ANNUAL REPORT

OF THE DIRECTOR
OF THE

MUSEUM OF COMPARATIVE ZOOLOGY

AT HARVARD COLLEGE

1958-1959

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PUBLICATIONS ISSUED BY OR IN CONNECTION
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MUSEUM OF COMPARATIVE ZOOLOGY
AT HARVARD COLLEGE

BULLETIN (octavo) 1863 — The current volume is Vol. 124.

BREVIORA (octavo) 1952 — No. 129 is current.

MEMOIRS (quarto) 1864–1938 — Publication was terminated with Vol. 55.

JOHNSONIA (quarto) 1941 — A publication of the Department of Mollusks. Vol. 3, no. 39 is current.

OCCASIONAL PAPERS OF THE DEPARTMENT OF MOLLUSKS (octavo) 1945 — Vol. 2, no. 25 is current.

PROCEEDINGS OF THE NEW ENGLAND ZOOLOGICAL CLUB (octavo) 1899–1948 — Published in connection with the Museum. Publication terminated with Vol. 24.

The continuing publications are issued at irregular intervals in numbers which may be purchased separately. Prices and lists may be obtained on application to the Director of the Museum of Comparative Zoology, Cambridge 38, Massachusetts.

Of the Peters "Check List of Birds of the World," volumes 1-3 are out of print; volumes 4 and 6 may be obtained from the Harvard University Press; volumes 5, 7 and 9 are sold by the Museum, and future volumes will be published under Museum auspices.

MUSEUM OF COMPARATIVE ZOOLOGY

I submit herewith the one-hundredth annual report of the Museum of Comparative Zoology, for 1958-59. On such a centennial occasion one may be permitted to look back, with considerable satisfaction, on the achievements of the "Agassiz Museum" during the past century under such notable leadership as that given by Louis Agassiz, Alexander Agassiz and Thomas Barbour. A past is not enough. But a look about me at the steadily increasing tempo of the institution's research activities gives me quiet confidence that our role in the advancement of scientific knowledge will be as distinguished — or even more distinguished — in the coming century as in that just completed.

Staff

The death of Ludlow Griscom on May 28, 1959, after a long period of ill-health, marked the passing of one of the most outstanding field ornithologists of our time. He came to Harvard in 1927 and for some time actively aided Dr. Barbour in the reorganization of the Museum; in later years, although keeping the editorship of the Museum's publications, he was enabled, as Research Ornithologist, to devote nearly his full time to valuable research. Even before coming to Harvard he had achieved a solid reputation as a systematist and as a specialist in the avifauna of Central America. At Harvard he expanded his interest to include research on New England faunal areas and, most especially, was the chief exponent of a new technique of field ornithology that has received enormous expansion in recent years and has had profound influence in furthering the movement for wildlife conservation. Among the honors received by him in recognition of his work in ornithology were the award

of the Aububon medal of the National Aububon Society, the chairmanship of that society and the presidency of the American Ornithologists' Union.

As usual, members of the staff engaged in various teaching activities, symposia and lectureships. Some staff instructional interests have strayed well off the normal staid patterns. For example, Dr. Kummel, as a member of the Department of Geology and Geography, is enthusiastically engaged in the development of an introductory course in geology which bids fair to be satisfactory from the point of view of the general education program and that of an introduction to more advanced department work as well; Dr. Levi is heavily engaged in the science program for high school teachers; I find myself serving on a national committee, under the auspices of the American Institute of Biological Sciences, directing a broad-scale survey of biology teaching at every level.

At the end of this year Dr. Carpenter will relinquish the chairmanship of the Department of Biology and return, happily, to his research in entomology, necessarily neglected in great measure because of his highly appreciated but onerous departmental services during the past seven years. Dr. Lyman organized and served as chairman last spring of the First International Conference on Mammalian Hibernation, supported by the Office of Naval Research and sponsored by the American Institute of Biological Sciences; the proceedings of the conference will be published as a special volume of the Museum Bulletin. The writer organized a two-day meeting on vertebrate anatomy sponsored by the American Society of Zoologists and held at the Christmas meetings of the American Association for the Advancement of Science in Washington; the success of this meeting has led to the organization of a new special section of the Society dealing with this area. Dr. Mayr was honored by the award of the Doctor of Science degree by Yale University, and I had the pleasure of receiving the same degree from Dartmouth College. Dr. Carpenter has been elected National Presi-

dent of Sigma Xi, the honorary scientific fraternity. Dr. Levi was re-elected to the Board of Governors of the Nature Conservancy and became secretary of the Rocky Mountain Biological Laboratory. Dr. Mayr was awarded a Darwin-Wallace medal issued to notable workers in the field of evolutionary theory by the Linnean Society of London in commemoration of the centennial of the publication of the "Origin of Species." Professors Mayr, Patterson and I are serving on panels of the National Science Foundation which review proposals for research and facilities grants.

