

relatively warm stratum was found to extend from 12,900 meters to the enormous height of 29,000 meters, or 18 miles, where there was still no indication of its diminution.

A. LAWRENCE ROTCH

LETTERS FROM CHARLES DARWIN

IN 1882 I published in a history of Pettis County, Missouri, the following:

A flock of geese, belonging to ex-Marshall Kelly, of Sedalia, presents an interesting feature of malformations. In 1873 a gander had one of its wings so injured that it hung horizontally at right angles to the body, in the same manner as is not infrequently seen in other flocks, a result of injuries received. In 1874, one of the young of the flock presented a wing similarly affected; the following year its offspring showed the same features, and this has been continued to the present time. As many as two thirds of the flock have at one time presented this peculiarity, some in both wings. Believing that it was a case of "the inheritance of effects of injuries," Mr. R. A. Blair published an account of it, and sent a copy to Mr. Charles Darwin, and received from him the following letter:

*Dear Sir:* I am much obliged to you for kindly informing me of the case of the goose. It seems to be a remarkable case of inheritance of effects of injury, and as such cases are very rare, it would be quite worth while to have the facts carefully examined. If you could obtain a wing, and would send it to me, I should be much obliged. The wing might be cut off at the joint with the body, and dried with feathers on, before a hot fire. To make the case of more value, it would be very advisable to ascertain whether the goose had any offspring before the injury, and if so, whether they were normal, and not malformed in any way.

Dear sir, yours faithfully,

CHARLES DARWIN

Mr. Blair then sent a wing of one of the geese, and received the following answer:

*Dear Sir:* You will think that I have been very neglectful in not having sooner thanked you for the wing of the goose, the photograph, and your last interesting letter; but I thought it best to wait until receiving Professor Flower's report, and you will see by the enclosed the cause of his delay. If you are willing to take the trouble to get your interesting case thoroughly investigated,

it will be necessary to procure from the owner the wings of a half dozen birds, some of them quite young; and, if possible, the old one which had his wing broken. They ought to be sent in spirits, and they had better be addressed to Professor Flower, Royal College of Surgeons, Lincoln's Inn Fields, London, and I had better be informed when they are dispatched. Should you be inclined to take so much trouble, I hope you will allow me to say that I should be very glad to pay for the geese, and for the several other contingent expenses. Your first letter and Professor Flower's had better be returned to me hereafter. There is one other point which ought, if possible, to be ascertained, viz: when the old gander had his wing broken, was it wounded so that blood was discharged? If wounded, did the wound suppurate? Did the wing heal quickly or slowly? These are important points in relation to the inheritance of mutilations. Pray accept my best thanks for your kindness, and I remain, Dear Sir,

Yours faithfully,

CHARLES DARWIN

A number of wings were then sent to Dr. Flower, who made a report to Mr. Darwin, in which he says:

The bones, muscles, and ligaments seem quite normal, except for this twisting on their axis, which exactly corresponds, as I mentioned before, to *talipes* or club foot in man. The wings of the very little goslings being dried and very small could not be examined with any good result, but the most curious and unsatisfactory part of the whole thing is that the wing of the old gander, the supposed *fors et origo* of all the mischief, is perfectly normal, and presents no trace of ever having been injured in any way discoverable after the closest examination. It has certainly never been broken or dislocated, though, of course, we can not be sure whether it may not have had a partial twist from which it has now recovered.

With this letter and with the full and detailed report of Dr. Flower's assistant, Mr. Darwin wrote as follows:

*Dear Sir:* Professor Flower has suffered from a long illness, and this has caused much delay in the examination of the wings of the geese. But I received yesterday his report and letter which I enclose, as you may like to see them. I fear there is no connection between the deformity and the injury. The owner when he saw several goslings thus deformed, a not uncommon form of

quasi inheritance, remembered the accident, and naturally attributed the deformity to this cause. It has been probably a case of "post hoc" and not "propter hoc." I grieve that you should have expended so much time, trouble and great kindness in vain. As for myself I am well accustomed in my experimental work to get definite results but once in three or four times, and thus alone can science prosper. With my renewed thanks, I remain, Dear Sir,

Yours faithfully,

CHARLES DARWIN

The above publication did not give the dates of the letters; however, the first was in 1877 and the last in 1878.

F. A. SAMPSON

COLUMBIA, Mo.

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LUDWIG RUDOLPH SOPHUS BERGH

LUDWIG RUDOLPH SOPHUS BERGH was born in Copenhagen, October 15, 1824. His father was a military surgeon. Since his family was in moderate circumstances, he undertook at eighteen years of age to support himself during his student life, taking the medical course with zoology and general anatomy under the anatomist Ibsen and the distinguished malacologist Beck. His first paper, published in 1853, was a contribution toward a monograph of the Marseniidae. In the same year, during the cholera epidemic at Copenhagen, he acted as one of the medical staff formed to combat the ravages of this disease. In 1860 he received his degree of doctor of medicine at the University of Copenhagen, and was appointed three years later head surgeon for dermatology and venerology in the General Hospital; in 1881 professor of these branches in the university, and in 1885 head surgeon in charge of the newly built Vestre Hospital, erected and fitted after his own plans. This responsible position he retained until 1903, when he retired for age; two years later he ceased his private practise, and soon after, by the failure of eyesight, was obliged to relinquish his microscopical researches. He died at Copenhagen, June 20, 1909, leaving a widow and one son, his namesake.

Dr. Bergh for many years stood at the head of the small group of malacological anatomists,

devoting himself especially to the Opisthobranchiata and particularly to the group of Nudibranchiata. His published works on these animals form a small library and a mine of detailed information. The chief results of this unremitting labor are summed up in a large quarto in which he gives a complete systematic arrangement for these animals. Beside this contribution to the knowledge of molluscan anatomy he published several valuable memoirs on other groups of mollusks, an especially notable instance being a fine memoir on the anatomy of the genus *Conus*. He was largely concerned with the publication of the great posthumous series of quartos detailing the results of the researches in eastern seas by Carl Semper, who was his intimate friend. In medicine also, his publications, based on the treatment of thousands of hospital patients, took a high rank. He was naturally a member of most European societies and academies concerned in medicine or zoology, and was elected Huxley's successor in the corresponding membership of the Institute of France.

Personally, Dr. Bergh was most genial and agreeable in manner, ever ready to help younger students, or serve as cicerone to foreign colleagues visiting his beloved Copenhagen. Hospitable and unpretentious, a staunch friend and untiring student, his death leaves a gap in the ranks of the veterans which we may hardly hope to see filled, and a memory which those who knew him will cherish long.

WM. H. DALL

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SCIENTIFIC NOTES AND NEWS

THE American Astronomical and Astrophysical Society held its tenth annual meeting at the Yerkes Observatory, Williams Bay, Wisconsin, on August 19-21. Fifty members were present and forty-one papers were presented. The following are the officers for the ensuing year: *President*, E. C. Pickering; *First Vice-president*, George C. Comstock; *Second Vice-president*, W. W. Campbell; *Secretary*, W. J. Hussey; *Treasurer*, C. L. Doolittle; *Members of the Council*, W. J.