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Enrico Hillyer Giglioli and His Contribution to the Primatology of the 19th Century

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Introduction

A recent analysis of the primatological works of the Italian zoologist and anthropologist Enrico Hillyer Giglioli (London 1845 - Florence 1909) revealed the important contribution he gave to primatology. He attended the Royal School of Mines (1861-1863) in London, where he met T. H. Huxley, C. R. Darwin, R. Owen and C. Lyell and obtained his graduation degree at the University of Pisa in 1864 (Barbagli *et al.*,1996). He took part in the voyage around the world sponsored by the Italian Government in 1865 embarking on the Royal Navy warship *Magenta.* Later he got the direction of the Zoological and Anatomical Cabinet of the Natural History Museum *La Specola* of Florence and was involved in the activities of the Florence School of Anthropology. He was a great supporter of Darwinism and a pioneer of ethnological studies along with Luigi Pigorini and Ettore Mantegazza. In 1901 he established the Laboratory of Anthropometry attached to the Museum of Anthropology in Florence.
Our work aims to give a description of Giglioli's primatological works highlighting his contribution to evolutionary aspects.

Material and Methods

As an historical work all the papers about mammals by Giglioli including or mentioning non-human primates were examined. The activity of Giglioli as Director of the Zoological and Anatomical Cabinet of Natural History Museum *La Specola,* was re-examined during the revision of the primatological collection of this Museum (Veracini *et al.*, 2010).

Results and Discussion

Giglioli was an eminent ethnologist and zoologist who worked on various groups of animals. He published around 400 papers on different topics (Barbagli *et al.*, 1996). Although his works on primates are not so numerous (Giglioli, 1872, 1887, 1888) they represented a valuable contribution to the 19th century primatology. When he was director of *La Specola* Vertebrate Collections, he started the general collection of Italian vertebrate and the assessment and re-organization of the entire vertebrate collection. It should be underlined that thanks to his efforts this museum received several specimens of orang-utan currently identified as belonging to two distinct species: *Pongo pygmaeus* (Linnaeus, 1760) and *Pongo abellii* (Lesson, 1827). The work of Giglioli, combining scientific accuracy with a wide range of international contacts, led the Museum to its period of greatest increase as regards the primatological collection (Veracini *et al.*, 2010). An important work was the scientific description of a new Ethiopian species of guenon, the Boutourlini's Blue Monkey (Giglioli, 1887): *Cercopithecus boutourlinii* currently *Cercopithecus mitis boutourlinii* (Giglioli, 1887). In another work he described the mammal taxa of the same geographical area of this monkey, the Scioà region. These vertebrates were collected by Augusto Bouturline and by Doctor Traversi (Giglioli, 1888). Here Giglioli discussed his previous work on *C. bouturlinii* giving the exact descriptions of the specimens. Moreover, he studied the specimens of *Colobus guereza* observing the individual variations of the tail's length and morphology and argued against the subspecies *Colobus guereza caudatus* described by Thomas in 1885 (Giglioli 1988). But his most important work was the essay: "*Studi craniologici sui cimpanzè*" (1872) where he conducted a detailed study of the chimpanzee skulls collected by his friend Georg August Schweinfurth in the region which is today Southern Sudan. He measured and compared the skulls of chimpanzees and of other apes observing that the skulls of the Eastern chimpanzee had a greater cranial capacity in comparison with the other great monkeys he could observe. In this work he gave the scientific description of the species *Troglodytes schweinfurthii,* (Giglioli, 1872), currently a subspecies of *Pan troglodytes* (Blumenbach, 1775). In order to evaluate the differences among skulls Giglioli used the methodology that Mantegazza, the famous Florentine anthropologist, had used for humans. Moreover he discussed on the importance of certain cranial features as diagnostic traits to evaluate species and subspecies and included a thorough essay on the comparative anatomy of the different primate genus also describing some ontogenetic variations of the Order of Primates.

He explained the meaning of species and subspecies saying that: "T. schweinfurthii *deve per ora considerarsi una razza di Cimpanzè, una specie in via di formazione, o, come dicono taluni, una sottospecie, con decisa tendenza antropoide*". And he continued: "*Il lettore avrà osservato che parlando del* Troglodytes schweinfurthii *e di quelli che abitano l'Africa occidentale mi sono sempre astenuto di far uso della parola specie; non ho fatto questo casualmente, come ora vedremo. Per chi accetta come faccio io l'ipotesi Darwiniana quella parola non ha più un significato assoluto; anzi la specie come l'intendiamo noi varia talmente che credo nessuno ne possa dare una diagnosi netta e definita. Nello studio della biologia abbiamo bisogno di quella parola classificatrice: la specie è necessaria ed io la serbo per indicare l'insieme di certi caratteri collettivi che riuniscono un numero d'individui separandoli da altri e che predominano sui caratteri individuali e quali tendono ad isolare ciascuno. Limitando i miei confronti ai primati superiori la specie è variabilissima. Si hanno così varietà e si hanno anche vere razze o sottospecie. Ora per me il* Troglodytes schweinfurthii *deve per ora considerarsi una razza di Cimpanzè, una specie in via di formazione, o come dicono taluni, una sottospecie*". He added another very interesting part saying "*la scoperta di* T. schweinfurthii *rende più probabile l'ipotesi di Darwin, diminuendo la distanza che separava sin qui l'Uomo ed i Trogloditi. Ma l'anello di congiunzione manca ancora [...] e cioè quell'essere che non essendo ancora scimmia possa dirsi Uomo; credo però che questo essere giacché è più probabilmente estinto, debba ricercarsi nell'Africa centrale*". He gave a very important definition of species stating that *T. schweinfurthii* was actually still developing, that is the variability which differentiated it from other chimpanzees was not so remarkable. It should be underlined that the concept of species and sub-species among primates is still today under discussion. These considerations sounded very important at that time just when Darwin's ideas were establishing themselves throughout Europe and Giglioli joined the Italian evolutionary debate of the second half of the XIX century.

Conclusions

Enrico H. Giglioli was one of the first Italian supporter of Darwinism and an advocate of the origin of man from apes. He discussed on evolution and variability of chimpanzee species and subspecies showing the problems deriving from a clear-cut application of the concept of species which is still under discussion. He named the species *Cercopithecus boutourlinii* currently *Cercopithecus mitis boutourlinii* (Giglioli, 1887) and *Troglodytes schweinfurthii* today *Pan troglodytes schweinfurthii* (Giglioli, 1872) the Eastern chimpanzee. Up to now he is the only Italian scientist who named two taxa of primates.

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