It is a pleasure to report that Dr. George Gaylord Simpson, distinguished vertebrate paleontologist and student of evolution, has accepted appointment as an Alexander Agassiz Professor and will join us September 1.

Miss Jessie Bell MacKenzie has been appointed a Librarian without limit of time, and Dr. Paynter has been voted a similar tenure position as Associate Curator of Birds. Mr. Andrew A. Konnerth has joined the preparation staff in vertebrate paleontology.

Research

In the field of mammalogy, Miss Lawrence has completed work on a study of bats collected by Dr. Novick from the Philippines and Africa and has made progress in the study of the throat musculature of delphinid cetaceans. Dr. Lyman continues to expand his studies on the effect of low temperatures on mammalian tissues and on various other problems connected with hibernation. He has developed a technique in which drugs and hormones of known pharmacological effect can be introduced into the hibernating animal without disturbing it, and measurement of heart and respiratory rate and of blood pressure can be recorded.

Dr. Paynter has resumed research in population dynamics of herring gulls. Work continues on the Check List of Birds of

the World. Curator Greenway reviewed and prepared manuscript of the Family Oriolidae and is engaged in reviewing the Family Sittidae. He and Dr. Paynter have been working on final preparation of volume 9. Dr. Mayr's scientific activities during the year were dominated by the Darwin Centenary; despite this, a number of research projects were published or completed during the year.

Dr. Williams completed and published this past year an important paper on the development of tetrapod vertebrae; this will, I believe, re-orient future studies on the controversial subject of the evolution of the vertebral column. The lizards of the genus *Anolis* are to the fore in his research interests; he continued work on members of that genus from the Lesser Antilles, with A. S. Rand on those from Hispaniola, and with R. Ruibal on Cuban anoles. Mr. Shreve continued work on the *Sphaerodactylus difficilis* group and prepared a description of a new *Eleutherodactylus* from Haiti.

Dr. Bigelow and Mr. Schroeder are continuing their work on a collection of skates and rays trawled in 100-500 fathoms by the U. S. Fish and Wildlife Service vessel "Oregon" with an area extending from the Caribbean Sea to the offing of the Amazon River. Dr. Bigelow has continued actively his editorial work on volume 3 of Fishes of the Western North Atlantic.

In the Department of Insects, Dr. Darlington has continued his work on carabid beetles of the Indo-Australian area (especially New Guinea) and on special zoogeographical problems. Dr. Brown has completed a review of the ants of New Zealand and has also completed part III of his reclassification of ants, six more parts of his revision of the ant tribe Dacetini, and a general paper on animal adaptation and evolution. Dr. Wilson has continued study of the systematics and distribution of Melanesian ants and has nearly completed his studies of Polynesian ants. Dr. Chapin has continued work on coccinellid beetles, and Dr. Fairchild continues his studies of neotropical biting flies. It is a pleasure to have with us Prof. William T. M.

Forbes, distinguished student of the Lepidoptera, who is doing research on our collections in this field. Dr. Carpenter during the year has studied Hemerobiidae from Micronesia and Neuroptera from Mexico and South America; in the area of fossil insects he has worked on Permian and Triassic forms from the United States and Brasil as well as continuing with the preparation of an account of fossil insects as a whole for the Treatise on Invertebrate Paleontology. Dr. Levi is at work on revisions of the spider family Theridiidae; he has completed manuscripts on the evolution of palpi and on a synopsis of the family. Dr. Chickering's continuing studies on neotropical spiders have included, especially, work on *Micrathena* (Argiopidae). During the year the department has been visited by well over a score of entomologists who wished to make special studies or type comparisons; the visitors included Father Francisco S. Pereira of Brasil, who spent several weeks identifying and arranging our Coprinae (Scarabaeidae) of the world.

