

crowded condition. The capture and removal of these elk was the greatest operation on record in this country of handling big game on a wholesale scale. The total number of big-game animals now on reservations administered by the Biological Survey is about 1,530.

Museum News states that the work of preparing the site of the new Chicago Zoological Gardens is progressing rapidly. The tract of 196 acres is being cleared preparatory to the excavations necessary for the artificial lakes and ponds. A seventeen-hundred-foot well is being drilled so that the park may be entirely independent as regards its water supply. Two lakes, one of twelve acres for boating and water fowl, and another of two acres for wading birds, are being excavated. Pools are also being prepared for the elephants and hippopotami. It is also planned to set out 2,050 trees in addition to the various plants and flowers, some of which are being grown in a greenhouse already on the site. By April it is expected that the entire site will be properly fenced in and that work on the various buildings will be started.

AN organization called the Argentine Aerotechnical Institute (Instituto Aerotecnico Argentino) was recently founded in Buenos Aires, according to an announcement by the U. S. Department of Commerce. The purpose of the new institution is to seek to make the country independent in the field of aeronautical engineering. The present members, who number 15, are a group of well-qualified and capable professionals, and therefore are in a position to produce the necessary initial effort. The institute will attempt to direct the course of aero engineering, and work for the establishment of factories of aerial and experimental material, at the same time spreading a knowledge of the principles of this subject by means of public lectures.

It is announced that there will be opened in New York City some time before next fall a cancer hospital, which it is said will be the largest in the world. It will be devoted to clinics, operation on and treatment of patients, and will have laboratories for research into the nature and cause of the disease.

UNIVERSITY AND EDUCATIONAL NOTES

AN appraisal of the estate of Lewis B. Woodruff shows that Yale University will receive the residuary estate of \$66,694 outright and \$25,000 after the death of Frances Butler. The New York Entomological Hospital receives \$10,000 for the publication of monographs on the society's activities.

AMERICAN UNIVERSITY will receive from the late

Miss Mary Graydon, of Ridgewood, N. J., a total of \$861,000, including bequests of \$545,000, according to an announcement by Chancellor Lucius C. Clark. Gifts from Miss Graydon, which have been coming to the institution over a period of years, have helped substantially in sending the campaign for funds well over the \$1,000,000 mark toward the goal of \$6,000,000.

GROUND has been broken for the basement of the plant science building at University Farm, St. Paul, to house the division of agricultural biochemistry of the University of Minnesota.

WORK will start soon on a new twelve-story building for Tulane University of Louisiana School of Medicine at the site recently purchased on Tulane Avenue, New Orleans.

DR. EDWARDS A. PARK, Sterling professor of pediatrics at Yale University School of Medicine, has accepted the professorship of pediatrics and the position of pediatrician-in-chief of the Johns Hopkins Hospital, Baltimore, and will assume his new duties next September. Dr. Park succeeds Dr. John Howland, who died in London last June.

DR. J. EARL THOMAS, associate professor of physiology in the Medical School of St. Louis University, has been elected to the chair of physiology at Jefferson Medical College.

DR. H. E. ENDERS has been made head of the department of biology at Purdue University.

DR. D. R. DAVIS has been appointed assistant professor of mathematics at the University of Oregon.

H. L. BALDWIN has been appointed associate professor of engineering at the University of Utah in Salt Lake City.

DR. PIERRE MASSON, of the University of Strasbourg, Alsace-Lorraine, has accepted the professorship of pathology at the University of Montreal and the position of pathologist at Notre Dame Hospital. Dr. Masson was for many years at the Pasteur Institute, Paris.

DISCUSSION AND CORRESPONDENCE

THE FISH NEOSTETHUS IN SIAM

AMONG the most remarkable fishes brought to light during the present century, front rank, if not first place, must be assigned to three diminutive forms described by Mr. C. Tate Regan under the new generic names *Phallostethus* and *Neostethus*. *Phallostethus dunckeri*¹ was described from Johore, Malay Penin-

¹ "A Remarkable New Cyprinodont Fish from Johore." *Annals and Magazine of Natural History*, xii, 1913, pp. 548-555.

sula, and *Neostethus lankesteri* and *N. bicornis*² were described from Singapore and the Malay Peninsula.

