

- ss. Form oblong-elliptical, the depth less than one-third length; profile slightly convex; pectoral short,  $4\frac{1}{2}$  in body; sides with longitudinal dark streaks ..... CANTHARINUS.\*
- rr. Dorsal spines 13 (or 14); soft parts of dorsal and anal scaly; preorbital very narrow, its width much less than diameter of eye; pectoral long, as long as head,  $3\frac{1}{2}$  in body; scales very small; color grayish, with narrow oblique dark streaks..... INORNATUS.†

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### THE RAPID PREPARATION OF LARGE ZOOLOGICAL SPECIMENS.

By M. FÉLIX PLATEAU,

*Professeur à l'Université de Gand.*

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[Translated by H. C. Yarrow, M. D., for the Smithsonian Institution, Washington.]

The laboratory of comparative anatomy of the University of Gand is of restricted dimensions. Its surroundings, sufficient for elementary practical teaching, are very modest, but, happily, material for study is not wanting, thanks, above all, to the administration of the Zoological Garden of Antwerp, one of the richest of the continent, which generously donates to us its losses and carries the obligation still farther in sending to us the bodies of animals by express. It is thus that during the academical years of 1879 and 1880 we have had at our disposal a series of very rare monkeys, a kangaroo, a cheetah or hunting leopard, a young American ostrich, the principal viscera of an adult African elephant, and other interesting specimens.

With the assistance of a single helper I have been able to utilize all these objects and rapidly prepare, during the few hours which my other duties leave me, a great number of permanent anatomical preparations to enrich our museum, which is already comparatively complete.‡ Our

\* *Pristipoma cantharinum* Jenyns, Zool. Voy. Beagle, Fishes, 49, 1842. *Habitat*: Graymas (*Lieut. Nichols*); Galapagos Islands (*Jenyns*; *Gthr.*).

† *Microlepidotus inornatus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 256 = *Pristipoma brevipinne* Steind. Ichthyol. Notiz. viii, 1869, 10 = ? *Pristipoma notatum* Peters, Berlin. Monatsber. 1869, 706. *Habitat*: Cape San Lucas (*Gill*); Mazatlan (*Steind.*; *Peters*). Not obtained by Mr. Gilbert.

‡ The collections at Gand actually contain more than 3,000 preparations belonging properly to comparative anatomy, and more than 1,600 specimens are preserved in alcohol.

collections being relatively poor in preparations of the muscular system, I have above all endeavored to fill this want. We have, indeed, made many preparations of the entire muscular system of animals of medium size.

As the solution of this problem, *i. e.*, how to make rapidly and at a trifling cost, in a laboratory of second rank, large permanent myological preparations might interest professors of comparative anatomy and zoology, I have thought it best to briefly relate the method which I have employed.

Having a horror of dried and varnished preparations, I have endeavored to prepare muscular specimens with phenolized glycerine, easily handled, and which could constantly serve for demonstration. With us the muscles are red, the tendons white; in a word the uninitiated would believe that they saw the fresh muscle.\*

In order that I may be well understood I will give a *résumé* of the easy operations to which we have subjected a very large monkey, the *Cynocephalus sphinx*, in order to prepare the whole of its muscular system.

The animal being skinned, care being taken of the superficial muscles or muscles of the skin, the abdomen having been split longitudinally and the viscera removed, it was first of all necessary to preserve this specimen from decomposition, and to employ a process which would permit us to dissect all the muscles at our pleasure.

It is impossible to use alcohol for animals of this size; the body is simply plunged into a saturated solution of the alum of commerce. The muscles in a short time are capable of being indefinitely preserved, and all the conjunctive elements, aponeuroses, tendons, sheathes of the nerves, &c., acquire a firm consistence and become very white.

Whenever the specimen is required for dissection it is taken from its bath, and when the work is over it is replaced.

We have thus been able to dissect at our leisure all the muscles of the *Cynocephalus*, continuing the labor for at least ten days.

Having finished the dissection, it becomes necessary to impart to the muscles their original color. It is in this operation that I employ, and always successfully, the process which I have exemplified since 1874, and which is based on the property that carmine presents, *viz.* in forming when in the presence of alum an insoluble red laquer.†

The animal having been dissected and taken out of the bath, is plunged in pure water for twenty-four hours; this is done in order to get rid of the excess of alum.

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\*Our scholars are generally deceived up to the very moment when we explain to them the mode of preparation.

