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Thomas Horsfield—American Naturalist and Explorer

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The eighty-six years of Thomas Horsfield's life may be divided into three periods—the American period of twenty-six years from 1773 to 1799, the Javan period of twenty years from 1799 to 1819, and the British period of thirty-nine years from 1820 to 1859. But before taking up Dr. Horsfield's career in detail it might be well to devote some time to a study of his ancestry.

Thomas Horsfield's grandfather was Timothy Horsfield¹ who was born in Liverpool, England in 1708 and was educated in the parish school. In 1725 he emigrated to New York and joined his brother Isaac, with whom he learned the trade of butcher. In 1735 they leased two stands in the Old Slip Market where their business became large and profitable.

Although a member of the Church of England, he became interested in the Moravian Church in 1739. In 1748 he applied to the authorities at Bethlehem, Pennsylvania for permission to reside there, but because he was one of the executors of the estate of Thomas Noble, a prominent merchant of New York, and a member of the newly organized Moravian congregation, as well as being entrusted with the building of the Irene, he was requested to postpone his removal. He, however, took his children to Bethlehem to be educated in the schools. The year following he moved there himself where, except for a short sojourn in Nazareth, Pennsylvania, he resided until his death.

On the founding of Northampton County in 1752, Timothy Horsfield was appointed a justice of the peace by Governor Hamilton. In 1763 he was commissioned colonel of the forces in the county for the defense of its frontiers against Indian raids. This appoint-

¹ Timothy Horsfield, perhaps the great grandfather of T. Horsfield, appears in the parish register of St. Nicholas Church, Liverpool in 1694 and 1704.

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ment excited jealousy, so he soon resigned and lost his justiceship in consequence. Squire Horsfield lived in what was known as the Oerter house, which stood on Market Street opposite the graveyard.

In 1731 Timothy Horsfield was married to Mary, daughter of John Doughty, a prominent butcher of Long Island, and a lineal descendant of the Reverend Francis Doughty, who, in 1632, preached the first Presbyterian sermon. Both Timothy and Mary Horsfield died in 1773 on Long Island.

Thomas Horsfield's best known uncle was Joseph Horsfield who was chosen a delegate to the Pennsylvania convention to ratify the Federal Constitution in 1787 and one of the signers of the ratification. In 1792 he was appointed by President Washington to be the first postmaster of Bethlehem.

Thomas Horsfield's father was Timothy Horsfield, Jr., who married Juliana Parsons at Philadelphia in 1738. She was the daughter of William Parsons, surveyor general and founder of Easton, Pennsylvania. Timothy Horsfield died April 11, 1789 and his wife died January 17, 1808.

Thomas Horsfield was born at Bethlehem, Pennsylvania, May 12, 1773. He received his early education in the Moravian schools at Bethlehem and Nazareth. Very early in life his tastes led him to the study of botany, and a similar inclination to the pursuit of all branches of biological science may have caused him to select medicine as a profession. He pursued a course in pharmacy with Dr. Otto of Bethlehem and devoted special attention also to botany. This Dr. Otto was probably John Frederick Otto, M.D., of Halle who arrived from Europe in 1750. He was widely known as physician and surgeon and died at Nazareth in 1779.

Thomas Horsfield graduated in medicine at the University of Pennsylvania in 1798 in the twenty-fifth year of his age and served as "medical apprentice" in the Pennsylvania Hospital from 1794 to 1799. While at the University he was a pupil of Dr. Benjamin Smith Barton. "His graduation thesis is remarkable for its painstaking clinical description of the toxic symptoms of the poisoning produced by sumac and poison ivy, and for the record of well-conceived experiments carried out upon himself and upon animals concerning the pharmacological action of this interesting poison. It ranks as a pioneer contribution in the history of experimental pharmacology in America."

The year after his graduation, in October 1799, he accepted service as surgeon on the *China*, a merchant vessel about to sail for Java. In the course of the voyage he visited Batavia, in the island of Java. He was impressed with the beauty of the scenery, the richness of the vegetation, and certain drugs in common use by the natives which were extracted from local plants. He decided to investigate these substances, so upon his return home he secured such books, scientific instruments and materials as he could get together in Philadelphia and undertook a second voyage to Batavia in 1801. There he secured, upon application, an appointment as surgeon in the Dutch Colonial Army, and this gave him an opportunity to visit and study the flora, fauna and geology of the various parts of the island. This was the beginning of eighteen years of study which linked his name inseparably with the natural history and especially the botany of Java.

