

Nat. Mus. Washington, p. 138, 1896.) I meant to correct my mistake when I read my proof, but I neglected so to do.

It, therefore, becomes necessary to give the Georgia old field mouse a new name and I propose for it *Peromyscus subgriseus baliolus** nom. nov. Type, No. 5925, Coll. of E. A. and O. Bangs, described under above reference as *Peromyscus subgriseus arenarius*.

OUTRAM BANGS.

BOTANICAL NOTES.

SEEDS AND VERY LOW TEMPERATURES.

Two English investigators, H. T. Brown and F. Escombe, recently made some interesting experiments upon the ability of seeds to endure very low temperatures. In the Jodrell laboratory, of the Kew Gardens, they enclosed seeds in thin glass tubes immersed in a vacuum-jacketed flask containing about two liters of liquid air; the latter was replenished so as to submit the seeds, for one hundred and ten hours, to a temperature of from -183° C. to -192° C. (-297° Fahr. to -313° Fahr.). The seeds used were: *Hordeum distichon*, *Avena sativa*, *Cucurbita pepo*, *Cyclanthera explodens*, *Lotustetragonolobus*, *Pisum elatius*, *Trigonella foenum-graecum*, *Impatiens balsamina*, *Helianthus annuus*, *Heraclium villosum*, *Convolvulus tricolor* and *Funkia sieboldiana*. They had previously been air-dried, and contained, when the experiment was begun, from ten to twelve per cent. of moisture. After their prolonged exposure to the intense cold indicated above, they were slowly thawed, the process requiring about fifty hours. They were then tested as to their germinative power, by comparison with seeds from the same lots, which had not been subjected to this low temperature, with the result that 'their germinative power showed no appreciable difference from that of the controls, and the resulting plants, which were in most cases grown to full ma-

turity, were equally healthy in both cases.'

This astonishing result can not fail to attract much attention, not only of botanists, but of gardeners and farmers as well. That this was not due to unusual or accidental conditions is shown by experiments by other investigators, cited by Messrs Brown and Escombe. Thus DeCandolle and Pictet in 1884 exposed seeds for four days to a temperature of -100° C. (-148° Fahr.) without destroying their vitality, and in 1895 the former exposed seeds in the 'snow box' of a refrigerating machine for a period of one hundred and eighteen days to a temperature of from -37° C. to -53° C. (-34.6° Fahr. to -63.4° Fahr.), a treatment which most of the seed are said to have 'resisted successfully.'

While these experiments are very interesting as showing that mere lowering of temperature may not necessarily destroy the vitality of seeds, it is fair to the investigators to say that this was not their principal object. They aimed to determine the condition of the protoplasts of the resting seed, whether (1) 'the essential elements of the cell, during the period of inertness, are still undergoing feeble but imperceptible alteration, accompanied by gaseous interchange with the surrounding atmosphere,' or (2) 'that all metabolism is completely arrested in protoplasm when in the dormant state, and that it then loses, for the time being, all power of internal adjustment to external conditions.'

In other words, they asked the question: 'Is the machinery of the dormant cell merely slowed down to an indefinite extent, or is it completely brought to rest for a time, to be once more set going when external conditions are favorable?' To this question they make answer that 'we must regard the protoplasm in resting seeds as existing in an absolutely inert state, devoid of any trace of metabolic activity, and yet conserving the potentiality of life.'

* Baliolus=dark-brown, swarthy.

THE SCIENTIFIC WORK IN THE DEPARTMENT
OF AGRICULTURE.

It is not many years since the scientific men of this country were entirely indifferent to the work of the United States Department of Agriculture. They were indifferent because the work of the Department was so poorly done that trained men knew that it was practically valueless; now and then one still finds a remnant of this old feeling in elderly men who have not kept in touch with the development of the Department during the past few years. That this prejudice has no longer any foundation in fact (if we except the free-seed-distribution folly) may be seen by an examination of the recently published 'Historical Sketch of the United States Department of Agriculture,' compiled by Charles H. Greathouse, of the Division of Publications. From it we learn that there are a full dozen 'divisions,' 'bureaus' and 'offices,' which are concerned with scientific problems. Botanists are interested especially in the Division of Botany, established in 1869; Division of Forestry, established in 1881; Division of Vegetable Physiology and Pathology, established in 1886; Office of Fiber Investigations, established in 1890; Division of Soils, established in 1894; and Division of Agrostology, established in 1895. For these divisions there are annually appropriated for expenses, from \$80,000 to \$100,000, in addition to separate appropriations for salaries, library and museum. If we add the Divisions of Chemistry, Entomology and Biological Survey, the aggregate of the appropriations reaches about \$150,000. Every one of these divisions is in charge of well trained scientific men, who have surrounded themselves with expert assistants selected with great care and with especial reference to their preparation for the work to which they are assigned. No mention need be made here of the Weather Bureau,

or of the Bureau of Animal Industry, with whose work the people at large are quite generally and favorably acquainted.