†Note on a process for giving or imparting the red color to muscles preserved in alcohol.—(*Bulletin de l'Académie Royale de Belgique, 2<sup>e</sup> série, tome XXXVIII, Nos. 9 et 10, 1874.*)

Pure powdered carmine, a little chrome yellow, and liquor of ammonia are the only substances necessary. The carmine is deposited on an earthenware dish; the ammonia is employed as water is by the water-color painter, and traces of chrome yellow correct the tints which are too purple. Finally, the white surface of the plate serves as a background on which the tints may be criticized.

The muscles of the specimen are painted with the aid of an ammoniacal solution of carmine, taking the precaution not to cover the tendons or bones, and in general those parts which should remain white. In fact, these parts are protected by wrapping them separately in strips of tolerably thick paper.

It is unnecessary for me to recall the fact that carmine tints the muscles and penetrates them to a certain depth.

This operation finished, it is next in order to fix the tint. For this purpose the specimen is simply replaced in the bath of alum. An insoluble red laquer is formed, constituting two coats, the one superficial and pulverulent (this comes from the bottom of the liquid), the other penetrating much deeper into the muscular tissue itself and remaining fixed in the tissue.

From this time forth the carmine is fixed and the muscles are red, having the appearance of fresh flesh, and may be handled for an indefinite period without soiling the fingers of the operator with their coloring matter. Specimens which we thus prepared in 1872, have been used every year in the comparative anatomy course, and have lost nothing of their value.

The next step is the employment of glycerine. The specimen is plunged into a bath of phenolized glycerine, but, as the alum has already rendered the specimen proof against decomposition, a long maceration is unnecessary, eight days being a sufficient length of time.

Finally, to place the specimen in a definite condition. It is well known how annoying ordinary preparations are in which glycerine has been used, it being necessary to let them drain for several months. Here we have employed a more expeditious method. After having allowed the specimen to drain for some hours, we wrap the members of the animal and the trunk, in fact the entire body, in a covering of white filtering paper, then in many coverings of ordinary gray paper, around the whole of which twine is wound.

One week after, the paper, which has absorbed all the glycerine in excess, is taken off, the abdomen is filled with packing, the body is sewn up, the muscles are restored to their proper position, and the specimen is finished.

Thanks, probably to the alum, the tendons are white and not yellowish, as preparations are when made by ordinary processes. The muscles are never found to be glued together.

To state it briefly, the method is composed of the following opera-

tions: 1st, maceration in alum during the dissection; 2d, washing in pure water; 3d, tinting with carmine; 4th, the fixing of the carmine by alum; 5th, maceration in phenolized glycerine; 6th, getting rid of the excess of glycerine by compression between pieces of absorbent paper.

This is the whole of the process which is warranted by known facts; it is quite inexpensive, simple, and expeditious.

As an example of the rapidity of execution I will cite the following fact: On May 23, of this year, an adult African elephant died in the Zoological Garden of Antwerp. One month after that event we displayed, in one of the exhibition cases of the National Exposition of Brussels the enormous heart of this animal prepared by the above-detailed method.

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**ON THE CHINOOK NAMES OF THE SALMON IN THE COLUMBIA RIVER.**

**By SILAS B. SMITH.**

[NOTE.—The following notes were contributed by Mr. Silas B. Smith, a lawyer, at Skipanow, Wash., and a half-breed Chinook, in answer to questions asked by Mr. Charles J. Smith, of Brookfield, Wash. As the Chinook names have a considerable place in our Salmon literature, it seems very desirable to place the facts given by Mr. Smith on record. I give the present accepted names of the different species in foot-notes.—D. S. J.]

The Chinook names for the different varieties, following the order given by you, are as follows:

1st. Chinook Salmou,\* “*E-quinna*” (accent second syllable and give the “*a*” the broad sound).

2d. Blue-back,† “*Oo-chooy-ha*” (accent first syllable and give the broad sound to “*a*”).

3d. Silver-side,‡ “*O-o-wun*” (accent first syllable). Your next is “Dog Salmon (red).” My mother and all the other Indians I have spoken to on the matter, and some of the whites, maintain that the red-skinned salmon with hooked nose or beak is nothing more or less than the male silver-side, having turned red after inhabiting fresh water, and his nose assuming that shape upon its becoming poor.

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\* *Oncorhynchus chouicha* (Walb.) J. & G. This word “*E-quinna*” is evidently the “*quinat*” of Richardson.

† *Oncorhynchus nerka* (Walb.) G. & J.

‡ *Oncorhynchus kisutch* (Walb.) J. & G.