In the prefaces of his various works he tells the story of his collections and travels. It appears that between 1802 and 1811 his facilities were poor and many of his most valued specimens decayed owing to inadequate preservation. For several years his researches were confined to the vicinity of Batavia, but beginning with 1804 he visited nearly all parts of Java and made brief trips to several of the neighboring islands.

In 1811 Java became a British possession, administered by the East India Company. The temporary commissioner authorized Horsfield to continue his investigations along the same lines as hitherto, and before the end of the year a new governor, Sir Thomas Stamford Raffles (after whom the genus *Rafflesia* and family *Rafflesiaceae* were named) confirmed his appointment in the service of the East India Company. This connection enabled him to pursue his studies on a more elaborate scale. Dr. Horsfield thoroughly explored every part of the island in quest of its natural products. From Java he visited Banca and gave the fullest and best account which exists of the mineralogy, geology, botany and zoology of that island. After the restoration of Java to the Dutch in 1816, Dr. Horsfield made a long sojourn in Sumatra and there continued his favorite studies.

He secured the warm friendship of Sir Stamford Raffles, who, it is believed, acquired from Dr. Horsfield that love of natural history by which he was distinguished, and which rendered him so

zealous in its promotion. Dr. Horsfield followed that eminent man to England in 1818 and soon after was made Keeper of the Museum of the East India Company, which charge he held until his death on July 24, 1859 in the eighty-seventh year of his age.

In regard to Dr. Horsfield's work in Java, Sir Stamford Raffles says in his History of Java that "For all that relates to the natural history of Java, I am indebted to the communications of Dr. Thomas Horsfield. Though sufficient for my purpose, it forms but a scanty portion of the result of his long and diligent researches on the subject."

It is not strange that one who graduated in medicine and whose graduation thesis should be a study of the action of a poisonous plant should be interested in other plants of pharmacological action. And so we find that upwards of sixty of the medicinal plants of Java were described for the first time by Dr. Horsfield in the Batavian Transactions. One of these studies which gained especial notice was his work on the Upas tree in which he refuted the falsehoods and fabulous traditions which had been published concerning this subject.

Sir Stamford Raffles also states that "Upwards of a thousand (Javanese) plants are already contained in the herbaria of Dr. Horsfield, of which a large proportion are new to the naturalist." This extensive collection was sent to England and later (1858) presented by the East India Company to the Linnean Society of London. A selection only of his botanical collections was published as a monograph "*Plantae Javanicae Rariores.*" This is a beautifully illustrated work, prepared with the assistance of the botanists Robert Brown and J. J. Bennett. In it 2,196 species are described, all of which Horsfield had collected himself.

Dr. Horsfield although eminent as a botanist and equally versed in mineralogical knowledge, was perhaps most eminent as a zoologist. The most important of his zoological publications and the earliest of his independent works after his coming to England, was his "*Zoological Researches in Java and the Neighbouring Islands,*" published in 1821 and the following years. His other zoological writings are chiefly the valuable illustrated catalogues of mammals, birds and lepidoptera of the several zoological departments of the East India Company's museum, and numerous papers on zoological subjects contributed to the "*Linnean Transactions.*"

the "Zoological Journal" and the "Proceedings of the Zoological Society." His latest publication was the "Catalogue of the Lepidopterous Insects in the East India Museum." It was compiled by Mr. Moore, his assistant, from Dr. Horsfield's materials and manuscripts, and under his direction. Dr. Horsfield had some years before commenced a catalogue of these insects, of which only two parts were published (1828-29). This publication, though incomplete, deserves notice, as it contains an elaborate introduction, with a general arrangement of the Lepidoptera founded on their metamorphosis. The importance of the transformations of insects in reference to their classification had indeed become early impressed on Dr. Horsfield's mind. He accordingly spent three seasons during his stay in Java in collecting the larvae of numerous species of Lepidoptera, watching their development, and making careful descriptions and drawings of their successive changes up to the perfect state.

Dr. Horsfield always took the deepest interest in the progress of natural history, and especially in the systematic arrangement of animals, in which he adopted the views of Mr. McLeay. His classification of the diurnal lepidoptera and of birds exhibits great powers of philosophical analysis.

His numerous scattered papers, if put together, would constitute several large and valuable volumes, and many of them, more especially those on geology and natural history of the Eastern Archipelago, well deserve to be collected in a separate form.

