

Patrick Russell (1727–1805), surgeon and polymath naturalist

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ABSTRACT.– The life and times of Patrick Russell (1727–1805), a Scottish medical practitioner and natural historian from Edinburgh, are traced, with emphasis on his work in the Ottoman town of Aleppo (currently, Halab, in north-western Syria), with that of his half-brother, Alexander Russell (1715–1768), and along the Coromandel Coast (in eastern India). Russell is best known amongst zoologists for the discovery of his namesake, the venomous serpent referred to as Russell’s Viper, *Daboia russelii*. His two folio volumes, centred around his time in the Coromandel coast of south-eastern India, was lavish in its illustrations of Indian snakes, and executed by an unknown Indian artist. Vernacular, rather than English or scientific names were used in this compendium, arguably the first text exclusively on a herpetological topic published on the Indian fauna. Apart from snakes commonly occurring in the south-eastern India, the work also describes a few species sent to Russell by colleagues from other parts of Asia. He also experimented on the venom of the local snakes, and documented their effects on dogs, rabbits and chickens, these being the first attempts to classify the venomous snakes from the harmless ones in the country.

KEYWORDS.– Patrick Russell, Alexander Russell, biography, medicine, herpetology, natural history, Aleppo, Syria, Coromandel Coast, India.

“After all that has been already done, India still presents a wide field for research; and the progress made, of late years, in other branches of knowledge, affords room to expect material improvement in Natural History...”

Patrick Russell (1795) Preface in *Plants of the coast of Coromandel, selected from drawings and descriptions presented to the Hon. Court of Directors of the East India Company* by William Roxburgh.

Introduction

The Age of Enlightenment reached Scotland’s shores before the glorious Victorian Age in England, in the 18th Century. Witness the Act of Union passed by the Parliament of Scotland (1707); the establishment of Britain’s first circulating library as well as medical school (1726) and of the Royal Bank of Scotland (1727); game of golf played on Bruntsfield Links (1735); the first series of public lectures by political economist Adam Smith (1748); publication of the first edition of *Encyclopædia Britannica* (1768–71);

creation of the Royal Society of Edinburgh for “the advancement of learning and useful knowledge” (1783); and the birth of Scotland’s famous sons (David Hume, philosopher, 1711; James Hutton, geologist, 1726; Alexander Monro, discoverer of the lymphatic and nervous systems, 1733; James Boswell, biographer, 1740 and Sir Walter Scott, poet, 1771). In the field of medicine, in particular, that of surgery, Edinburgh was the world centre (Fillmore, 2009), attracting attention of scholars and students, including, most famously, the Darwin family, several of its



Figure 1. Patrick Russell (1726–1805). Frontispiece portrait from Patrick Russell’s (1802) *A Continuation of an Account of Indian Serpents*. Although Western sources mention that he was permitted to wear a turban, a privilege seldom given to Europeans in Aleppo (Anon, 1811), it is more likely that a turban was presented to him as a symbolic gesture of recognition rarely given to a European at the time, presumably for his medical services to the Pasha and others in Aleppo.



Figure 2. Frontispiece of Alexander Russell's (1794) *The Natural History of Aleppo and Parts Adjacent*, showing the city of Aleppo, in modern-day Syria, described as "...opulent and orderly" at the time of residence by the Russell brothers, Alexander and Patrick, in the late 18th century (Starkey, 2002).

members taking courses at Edinburgh (Antolin 2011).

This essay centres around the contributions of two remarkable individuals, Alexander Russell (1715–1768) and especially his younger half-brother, Patrick Russell (1727–1805; Fig. 1) to the natural history of the Near East, and of India.

