

type of *Cynognathus*, with a principal cusp flanked back and front by a small cusp, with a smaller accessory posterior cusp in the four hindermost teeth. As in all species of the genus the mandibular symphysis is long, oblique, and completely obliterated. There is a large pit with sharp margin in the median line in front of the orbits, which may be a generic difference from *Cynognathus*, since it occurs in the area in which other specimens show indications of a thin supra-nasal ossification flanked by a pair of small hemispherical concavities. It is indicated as *C. leptorhinus*.

Tribolodon frerensis is the name given to a dentary bone with few three-pronged teeth widely separated from each other standing high above the jaw. With this jaw is associated a femur which shows the transverse development of the great trochanter as strongly developed at the proximal end of the bone as in *Ichthyosaurus*, so that the trochanter minor of mammals only represents that of Theriodonts in miniature, the trochanter being more developed than in Saurischia or any other reptiles. With it is associated a right tibia, which is somewhat curved and nearly as long as the femur.

These Cynodont remains have given no certain evidence of the extremities of the limbs; but, with this exception, they make known the entire skeleton for the first time in an African Theriodont, furnishing data for comparison with mammals and reptiles in every part of the skeleton preserved.—*From the Proceedings of the Royal Society.* (Communicated by the Author.)

The Faunal Regions of Australia. By C. HEDLEY, F.L.S.

The discrimination of the various provinces into which the Australian fauna and flora group themselves has been frequently attempted. To the earlier naturalists, from a study of scanty material and with little or no personal knowledge of the continent, four divisions of east and west, temperate and tropical, seemed natural and sufficient. Hooker's 'Essay on the Australian Flora' paved the way for a better understanding of the relations which various localities bore to each other. Owing to fundamental errors of his interpretation of Australian geology, Wallace's treatment of the subject in 'Island Life' is of but slight value. To the writer, the most successful arrangement of the various biological regions yet proposed is that sketched by Professor Tate, in his address to the first meeting of this Association. This author accepts two main biological divisions—the *Autochthonian*, developed in west Australia, and the *Euronotian*, seated in eastern Australia and Tasmania; a subsidiary division, less in value and derivable from both the above, is the *Eremian*, or desert fauna and flora.

Taking this disposition as the basis of my remarks, I would observe that eastern Australia contains two distinct biological populations, where Professor Tate has located one—the *Euronotian*. This title, I propose, should be reserved for that fauna and flora characteristic of Tasmania, Victoria, and southern New South Wales; while the second and very distinct fauna and flora developed on the

coasts of Queensland and northern New South Wales would best be described as Papuan. Indeed, so distinct is this latter, that a separation of Australian life into Papuan and non-Papuan seems to the writer to be the primary divisions into which fall the Australian fauna and flora.

The types encountered by a traveller in tropical Queensland, or rather in that narrow belt of tropical Queensland hemmed in between the Cordillera and the Pacific, all wear a foreign aspect. Among mammals may be instanced the cuscus and tree-kangaroo; among reptiles, the crocodile, the *Rana* or true frog, and the tree-snakes; among birds, the cassowary and rifle-birds; among butterflies, the *Ornithoptera*; among plants, the wild banana, orange and mangosteen, the rhododendron, the epiphytic orchids, and the palms; so that, in the heart of a great Queensland "scrub," a naturalist could scarcely answer, from his surroundings, whether he were in New Guinea or Australia. It may be supposed that late in the Tertiary epoch Torres Straits, now only a few fathoms deep, was upheaved, and that a stream of Papuan life poured into Australia across the bridge so made.

Sharply defined from the tropical jungle above mentioned are areas occupied by strictly Australian vegetation, which are left invariably in possession of the poorest tracts of land. From the rich lands, formerly no doubt possessed by them, everywhere have they been ousted by the invading flora.