Dr. Horsfield was a man of retiring habits, but of amiable character and unblemished integrity. He was one of the few Americans who became a Fellow of the Royal Society of London (in 1828). He was a member of many other societies including the Batavian Society, the Zoological Society of London and the Geological Society of London. He was elected a Fellow of the Linnean Society in 1820 and later became one of its vice-presidents.

Three genera of plants have been named *Horsfieldia* at different times. *Horsfieldia* of Willdenow (1805) is the oldest and comprises plants of the Myristicaceae. It is in current use and included more than fifty species of nutmegs. The genus *Horsfieldia* of Blume (1830) was composed of a species of the Araliaceae. Chiffot (1909) designated the genus *Horsfieldia* for some of the Gesneriaceae. Because *Horsfieldia* was first used by Willdenow in a generic sense

the genus *Horsfieldia* of Blume was changed to *Harmsioplanax* Warb. and that of Chifflet to *Monophyllaea* Reichb. Many species of plants and insects also bear Horsfield's name.

References

- Anonymous. 1859. Obituary. *The Times*. London. July 29, 1859.
- . 1859. Obituary. *Proceedings of the Royal Society of London*. **10**: xix-xxi.
- . 1861. Obituary. *Proceedings of the Linnean Society of London*. Anniversary meeting May 24, 1860. *Jour. of the Proc. of the Linn. Soc. Zoology*. **5**: xxv-xxvi.
- . 1858. *Proceedings of the Linnean Society of London*. Meeting of Nov. 4, 1858. *Jour. of the Proc. of the Linn. Soc. Zoology*. **4**: i.
- Candolle, A. P. de 1830. *Prodromus systematis naturalis regni vegetabilis, sive Enumeratio contracta ordinum, generum specierumque plantarum*. **4**: 87.
- Carson, J. 1869. A history of the medical department of the University of Pennsylvania. pp. 131-132.
- Chifflet, J. B. J. 1909. Sur quelques variations du *Monophyllaea Horsfieldii* R. Br. *Compt. rend. Acad. Sci. Paris*. **148**: 939-941.
- Egle, W. H. 1887. The Federal Constitution of 1787. *The Pennsylvania Mag. of Hist. and Biogr.* **11**: 213-222.
- Gray, Asa. 1859, 1860. *Amer. Jour. of Science*. Second series (1859) **28**: 444; (1860) **29**: 441.
- Jordan, J. W. 1896. Timothy Horsfield. Notes and Queries. Edited by W. H. Egle. Harrisburg, Pa. **3**: 166-168. Reprinted edition.
- . 1909. William Parsons, Surveyor General and Founder of Easton, Pa. *The Pennsylvania Mag. of Hist. and Biogr.* **33**: 345-346.
- Levering, J. M. 1903. A History of Bethlehem, Pennsylvania. p. 171.
- McNair, J. B. 1923. *Rhus dermatitis, its pathology and chemotherapy*. University of Chicago Press. pp. 83, 101, 116, 119, 126, 127, 139, 141, 142, 145, 147, 193.
- Oliver, D. 1860. Notes on the British Herbarium of the Linnean Society. *Jour. of the Proc. of the Linn. Soc. Botany*. **4**: 194-198.
- Raffles, Sir T. S. 1817. *The History of Java*. London. Vol. 1.
- Willdenow, C. L. 1805. *Species plantarum*. **4**: 872.

Publications

- Horsfield, Thomas. 1798. An experimental dissertation on the *Rhus vernix*, *Rhus radicans* and *Rhus glabrum*; commonly known in Pennsylvania by the names of poison-ash, poison-vine and common sumach. By Thomas Horsfield of Bethlehem, Pennsylvania. Philadelphia. Printed by Charles Cist, No. 104 North Second Street. Published also in Charles Caldwell's "Medical Theses," Philadelphia 1805. pp. 113-163.
- . 1805. An account of a voyage to Batavia in the year 1800. The Philadelphia Medical Museum. Edited by J. Redman Coxe. Vol. 1.