These fishes, which attain a maximum length of thirty mm, have anatomical characters that are absolutely unique and entitle them to assignment to a new family. Regan gave them only subfamily rank, but Weber and de Beaufort³ recognize the family Phallostethidae and place it in the new order Microcyprini of Regan, and Jordan⁴ likewise gives full family rank in the equivalent order Cyprinodontes. The principal special characters of the family are absence of ventral fins, ventral aperture in the female between the pectoral fins, and the following extraordinary features in the male: a complicated fleshy appendage (priapium) suspended from the head and anterior part of the body, supported by one or both of the clavicles and one or both of the first pair of ribs, provided with special bones and muscles, and with separate anal, urinary and genital openings; attached to the aproctal side of the priapium posteriorly a single, slender, rod-like bone or a pair of such bones (ctenactinia) which may be long, curved and extended under the chin to the proctal side (*Neostethus*) or short, nearly straight and confined to one side (*Phallostethus*); and in *Phallostethus* another external bone (toxactinium) attached to the anterior part of the priapium.

This note deals primarily with *Neostethus lankesteri*, which until recently has been known only from six specimens obtained at Singapore and in the Muar River in southern Malaya. During the four years the writer has been in Siam he has become well acquainted with this fish, and he is probably the only student of fishes who has seen *Neostethus* alive. The species abounds in fresh-water pools, ditches and smaller canals in the Bangkok region and will doubtless be found to have an extended range. As there are no recorded observations on habits, food, eggs, etc., a few facts may be of interest.

The fish lives in water that is constantly muddy or turbid. It occurs in small, scattered schools which normally remain at or near the surface, and it feeds on planktonic micro-organisms. Small numbers put in balanced aquaria do well for a time but gradually die from starvation as the food supply becomes exhausted. By the daily introduction of raw ditch or canal water, fish in aquarium jars have been kept alive for a month and could probably be sustained longer.

² "The Morphology of the Cyprinodont Fishes of the Subfamily Phallostethidae, with Descriptions of a new Genus and two new Species." *Proceedings of the Zoological Society of London*, 1916, no. 1, p. 1-26.

³ "The Fishes of the Indo-Australian Archipelago," *IV*, 1922, p. 381.

⁴ "A Classification of Fishes," 1923, p. 160.

The larvae of Anopheles and other mosquitoes, which are the chief food of most of the small fresh-water fishes of this region, are entirely too large for *Neostethus* to ingest. The color of the back of the back harmonizes with that of the water in which these fish live, and they would be difficult to see when at or near the surface were it not for a triangular glistening yellow area on the top of the head with its apex on the nape. Viewed from the side the fish is transparent, the heart and abdominal viscera are distinctly visible, and the vertebrae may easily be counted.

The maximum length of specimens thus far measured is twenty mm, with the females averaging slightly larger than the males. Thus, in one lot of 108 adult fish, comprising forty-six males and sixty-two females, the largest number of males (twenty-eight) measured eighteen mm and none twenty mm, while among the females the largest number (thirty) measured nineteen mm and ten twenty mm; the average for males being 17.8 mm and for females 18.7 mm.

No observations on spawning habits have yet been possible. The extraordinary organ (ctenactinium) which in the male runs along the side of the head, extends under the lower jaw, and continues backward for some distance on the other side of the head may be used for clasping. The species is oviparous. The spawning period in Bangkok is protracted, corresponding with the rainy season and subsequent high water in river and canals (May to December). Fish with enlarged ovaries were observed in July; young nine mm long were collected in September and ten to twelve mm long in November; and eggs approaching maturity and numbering sixty-seven were dissected from a full-sized fish in November.

Not the least interesting thing about *Neostethus* is its possession of a structure not mentioned in Regan's description and not shown in his figures. This is a rather short, highly refractive spine situated a short distance in front of the dorsal fin. The spine is enclosed in or attached to a delicate membrane, may be elevated and depressed by the fish and is, in fact, a functional fin. The failure of so keen an observer as Regan to make any reference to this structure suggested to the present writer the possibility that the Siamese fish might represent another phallostethid type. However, an examination of Regan's material in the British Museum made at the writer's request has elicited the information from Mr. J. R. Norman, of that institution, that the types of both *Neostethus lankesteri* and *N. bicornis* show the structure referred to. Whether it occurs also in *Phallostethus* has not been stated.