The publications from these scientific divisions reflect great credit upon the management of the Department. This is notably true of the divisions pertaining to botany, from which we have had many valuable scientific papers.

BOTANICAL PAPERS IN THE NEBRASKA ACADEMY OF SCIENCES.

THE botanical papers printed in the recently issued 'Publications of the Nebraska Academy of Sciences, VI.,' are as follows: 'The Nomenclature of the Nebraska Forest Trees,' by Charles E. Bessey (giving the now generally accepted names of the sixty-seven species of native trees, and discussing their synonymy); 'A Comparison of Fossil Diatoms from Nebraska with Similar Deposits at St. Joseph, Mo., and at Denver, Colo.,' by C. J. Elmore (showing that these must have grown in fresh-water ponds or lakes); 'An Observation on Annual Rings,' by F. W. Card (showing that, contrary to popular belief, the growth of a second ring of wood in tree trunks does not occur as a result of defoliation); 'On the Internal Temperature of Tree-Trunks,' by R. A. Emerson (giving the results of a prolonged study of the problem, and showing that the temperature is greatly affected by the amount of water present); 'Data as to Wind-Distribution of Seeds,' by Edward M. Hussong (giving the results of observations by means of collecting trips, showing that while 'high winds' are effective agents in the distribution of heavy and rounded seeds they are by no means efficient in the dispersion of the comose, pappose and membranaceous seeds, these being carried much more efficiently by the lighter 'breezes' and 'local winds'); 'Chalcedony-Lime Nuts from the Bad Lands,' by Erwin H. Barbour (describing and figuring fossil embryos of seeds ob-

tained from the Miocene formation of the Bad Lands of the Hat Creek Basin, in northwest Nebraska; for these the name *Archihicoria siouxensis* is proposed, the embryo showing unmistakably their close relationship to the modern *Hicoria*.

THE OVARY OF OPUNTIA.

DR. JOSÉ RAMÍREZ, in the *Anales del Instituto Médico Nacional*, of Mexico, describes and figures three monstrous ovaries of *Opuntia*, which he regards as evidence of the axial nature of the inferior ovary in general. In the first case the ovary, though entirely normal in color, function, etc., instead of being articulated with the joint, is fused with it. Moreover, the spiral disposition of the arolae is continuous from joint to ovary. In the second example the ovary resembles a joint externally, while within it is in no wise different from a normal ovary. In the third a mature ovary bears thirteen perfectly developed ovaries, which are arranged spirally upon it. From the fact that the uppermost are already mature, the author concludes that the inflorescence of *Opuntia* is determinate.

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CURRENT NOTES ON ANTHROPOLOGY.

ON PYGMY RACES.

MR. R. G. HALIBURTON has devoted much time to the study of the pygmy races of men, and it is to his researches that the learned world owes the best information about the small people of the Atlas and Pyrenees Mountains.

Under the title 'How a Pygmy Race was found in North Africa and Spain' (Toronto, 1897, pages 147), he has republished the scattered articles containing his results, and added, also, various papers on other anthropological topics. Among the latter, as touching upon points of special interest,

I may note one on 'The Days of Rest of Prehistoric Men,' which refers to the inauspicious, intercalary days of primitive calendars; and one on 'The Connection of November Flood-Traditions with the Pleiades,' where he ingeniously suggests that the sacredness of the number four in many mythologies may be due to the fact that the heliacal rising of the Pleiades corresponds to that of the new moon once in four years. Five articles refer to the Gypsies in Africa, and several to the customs and myths of ancient Egypt.

UNSOLVED PROBLEMS OF ANTHROPOLOGY.

MR. E. W. BRABROOK, in his third inaugural address as President of the Anthropological Institute of Great Britain, reviewed the recent progress of the science of man, and recounted the unsolved problems which it offers. It is worth while to quote these, as to know where we are especially deficient is the best preparation for extension of knowledge.

He mentions: (1) the development from the brute to man; (2) the *hiatus* between the palæolithic and neolithic periods in Europe; (3) the process of the disappearance of races; (4) the development of religions; (5) the accurate measurement of different races; (6) the record of the passing mental phases of humanity.

The postulates which he claims the science of anthropology should always regard as fixed beyond doubt are: (1) the unity of the anthropologic sciences (in aim, I suppose); and (2) the doctrine of the continuity of the phenomena which it studies. These suggestions from one who understands the field so thoroughly merit careful reflection.

ABOUT THE HITTITES.

THE latest contribution toward an identification of the Hittites with some known stock is from the pen of Professor Fritz Hommel, and is printed in the *Sitzungsberichte* of