The Brothers Russell in Aleppo

The sons of the eminent Edinburgh solicitor, John Russell (1710–1796), who was also a founding member of the Royal Society of Edinburgh, Alexander (born 8 September 1715) and Patrick (born 6 February 1727) studied classical subjects (Greek and Roman) in high school, and as was possible at the time, took up medicine, graduating as Doctors of Medicine. The elder sibling took up a position as a physician in the Levant Company's factory, in charge of quarantine and disease control in Aleppo (Arabic name, Halab), a major Ottoman city dating back to the 14th century, in north-western Syria (Fig. 2). The Levant (or the Company of Turkey Merchants) Company, an English chartered company established in 1581, regulated trade with these countries, and welcomed Scots, unlike the English East India Company at the time (Starkey 2013). Factories (in reality, trading centres or commercial bases) were established at a number of commercial centres, and were provided with chaplains as well as physicians (Epstein 1908). Alexander attended to both staff

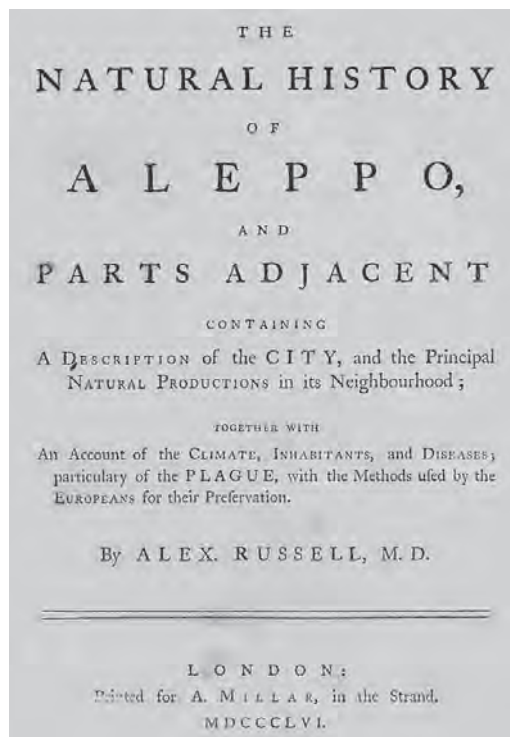


Figure 3. Title page of Alexander Russell's (1756) first edition of *The Natural History of Aleppo and Parts Adjacent*.

of the Levant Company as well as the local populace, regardless of religion, race or rank, and his knowledge of the local customs and language apparently attracted the notice of Mehmet Raghib Pasha (1699–1763), the Governor-General of Aleppo (between 1755–1756), propelling him to the post of chief medical practitioner in Aleppo; perhaps more importantly, he was permitted to dissect corpses (Starkey 2013). One of his major medical contributions was the first description in English of *cutaneous leishmaniasis* (Hawgood 2001), a common skin infection caused by parasites transmitted by sandfly bites. Despite what must have been a trying time (including the outbreak of plague), he retained a strong interest in natural history.

The younger sibling, Patrick, followed shortly (in 1750), replacing Alexander who resigned (in 1753) to return to London in 1755, and Alexander was elected to the Royal Society the following year. The two brothers shared residence and workspace at Khan-al-Jumruk, near the Great Umayyad mosque, in the centre of the bazaar, a structure that dates back to 1574.

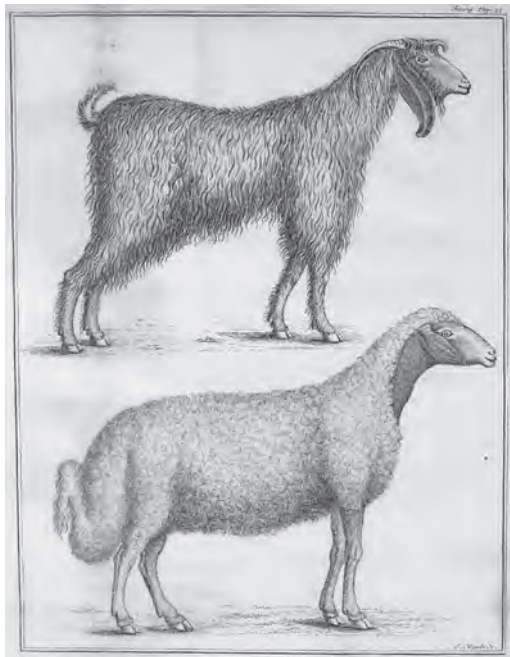


Figure 4. Plate opposite page 52 of Alexander Russell's (1756) *The Natural History of Aleppo and Parts Adjacent*, the text reporting "...two sorts of sheep in the neighbourhood of Aleppo", the extraordinary one illustrated below, with its broad tail that terminates in an appendix.