The presence of this feature in *Neostethus* raises the question whether the family Phallostethidae can be retained in the order Cyprinodontes, none of the

other members of which have any vestige of a spinous dorsal fin. It seems certain that this family will have to receive reallocation.

American zoologists who may desire to examine this astounding little fish will be gladly supplied with specimens on request.

HUGH M. SMITH

DEPARTMENT OF FISHERIES,
BANGKOK, SIAM

CRITICAL POTENTIAL MEASUREMENTS

IN your issue of Dec. 11, 1926, there appeared an article by Dr. George Glockler on "Critical Potential Measurements: A Correction for High Emission Currents." The author notes that when the emission current becomes appreciable one must no longer consider the resistance of the tube to the infinite. He suggests that the p.d. between anode and cathode as calculated by a potentiometer scheme be corrected for this condition. I would like to suggest that there is nothing original in this suggestion. The tube simply acts as a shunt across a section of the potentiometer resistance and the calculations are carried out in precisely the same manner as for any shunted instrument.

I might add that I have used this correction factor for the last five years in measurements on vacuum tube characteristics. However, I have never regarded the matter as an original procedure.

JOHN G. FRAYNE

DEPARTMENT OF PHYSICS,
ANTIOCH COLLEGE

"DATA IS" OR "DATA ARE": WHICH?

It is far from my desire to be unduly critical in regard to the use of scientific terms, but I have long hoped that some one would call attention to the incorrect use of the word "data" now too prevalent.

"Memorandum" and "memoranda," words seldom seen or heard now-a-days, seem to have been comprehended readily and honored by correct use almost invariably: why not "datum" and "data"? Yet in about one scientific article in six, often in those sponsored by institutions of the highest reputation, there will be found the careless, ignorant or indifferent use of these words. Sometimes the blame may be laid to inadequate editing, often where we least expect it; but primarily it is the fault of authors—even though their names are followed by a generous share of the alphabet, indicating that much time has been spent in scientific circles, and correctness should be expected. In the interest of scientific precision and to maintain proper standards it is time to call a halt on this unfortunate practice.

Probably the expressions "this men is" and "much

children does" would grate even upon the sensibilities (at least, let us hope so!) of those who make use of "this data indicates," "much data has," etc.

A. P. MORSE

PEABODY MUSEUM,
SALEM, MASS.

THE INDICATION OF QUOTATIONS

MR. S. M. NEWHALL has recently¹ called attention to the need for a pair of equivalents, in oral speech, for the unwieldy phrases "quotation begun; . . . quotation closed."

May I suggest that we find in ordinary telegraphic language many instances of the reduction of such cumbersome expressions to others more concise, graphic, and effective?

In this case the usual rendering is "quote . . . unquote."

JOHN W. ARNOLD

WESTERN UNION TELEGRAPH COMPANY

SCIENTIFIC BOOKS

Coffee. By RALPH H. CHENEY, New York University. Pp. 244, 77 plates. The New York University Press, 1925.

THIS book is a very unusual combination of scientific research and practical information. It is a curious fact that coffee, one of the most familiar and important plants, has never before been adequately investigated. Cheney has certainly filled this gap in our knowledge in a most complete way, so that everything known about coffee is now on record.

Part I contains the scientific presentation of the botany of coffee. Its four chapters give in detail taxonomic descriptions of the nineteen known economic species. Associated with these scientific descriptions, much interesting information is given as to the native names, the history and the uses of coffee. The bibliographical references are remarkably complete, so that the whole literature of the subject is available.

Part II consists of an economic discussion of coffee. The story of the indigenous distribution of the economic species and the principal countries where they are now grown is most interesting. All these data are given with a wealth of detail that is surprising. A full description is also given of the preparation of the coffee-bean, the plantation treatment and the treatment by wholesale distributors. A very interesting chapter describes commercial sophistication and substitution, giving the botanical sources of coffee-substitutes and adulterants and also the methods of

¹ SCIENCE, LXIV, 427.