAGE
INTRODUCTION	197
PROGRAMS OF SPECIFIC CONCENTRATION	
Vital Processes	
California Institute of Technology. Research in biology....	202
University of Chicago. Research in biology.....	203
National Research Council. Committee for Research in Problems of Sex.....	206
Roscoe B. Jackson Memorial Laboratory. Studies in genetics	208
California Institute of Technology. Research in chemistry..	209
National Research Council. Committee on Effects of Radiation on Living Organisms.....	210
Earth Sciences	
Massachusetts Institute of Technology. Aerological research	212
Grants in Aid of Research in Vital Processes and the Earth Sciences.....	215
FORMER PROGRAM	
Resident Fellowships in China.....	217
Research and Developmental Aid Funds, China	218
Marine Biological Association of China. Institute at Amoy...	218
Emergency grants, natural sciences, China.....	219
<i>Biological Abstracts</i>	220
American Mathematical Society.....	220
Institute of Comparative Physiology, University of Utrecht....	220
Jungfrauoch Scientific Station, Switzerland.....	221
Apia Observatory, Western Samoa.....	222
Special research aid fund for European scholars.....	223
GENERAL PROGRAM	
Fellowships and research aid grants.....	223
SUMMARY OF APPROPRIATIONS, 1933.....	226
PAYMENTS ON FORMER APPROPRIATIONS.....	227
STAFF DURING 1933.....	230

THE NATURAL SCIENCES

During the years immediately following 1929, when The Rockefeller Foundation's program in the natural sciences was first organized, there was recognized, in selecting projects for aid, some preferential emphasis upon certain fields of interest; but the primary emphasis was not upon field but rather upon the outstanding leadership of the chosen men or institutions. In recent years, however, interest in certain definite fields has played the dominant rôle in the selective process. The opportunities open to the Foundation in the field of the natural sciences are, in fact, not likely to be met by supporting undertakings merely because they are sound scientific projects, or even because they are outstandingly good scientific projects. A highly selective procedure is necessary if the available funds are not to lose significance through scattering. Within the fields of interest decided upon, selection naturally continues to be made of the leading men and institutions.

The choice of fields of interest is influenced by several considerations. The field must contribute in a basic and important way to the welfare of mankind. It must be sufficiently developed to merit support, but still so imperfectly devel-

oped as to need it. It should be a field in which the contributions of the Foundation can play a significant rôle in producing and stimulating development that otherwise would not take place within a reasonable time.

It is obvious that the welfare of mankind depends in a vital way upon man's understanding of himself and of his physical environment. The problems of physical and mental growth and development and of reproduction of kind are of central importance to all individuals. Not only the well-being of present society, but even to a greater extent the well-being of the society of the future, depends upon a deeper understanding of the nature of these problems. Science has made magnificent progress in the analysis and control of inanimate forces, but it has not made equal advances in the more delicate, difficult, and important problem of the analysis and control of animate forces. This indicates the desirability of increasing emphasis on what may be called the vital sciences, or sciences dealing with the processes of life. These include the biological sciences, psychology, and those special developments in mathematics, physics, and chemistry which are fundamental to biology and psychology.

Biology is today in a position in some ways analogous to that occupied by physics and chemistry many years ago. It has advanced out of

the stage of qualitative observation and classification into the stage of detailed quantitative analysis. The time is ripe to help stimulate significant advances by bringing to bear on the basic problems of biology the powerful quantitative techniques of mathematics, physics, and chemistry. Among the promising fields for study are endocrinology, genetics, psychobiology, embryology, nutrition, general physiology, and the biology of reproduction.

Important questions are: Can we obtain enough knowledge of the physiology and psychobiology of sex so that man can bring this aspect of his life under rational control? Can we unravel the tangled problem of the endocrine glands and develop a therapy for the whole hideous range of mental and physical disorders which result from glandular disturbance? Can we develop so sound and extensive a genetics that we can hope to breed in the future superior men? Can we solve the mysteries of the various vitamins, so that we can nurture a race sufficiently healthy and resistant? Can psychology be shaped into a tool effective for man's every-day use? In short, can we rationalize human behavior and create a new science of man?

The past fifty or one hundred years have seen a marvelous development of physics and chemistry, but hope for the future of mankind depends in a

basic way on the development in the next fifty years of a new biology and a new psychology. In selecting projects for Foundation aid in the natural sciences the major emphasis at present is upon certain fields of modern analytical biology.

An inclusive study of vital phenomena must take into account the physical conditions surrounding and effecting life. For example, few concepts in the whole history of thought have been so important in their implications as the concept of organic evolution, and man has perhaps no higher responsibility than that of understanding and consciously controlling the evolutionary processes. In the attack on the unsolved problems of evolution two types of knowledge are required, knowledge of the development of the individual and knowledge of the physical background which to so large an extent conditions that development.

It has not been judged feasible for The Rockefeller Foundation to support an extensive program in the varied disciplines which study all aspects of the physical stage on which the drama of life is played. The field of the earth sciences (covering, for example, meteorology, atmospheric electricity and magnetism, earth currents, geophysics, etc.) has, however, been chosen to form a modest complement to the principal program in vital processes. Certain aspects of re-