Regarding the origin of the *Euronotian* fauna and flora, sundry facts collected by Mr. H. O. Forbes, in his paper on the Chatham Islands, would suggest a South American source. Assuming that, in or before the Miocene, continuous land extended from Tierra del Fuego to Tasmania, the derivation of the Australian marsupials appearing in the Pliocene from their South American allies *Prothylacinus* and *Amphiproviverra* of the Eocene would be clear. Mr. Forbes adduces strong confirmatory evidence from Professor Parker, who, on embryological grounds, does not hesitate to assume as ancestors of certain Australian crows a form allied to the American *Dendrocalaptine* birds. The distribution of the parrots and the cystignathous frogs appear also to sustain the theory. The extinct alligator, *Pallimnarchus*, found in Queensland and New South Wales, associated with *Diprotodon*, strengthens the chain of evidence, as does the occurrence in Tasmania and South Australia of *Gundlachia*, otherwise exclusively an American mollusk.

As the name implies, the *Autochthonian* is the oldest member of the Australian faunas and floras. The date of its arrival in Australia and the route which it traversed are lost in antiquity. Seeing that many resemblances exist between our vegetation and that of Timor and the south-east Austro-Malayan islands, perhaps these lands afforded the passage to Australia.

Summary.—Superimposed one above another may be distinguished three divisions of Australian life. The earliest is the *Autochthonian*. Possibly this arrived from the Austro-Malayan islands in or before the Cretaceous era, and spread over the whole

of Australia. The next is the *Euronotian*. Probably this reached Tasmania from South America not later than the Miocene epoch; many of the original inhabitants, particularly on the east coast, probably disappeared before the invaders. Thirdly, a contingent of Papuan forms seized on the Queensland coast late in the Tertiary, and likewise largely exterminated their predecessors.—*From an advance proof of unpublished vol. from the writer, having been read at the Adelaide Meeting of the Australasian Association for the Advancement of Science, held September 1893.*

Note on a Species of Eubolina six times described by Walker.

By A. G. BUTLER, Ph.D. &c.

In his 'Catalogue of Lepidoptera Heterocera,' vol. xv. p. 1688, Walker described a small moth from Venezuela under the name of *Celæna diffundens*.

The genus *Celæna* belongs to the first group of Noctuæ distinguished by the trifold character of the median branches of the secondaries; but *C. diffundens* clearly belongs to the quadrifid group, in which the radial vein is given off close to the third median branch.

In volume xxxiii. of his Catalogue Walker described the same species as *Homoptera excavata*, from St. Domingo, at page 879; as *H. minuscula*, from St. Domingo, and *H. scitior*, from Honduras, at p. 880; as *H. perpusilla*, from Honduras, at p. 881.

Lastly, in volume xxxiv. he again described the same species as *Pyralis? noctualis*, from Venezuela, at p. 1231.

This kind of work needs no comment—it sufficiently condemns itself; but it is important that the facts should be recorded. The following, then, will be the synonymy:—

Eubolina diffundens.

Celæna diffundens, Walker, Lep. Het. xv. p. 1688.

Homoptera excavata, Walker, l. c. xxxiii. p. 879.

Homoptera minuscula, Walker, l. c. p. 880.

Homoptera scitior, Walker, l. c.

Homoptera perpusilla, Walker, l. c. p. 881.

Pyralis? noctualis, Walker, l. c. xxxiv. p. 1231.

Venezuela, Honduras, and St. Domingo.

Description of a new Australian Snake. By J. DOUGLAS OGILBY.

The habitat of the new species (*Hoplocephalus Waitii*), which differs mainly from *H. pallidiceps*, Günth., in having 21 series of scales round the body instead of only 15, appears to be the central district of New South Wales, whereas *H. pallidiceps* is a North Queensland form.—*From the Abstract of Proceedings of the Linnean Society of New South Wales, May 30, 1894, p. ii.*



Hedley, Charles. 1894. "The faunal regions of Australia." *The Annals and magazine of natural history; zoology, botany, and geology* 14, 390–392.

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