

Behavior, Aging, and the Nervous System

Biological Determinants of Speed of Behavior and
Its Changes with Age

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Nervous System**

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PREFACE

THE PURPOSE of this volume is to bring together a group of papers which review questions and present data related to speed of behavior, directing attention especially to explaining the slowness of behavior associated with advancing age and with certain types of brain damage and psychopathology. The papers were originally presented and discussed at a Colloquium held in Cambridge during August 1963: two papers are included by authors who were originally invited but were unable to attend.

After the colloquium, the authors had the opportunity of revising their papers in the light of the discussions, but no attempt has been made to secure uniformity of view on the many points where the contributions overlap. From the many and varied points of view represented, some striking agreements do emerge, but there are also some point of divergence: in such an active area of research diversity of method and point of view toward common problems is to be expected and can serve as a stimulus to further progress. Nor have we tried to bring together the implications of the various papers in the form of a discussion of "trends in research." Certain issues do, however, recur in the discussions by the various authors and appear to represent leading issues in current research and focal points in the present organization of knowledge. Some of these are: whether the autonomic nervous system has a lower responsivity in old age and what implications change in level of "activation" or "arousal" might have for organized behavior; how much bearing the change in short-term memory with age has on the maintenance of short-term set; how much the changes in sensorimotor capacity which commonly occur in older people are due to processes of identifiable disease, traumatic brain damage, and psychopathology; the extent to which slowness of aging is the result of a single

major factor or change in the functioning of the nervous system; and how far the rate of aging can be accelerated or delayed by experimental control of such factors as diet and exercise.

The sequence of the papers in this volume is largely that followed in the colloquium, although some departures have been made from the original order in instances where the papers seemed more logically arranged otherwise. It is hoped that the arrangement will serve a useful role in providing readers with a convenient means of access to published literature in areas of research bordering their own special interests. This is one of the more manifest gains of a multidisciplinary colloquium over and above the professional contacts and stimulating friendships which may be made.

We are pleased to include as an appendix, a paper by Dr. Walter R. Miles. This paper was invited as a special introductory address to the group at its opening session. Dr. Miles was the organizer of what was very likely the first systematic attempt to study the behavioral aspects of aging. His remarks about the origin of the Stanford Studies of Later Maturity are printed since it is thought that they can provide some real information and encouragement to those engaged, or considering becoming engaged, in the fascinating task of unraveling the nature of human aging through experimental studies.

The origin of the Colloquium goes back to the meeting of the European Branch of the Biological Research Committee of the International Association of Gerontology which was held in Paris during April 1962. It was thought by the editors of this volume that research on speed of behavior was sufficiently advanced in fact and theory to warrant a meeting of the more active research workers on the subject.

It seemed clear that such a meeting ought to include representatives of experimental psychology, physiology, anatomy and neurology, and that it should cover both laboratory and clinical approaches. Further, it seemed desirable that it should not be entirely confined to studies of aging but should include for comparison some work in other areas, such as brain damage, schizophrenia and cardiovascular diseases, where slowing of performance is also found. People with such varied interests do not

readily speak in a common language, yet the volume does suggest that effective communication can exist when such people address themselves seriously to a common problem.

Following a grant from the National Institute of Mental Health (MH 07295-01) to St. John's College, Cambridge, the Colloquium was arranged for 6-9 August 1963. The particular time was chosen so that the meetings would take place during the week before the Sixth International Congress of Gerontology held in Copenhagen from 11 to 16 August 1963. The editors are grateful for the encouragement given to the Colloquium by the organizers of the Copenhagen Congress and have thought it appropriate to assign any royalties arising from the present volume to the International Association of Gerontology.

Grateful acknowledgement is given to Mr. T. C. Thomas, Senior Bursar of St. John's College, Cambridge who served as the responsible fiscal officer for the colloquium grant. Acknowledgment is also given to Mrs. Dorothy Oest and Mrs. Virginia Marbley of the Section on Aging of the National Institute of Mental Health for their assistance in many of the details of the invitations, manuscripts and publication.

The authors' preferred forms of spelling have been retained in their papers.

JAMES E. BIRREN
A. T. WELFORD

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