SCIENTIFIC LITERATURE

GROWTH OF PRIMATE LITERATURE SINCE 1800

IT is only within the past decade or two that the study of the primates as a distinct zoological group has come into sufficient stature to warrant separate designation—"primate biology" or if you will, "primatology." That such a cleavage is not merely a terminological one is witnessed by the fact that individual workers and even whole laboratories are almost exclusively devoted to the study of this order. Nor does the interest in the primates lie only in their rôle as man's unhappy vicar in laboratory experimentation. Rather is the interest broader and more truly biological.

The drawing together of the literature of the primates,[1] in three of its phases, anatomy, physiology and psychobiology, affords an opportunity to survey the present status and the development of primate biology by analyzing the collective literature with respect to time, subject, place of publication, etc. Perhaps the most striking thing of all is the restricted character of the literature. Extensive searching yielded some 4,630 articles or books relating to the anatomy, physiology and behavior of the primates published prior to the beginning of 1939. In this number are counted many works in which representative primates are treated along with others of the mammalian or vertebrate series, and in certain sections many "popular," anecdotal and descriptive papers are included. This whole literature represents but a fraction of attention devoted to almost any other group of animals. Man, so often self-accused of anthropocentricity, does not in his zoological interests show any intense preoccupation with his next of kin.

Another fact which emerges without analysis is the not unexpected preponderance of morphological over functional studies. Classified as anatomical (*i.e.*, systematic anatomy, embryology, histology and studies employing the techniques of physical anthropology) are 2,734 titles or 59 per cent. of the whole (4,630); as physiological and pharmacological, 896 or 19 per cent.; and as psychobiological 669 or 14 per cent. The latter should perhaps be broken down as is done in the bibliography into experimental and observational psychobiology, the former numbering 316 papers or 6 per cent. The remaining papers were published before 1800 or fall under the category of miscellaneous bibliographies, which include such topics as "phylogeny of the primates," "primate culture and methodology," "the primates in mythology," etc. One reason for the preponderance of structural studies lies certainly in the relative unavailability of living primate forms in adequate quantities for functional studies. Another without doubt is historically grounded, and is brought out by graphing the number of papers appearing in each subject per year. It is quite clear from this graph that the three subjects got underway in the order of anatomy, physiology and psychobiology. Morphological studies show a steady increase in number except for the years marred by the first World War, with, perhaps, a tendency for slower growth in the past fifteen years. Physiological studies made a rather definite beginning in the last decades of the nineteenth century, due no doubt to the English and German

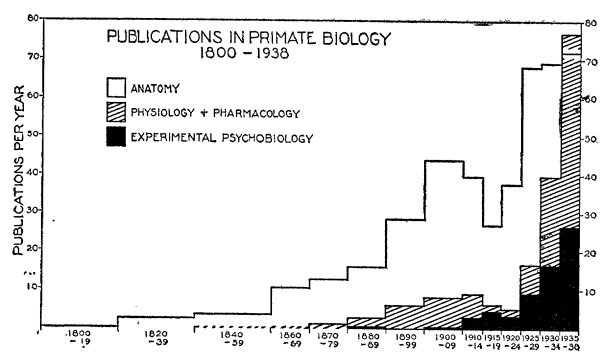

FIG. 1

investigations of the nervous system. A steady though not accelerating interest was exhibited in primate physiology until well after the war. Beginning about 1930 has come a remarkable increase in the number of physiological papers, until functional and morphological studies become roughly equal. Experimental psychobiology though later in starting (*c.* 1910) parallels in growth its fellow functional science.

It is interesting to speculate on the factors determining the growth of these subjects. Does the plateauing of anatomical studies in the past decade and a half denote simply a maturing of a subject? Or does it reflect a change in the attitude of anatomists from a comparative to a functional approach, causing him to be recruited into the ranks of the physiologists? The many important contributions to the physiology of the nervous and endocrine systems coming from anatomical laboratories in recent years are indicative

[1] T. C. Ruch, "Bibliographia primatologica: A Classified Bibliography of Primates Other Than Man. Part I. Anatomy, embryology and quantitative morphology; physiology, pharmacology and psychobiology; primate phylogeny and miscellanea." xxvii + 241 pp. Springfield, Ill.: Charles C Thomas, 1941.

of some such process. Though the literature has not been analyzed from this point of view, the burst of activity in physiological and psychobiological investigation coming in the past decade must in some degree reflect the stimulus afforded by the creation of laboratories for primate research by the foundations.

