

THE DICTIONARY OF  
NINETEENTH-CENTURY  
BRITISH SCIENTISTS

Volume 3

K-Q

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The University of Chicago Press

D475

2004

vol. 3

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The University of Chicago Press, Chicago 60637  
Thoemmes Continuum, Bristol BS1 5RR, England  
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13 12 11 10 09 08 07 06 05 04 1 2 3 4 5

ISBN: 0-226-48116-6 (cloth)

Cataloging-in-Publication data have been requested from  
the Library of Congress.

∞ The paper used in this publication meets the minimum requirements of the American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1992.

Typeset in Sabon.  
Printed and bound in the United Kingdom  
by Antony Rowe Ltd.

ness to blue light in the foramen centrale helped James formulate his influential theory of colour vision.

A fire at Glenlair destroyed almost all the Maxwells' papers and makes reconstructing further details about Katherine's contributions very difficult. We are thus left with scattered, suggestive hints about her life. Margaret Tait is supposed to have accused Katherine of derailing James's later career because he nursed her through a prolonged illness that she suffered from in 1876 (Everitt, p. 55). This anecdote is difficult to reconcile with other evidence, which suggests Katherine performed much of the experimental work that James later formalized. In that same period, James wrote to Margaret's husband, P.G. TAIT, that 'my better 1/2, who did all the real work of the kinetic theory is at present engaged in other researches. When she is done I will let you know her answer to your enquiry [about experimental data]' (Maxwell Papers). Here James referred to measurements of gaseous viscosity that led to his famous paper, 'On the Dynamical Theory of Gases'.

In another case James obliquely acknowledges his wife's scientific acumen. In a letter to her he described the collaborative efforts of other scientific couples:

Mrs. Sabine learnt mathematics of her husband after she was married, so she was not married for it. Murchison knew no geology when he was married, but his wife did a little; and there was a fall of a cliff in the morning early, and her maid told her of it, so she was for up [wished to get up] so Murchison got up too, and there were the great bones of an Ichthyosaurus in the broken cliff, and he was interested and took to geology. Before that he was an idle young officer (Campbell and Garnett, p. 313).

One can reasonably suppose that these lines were prompted by Katherine's curiosity about other scientific wives. The remainder of the couple's surviving letters focuses almost exclu-

sively on religious piety – no surprise, given their immersion in the mid-century evangelical turn in Scottish Protestantism.

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#### MAYCOMB-MACDONNELL, M.I. Return (1764–1818?)

M.I. Return Maycomb, later known to some as Mkihill MacDonnell, and still later to others as Nukunau-Oannes (the 'Polynesian Man-Fish'), was born into the peripherally respectable reaches of the Anglo-Irish oligarchy on 18 January 1764. The date of his death is unknown, but the thread of his biography frays by the third decade of the nineteenth century. A mercurial figure of considerable romantic appeal, Mkihill Ionah Return Maycomb-MacDonnell was a creditable physiologist, an amphibious explorer and a true pioneer in cetacean research. He was also, however, a perennially protean exile-castaway for whom, in the end, perhaps, deception, disguise and theatre came to constitute something like a theory of knowledge.

He was christened Ionah Return Maycomb, the only child of John Maycomb, an Anglican clergyman briefly resident in Londonderry, and Charlotte, his bride, originally from Barbados, where William had gone in the 1750s to attend to sugar properties inherited from his maternal uncle. After Charlotte's death in labour three years later (Return's sibling did not survive), John entrusted the precocious child to a French guardian and tutor and left Ireland for the West Indies again; he would never return.

Effectively orphaned, Return came under the protective wing of the Sampson family, also of Londonderry, and grew up in the company of the young William P. Sampson, his contemporary (they were born one day apart), who would go on to make a reputation for himself as a lawyer in the United States. Like William, Return found himself caught up in the political turmoil in Northern Ireland in the late 1770s and early 1780s. Drawn to the liberal and aristocratic leadership of Henry Grattan, Return joined the Protestant Volunteers early in 1782, only to experience disillusion with the movement as broader civil reform efforts foundered. Having achieved some notoriety for his bravado in denouncing English tyranny and praising the American colonists for their revolutionary fervour, Return came to believe he was a marked man, and he left the country abruptly in 1783, making his way to Edinburgh, where he enrolled (pseudonymously) at the University of Edinburgh at the beginning of the winter term, intending to pursue the MD.

