imagine the opossums to have originally gained access to the region, is it not preeminently fitting that, in establishing the foundation of an extremely comprehensive adaptive radiation, and under the favorable conditions of an absolute freedom from competition, they should have thrown aside their original didelphyid characters? And especially is this conceivable when we realize that the differences of structure separating the opossums from the most primitive of the Australian forms (dasyures) are extremely slight.

However unprogressive the opossums may at first sight appear to be, they are still plastic types. That they are at the present time attempting to radiate in South America is apparent from the numerous subgeneric divisions which it has been found necessary to establish,* and more especially from the fact that one form (Chironectes) has already become completely adapted to an aquatic life.†

The above conception approximates closely the general opinion, expressed by Lydekker,‡ in 1896, that the opossums and dasyures are the descendants of a common ancestral stock, but differs in assuming that these ancestors were opossums, and that they were formerly present in Australia. If we assign to the ancestors of the dasyures characters which would allow them to constitute the Marsupial prototype, they would no longer be Dasyures, but opossums. Ameghino has suggested the South American Microbiotheriidæ as ancestral to the dasyures, and Bernard (Éléments de paléontologie) regards the border as opossums.

B. ARTHUR BENSLEY.

COLUMBIA UNIVERSITY,
November 5, 1900.

WORK AT THE MARINE BIOLOGICAL LABORATORY OF WOOD'S HOLL, 1900.

THE course in physiology should be classified as a kind of research. The same is true in large measure of the course in embryology. In both of these courses, for instance, Dr. Loeb's experiments on artificial parthenogenesis were successfully repeated. Both of these courses are attracting students from medical colleges who feel the need of getting away from the strictly conventional physiology and embryology, into touch with the new lines opening up—in physiology, with the comparative study of biokinetics and in embryology with the new lines of thought introduced by experimental work and by the studies in cell-lineage. Both of these courses, as given here, are largely the outcome of the results of research of preceding years by members of the laboratory, who are themselves concerned in giving the instruction. They therefore represent the spirit of the laboratory along these two lines of investigation.

As regards investigation proper :—In PHYSIOLOGY, Dr. Loeb has continued his experiments on artificial parthenogenesis and has succeeded in inducing the development of unfertilized eggs of Annelids (see a recent number of SCIENCE). Other lines of work in physiology concern the chemical stimulation of nerves, the physiological effects of inorganic salts on the rhythmical activity of living tissues, similar studies on ciliary motion; and work on regeneration by several investigators.

In CYTOLOGY: work on *spermatogenesis* has been carried on by Dr. Montgomery, Mr. Downing and Miss Wallace; on *ovogenesis* by Mr. Arthur E. Hunt, Dr. H. E. Crampton and Dr. C. M. Clapp; on *fertilization* by Dr. Conklin, Miss Katharine Foot, Miss Strobell, Dr. F. R. Lillie, Mr. Martin Smallwood. Dr. E. B. Wilson has brought here his experimental work on fertilization and cleavage in the sea urchin eggs.

In EMBRYOLOGY work has been carried on in various lines: *Annelids* by Dr. A. C. Treadwell and Mr. R. S. Lillie, *parasitic copepods* by Mr. Edward Rynearson, *Cirripedia* by Mr. M. A. Bigelow, *fishes* by Dr. Cornelia M. Clapp, Miss Robinson, Dr. Neal and Miss A. C. Smith, *Monotremata* by Mr. B. A. Bensley, *Histogenesis of gastric glands of Amphibia* by Dr. R. R. Bensley, *Planaria* by Mr. W. C. Curtis, *Nucula* by G. A. Drew, *Parasitic Isopods* by J. R. Murlin.

The work in NEUROLOGY included the following: V. E. McCaskill on nervous system and metamerism of *Hirudo*, Mr. Fling

*Cf. Thomas, O., 'British Museum Catalogue of Marsupialia and Monotremata,' London, 1888, pp. 317–322.

†Cf. Gadow, H., 'On the systematic position of *Notoryctes typhlops*, P. Z. S.,' London, 1892, p. 370.