The break in the orderly march of these subjects occasioned by the war and extending well into the post-war years, is cause for speculation on the course these graphs will take in the next five-year period.

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SOCIETIES AND MEETINGS

THE TENNESSEE ACADEMY OF SCIENCE

THE forty-ninth meeting of the Tennessee Academy of Science was held in Nashville on November 28–29, at the George Peabody College for Teachers. President F. L. Wren presided. Friday and Saturday mornings were devoted to general sessions, with Friday afternoon reserved for sectional meetings. Fifty papers were presented.

The following chairmen presided at the section meetings on Friday afternoon: *Botany:* D. M. Brown, State Teachers College, Johnson City; *Geology and Geography:* R. A. Laurence (for B. C. Moneymaker), Tennessee Valley Authority, Chattanooga; *Mathematics:* W. L. Miser, Vanderbilt University, Nashville; *Chemistry:* L. J. Bircher, Vanderbilt University, Nashville.

The annual dinner was held on Friday night at the James Robertson Hotel. Vice-President D. M. Brown served as toastmaster. The address of Retiring President F. L. Wren was on the timely topic, "Our Public Trust," in which the speaker emphasized the new role and responsibility of science in the world of to-day. A beautifully colored motion picture, "The Sportsman's Dollar," was shown by the courtesy of the Educational Service of the State Department of Conservation.

At the meeting of the executive committee on Friday and at the general business session on Saturday, the following business was transacted: (1) A committee appointed to proceed in the organization of a Junior Academy of Science. (2) A committee appointed to canvass the state to determine the number and type of science groups with the possibility of offering student membership in the academy at a reduced rate. (3) Jesse M. Shaver was elected representative of the academy on the Council of the American Association for the Advancement of Science. (4) Recommendations will be made to the incoming executive committee that in place of the regular spring meeting the academy convene with the newly organized Southern Association for the Advancement of Science.

New officers for 1941–42 were elected as follows: *President:* D. M. Brown, State Teachers College, Johnson City; *Vice-President:* C. S. Shoup, Vanderbilt University, Nashville; *Secretary-Treasurer:* Kendall E. Born, State Division of Geology, Nashville. *Section Chairmen: Botany:* Frances Ranney Bottom, George Peabody College for Teachers, Nashville; *Geology and Geography:* Robert A. Laurence, Tennessee Valley Authority, Jefferson City; *Mathematics:* J. A. Cooley, University of Tennessee, Knoxville; *Chemistry:* C. A. Buehler, University of Tennessee, Knoxville.

KENDALL E. BORN,
Secretary-Treasurer

SPECIAL ARTICLES

A NEW PROTEASE FROM BROMELLA PINGUIN L.[1]

THE juice obtained from the fruit of the *Bromelia pinguin* L., commonly called "maya" in Puerto Rico, has a pleasantly acid taste, but produces a burning sensation when applied to the hand or lips, peeling the skin after a few hours.

Suspecting the presence of a proteolytic enzyme in this juice, it was tested by the milk-clotting method of Balls and Hoover,[2] as well as by the formol titration, using gelatin as a substrate. Similar tests were performed on heat-inactivated juice which served for control tests. The result of these trials is reported in Table I, which shows the presence of a protease in the juice.

To obtain the crude enzyme, 100 cc of fresh maya juice were filtered with celite. To the filtered juice,

TABLE I

Juice	pH	Milk clotting units per cc of juice*	Formol titration. cc 0.01N NaOH per cc of juice
Fresh	4.0	50	3.80
Boiled	4.0	No clotting	1.10

* A milk-clotting unit is defined here as the amount of enzyme preparation required to clot 5 cc of standard milk solution from dried milk in one minute at 40° C.

[1] Published with the approval of the director of the School of Tropical Medicine and of the director of the Agricultural Experiment Station of the University of Puerto Rico. A cooperative project.

[2] A. K. Balls and S. R. Hoover, *Jour. Biol. Chem.*, 121: 737, 1937.