Patrick returned to London a good 16 years later, in 1771. Like his half-brother, Patrick was similarly held in esteem by the Pasha (Anon 1811). Back home in 1772, the younger Russell was feted by his peers and elected Fellow of the Royal Society. Alexander published what was to become an important work on the natural history of the Near East in the broadest sense, entitled "The Natural History of Aleppo and Parts Adjacent" (A. Russell 1756; Fig. 3), published in quarto, bearing multiple illustrations, and including accounts of the city of Aleppo, its inhabitants and natural products, as well as diseases and their treatment (Figs. 4–5). Noteworthy in the volume is the extensive use of Arabic sources in the footnotes, especially medical texts (Starkey 2004). Patrick edited a second edition of the work (A. Russell 1794; A. Russell & P. Russell 1794; Fig. 6), in two volumes (the second also coauthored by him), the first one on the city itself, its seasons and fruits and vegetables, as well as ethnic groups and local government, the second on Europeans and other foreigners residing in the city, medical observations, natural history (Fig. 7) and a detailed sec-

tion on the plague epidemic whose waxing and waning was the subject of a special study. There are substantial details (in the form of a complete chapter) on the local flora and fauna, using the then recent Linnaean (but not always binomial) nomenclature for botanical specimens. These works were published after the passing of Alexander in 1768, and include new material both collected by Patrick and those sent to him by former colleagues at Aleppo (Starkey 2002).

Patrick Russell in the Coromandel Coast

After his return to London, Patrick Russell was convinced by family to follow to India an ailing younger brother, Claude Russell (1733–1820), originally a "writer" (junior clerical staff), and subsequently, an officer with the English East India Company, based at Vizagapatam (currently, the city of Visakhapatnam, in Andhra Pradesh). Towards the end of 1781, Patrick arrived at this southern Indian coastal town, to tend to his brother, and significantly, devoted his energy to the exploration of the flora and fauna of this part of the Indian Subcontinent, that had remained virtually unexplored. He was 55 years at the time. Following the death of the botanist, Johann Gerhard Koenig (1728–1785), Russell received an offer to serve as either Botanist or Naturalist with the British East India Company, which he accepted, at the insistence of his brother Claude. The following several years were spent in organising the delivery of "every information...(on)...useful plants" from "residents of different (medical) stations" of the Madras Presidency (Anon 1811), and Patrick Russell went



Figure 5. Plate XV of Alexander Russell's (1756) *The Natural History of Aleppo and Parts Adjacent*. "The people of Aleppo lead in general a sedentary life. They do not consider exercises as necessary to the preservation of health".

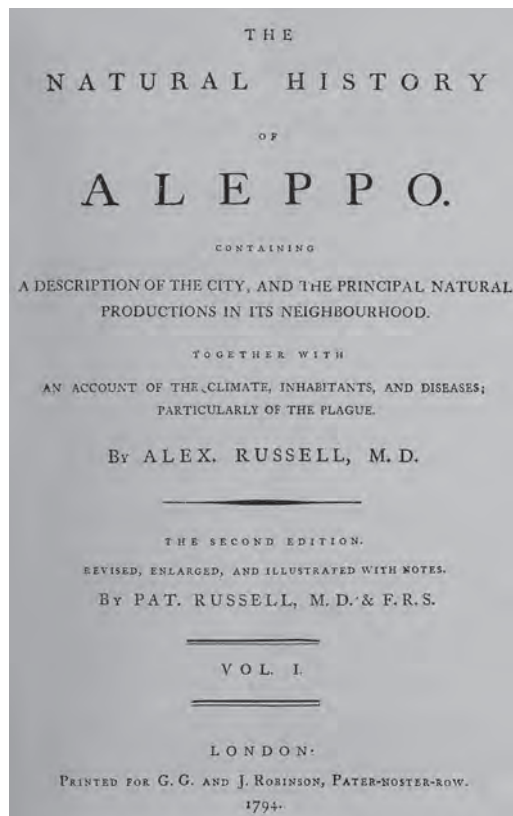


Figure 6. Title page of Alexander Russell's (1794), Volume 1 of the second edition of *The Natural History of Aleppo*.

on to collect some 900 herbarium specimens. These and other collections were published in a three folio volumes, between 1795–1819, by William Roxburgh (1751–1815), Russell's successor, and Russell provided a generous preface to the work that include hundreds of watercolours (Fig. 8). The text also capture knowledge of botany of ethnic groups speaking Telinga and Tamil, south of the Godavari River, and Patrick Russell himself was reported to have learnt Telugu. Patrick Russell continued to stay at Vishakhapatnam with Claude, an area in the Northern Circars, even though his work for the Company was further south, in the Plains of the Carnatic.