The foresight of his absentee father ensured that Return had received an exacting classical education, and a liberal Francophile streak in the Sampson family meant that the writings of the *Philosophes* were well known to the young Maycomb. A story survives of a clandestine masque at Trinity College Dublin (where Sampson and Maycomb roomed together for a year before Maycomb's departure for Scotland) in which portions of Diderot's *Supplément au Voyage de Bougainville* were performed in native attire (and undress), with Return

Maycomb playing both the role of the elderly noble savage, and that of the salacious young friar. It was, in more ways than one, a foretaste of things to come.

At Edinburgh, Return slipped soundlessly and with delight into the intellectual ferment of the 'Athens of Britain', devouring Hume, and tinkering with an electrical apparatus rigged by his landlord, a brewer and Mason incurably infatuated with Franklin. It was in this period that Maycomb grew friendly with a young American medical student from Long Island, Samuel Latham Mitchill, and the three men together engaged in late-night extramural chemical and natural philosophical speculations under the auspices of an evanescent club of like-minded investigators who called themselves the 'Society of Cthonic Cunctators'. Medical studies appear not to have overtaken Return's attentions, but he was certainly taken with the chemistry lectures of Joseph BLACK, the summer botany lessons taught by John HOPE (shortly to retire), and the instruction in *materia medica* by Francis HOME (though these were the early morning lectures, from 8 to 9 a.m. during the long winter term, and Return complained heartily in letters to Sampson about the 'lamentable lacunae' in his knowledge of the pharmacopoeia).

In these heady years Maycomb annealed the friendship that would determine the direction of his future life and work. Walking the strand on a natural history excursion in late August of 1784, Maycomb came across a clutch of fishermen who had landed, and largely dismembered, an unusual beaked whale (*Mesoplodon bidens?*). He salvaged several teeth and returned to his inn. The next morning he was awakened by the inn-keeper who informed him that he had a 'gentleman caller'. The gentleman proved to be none other than Alexander Monro (Monro *secundus*), the distinguished professor of anatomy and surgery, who was at that time engaged in a polemical dispute with Petrus Camper over the auditory system in the Cetacea (Pilleri, pp. 50–55). Monro had learned of the mysterious catch from a fishmonger-

informant and had made a late night dash to the coast in an effort to recover the animal's head. Unsuccessful (the remains of the carcass had gone out with the tide), a despondent Monro pressed the fisherman for details and was directed to the young man who had purchased from them several specimens from the jaw. Refreshed with hope, Monro tracked Maycomb back to his inn, and the two men shared breakfast discussing matters cetological. Though the teeth were not adequate to establish the novelty of the species (this would have to wait for another stranding, in 1800, in Moray Firth, and the taxonomic efforts of James BRODIE and James SOWERBY), the specimens did prove the seeds of an enduring and amicable relationship between the enthusiastic student-naturalist and the distinguished comparative anatomist who would become his mentor.

Apprenticed to Monro, Maycomb honed his skills with the knife and contributed to the fine dissections that revealed, in 1785 (*contra* Camper), the existence of true (if minute) semi-circular canals in the cetacean ear (Monro). Encouraged by this revelation, and goaded by the implications for the ancient question of whether whales were deaf, Maycomb made several excursions to the whaling ports of Hull and Whitby to query whalers about the sensory capabilities of their quarry. Startled to discover that they uniformly believed whales and dolphins to have preternaturally keen hearing, Maycomb conceived a plan to make a voyage on a Greenland whaler in order to observe the animals in the chase and to collect specimens. Letters from Monro to a former student at Hull, then a whaling agent, secured Maycomb a berth as Surgeon on the *Henrietta* in 1785, where he was, as it happened, a shipmate of young William SCORESBY Sr, then making his maiden voyage to the polar waters. It is in the Scoresby papers (in the Library of the Whitby Literary and Philosophical Society), that a brief mention of 'the surgeon' on this trip survives: 'taken today from the bowsprit shrouds, one nar-whale, or "Sea Unicorn", 9

feet and fat. Surgn. caperd wldly as the beasts eyes were grown-over with a *mould*, insisted that the whole fish be hawled on the foredeck for philosophy' (Scoresby Papers, Whitby, File 'Henrietta Log').

We can surmise how greatly this encounter stimulated Maycomb's curiosity, and in the light of his later researches with Spallanzani at Pavia, it seems safe to imagine that a well-fed whale, totally blind, must have sharpened for him the keen mystery of the cetacean sensory apparatus.