- . 1814. Scheikundige ontleding van een vulkaansch zand en een yzer-erts. (Chemical analysis of some volcanic sand and an iron ore.) Batav. Genootsch. Verhand. 7.
- . 1814. Over de Rivier van Solo. (Beyond the River Solo.) Batav. Genootsch. Verhandl. 7.
- . 1814. Reis naar de Ooster-streken van Java. (Journey to the East-stretch of Java.) Batav. Genootsch. Verhandl. 7.
- . 1814. Beschrijving van den Gatip-Boom. (Description of the Gatip-Tree.) Batav. Genootsch. Verhandl. 7.
- . 1814. Beknopte beschrijving van het *Crinum asiaticum*. (Brief description of *Crinum asiaticum*.) Batav. Genootsch. Verhandl. 7.
- . 1814. Scheikundige ontleding der vruchten van den Rarak-Boom. (*Sapindus saponaria*, Linn.) (Chemical analysis of the fruit of the Rarak-Tree.) Batav. Genootsch. Verhandl. 7.
- . 1814. On the Oopas or Poison-tree of Java. Batav. Genootsch. Verhandl. 7; Thomson Ann. Phil. 9: 202-214, 265-274 (1817); Jour. de Phys. 84: 259-266 (1817); Amer. Med. Recorder, Phila. 1: 64-80, 587-600 (1818); Jour. de Physiol, exper. et pathologique (Magendie's), Paris. 7: 334-384 (1827).
- . 1816 (?) On the mineralogy of Java. Batav. Genootsch. Verhandl. 8: 141-173.
- . 1816 (?) Essay on the geography, mineralogy, and botany of the western portion of the territory of the native princes of Java. Batav. Genootsch. Verhandl. 8: 175-312.
- . 1822. Systematic arrangement and descriptions of birds from the island of Java. (Read April 18, 1820.) Linn. Soc. Trans. 13: 133-200. Oken, Isis, 1825, col. 1053-1087.
- . 1824. Zoological researches in Java, and the neighbouring island. London.
- . 1824-25. Description of the Riman-Dahan of the inhabitants of Sumatra, a new species of Felis (*F. macrocelis*) discovered in the forests of Bencoolen by Sir Stamford Raffles. Zool. Jour. 1: 542-554; Ferussac, Bull. Sci. Nat. 6: 400-402 (1825); Oken, Isis, 1830, col. 825-827.
- . 1825. Description of the Helarctos Eurypilus, exhibiting in the Bear from the island of Borneo the type of a sub-genus of Ursus. Zool. Jour. 2: 221-234 (1826); Ferussac, Bull. Sci. Nat. 6: 399-400 (1825); Oken, Isis, 1830, col. 1023-1027.
- . 1827. Notice of a species of Ursus (*U. isabellinus*) from Nepal. (Read June 20, 1826.) Linn. Soc. Trans. 15: 332-334.
- . 1827-28. Notice of two new species of Vespertilionidae found in Cuba (*Molossus velox*, *Phyllostoma Jamaicense*). Zool. Jour. 3: 236-240.
- . 1828-29. Notice of a new species of Mustela (*M. Hardwickii*) found in India by Major-General Thomas Hardwicke. Zool. Jour. 4: 238-240; Ferussac, Bull. Sci. Nat. 20: 322 (1830).
- . 1828-29. Part I (-II) of a descriptive catalogue of the lepidopterous insects contained in the Museum of the East India Company . . . with . . . observations on the general arrangement of this order of insects. London.