At the same time, Patrick Russell made detailed studies of the dentition of snakes, particularly as observed in bites, and thus could generalise differences between life-threatening venomous species from the harmless ones. Descriptions and figures of these observations were published in the form of pamphlets and were widely disseminated. Russell also revisit-

ed the remedial procedure then widely used for treating snake envenomation, as well as bites from rabid animals, via the use of the *Tanjore Pill*, an arsenic and mercury-containing drug, concluding that efficacy “was a matter of difficult discussion” and concluded optimistically that further evidence may “confirm its good character” (Raman *et al.* 2014).

In 1799, the outbreak of the plague in the Middle East alarmed the Privy Council of Great Britain, and a committee was duly appointed to draw up quarantine regulations. The task naturally fell on Patrick Russell. During his time in India, he also collected marine as well as freshwater fishes assiduously, a large collection that, before his departure, were deposited in the Company's Museum at Fort Saint-George, Madras. Notes on the collection and specially commissioned paintings by an unnamed Indian painter (who apparently also worked on his snake folios, see Raman 2010) were brought back to Britain, and provided material for his future work on ichthyology.

To return to Russell's herpetological contributions, his masterpiece, a two volume folio on snakes was published after his return to Britain, in 1796 (Vol. 1) and between 1801 and 1809 or 1810 (Vol. 2). The complex issues surrounding dates on publication of the text and plates for these volumes have been dealt by Adler (1989; 2014), and it is evident that three of five fascicles of the second volume were published posthumously. While the Aleppo volumes do not reveal a special interest in snakes or treatment for envenomation, an oft mentioned pas-

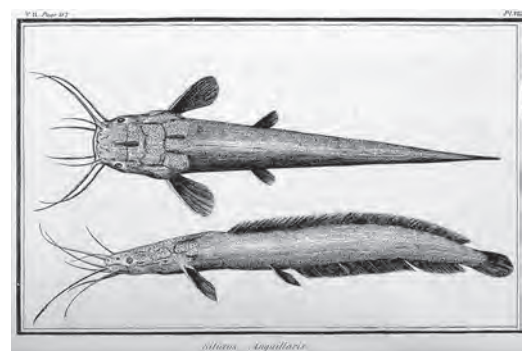


Figure 7. Plate VII from Alexander and Patrick Russell's (1794), Volume 2 of the second edition of *The Natural History of Aleppo*. The Russells wrote “Though the Turks seldom eat fish, the Kowick (river) does not afford a sufficient quantity for the Aleppo market”.



Figure 8. Plate 18 from Roxburgh's (1795) *Plants of the Coast of Coromandel, Vol. 1.*, a work for which Patrick Russell prepared the preface and collected much botanical material.

sage from Russell (1796) may throw light on his new-found interest in the field: “The terror occasioned by those numerous reptiles, is immoderately aggravated by the indiscriminate apprehension of all being poisonous. To distinguish, therefore, those that are really so, from such (by far the greater number) as are harmless, becomes a matter next in importance to the discovery of a remedy against their poison”. Yet, the English East India Company was “not a liberal patron of science” (see Bhaumik 2012), the rationale behind their support of such expensive undertakings as an inventory of a complex tropical fauna considered utilitarian to the Company, in terms of saving life and limb of its civil

servants, rather than generation of knowledge or attending to an age old problem encountered by the human inhabitants of the Carnatic.