Back in Edinburgh, Maycomb corresponded with the celebrated naturalist John HUNTER about the voyage, and received a commission to return to Greenland the following season to make further investigations. Hunter was at this time at work on the essay that would become 'Observations on the Structure and Oeconomy of Whales' transmitted to the *Philosophical Transactions* by Joseph BANKS and published in 1787. While Hunter, too, was interested in the sensory world of marine animals (he had made experiments on whether fish had a true sense of 'smell' in the water, or if they could only 'taste' their surroundings), the collaboration with Maycomb was apparently not a happy one (*Philosophical Transactions of the Royal Society*, vol. 77, p. 428 [n]). Hunter would write in his 'Observations': 'As the opportunities of ascertaining the anatomical structure of large marine animals are generally accidental, I have availed myself, as much as possible, of all that have occurred; and, anxious to get more extensive information, engaged a Surgeon, at a considerable expense, to make a voyage to Greenland in one of the ships employed in the whale fishery, and furnished him with such necessaries as I thought might be requisite for examining and preserving the more interesting parts, and with instructions for making general observations; but the only return I received for this expense was a piece of whale's skin, with some small animals sticking upon it' (*Philosophical Transactions of the Royal Society*, vol. 77, p. 372).

What Hunter failed to note was that Maycomb's captain, ambitious to get to untrammelled grounds, had overshot the boundary of the pack ice in late season: the crew, bivouacked in slurry, watched as slow grinding sheets crushed the ship to toothpicks. This obliged Maycomb and several intrepid shipmates to make a terrifying passage across shifting flows in order to hail a passing Dutch ship which, when salvage proved impossible, returned them to The Hague. There Maycomb took advantage of the detour to call on the ailing Petrus Camper himself. Irish charm lubricated the seized machinations of the Camper-Monro polemic, and it appears that Camper permitted Maycomb to read and copy from his voluminous manuscript on the internal anatomy of whales, material that would not be published until 1820, thirty years after the death of Camper *père*, when Camper *filis*, Adrien-Gilles, published (in Paris) *Observations Anatomique sur La Structure Intérieure et le Squelette de Plusieurs Espèces de Cétacés*.

With letters of introduction from Camper, Maycomb seems to have spent the next year (or more) on the Continent, and scattered sources suggest that he was in Paris from 1788 to 1789. By 1790 he surfaces again, fleetingly, back in Ireland, where he struggled to settle financial matters related to Derry property that had long provided his modest living. But the earthquake of the Revolution was triggering dangerous aftershocks in Hibernia, and Maycomb's reputation had not been forgotten. Perhaps further radicalized by his presence in Paris in 1789, Maycomb proved unable to avoid incendiary activity and secretive organizing. Judicial retaliation was the result: his lands and effects were seized punitively in 1791, and even the intervention of his old friend Sampson, recently admitted to the Irish bar after several years at Lincoln's Inn, could not save him. Hunted and penniless, he again fled Ireland, this time with the help of the Catholic underground, which spirited their hero under the *nom de guerre* 'Mkihill MacDonnell' to Portugal, whence, the following year, he made his way to Italy.

It has been suggested that this trip was part of an effort to raise support for an armed Catholic insurgency, and that the Iberian interlude was an occasion to assemble a network of sympathetic smugglers and gun-runners, but none of this has ever been satisfactorily established; it should be added that the idea of Maycomb, a freethinker, contracting an elaborate alliance with Catholic reactionaries remains quite unsatisfactory.

Whatever his political ambitions in this period, scientific avocation again absorbed the preponderance of his energies. Well aware of the dispute in the late 1780s between John Hunter and the 'Magus of Pavia', Lazzaro Spallanzani, over the digestive system, and aware too of Spallanzani's work on the *Natural History of the Sea*, Maycomb made a pilgrimage to the north, and a letter from Spallanzani to Vassalli at Turin in 1794 confirms that the greatest physiologist of the age had decided to lodge this picaresque visitor in rooms above the Museum. Spallanzani added that he had nearly been convinced by Maycomb's arguments and demonstrations that cetaceans did not, in fact, blow water from their blowholes, as Spallanzani had maintained in his 1793 *Viaggi alle Due Sicilie*. On the other hand, Maycomb did ratify Spallanzani's assertion that dolphins held under water drown, a point made in his earlier work, the *Mémoire sur la Respiration*. The affection of the older prelate for this Irish interloper appears genuine: the two men shared an abiding love for the work of Oppian, and were passionate readers of the *Halieutica*, a didactic fishing treatise in hexameters, which rehearses an elaborate Greco-Roman myth concerning the origin of dolphins and porpoises (namely that these animals represent a race of men who contracted an alliance with Dionysos and 'put on the form of fishes' to pursue lives of aquatic pleasure-worship). Out of these readings came the Greek inscription over the door of the original mausoleum in Scandiano erected by Spallanzani in honour of his deceased brother: 'Diviner than the dolphins is nothing yet created.' This would later become Maycomb's motto.

