

# THE GLANDS OF OWEN

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In the now non-fashionable eponymous anatomical nomenclature the parathyroid glands were the glands of Gley: properly, on the basis of priority of discovery, they are the glands of Owen. For (Sir) Richard Owen (1804-92), successively student, prosecutor to Abernethy and Lecturer on Comparative Anatomy at Bart.'s, was their true discoverer in 1849-50, as this brief note on parathyroid history demonstrates. Credit for parathyroid discovery customarily goes to Ivar Victor Sandström (1852-89), praelector in anatomy in the University of Uppsala, who, discovering the parathyroids in the dog in 1877, and thereafter verifying their occurrence in the horse, cat and rabbit, and in Man, published<sup>1</sup> in 1880 the first comprehensive account of these "new" glands. Sandström considered these organs to be embryonic portions of the thyroid gland and hence gave them no distinctive name. Indeed the term "parathyroid" was not applied to them until 1896, when it was introduced by Vassale and Generali<sup>2</sup>.

In 1881 Cresswell Baber<sup>3</sup> published independent studies of the human and mammalian parathyroids, his findings being confirmed in 1885 by Victor Horsley<sup>4</sup>. In 1891 Eugène Gley<sup>5</sup> re-discovered the rabbit's parathyroids and thereafter worked much upon parathyroid physiology, so that his name came to be applied to these glands: he regarded them, however, as nothing more than so much potential thyroid tissue. In 1892 the intra-thyroid parathyroid gland of the rat was described by Cristiani<sup>6</sup>. In 1893 Chantemesse and Marie<sup>7</sup> confirmed Sandström's original findings in the human subject, noting the generally single nature of the upper gland (= parathyroid IV) and the commonly multiple nature of the lower (= parathyroid III).

The anatomical and physiological distinction of the parathyroid glands was proclaimed first by Kohn<sup>8</sup> in 1895 and thereafter by Welsh<sup>9</sup> in 1898. Yet as late as 1907 Forsyth<sup>10</sup> could regard the parathyroids as but potential sources of thyroid substance.

The small size of the mammalian parathyroid gland, its variable situation (para-, epi- or intra-thyroid) in different species or even in different examples of the same species, and the technical and physiological difficulties attendant upon its experimental investigation may well explain the relatively late recognition of its morphological independence. The greater credit therefore accrues to the real discoverer of the mammalian parathyroid—our own Richard Owen—who, in the Indian Rhinoceros, recognised its distinctive nature as early as 1850, two years before Sandström's birth. And although, on dubious grounds, Sandström himself credited recognition of the putative parathyroid to Remak in 1855 and to Virchow in 1863, it is obvious that, in any case, Owen's priority of discovery stands.

At the time of his parathyroid discovery Owen was Hunterian Professor of Comparative Anatomy and Senior Conservator of the Museum of the Royal College of Surgeons, where he was resident, and at the height of his anatomical prowess. From his indefatigable pen was flowing—in the true Hunterian tradition—that sustained torrent of monographs, papers and catalogues on recent and fossil forms which proclaims the magnitude of his range and industry and constitutes so memorable and permanent a chapter in the history of British biological science. To Owen came the carcasses of animals dying in the menagerie of the Zoological Society of London, and amongst them that of the first Great Indian Rhinoceros (*Rhinoceros unicornis* Linn.) owned by the Society, purchased on Owen's recommendation for 1,000 guineas on May 24, 1834. This beast, a male, lived in the Society's menagerie from September 20, 1834, until November 19, 1849, whereafter Owen anatomised it.

In a letter<sup>11</sup> to a sister he deplors this animal's death but characteristically remarks, "His anatomy will furnish forth an immortal 'Monograph', and so comfort comes to me in a shape in which it cannot be had by any of my brother Fellows". Owen's jesting

prophecy was duly fulfilled and his subsequent paper<sup>12</sup> in the Zoological Society's *Transactions* remains the authoritative and classic account of the anatomy of this species. In this paper is described for the first time the parathyroid gland of any mammal.

The time-devouring dissection was carried out during the winter of 1849-50, chiefly at the Royal College of Surgeons, Owen's wife<sup>13</sup> recording in her diary that "as a natural consequence [of this animal's death] there is a quantity of rhinoceros (defunct) on the premises". Three months later, on February 12, 1850, Owen communicated his findings to a meeting of the Zoological Society. This paper was published as Article III in Vol. IV of the Society's *Transactions*. Here dates may mislead historians. Volume IV of the *Transactions* covers the period January 1851 to September 1862 and bears the terminal date only. Its contained Articles, however, bear their individual dates, that of Owen's rhinoceros paper being March 2, 1852. Owen therefore observed the parathyroid gland during the 1849-50 winter months; this find (*inter alia*) was communicated to the Society on February 12, 1850, and the communication itself was published in the March of 1852.

Nobody else, by 1850, had drawn attention to any mammalian structure which even might have been the parathyroid gland.

In his rhinoceros dissection Owen had particularly observed "a small compact yellow glandular body, attached to the thyroid at the point where the veins emerge"—the parathyroid gland of this species. He neither named this "body" nor suspected its true nature: nevertheless, he was impressed by it, and clearly recognised its anatomical novelty, for he made special reference to it in his later (1868) monograph<sup>14</sup> on comparative vertebrate morphology and meanwhile carefully dissected out and preserved the "body" *in situ* as a spirit specimen in the Royal College of Surgeons Museum (=Physiological Series L.333.1: Old Catalogue No. 772P). (The articulated skeleton of the animal dissected is preserved in the British Museum (Natural History) under reference B.M.722g (51.11.10.2).)

The identification of Owen's "compact yellow glandular body" with the parathyroid gland was confirmed by the writer's dissection of two adult male Indian Rhinoceroses dying in the Zoological Society's menagerie in 1941 and 1945 respectively. In the first animal, a beast of twenty years, a single parathyroid gland existed bilaterally. The left gland was attached to the dorsal aspect of the caudal thyroid pole, completely hidden by fascia and a dense thyroid venous plexus. Its dissection emphasised the difficulty of displaying a structure known to be present within a circumscribed area, the gland being finally disclosed only by a bold section in the neighbourhood of its suspected presence, whereupon its spongy, gamboge-yellow parenchyma proclaimed its true position and nature. The right gland was epithyroid in position and more easily secured amid the emergent thyroid veins.

In the second animal, some fifteen years old, a single parathyroid gland existed bilaterally, in each case embedded in the dorsal aspect of the thyroid and not apparent even after removal of all thyroid vessels and fasciae. Section of the thyroid at the anticipated site of the parathyroid was necessary to establish the presence of the smaller gland. The laborious nature of these dissections engendered enhanced respect for Owen's prosectorial assiduity and accuracy of observation, for the rhinoceros parathyroid has but the diameter and circumference of a six-penny piece. Not suspecting its presence in his specimen Owen might justifiably have overlooked the gland in the necessarily rapid gross dissection of so unwieldy a subject: had the parathyroids of his animal been intrathyroid in position, it is likely he would have missed them. Owen obviously sectioned the right parathyroid, since he noted its distinctive yellow colour and its glandular nature, but whether accidentally during the dissection, or deliberately after observing the new "body," does not appear.

But that Owen was the first to describe and to preserve the organ now called parathyroid gland, and that he recognised the glandular nature of his discovery, is sufficiently

established. His achievement deserves a wider recognition than it has hitherto received, both as a tribute to his investigatory acumen and as reflecting credit on British anatomical science. It should appeal particularly to Bart.'s men of a generation later than his.

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