Contemporary workers will find the usage of local (Telugu, the state language of the Indian State of Andhra Pradesh, and of Dravidian roots) vernacular names, rather than their English or scientific names odd. However, it must be borne in mind that Linnaeus' 10th edition of *Systema Naturae* was merely three decades old, and transmission of paper and ideas between continents and across languages must have been slow two-and-half centuries ago. Additionally, snakes encountered by Russell along the east coast of India (barring a few sea snakes and *Naja naja*, Russell's “cobra de Capello”) were undescribed at the time. Nonetheless, the Russells had earlier used Linnaean names for botanical material from Aleppo,

and Linnaeus himself named a plant after the elder Russell (Starkey 2004; 2013). Patrick Russell (1801) provided a valid description of *Boa Johnii* (currently, *Eryx johnii*), the types of which were not designated, on the basis of material from “Tranquebar” (= Tarangambadi, Mayavaram Taluk, Tanjore District, Tamil Nadu State). The species name honours Reverend Christoph Samuel John (1747–1813), a Danish missionary who sent specimens from Tranquebar to Germany. Several others were found in his study after Patrick Russell's untimely death (Anon 1811).

Museum-based zoologists in Europe, including Britain, France and Germany, were quick in

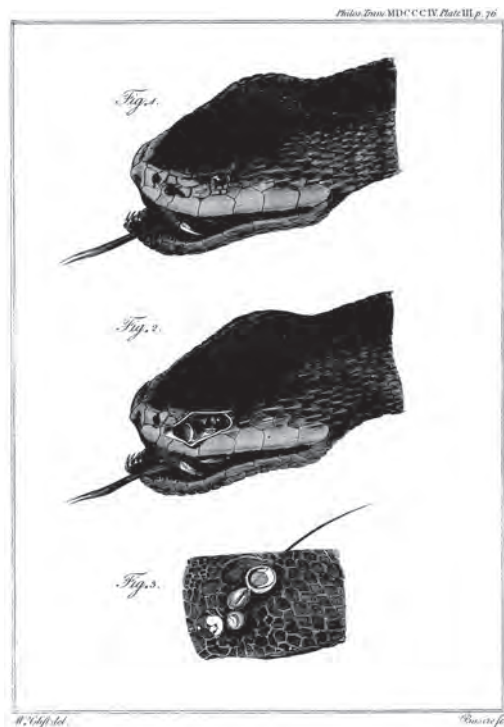


Figure 9. Plate III from Russell and Home (1804b), showing lateral view of head and neck of a “Ferde-lance” or “yellow snake of Martinico” (*Bothrops lanceolatus*), and the position of the loreal pit and a dissected view of the structure.

taking notice of Russell’s paintings, and starting with Shaw and Nodder (1797), a number of snakes depicted in the two volumes were given names. Two species originate from “Java”, *Dipsas multomaculata* Boie, 1827 and *Lycodon capucinus* Boie (1827), and a few from the Sunderbans further north and one was from Bombay, exceptional for the coverage in Russell’s volumes, these specimens being received as a donation from members of the civil service. However, the bulk of the specimens were collected from the Coromandel region. Apart from snakes, the volumes also illustrate a limbless lizard that Schneider (1801) described as *Anguis melanostictus* (see Das 2000). Several species names honour Patrick Russell, including *Coluber russelii* Shaw and Nodder (1797), currently referred to as *Daboia russelii* (Shaw and Nodder, 1797), *Coluber russelius* Daudin, 1803, a junior synonym of *Oligodon arnensis* (Shaw and Nodder, 1802), *Cerberus russelli* Cuvier, 1837, a junior synonym of *Cerberus rynchops* (Schneider, 1799), *Dryinus russelianus* Bell,

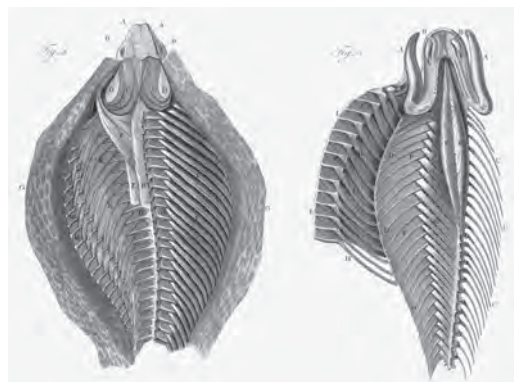


Figure 10. Plate VIII from Russell and Home (1804a), comprising dissected views of the neck of “Cobra de Capello” (*Naja naja*), showing ribs and muscles involved in the “hooding” of cobras.