Workers in the Mollusk Department have completed volume 3 of Johnsonia, and the first number for volume 4 (on *Calliostoma*) is in progress; an issue of the Occasional Papers on the genus *Taheitia* has appeared, and two additional numbers are in press. Dr. Clench's work on the land and freshwater mollusks of the Bahamas continues, with manuscripts completed for the Turks and Caicos Islands and the Crooked Island group. Dr. Turner has received a grant from the Office of Naval Research for research on the boring mollusks, the Teredinidae, and is making progress in her work on a world-wide monograph of this family. She has further studied the land mollusks of Navassa Island, a raised coral reef off the west coast of Hispaniola. Joint studies by Drs. Clench and Turner on the Papuininae of Melanesia continue, despite the handicap of not being able to obtain material for anatomical studies. Dr. Deichmann has done further work on Antarctic holothurians. She has completed studies on the Clipperton holothurians and on echinoderms, gorgonians and stony corals from Puerto Rico shallow waters.

In the area of fossil vertebrates, Dr. Edinger has steadily pursued her studies in the area of paleoneurology. Prof. Patterson's interests have been mainly concentrated on the early evolution of mammals; the structure of the Triassic cynodonts which were collected in Argentina last year offer interesting suggestions regarding the evolution of the mammalian auditory apparatus. I have prepared an account of the Triassic deposits of the Mendoza region of Argentina which I hope will prove useful to those who concern themselves with the vertebrates of this complex area, considered the nature of rhynchosaur history, and made some modest progress in the study of North American Carboniferous amphibians.

Dr. Whittington has finished further studies on silicified Middle Ordovician trilobites from Virginia and a manuscript on Devonian trilobites of North America; further systematic studies of Ordovician and Devonian trilobites continue. Dr. Kummel has completed various cephalopod studies, including three papers on New Zealand faunas and others on Triassic faunas from Malaya, Thailand and the Middle East. Further research well in hand includes work on a fine Triassic fauna from Nevada, and problems in speciation of Spitzbergen ammonoids and New Zealand Triassic nautiloids. In the hands of the publisher is a text on earth history on a world-wide basis.

Expeditions and Travel

Dr. Paynter last winter rejoined us on completion of a year and a half spent in conducting a highly successful ornithological expedition to countries in the Indian region, sponsored jointly with the Peabody Museum of Yale University. Despite the difficulties normally encountered in foreign work, particularly in wilder areas, specimens collected represent 550 species of birds, as well as a variety of other vertebrates, spiders and mollusks. The earlier part of the trip was spent in Nepal. Last summer collecting was done in the mountains near Darjeeling, India,

following which work was shifted to West Pakistan, where collections were made in Swat, the tribal districts on the Afghanistan border, and the Hazara region. Other expeditionary work during the year included an invertebrate fossil collecting trip to Newfoundland by Dr. Whittington in the summer of 1958, studies by Dr. Brown during the same season of the ant population of the Mississippi Valley region, some two months work by Dr. Deichmann in Puerto Rico, a three-weeks trip by Dr. Clench and Mr. Joseph Rosewater, graduate student, to the Salt and Kentucky Rivers, a month's work last spring by members of the vertebrate paleontology department in my old stamping-grounds, the Texas Permian Redbeds. A considerable number of staff members attended the International Zoological Congress in London, mentioned in the last report, and remained in Europe for museum field studies. In addition to staff expeditions and travel, various students engaged in field work, such as (for example) Mr. Clayton Ray and Mr. A. Stanley Rand's productive trip last summer to the West Indies for recent and sub-fossil material and Mr. Arthur Clarke's participation in the cruise of the R. M. Vema to the eastern Pacific.

Collections

Noted last year was the award of a substantial five-year facilities grant by the National Science Foundation, mainly for the improvement of those collections which are the Museum's most important research tools. A fraction of the grant is being expended for their better housing, and most departments have added new storage cases or — equally, if not more important — have revamped existing accommodations for specimens to make the collections more easily available and to make more efficient use of storage areas. A considerably larger amount, however, has been spent in hiring both "dieners" and scientifically trained helpers in sorting, identifying and placing in proper place in the main collections accumulations of valuable

materials which had been received in past years but which for lack of man-power had long lain unworked and hence sterile. In the Department of Insects this past spring Dr. W. R. M. Mason came to us as a specialist for a short time to arrange the Braconidae and Mr. Gerd H. Heinrich, the Ichneumonidae.