But clearly the most important fruit of the collaborative work in Pavia from 1793 to 1795 was Maycomb's hand in Spallanzani's remarkable and long-overlooked investigations into the 'blindsight' of bats. As Dijkgraaf, Galambos, Griffin and others have now shown, these years witnessed Spallanzani's painstaking efforts to establish that bats could 'see with their ears', work that involved experiments with surgically blinded bats, and others with candle-wax in their ears, noses and/or mouths. Despite the confirmatory demonstrations of Charles Jurine at the Geneva Natural History Society, these experiments were more or less lost to students of physiology and animal behaviour during the nineteenth century. Maycomb worked closely with Spallanzani in this period, and in fact developed the technique of blinding bats using a hot filament, which proved much less damaging to the experimental subject than the surgical removal of the eyes themselves. Maycomb's extension of these echolocation researches to marine animals during his years of residency in the Pacific remains his greatest scientific legacy.

Napoleon's invasion of Italy presented a new hazard for Maycomb, who was suspected of Catholic sympathies. Fleeing to Sicily, he lodged incognito with friends of Spallanzani, and may have drawn on connections with smugglers to secure passage out of the Mediterranean via Tripoli and Tenerife during the manoeuvres of the Quasi-War. An American trader deposited him in Manhattan carrying only a sailcloth sack of manuscripts in 1801. There he reawakened his collegiate friendship with Samuel L. Mitchill, who had by then become not only the 'Nestor of American Science' but a leading figure in state and national politics, representing New York in the seventh Congress of the United States. Briefing Mitchill on political and military conditions in the Mediterranean, Maycomb certainly conferred intelligence that was later conveyed to Decatur and that played a role in the US Navy's actions against the Tripoli Pirates.

Persuaded that he was being pursued by both French and English agents and anxious to distance himself from metropolitan centres, Maycomb prevailed on Mitchill to arrange for him passage to the South Pacific and Mitchill obliged, finding him a position as a 'collector' on a Sag Harbor sperm whaler, upon which he shipped under the auspices of the Society for Promoting Agriculture, Arts and Manufactures in New York. It appears that Mitchill himself paid for the expedition.

Thus began the final act in the improbable life of I. Return Maycomb. Where these last decades are concerned we are able to reconstruct a fragmentary sketch of Maycomb's activities from a consular report in the manuscript Consular Letters of the Department of State, which holds affidavits of witnesses to the sinking of the *Dispatch* in 1813 (Hohman, Appendix A). Included in these papers is a statement by Captain Preserved Grinnell of Nantucket. Grinnell reported his encounter with a beachcomber at Nukunau in the Gilbert Islands who identified himself as 'Jonah MacDonnell', and who was, almost certainly, Return Maycomb.

Briefly then, on his outbound voyage from Sag Harbor Maycomb developed a passionate hatred for the autocratic and mercenary captain (George Morgan), to whom he was subject, and disputes over storage space for specimens escalated into an affair of honour. The result was Maycomb's jumping ship (or was he abandoned?) during a wood and water stop at an atoll in the Tuamotu Archipelago. From there Maycomb fell in with the British ship *Margaret*, under Captain John Buyers, which visited Makemo in 1802; Buyers was delighted to find a castaway who could serve as a go-between with the native communities, given his designs on the emerging *bêche-de-mer* and sandalwood trade. Informing Buyers of the numerous pearl-oysters (then known as *Meleagrina margaritifera*, now better known under the genus *Pinctada*) to be found in the local waters, Maycomb took up with Buyers and John Turnbull on the first of several efforts to secure

indigenous divers at Chain Island (Anaa) and exploit the pearl wealth of these regions (Branagan). The wreck of the *Margaret* in April of 1803 was the first of many setbacks, but Maycomb would later be more successful with William Campbell in the north-western atolls in 1809.

For nearly a decade Maycomb navigated the beaches, islands and maritime worlds of Polynesia and Micronesia, until roughly 1814, when, implicated in the sinking of the *Dispatch*, and alienated by the ever-deeper incursions of missionaries, he exiled himself from his exile, and took up residence on a remote cay in what would become the Gilbert and Ellice Islands. It was there, near Butaritari, that Maycomb contracted his enduring alliance with the 'porpoise callers' of the Kuma people. These hereditary servants of the *M'eang*, or chief, had apparently refined an ability, in dreamlike trances, to draw small cetaceans into natural lagoons by means of distinctive vocalizations. These animals would then reside in these ponds, some of them for long periods, becoming more or less 'domesticated' and serving both as oracular animals for divination, and as sacrificial beasts during particular feasts. Persuaded that these islanders shared a dolphin creation story much like that of Oppian (and here he appears to have been correct), Maycomb's long-standing physiological fascination with these unusual animals blossomed into a kind of syncretistic and spiritual apotheosis. He indentured himself to one of the esteemed 'porpoise-callers', and may have learned some of his skills or tricks. He then pursued, in the company of Kuma elders, a set of Spallanzani-style experiments with blindfolded dolphins, work that established that these animals too could 'see with sound'. Remarkably, these findings would not enter mainstream scientific literature until the work of Kellogg and Schevill and Lawrence in the late 1950s and early 1960s.