1825, a junior synonym of *Ahaetulla nasuta* (Bonnaterre, 1790) and *Tortrix russelli* Merrem, 1820, a junior synonym of *Ramphotyphlops braminus* (Daudin, 1803).

The snake folio volumes also record experiments Russell conducted to discover differences between venomous and harmless snakes, through an examination of dentition as well as observations on the effect of their bite on various small animals (dogs, rabbits and chickens), reporting, in particular, both neurotoxic and haemorrhagic effects of viper envenomation. To undertake these experiments, he learnt to milk venomous snakes, presumably after mastering their safe capture and restraint. Patrick Russell’s other herpetological contributions include observations on the loreal pits of crotaline snakes from both the Old and New Worlds. In a paper coauthored with the anatomist and fellow member of the Royal Society, Sir Everard Home (1756–1832), the First Baronet of Well Manor, Southampton, Patrick Russell described and illustrated these loreal pits (Russell & Home 1804a; see Fig. 9). Russell was to work with Home one last time to solve the problem of “hooding” by cobras, in this case, making dissections on specimens he brought back from India to study the osteological and myological adaptations in these species that permit the spreading of the hood (Russell & Home 1804b; see Fig. 10).

The Legacy of Patrick Russell

Early European scientific contacts with the Subcontinent were various, those prior to the second

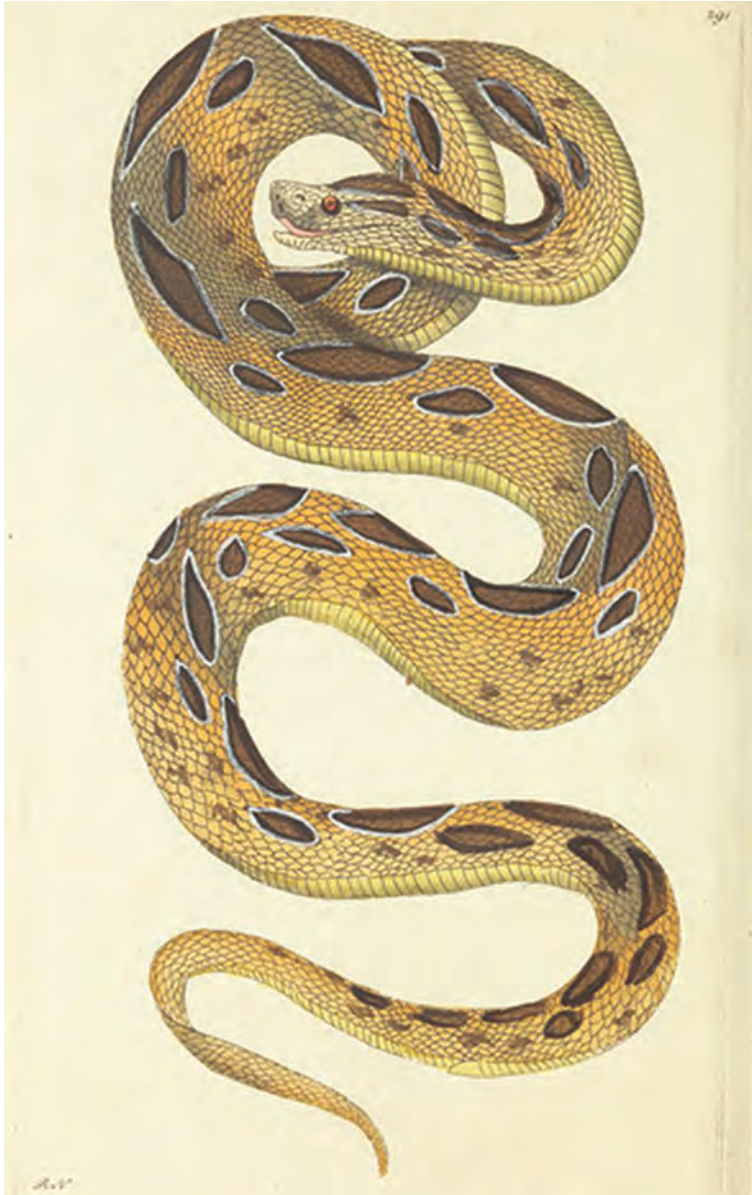


Figure 11. Plate 291 from Shaw and Nodder (1797), showing the Russell's Viper, *Daboia russelii*, thought to be derived from the British Museum holotype (BMNH I.I.I.a).