As a praiseworthy counteraction to the almost irresistible tendency for collection storage to expand may be mentioned that in invertebrate paleontology a large percentage of storage drawers have been cut down to a shallower depth and the drawer slides in the cases altered proportionately; as a result the storage capacity of the existing cases has been increased by about 30 percent. The same procedure has been successfully followed in the case of fossil fishes, most specimens of which occur as flat slabs.

Under the heading of "Acknowledgements" are noted numerous valuable gifts of material.

Library

Miss Mackenzie, as librarian, notes a modest net increase in volumes of 2,790. Currently some 2,538 serials are received by purchase or exchange (1671 on the latter basis). Because of the richness of our collections in most appropriate fields, reference demands on us and the amount of inter-library loans continue to increase. A considerable backlog of cataloguing persists. Happily, however, the greater backlog of binding is being considerably reduced. Work on this front is being pushed forward under the fraction of the NSF facilities grant alloted for this purpose, and we are making much progress in binding geological publications by use of funds in the anonymous gift, noted last year, for this section of the library. Also with the aid of this fund further gaps were filled in our geological holdings.

Like various other members of the staff, Miss Mackenzie attended the International Zoological Congress in London and spent considerable time, profitably, in the library of the British Museum (Natural History).

Publications

During the year there were published, under Miss Wright's editorship, a total of 1276 pages in the *Bulletin* and in *Breviora.* These papers included numbers 89 to 111 of *Breviora,* and complete volumes 119 and 120, and numbers 1 and 2 of volume 121 in the *Bulletin.* In addition, as noted above, the Mollusk Department published several papers in *Johnsonia* and one in *Occasional Papers.* As customary, the museum sponsored publication of a series of papers in *Psyche.*

Exhibits

As over the past few years, work on a gradual renovation and re-arrangement of exhibits has continued — at a necessarily slow pace, because of the fact that there are no funds in the normal budget available for this purpose, and reliance must be had on gifts to promote the work. The fossil mammals formerly exhibited at the east end of the first floor, have been moved to the third floor and work has begun on an exhibition room in which many of the mammals will be shown. It is hoped that in the course of the next few years all the fossil exhibits will have been transferred to the third floor, making the first floor area available for badly needed offices and laboratories. A committee consisting of Mr. Johnson, Dr. Lyman and Dr. Paynter, is taking an active interest in planning the exhibition work.

In our revision we are not attempting to create elaborate dioramas or push-button, "animated" exhibits to catch the attention of the uninterested and casual visitor. Our interests are on a higher level and simpler pattern. The Museum has an array of interesting animals many of which are to be found in but few other institutions in this — or any other — country. Our objective is merely to put specimens of this type on view for the serious student or interested adults, mainly in systematic arrangement, in simple fashion but well cased, well lighted and well labelled. Our objectives are well typified by the

Thayer collection of North American birds, renovation of which was completed last year; "before" and "after" figures of part of this exhibit are given in this report. In its former condition the hall containing it was a most depressing one; every bird normally present in the continent (north of Mexico) was there, but the arrangement was most unattractive, the labels not informative, and the lighting so dim that knowing visitors who wished to identify a bird would bring a flashlight with them as a necessity. In its present state the exhibit is informative and truly attractive.

Acknowledgements

As always, the Museum is indebted to many friends for specimens and for aid in various ways. The Mammal Department owes thanks for gifts to Garth Underwood, Robert W. Dickerman, Clayton E. Ray, W. F. H. Ansell and Kenneth Norris; the Bird Department to Clinton R. Smith, Joseph Seronde, John Molholm and Charles H. Blake; Mr. and Mrs. G. William Cottrell, Jr. gave African specimens to both mammal and bird departments and to the Insect Department as well. In fishes, R. Ishiyama gave a collection including nearly all species of Rajidae known from Japanese waters, H. R. Bullis, Jr. and Giles W. Mead donated batoids from the east coast of Central and South America, and O. Barton a collection from the Galapagos Islands; other donors include W. W. Anderson, R. Gibbs, C. L. Hubbs, H. Lyman, A. Pflueger and C. R. Robins. The Department of Insects is indebted to Dr. E. A. Chapin and Prof. W. T. M. Forbes for assistance, as well as to Alan L. Kostinsky and Charles C. Porter. Outstanding among donations to this department are fine lots of ants, including types, from Father Thomas Borgmeier and Dr. W. W. Kempf, and a fine collection of Okinawa insects from Floyd Werner. Other donors of insects include C. M. de Biezanko, T. Cekalovic, Richard Guppy, H. B. Hungerford, J. N. Knull, C. H. Lindroth, C. J. Louwerens, Arthur Loveridge, P. S.

