

The column marked "Maccagnone" should have been headed "Maccagnone and San Ciro," and the species inserted therein are those derived from both localities.

The *Felis*, *Ursus*, *Hyaena*, *Bos*, *Hippopotamus*, and *Cervus* have been hitherto not referred to their species by Dr. Falconer. To obviate further mistake, I append a list of the species derived from both bone-caves, as stated in Dr. Falconer's paper (Quarterly Journal, Geol. Soc. vol. xvi. 1860, p. 99 *et seq.*):—

San Ciro Cave, Two miles from Palermo.	Maccagnone Cave, A mile west of Carini, near Palermo.
<i>Felis</i> , a large species.	<i>Felis</i> , "as large as <i>F. spelæa</i> , but not yet specifically determined."
<i>Canis</i> .	
<i>Ursus</i> .	<i>Ursus</i> .
	<i>Hyaena</i> .
<i>Cervus</i> .	<i>Cervus</i> . } two species.
	<i>Do</i> .
<i>Bos</i> .	
<i>Sus</i> .	
<i>Elephas antiquus</i> .	<i>Elephas antiquus</i> .
<i>Hippopotamus</i> . } two species.	<i>Hippopotamus</i> .
<i>Do</i> .	
	Bones of Ruminants.

The liability in a table of this kind to error is obvious, when the exigencies both of space and time are duly considered.

Before the unenviable employment is commenced by me of "a wholesale manufacture of species," I shall wait the further identification of the specimens from the Sicilian bone-caves by Dr. Falconer.

Yours truly,

CHARLES CARTER BLAKE.

Origin of Species.

SIR,—In the July number of the 'Geologist' is a letter from Professor King, of Galway, expressing the opinions to which that high authority has arrived, after years of due thought and consideration, on the probable method of operation of continuously-operating secondary laws, which have produced the species of animals successively or progressively throughout geological time. While paying the highest tribute to the candid manner in which this eminent geologist has treated his subject, I am led to suggest that the meaning of one passage in his admirable paper may be liable to misconstruction.

Professor King holds "that an organism, whether it typifies a species, a genus, a family, an order, or a class, is an autotheogen, if it possesses a series of characters which isolate it from other equivalent groups;" and that inherent and external forces may modify such organism, "thereby resulting in geneotheonomous forms." The limits within which autotheogeny can be predicted are, however, left unexplained by Professor King.

A writer in 1830, reasoning from the philosophical standpoint of the state of knowledge in the time of Cuvier, would have confidently pointed

to the horse as an "autotheogen." Cuvier says, "If species have gradually changed, traces of these gradual modifications would be discovered; and between the *Palaotherium* and the recent species some intermediate forms would be seen; a fact yet undemonstrated. Why have not the bowels of the earth preserved the monuments of so curious a genealogy?" etc. etc. (Cuvier, 'Discours Préliminaire sur les Révolutions de la Surface du Globe,' 6th edition, 8vo, Paris, 1830, p. 122.) Here the absence of intermediate organisms, previous to the discovery of *Paloplotherium*, *Anchitherium*, and *Hipparion*, is made the groundwork on which to base a theory of distinct specific origin, or "autotheogeny." That, "on psychological grounds alone, Man must be regarded as isolated from all other organisms" may be conceded. As psychological grounds however are unsafe bases for a zoological classification, and as the extent of man's isolation is the problem which biologists are attempting to decipher, whatever position we may assign to man, whether with Owen in a distinct subclass *Archencephala* or with Huxley in a family *Anthropini* of the order *Primates*, we must at least admit that the anatomical characters of man are not more unlike those of the higher *Gyrencephala* than the lower *Gyrencephala* are unlike the *Lissancephala* or *Lyencephala*, i.e. that man is not more unlike the gorilla than the whale is like the rat or the opossum. I therefore would be slow to recognize that Man is an autotheogenous species.