- . 1829–30. Descriptions of several oriental lepidopterous insects. *Zool. Jour.* 5: 65–70.
- . 1831. Observations on two species of bats, from Madras (*Megaderma lyra*), one of them new (*Nycticejus Heathii*), presented by Mr. Heath. *Zool. Soc. Proc.* 1: 113–114.
- . 1832. On the specific distinction of *Viverra Rasse*, Horsf. and *Viverra Indica*, Geoffr. *Zool. Soc. Proc.* 2: 22–23.
- . 1839. A list of Mammalia and birds collected in Assam by J. McClelland. *Zool. Soc. Proc.* 7: 146–147; *Ann. Nat. Hist.* 6: 366–374, 450–461 (1841); Oken, *Isis*, 1846, col. 631–634.
- . 1848. Report on the island of Banka. *Jour. Ind. Archipel.* 3: 373–427, 705–724, 779–819; Silliman, *Jour.* 7: 86–101 (1849).
- . 1849. Brief notice of several Mammalia and birds discovered by B. H. Hodgson, Esq., in Upper India. *Ann. Nat. Hist.* 3: 202–203.
- . 1851. A catalogue of the Mammalia in the Museum of the Hon. East India Company. London.
- . 1855. Brief notices of several new or little known species of Mammalia, lately discovered and collected in Nepal, by Brian Houghton Hodgson, Esq. *Ann. Nat. Hist.* 16: 101–104.
- . 1856. Catalogue of a collection of Mammalia from Nepal, Sikkim and Tibet, presented to the H. E. I. C. by Mr. Hodgson in 1853. *Zool. Soc. Proc.* 24: 393–406.
- , J. J. Bennett and R. Brown. 1838–1852. *Plantae Javanicae rariores, descriptae iconibusque illustratae, quas in insula Java, amis 1802–1818, legit et investigavit T. Horsfield; e siccis descriptiones et characteres plurimarum elaboravit J. J. Bennett; observationes, structuram et affinitates praesertim respicientes, passim adjecit R. Brown.* London.
- , et al. 1826–35. *Illustrations of ornithology by Sir W. Jardine, Bart., and P. J. Selby, with the cooperation of J. E. Bicheno, J. G. Children, T. Hardwicke, T. Horsfield, R. Jameson, Sir. T. S. Raffles, N. A. Vigors.* Vol. 1, 2. Edinburgh.
- , and F. Moore. 1854. A catalogue of the birds in the Museum of the Hon. East India Company. By Thomas Horsfield assisted by F. Moore. London.
- , and F. Moore. 1857. A catalogue of the lepidopterous insects in the Museum of the Hon. East India Company. By T. Horsfield and F. Moore. London.
- , and N. A. Vigors. 1827. A description of the Australian birds in the collection of the Linnean Society, with an attempt at arranging them according to their natural affinities. (Read June 21, 1825 and January 17, 1826.) *Linn. Soc. Trans.* 15: 170–321; Oken, *Isis*, 23, col. 258–312 (1830).
- and ———. 1827–28. Notice of a new genus of Mammalia (*Gymnura*), found in Sumatra by Sir T. Stamford Raffles. *Zool. Jour.* 3: 246–249; Ferussac, *Bull. Sci. Nat.* 18: 443–444 (1829); Oken, *Isis*, 1830, col. 1168–1169.
- and ———. 1827–28. Descriptions of two new species of the genus *Felis* in the collection of the Zoological Society (*F. planiceps* and *F. Temmincki*). *Zool. Jour.* 3: 449–451.

- and —— 1828-29. Observations on some of the Mammalia contained in the Museum of the Zoological Society. Zool. Jour. 4: 105-113, 380-384; Ferussac, Bull. Sci. Nat. 20: 321.
- Macleay, W. S. 1825. *Annulosa Javanica*; or an attempt to illustrate the natural affinities and analogies of the insects collected in Java by T. Horsfield, etc. No. 1. London.

Notes on the Flora of Arizona

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In this article the following topics are discussed: (1) A New Haplophyton from the Southwest; (2) *Triodia eragrostoides* in Arizona; (3) The California Poppy in Arizona.

1. A New Haplophyton from the Southwest

Dr. D. M. Crooks, head of the division of drug and related plants of the Bureau of Plant Industry, Washington, D. C., pointed out to the writer a difference in appearance of the Arizona plants of *Haplophyton cimidum* from figures of the same species grown in Mexico. Investigation of the characters of specimens obtained from the United States National Herbarium and in the University of Arizona Herbarium has resulted in the following segregation:

HAPLOPHYTON CIMICIDUM A. DC. var. **Crooksii** L. Benson, *var. nov.* Leaves lanceolate, 15-27 or rarely 32 mm. long, 4-8 or 10 mm. broad; seeds 6-7.5 mm. long, somewhat grooved and ridged, commonly with part of the surface with broad papillae resembling pebble-grained leather. Foliis lanceolatis, 15-27 mm. rariter 32 mm. longis, 4-8 mm. rariter 10 mm. latis; seminis 6-7.5 mm. longis, striatis vel partim papillatis. Southeastern Arizona to Western Texas; southward into Northern Mexico. Type collection: "Prison Road," Santa Catalina Mountains, Pima County, Arizona, D. M. Crooks & Robert A. Darrow, Dec. 27, 1939. Type mounted on three sheets in the Herbarium of the University of Arizona.

The corresponding characters of typical *Haplophyton cimidum* are as follows: Leaves ovate-attenuate, 35-45 mm. long, 14-22 mm. broad; seeds 8-10 mm. long, deeply grooved and ridged. The species is common in southern and central Mexico, and it occurs as far northward and westward as Guaymas, Sonora (*Palmer* in