Nathan and L. E. Peña; donors of arachnids include George Argus, R. R. Dreisbach, Mrs. O. Hite, H. Jungster, B. Kessel, M. Killpack, D. Lamore, J. Larsen, C. Lindroth, N. Meinkoth, A. Mossman, V. Roth and J. Ward. The members of the Mollusk Department wish to acknowledge their hearty thanks to those who have generously contributed to the Friends of the Mollusk Department Fund. Through the good office of Prof. Hope Hibbard of Oberlin College there has been received a collection of about 500 lots of mollusks, mainly Hawaiian, collected last century by John Gulick. This material is very valuable since most of the forms represented are now extinct. The authorities of the New York State Museum have kindly sent on permanent loan a duplicate set of Gould collection shells, many of which were collected on the United States Exploring Expedition of over a century ago. Various other materials of value were received from the Academy of Natural Sciences of Philadelphia, R. W. Foster, Dr. J. S. Schwengel and Dr. J. C. Bequaert. The department is, as in former years, deeply indebted to Dr. Champion for editorial work and curatorial assistance. Dr. Harald Rehder of the United States National Museum rendered invaluable aid to Bahaman mollusk studies by the loan of a large amount of land and freshwater material from those islands, collected by Dr. Paul Bartsch in 1930. Also the authorities of the British Museum (Natural History), particularly Mr. Peter Dance, were of great aid in the loan of their large collection of Papuininae and a large series of photographs of types of this subfamily. The Department of Marine Invertebrates is indebted for collections of holothurians to Patricio Sanchez, Edwin G. Allison and Robert Robertson, and for coelenterates to Reinaldo Pfaff and Juan L. Rivero and for brittlestars from Iran to Dr. C. E. Dawson. Cretaceous invertebrate fossils from Les Eyzies, France, were donated by Robert J. Rodden and Cambrian fossils from the eastern United States were given by the Geology Department of Massachusetts Institute of Tech-

nology. Plaster casts of nearly 1,000 types of Triassic invertebrates monographed by Hyatt, Smith and Johnston were received from the United States Geological Survey; Dr. S. Sakagami has presented the museum with casts of ammonoid types from the Iwai formation of Japan, and about 100 casts of Triassic ammonoid types were received from the Geological Survey of Canada. Dr. R. G. S. Hudson gave a collection of nautiloids from Egypt and Israel.

ALFRED S. ROMER, *Director*

MUSEUM OF COMPARATIVE ZOOLOGY

Faculty 1959–1960

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"Before and after." A view taken in the North American bird room in its former dreary condition.

A view of a section of the North American bird room after renovation.

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ARNOLD DAVID LEWIS, *Preparator.*
RUTH WOOD NORTON, A.B., *Secretary to the Director.*
JESSIE BELL MACKENZIE, A.B., *Librarian.*

PUBLICATIONS FOR THE YEAR 1958–1959

BREVIORA

No. 89. Remarks on some forms of *Cinclus* (Aves). By James C. Greenway, Jr. and Charles Vaurie. 10 pp. July 15, 1958.

No. 90. A fossil vampire bat from Cuba. By Karl F. Koopman. 4 pp., 1 pl. July 30, 1958.

No. 91. Contribution to a revision of the earthworm family Lumbricidae. II. Indian species. By G. E. Gates. 16 pp. August 13, 1958.

No. 92. A new genus of erethizontid rodents from the Colhuehuapian of Patagonia. By Bryan Patterson. 4 pp. September 17, 1958.

No. 93. A new barylambdid pantodont from the late Paleocene. By Bryan Patterson and Elwyn L. Simons. 8 pp. September 18, 1958.

No. 94. Affinities of the Patagonian fossil mammal *Necrolestes*. By Bryan Patterson. 14 pp. September 18, 1958.

No. 95. A new Bolivian land snail of the genus *Drymaeus*. By Juan Jose Parodiz. 3 pp. September 19, 1958.