I coincide with Professor King's remarks, that "natural selection only holds the rank of a subordinate or ancillary agent," but I am far from identifying the "other and higher principles involved" with the doctrine of direct creation of animals through a fiat from a Primary Cause, even though such a fiat might operate through "a principle inherent in animated nature." Such phenomena as unity of plan, parthenogenesis, and successive development are far more probably accounted for on secondary laws alone. "He must be a half-hearted philosopher who, having watched the gigantic strides of the biological sciences during the past twenty years, doubts that science will sooner or later make this further step, so as to become possessed of the law of evolution of organic forms—of the unvarying order of that great chain of causes and effects of which all organic forms, ancient and modern, are the links."*

In Professor King's ethnological remarks, no mention is made of the probabilities of a derivative origin of the lower races of man, as indicated by their physiological affinities to the higher apes. I commend the following extract from Dr. Büchner's 'Kraft und Stoff' (8vo, Frankf. p. 75, 1858) to Professor King's consideration:—

"An unbroken series of the most varied and multifarious transitions and analogies unites the whole animal kingdom together, from its lowest to its highest unit. Even man, who in his spiritual pride thinks himself raised high above the whole animal world, is far removed from being an exception to this law. The Ethiopic race unites him by a crowd of the most striking analogies with the animal kingdom in a very unmistakable way. The long arms, the form of the foot, the fleshless calf, the long slender hands, the general lankness, the but slightly protuberant nose, the projecting teeth, the low retreating forehead, the narrow and posteriorly protuberant head, the short neck, the contracted pelvis, the pendulous belly, the want of beard, the colour of the skin, the disgusting odour, the uncleanness, the making of grimaces whilst speaking, the clear shrill tone of voice, and the ape-like character of the whole being, are just so many characteristic signs, which in all the corporeal forms and relations of the

* Huxley, Address to the Geological Society, Feb. 21, 1862, p. 23.

negro unmistakably show the most decided approach to the monkey genus." The same author goes on to say, "Without doubt, man in his earlier periods approached in his whole character nearer to animals than he does in his present condition; and the oldest excavated human skulls indicate rough, undeveloped, and animal-like forms."

Such conditions as these, agitating and seething in the minds of patient observers and reflective thinkers in France and Germany, are being forced upon the minds of Englishmen. Our best thinkers now refrain from offering any theological or metaphysical explanation of geological facts.

I trust that Professor King, whose valuable tables of strata as recently published in the 'Geologist' have had so beneficial an effect on science, may be ultimately led to reject the unphilosophical theory of "autotheogeny."

The doctrine of "Geneotheonomy," or the "Derivative" hypothesis of animal causation, is now fast converting the minds of all palæontologists. Amongst its supporters can be numbered* Lamarck, Geoffroy St. Hilaire, Grant, Matthew, Rafinesque, Haldeman, the author of the 'Vestiges of Creation,' D'Omalius d'Halloy, Owen, Isidore Geoffroy St. Hilaire, Dr. Freke, Herbert Spencer, Naudin, Keyserling, Schauffhausen, Baden Powell, Wallace, Huxley, and Hooker. To these may be now possibly added those of Lyell, Fawcett, Lubbock, Mackie, Salter, Rupert Jones, Blake, Büchner, Schvareze, Knox, Burke, Hutton, King, and many others.

To accept, in 1862, the doctrine of the origin of species by creative fiat out of inorganic matter, is as unphilosophical as to believe in the theory of earthquakes given out by the Muyscas of New Granada, that the earth is supported by pillars of *guaiacum*, on the shoulders of the deity Chibchacum, who, being tired, shifts the weight from one shoulder to another; † or to the Egyptian theory, that the earth, during earthquakes, is tossed from one horn to another of a gigantic cow. ‡ Such theories are fast disappearing in the minds of those who, with Comte, "substitute the study of laws for that of causes, the *how* for the *why*."

I am, Sir, your obedient servant,
MICROLESTES.

Monography of the Geological Survey.

Dear Sir,—Will you be kind enough to inform me, through your Magazine, if the plates to Monograph I. of the Memoirs of the Geological Survey are issued or likely to be issued soon? The Monograph itself (on *Pterygotus*) is published without a word of notice as to when the plates are to be published, although they are referred to in the body of the paper.

It seems to me there is a great want of energy about the Government Geological Survey in the matter of the publication of their Decades and Monographs. On the covers of the work alluded to it is constantly announced that "Other Decades are in the press;" whilst years elapse between the publication of two small Decades. Were the undertaking car-

* List from Darwin, 'Origin of Species,' 3rd edition, 1861, p. xiii.: "Historical Sketch of the recent Progress of Opinion on the Origin of Species."

† Bollaert, 'Antiquities and Ethnology of South America.'

‡ Pouchet, 'Pluralité des Races Humaines.'