in thickness, rests with disconformable contact on the Domengine horizon of the Eocene and is conformable with the overlying Vaqueros marine beds of Lower Miocene age. Greenish and maroon shales and sandstones which are particularly characteristic of a conveniently recognizable middle division of the Sespe in the Simi anticline have yielded vertebrate remains. Occurrences of fossil mammals range vertically in the section from approximately 1,600 feet to 3,000 feet above the contact with the Eocene. The fauna includes *Paramys*, a creodont, insectivores, bunoselenodont artiodactyls, an agriochoerid, *Epitriplopus* (?), an amynodont and titanotheres. Some of the more important features of the discovery of this assemblage are: (1) The earliest Tertiary record of land mammals thus far known on the Pacific Coast; (2) the occurrence offers opportunity to establish on the basis of vertebrate paleontology the time relationships of the early Tertiary portion of the stratigraphic column of the Coast Ranges to the continental sequence as determined in the Rocky Mountains and western Great Plains; (3) several mammalian types in the fauna are structurally more advanced than related forms of the Upper Uinta Eocene and are evidently more primitive than forms known from the White River Oligocene; (4) added information is available concerning the geographic distribution of some early Tertiary mammals in North America.

Observations on individual growth: FRANZ BOAS.

The significance and inheritance of leg-length in dogs: CHARLES R. STOCKARD.

Conceptual categories in primitive languages: EDWARD SAPIR (introduced by C. Wissler). The relation between language and experience is often misunderstood. Language is not merely a more or less systematic inventory of the various items of experience which seem relevant to the individual, as is so often naïvely assumed, but is also a self-contained, creative symbolic organization, which not only refers to experience largely acquired without its help but actually defines experience for us by reason of its formal completeness and because of our unconscious projection of its implicit expectations into the field of experience. In this respect language is very much like a mathematical system, which, also, records experience, in the true sense of the word, only in its crudest beginnings but, as time goes on, becomes elaborated into a self-contained conceptual system which previsages all possible experience in accordance with certain accepted formal limitations. Such categories as number, gender, case, tense, mode, voice, "aspect" and a host of others, many of which are not recognized systematically in our Indo-European languages, are, of course, derivative of experience at last analysis, but, once abstracted from experience, they are systematically elaborated in language and are not so much discovered in experience as imposed upon it because of the tyrannical hold that linguistic form has upon our orientation in the world. Inasmuch as languages differ very widely in their systematization of fundamental concepts, they tend to be only loosely equivalent to each other as symbolic devices and are, as a matter of fact, incommensurable in the sense in which two systems of points in a plane are, on the whole, incommensurable to each other if they are plotted out with reference to differing systems of coordinates. The point of view urged in this paper becomes entirely clear only when one compares languages of extremely different structures, as in the case of our Indo-European languages, native American Indian languages and native languages of Africa.

The genesis of cerebellar tremor and its disappearance after removal of the cerebral hemispheres: J. F. FULTON (introduced by Yandell Henderson). One of the most striking locomotor disturbances encountered in the field of clinical neurology is the tremor associated with lesions of the cerebellum. Though recognized as the essential symptom of cerebellar deficit as early as 1824 (Flourens), its nature has remained obscure. We have therefore focused our attention upon the genesis of tremor following removal of the cerebellum (cats, dogs, monkeys and baboons) and have found that in the cat it does not appear until the fourth to the seventh day after the operation. Simultaneously with the appearance of the tremor, the animal commences to execute voluntary movements. In other animals in which tremor appears sooner, it is always coincident with the return of voluntary activity. Since the cerebellum had been removed the question arose as to what part of the nervous system was responsible for the tremor. On removal of one cerebral hemisphere in the decerebellated animal the extremities of the opposite side become rigid but continue to show associated movements unaccompanied by tremor. When the second cerebral hemisphere is removed, thus making a decerebellated thalamic preparation, great locomotor activity is seen in all extremities, but tremor is completely absent. We have thus far succeeded in keeping preparations of this character under observation for periods varying from one to three weeks. Further observations are being made on primates, in which the relation of the neocerebellum to the motor cortex is being studied. We conclude that cerebellar tremor is a phenomenon resulting from inadequate compensatory action of the cerebral hemispheres.

The rate of trophic impulses in nerves of cold-blooded vertebrates: G. H. PARKER and V. L. PAINE. The lateral-line nerve of the catfish transmits sensory impulses in one direction and trophic impulses in the opposite. The rate of transmission of the trophic impulses is very slow, approximately two centimeters per day.

(*To be continued*)

BOOKS RECEIVED

JOHNSTONE, JAMES and R. J. DANIEL. *Report for 1930 on the Lancashire Sea-Fisheries Laboratory at the University of Liverpool.* Pp. 115. University Press, Liverpool. 5s.

ROWAN, WILLIAM. *The Riddle of Migration.* Pp. xiv + 151. Williams & Wilkins. $2.00.

WILLIAMS, FRANCIS X. *The Insects and Other Invertebrates of Hawaiian Sugar Cane Fields.* Pp. 389. Illustrated. Experiment Station of the Hawaiian Sugar Planters' Association, Honolulu.