No. 96. A new dichobunid artiodactyl from the Uinta Eocene. By C. Lewis Gazin. 6 pp. September 19, 1958.

No. 97. Fusion of cervical vertebrae in the Erethizontidae and Dinomyidae. By Clayton E. Ray. 11 pp., 2 pls. October 27, 1958.

No. 98. Two new species of *Bathylagus* from the Western North Atlantic with notes on other species. By Daniel M. Cohen. 9 pp. December 12, 1958.

No. 99. A new subspecies of *Chamaeleo jacksoni* Boulenger and a key to the species of three-horned chamaeleons. By A. Stanley Rand. 8 pp. December 19, 1958.

No. 100. On the pineal organ of the tuna, *Thynnus thynnus L.* By Uno Holmgren. 5 pp., 2 pls. December 23, 1958.

No. 101. Cervical ribs in turtles. By Ernest E. Williams. 12 pp., 1 pl. March 2, 1959.

No. 102. A new Jamaican galliwasp (Sauria, Anguidae). By Garth Underwood. 13 pp. April 9, 1959.

No. 103. Two new species of *Eleutherodactylus* from Puerto Rico. By Juan A. Rivero. 6 pp., 1 pl. April 10, 1959.

No. 104. Studies on fishes of the family Ophidiidae. III. A new species of *Lepophidium* from Barbados. By C. Richard Robins. 7 pp. April 13, 1959.

No. 105. *Bufo gundlachi,* a new Species of Cuban toad. By Rodolfo Ruibal. 14 pp. April 14, 1959.

No. 106. The occipito-vertebral joint in the burrowing snakes of the family Uropeltidae. By Ernest E. Williams. 10 pp. April 28, 1959.

No. 107. A revision of the dacetine ant genus *Neostruma.* By William L. Brown, Jr. 13 pp. May 6, 1959.

No. 108. Some new species of dacetine ants. By William L. Brown, Jr. 11 pp. May 7, 1959.

No. 109. On the pineal area and adjacent structures of the brain of the dipnoan fish, *Protopterus annectens* (Owen). By Uno Holmgren, 7 pp., 2 pls. May 8, 1959.

No. 110. The spider genus *Coleosoma* (Araneae, Theridiidae). By Herbert W. Levi. 8 pp., 1 pl. June 16, 1959.

No. 111. On the caudal neurosecretory system of the teleost fish, *Fundulus heteroclitus* L. By Uno Holmgren. 13 pp., 2 pls. June 17, 1959.

BULLETIN

Vol. 119

No. 1. Revision of five African snake genera. By Arthur Loveridge. 198 pp. July, 1958.

No. 2. Four new rajids from the Gulf of Mexico. By Henry B. Bigelow and William C. Schroeder, 36 pp. July, 1958.

No. 3. The general histology and topographic microanatomy of *Australorbis glabratus.* By Chia-Tung Pan. 66 pp., 18 pls. July, 1958.

No. 4. Studies on the ant fauna of Melanesia III. *Rhytidoponera* in Western Melanesia and the Moluccas. IV. The tribe Ponerini. By E. O. Wilson. 72 pp. August, 1958.

No. 5. A new species of chelid turtle, *Phrynops* (*Batrachemys*) *dahli,* from Colombia. By Rainer Zangerl and Fred Medem. 18 pp., 2 pls. August, 1958.

No. 6. *Taractes asper* and the systematic relationships of the Steinegeriidae and Trachyberycidae. By Giles W. Mead and G. E. Maul. 28 pp., 1 pl. October, 1958.

No. 7. Additions to the Pleistocene mammalian fauna from Melbourne, Florida. By Clayton E. Ray. 32 pp. November, 1958.

No. 8. Studies on the morphology and function of the skull in the Boidae (Serpentes). Part 1. Cranial differences between *Python sebae* and *Epicrates cenchris*. By T. H. Frazzetta. 22 pp. January, 1959.

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Vol. 121

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JOHNSONIA

Vol. 3

Introduction (including dedication of Vol. 3 to Dr. H. A. Pilsbry, by R. D. Turner). Pp. I–VIII.

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No. 39. Index. By Merrill E. Champion. Pp. 347–352. 1959.

OCCASIONAL PAPERS ON MOLLUSKS

Vol. 2

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PSYCHE

Vol. 64

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Vol. 65

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