

## LINNÆUS AS A ZOÖLOGIST.

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I HAVE been asked to make a few remarks on the relations of Linnæus to zoölogy. After the comprehensive addresses to which we have listened, you would be well within your rights if you complained that a review of the systems and conceptions for zoölogy, entertained by Linnæus, was, on the present occasion, inopportune.

I shall attempt nothing so ambitious, or I might almost say, for a public address, so tedious.

Viewed in a broad way, the services of Linnæus to zoölogy were of several kinds.

The first and greatest, though at the time of its conception regarded as relatively unimportant, was the invention of what has long been known as the binomial or Linnæan system of nomenclature. The conception of a permanent name for each type of organized beings, thereby giving to the naturalist a concise method of indicating each unit of the system, was so great an advance on any previous method of handling zoölogical species that it amounted to a complete revolution in methods; comparable to that for the arithmetical sciences, which followed the adoption of the decimal Arabic symbols in place of the clumsy Roman notation of numerals.

That previous zoölogists, like Rumphius, had more or less inadvertently approximated to this system at times, while giving names to animals, does not diminish the credit due to Linnæus for erecting the method into a definite system emphasizing the principles of permanency and priority, and elaborating its details.

The second service was that of holding up the animated creation as an interrelated whole. This grasp of the subject would be impossible to a naturalist of the present day, were the multitudinous units of the animal kingdom now known, presented to him in the chaotic state in which Linnæus found the little micro-

cosm which he had to deal with. The progress, by the Linnæan methods, since his time, has been so great; anatomical, ecological and embryological discoveries have so illuminated the subject; that we are prone to look with amusement on the crude classification which alone in his time was possible, without appreciating the instances it contains of really astonishing insight into the true relation of organized beings.

It is only when we compare the Linnæan classification with the contemporaneous absurdities of such antagonists as Jacobus Theodorus Klein, who in bewigged pomposity stares at us from the frontispiece of his ridiculous "Tentamen," that we can appreciate the quality of the genius of the immortal Swede.

A third manner, and by no means the least important, in which Linnæus influenced zoölogical science, was through his friends, associates and pupils. We all know what the personal influence of Louis Agassiz did for science in America. Something of the same sort emanated from the personality of Linnæus in his time.

In the days of his early struggles it must have been evident, or we should not read of how such men as Rothmann, Stobæus, Celsius, Rudbeck and Reuterholm exerted themselves to promote the fortunes and facilitate the studies of the poor country parson's son. A little later, as he began to win a footing, we find the greater scientists with whom he was brought in contact giving him a cordial welcome; and, from men like Gronovius, Boerhaave, Burmann, van Royer and Clifford in Holland; Artedi in Sweden; Jussieu in France; Haller in Germany and Dillenius in England; such recognition was no feeble testimony to his influence and worth. Still more conclusive are the relations to Linnæus of such ornaments of the nobility as Counts Tessin and Gyllenborg, and her Majesty Queen Ulrica, worthy precursors of the liberal-minded nobles of to-day, and their leader, His Majesty of Sweden, always foremost in promoting science, exploration and the arts, to the true glory of his kingdom.

From every other civilized nation as well as from Sweden, Linnæus drew pupils. Those conversant with the dawn of science in the modern sense, will find familiar the names upon the roll.

First, as true martyrs of science, who gave their lives, by pestilence or accident in foreign lands for the promotion of discovery, are Ternstrom who died in China; Hasselquist in Smyrna; Forskal in Arabia; Loeffling in South America; and Falk in Tartary.

Those, more fortunate but not less daring who adventured in foreign lands and by a safe return were enabled to reap, in their lifetimes, a reward of merit, were Peter Kalm in North America; Rolander in Surinam; Toren in Malabar; Osbeck in China; Sparrman in South Africa; Thunberg in eastern Asia and Japan; Niebuhr in Egypt; Gmelin in Siberia; and, in various parts of Europe, Koehler, Alstroemer, Von Troil, Fabricius, and Solander.

I have mentioned but a prominent few among many. A little leaven leaveneth the whole lump. That influence which drew and held students, which inspired them to their utmost efforts, faithful in the quest of knowledge even unto death; which helped to mould a second generation to carry on the work of research; which affected more or less deeply every student of nature in the last quarter of the eighteenth century, and has not yet spent all its force; that influence was no trifling gift to mankind.

The details of work accomplished by Linnæus, as by each and every one of his successors, fluctuate in value under the keener scrutiny and more refined methods of those who follow after. The fate of theories lies in the lap of the Gods.

But the spirit which inspired them; the ardor which hands on the torch as the runner sinks exhausted by the way; the devotion to truth and disregard of self imparted by a great teacher; and which shall endure while a human mind and heart exist to cherish them — these are gifts immortal.