‡Lydekker, R., 'A Geographic History Mammals,' Cambridge, 1896, p. 55.

on *Lumbricus*, Mrs. M. A. Bigelow on Olfactory nerves of Vertebrates, Dr. Neal on origin of motor nerves in Selachians, Dr. A. D. Morrill on histology of nervous system in planarians, Mr. Yerkes on physiology of pineal eye in lizards, Miss Marion Hubbard on the nervous system of *Dero*.

In Zoology: A monograph on *Arenicola cristata* is under way: The nephridia are being studied from the points of view of anatomy and embryology by Mr. R. S. Lillie, the spermatogenesis by Mr. E. R. Downing, Oögenesis by Mr. Arthur E. Hunt, Organs of circulation by Miss Emma Keith. The first part of this monograph, the embryology, by Dr. C. M. Child, is already published and other parts, including the ones mentioned, are well under way. The zoological studies not already mentioned include work on Coelenterata by Dr. Murbach, on *Hemiptera* by Mr. W. M. Chester, on *Pycnogonida* by Mr. L. J. Cole, on *Nemertea* by Miss C. B. Thompson, on *Pectinatella* by Miss A. W. Wilcox, on *Acmæa* by Miss M. A. Willcox, on *Amphipoda* by Dr. S. J. Holmes, on *Limulus* by Dr. Wm. Patten, on Lamellibranch gill by Dr. E. L. Rice, on *Annelids* by Dr. A. L. Treadwell.

In variation statistics and allied subjects, Miss M. M. Entemann on *Polistes*, Dr. E. C. Edwards on *Synapta*, Dr. H. E Crampton on Lepidoptera, Miss A. C. Dimon on snails.

In Botany: Cytological work has been carried on by Dr. B. M. Davis, Miss C. M. Derick, Dr. Walter Swingle.

Physiological work has been carried on by Dr. R. H. True and Mr. Roberts. Dr. George T. Moore and Dr. Erwin Smith have also been working in this department.

NOTES ON INORGANIC CHEMISTRY.

From the current chemical journals the following notes are taken:

Professor Fittica still persists in his claims of being able to change phosphorus into arsenic and antimony and gives PN_2O as the true formula of arsenic, and $P_2N_2O_2$ as that of antimony. Christomanos, preparing arsenic, according to Fittica's directions, from commercial phosphorus, tests it without success for the presence of phosphorus and nitrogen, but Fittica replies that this should not occasion surprise, since methods used for testing in one class of compounds often fail when applied to those in which the nitrogen is more firmly united.

The cause of the much discussed poisonous qualities of arsenical wall papers has been shown by Biginelli to be due to the evolution of a gas, diethyl arsin, formed under the influence of the mold *Pencillium brevicaule*, which thrives on arsenic, and develops on arsenical papers.

Some time since reference was made in these columns to the work of H. J. Möller on the protective value of different colored glasses for chemical and drug bottles. His former method was photo-chemical, but he now finds the use of the spectroscope equally satisfactory, and much simpler, a pocket spectroscope answering every purpose. Glasses have a protective value in proportion as they absorb the blue and violet light from the line F to the line H. Dark red glass is the best but most expensive; the dark olive-green of cheap bottles is very satisfactory; dark brown-yellow bottles are effective, but lighter shades of brown, green or blue have little value.

The claims of Desgrez and Balthazard for sodium peroxid as a regenerator of the air in submarine navigation have caused Jaubert to claim priority, as having been at work on the problem for more than three years. According to the latter, however, sodium peroxid has many disadvantages, but he expects in the near future to publish results attained with other substances which are more effective, and cheaper than even compressed oxygen.

It has been noticed at various times during the past four years that the water of the river Rhone exhibits certain reactions characteristic of aldehydes. This is found by Causse to be due to the presence of ferrous oxy-thio-carbonate $FeCO_2S$, which is formed by the combination of carbon dioxid with ferrous sulfid. The latter results from the reduction of sulfates by organic matter. The compound is broken up by distillation, or on standing, with the formation of an ocherous deposit.

The reduction of sulfates in water to hydrogen sulfid has been supposed to be due to the action of Beijerink's *Spirillum desulfuricans*,