half of the 18th century being described as couriers, rather than collaborators, in making specimens available to European cabinets (Kochhar 2013). Larwood (1962) was less generous to these early contributors, writing that “Amateurism and motivation by practical needs are the keynotes” of their contribution, albeit admitting to the small European population in the Indian Subcontinent prior to the middle of the 19th

century, as well as shortage of professionals in scientific disciplines and of local scientific bodies and journals.

Thomas Hardwicke (1756–1835) and Patrick Russell were arguably the first European zoologists in India (Smith, 1952), arriving in the Subcontinent in 1778 and 1781, respectively. Rising to the position of Major-General in the Bengal Artillery of the East India Company, like Russell, Hardwicke collected natural history specimens and coloured sketches of plants and animals. Hardwicke's collection of the latter run into some 32 folio volumes, that included over 2,000 drawings (366 being of amphibians and reptiles). Hardwicke's most important work, prepared in collaboration with John Gray (1800–1875) of the British Museum, London, was entitled ‘Illustrations of Indian Zoology’ (Gray 1830–1832). The text was not published, owing to Hardwicke's premature death (biographical accounts in Adler 1989; Leviton & Aldrich 2000; Das 2004).

Russell's “Serpents”, in comparison, carries 92 plates (on 87 leaves), and is near exclusively on snakes. The aesthetic appeal of these illustrations to this day is evident in their continued discussion and reproduction in works of both art and science (see for instance, Magee 2013). Described as one of the most impressive book in the field for its weight alone (eight kilos) by Adler (1989), copies of ‘Serpents’ are highly

sought after- Christie's Sale 7576 lists one that realised \$8,588 USD (against an estimate of \$2,978–3,970 USD) in 2008.

Patrick Russell's contributions did not stop with the aforementioned works. He had earlier published a short account on the earthquakes in Syria (P. Russell 1760), wrote on indigenous inoculation practiced by the Bedouin Arabs (P. Russell 1768), wrote a definitive treatise on the plague as witnessed at Aleppo (P. Russell 1791), made observations on smallpox (P. Russell 1800), and finally, prepared two folio volumes on the fishes of the Coromandel Coast (P. Russell 1803).

As mentioned earlier, Patrick Russell is immortalised through the name for the Russell's Viper, *Daboia russelii*, given by Shaw and Nodder (1797) as *Coluber russelii* and based on a specimen in their colour plate (Fig. 11). It is derived from a specimen in The Natural History Museum, London (BMNH II.I.Ia) that is generally considered the lectotype of this species (see Bauer, this issue). The type locality was unfortunately not specified in the original description, although most workers (e.g., David & Ineich 1999: 312) have inferred that Russell's (1796) specimen that served as the type of *Coluber Russelii* Shaw and Nodder, 1797, originated from the Coromandel Coast. On the other hand, Hawgood (1994) opined that the species was sketched by an artist in Russell's pay from a specimen that originated from Bombay. This is a medically important species associated with mortality and morbidity of a large number of human victims across the subcontinent. The town of Rasulkonda (19.55N, 84.34E), in Ganjam District, Odisha State, in eastern India is named for Patrick Russell; more recently, the town was renamed Bhanjanagar. Nonetheless, for these scientific contributions, as well as for his important contributions to the development of herpetology in the early 19th century, Russell's name will not be forgotten.

Patrick Russell was, by all accounts, a modest man, and never married. He provided specific instructions for his funeral: "It is my request to be interred in the nearest burial ground, in the most private manner that custom will permit, but not be deposited within the walls of any place dedicated to public worship". Upon his death on 2 July 1805, he was laid to rest in the Maryle-

bone burial ground, an event witnessed only by a few of his closest acquaintances (Anon 1811).

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