Resurrecting from the work of Berosus the figure of Oannes, the man-fish-philosopher supposed to have emerged from the Red Sea in

the time of Alexander the Great, Maycomb began to affect the trappings of a Kuma sage, and to assert that he was capable of talking with the gods. It was this unnerving specimen that Captain Grinnell encountered in Nukunau when his vessel stopped to careen and caulk in 1817. Grinnell accounted this 'flotsam of the Line', the 'strangest man or else that I have crossed', and apparently decided to kidnap him, either to rescue him or to sell him as a freak.

At this point the thickly-braided life of M.I. Return Maycomb begins to unravel into untrustworthy threads. In one account the real Maycomb managed to evade Grinnell's efforts and remained as a Kuma *M'eung*, whose lascivious energies are preserved in oral tradition in the Republic of Kiribati. In another, for which there is better evidence (a ship's log in New Bedford that can be traced to Grinnell's voyage), Maycomb was indeed captured and died on the return voyage. Either way, it seems that some account of Maycomb's dolphin research made its way (via Grinnell?) back to Mitchill before 1818, though those materials, along with nearly all of Mitchill's scientific papers were destroyed in a fire at the home of his would-be biographer shortly after Maycomb's death. The final print reference to Maycomb appears in the transcripts of the trial of *Maurice v. Judd* published by his old friend William Sampson in the pamphlet *Is a Whale a Fish?* in 1819 (see p. 67).

The last thread, and the least reliable (if also the most alluringly coloured) suggests that Maycomb in fact did return to New York. In 1819 Scudder's Museum at the New York Institution printed a handbill announcing the arrival of a 'Polynesian Mer-man' known as 'Nukuanau-Oannes the Man-Fish', who had been 'recently captured by Captain Grinnell in the savage wilderness of Nukuhiva'. The document, preserved in the New York Historical Society, suggests that this 'human amphibian' would perform 'the calls of the herring-hog' for all comers willing to part with a dime.

It is appealing to imagine that I. Return Maycomb did indeed survive his Pacific ordeal, and made use of this carnival persona to move unrecognized through the early American Republic, studying the mores of a people for whom he had always expressed considerable admiration. Prosecuting this curious form of reverse ethnography, he might well have made the circuit of town-fairs and wonder-shows, a De Tocqueville with fins, swimming silently into the heart of the continent.

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## MAYHEW, Henry (1812–87)

Henry Mayhew was born in 1812, the son of a London attorney. He died at Charlotte Street, Bloomsbury on 25 July 1887 and was buried at Kensall Green. Educated at Westminster School, he ran away and sailed to Calcutta before returning to begin legal training with his father's firm. But he soon abandoned the law in favour of literature and the theatre, enjoying considerable success as a playwright in the 1840s. He also played a significant role in the foundation of the satirical magazine *Punch*, serving for a short time as its editor in 1841.

Mayhew's contribution to British science was as one of the first 'philanthropist' journalists. In the 1840s, as Mayhew once observed, the most distant tribes were better known and understood than the urban poor. Appalled at living conditions in labouring London, Mayhew conducted a rigorous survey with the intention of shocking the Victorian public. He interviewed a wide selection of working people, using the data to produce an occupational classification. Thus he was able to identify a link between the casual nature of employment and poverty. Moreover, he used his detailed statistical analysis of household income and expenditure to campaign for a higher, secure wage.

He published his findings, underpinned by reliable statistical evidence, in a series of articles in the *Morning Chronicle*. He drew attention to the intolerable conditions in which the majority of the working classes lived, and the high rates of disease and crime in London society. He provided unforgettable descriptions of the conditions he found on his visits: 'There was no table in the room, but on a chair without a back there was an old tin tray, in which stood a cup of hot milkless tea, and a broken saucer, with some half dozen small potatoes in it. It was the poor old soul's dinner. Some tea leaves had been given to her, and she had boiled them up again to make something like a meal. She had not even a morsel of bread. In one corner of the room was a hay mattress rolled up.' (Thompson and Yeo, p. 166.)

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