

T.A.B. SPRATT (1811 – 88) AND HIS CONTRIBUTION TO MALTESE GEOLOGY

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Introduction

Thomas Abel Brimage Spratt C.B., R.N., F.R.S., F.G.S., Vice-Admiral, hydrographer, cultivated scientist and author, was born at East Teignmouth, Devon, England on May 11th, 1811. He was the eldest surviving son of Commander James Spratt R.N., who served with much distinction on board HMS *Defiance* at the battle of Trafalgar. Very early in life, Thomas developed an inclination to follow in his father's footsteps and in 1827, at the age of sixteen years, left his parents, two brothers and six sisters and joined the Royal Navy.

His naval career was both exemplary and brilliant. It lasted over forty years and most of that time (1832–63) he was associated with the surveying service in the Mediterranean. His courage, marked devotion to duty, great indefatigability, profound attention and efficiency in his work soon turned him into an accomplished surveyor and hydrographer and earned him commendations from his superiors.⁽¹⁾

Throughout the nineteenth century, hydrographic activity by the British Admiralty in the Mediterranean was continuous and was carried out successively in the *Mastiff*, *Beacon*, *Volage* and *Spitfire* under Graves and subsequently in the *Medina* under Spratt:⁽²⁾ Spratt was very highly spoken of in his profession and his many excellent surveys of the Mediterranean – which rendered this sea a much safer place to navigate – are now a monument to the memory of that great hydrographer and naturalist. His accurate charts and maps were used also to illustrate a number of books.⁽³⁾

* This is the first in a series of papers projected by the author on the History of Maltese Geological Sciences (Biographies 1).

1. O'BYRNE, Wm. R. (1849). 'A Naval Biographic Dictionary comprising the life and services of every living Officer in Her Majesty's Navy from the Ranks of Admiral of the Fleet to that of Lieutenant, inclusive. Compiled from authentic and Family documents.' London, John Murray, Publishers to the Admiralty, 1849, 1400pp., pp. 1105-6.
2. DAY, Vice-Admiral Sir Archibald (1967). 'The Admiralty Hydrographic Service 1795–1919.' London, H.M.S.O., 378pp., 18 illus., 8vo.
3. FORCHHAMMER, Peter Wilhelm (1842). 'Observations on the Topography of Troy to illustrate a map of the plain of Troy made by Mr T.A.B. Spratt, Mate, under the direction of Mr Thomas Evans, Lieut., R.N.' *Journal of the Royal Geographical Society*, London, vol. 12, pp. 28-44.
FORCHHAMMER, P.W. (1884). 'Erlahrung der Ilias auf Grand der in der beigegebenen Original-Karte von Spratt und Forchhammer dargestellten topischen und physischen Eigen thumlichkeiten

Spratt was a man with a good cultural background, well versed in classical studies and with varied interests in life. Thus, beside his practical contribution to navigation, he made very valuable discoveries and contributions also in the field of Geology and Archaeology of the Mediterranean countries which he visited throughout his career as a British Naval officer. Spratt's discovery of six Greek inscriptions in Crete formed the subject of a special study by Babington⁽⁴⁾ and his esteemed opinions on the geology of this island were recently (1973) reviewed by Dermitzakis.⁽⁵⁾ His interests extended also to the field of numismatics and shortly before his death, he communicated to the Numismatic Society of London (1887) an account of some of the extremely rare gold coins of the island of Crete. His coin collection of the Mediterranean countries is said to have been "considerable".

In addition to his reports on deep sea soundings (Spratt 1856c, 1857, 1858e)⁽⁶⁾ and cable laying techniques (1862) – all of which are directly related to his professional duties as a surveyor – Spratt described archaeological sites (1838, 1876a, 1876b, 1879, 1884, 1886a, 1887) in the Grecian archipelago and Asia Minor. He carried out geological researches in Rhodes (1842b), Malta (1843), Gulf of Smyrna and Karabourou (1845), Samos (1847b), Euboea and Boeotia (1847c), Lycia (1847d), Serpent Island (1857a), Varna in Bulgaria (1857d), Doboutcha in Roumania (1858a) and Crete (1865a). His naval instructor and Commander Thomas Graves had greatly encouraged such studies.

Spratt studied also the influence of sea temperature on the distribution of marine fauna (1848a, 1848b) and sea currents in the Sea of Marmara (1858f), Mediterranean (1865b) and other 'oceans' (1871). To these subjects he had been introduced by his chance acquaintance – and subsequent friend and collaborator – Edward Forbes. In addition, Spratt studied also the fresh water deposits of the Danube (1857c, 1858d), the coast of Greece (1857e) and the Levant (1858b), the Nile (1859a, 1859b, 1859c, 1859d, 1870a, 1870b), Bessarabia, Moldavia and Bulgaria (1860a).

In Malta, Spratt advised local authorities on how best to improve the Island's defence system and surveyed local harbours and their approaches, rendering these

der troischen Ebene, 1884, 4°.

GUEST (MONTAGUE, John) (1881). *The Tunisian Question and Bizerta. . . Illustrated with maps by Vice-Admiral T. Spratt*. 1881. 8vo.

4. BABINGTON, Churchill (1855). 'Inscriptions Sprattaniae (Six Greek inscriptions discovered by Capt. Spratt in the Levant, with explanatory notes by C. Babington). *Cambridge Journal of Classical and Sacred Philology*. 12 pp., Cambridge, 1855. 12°.
- BABINGTON, C. (1865). *Greek Inscriptions found in Crete. . . with two plates*. Edited by C. Babington. 24pp., 1865, 8vo.
5. DERMITZAKIS, M.D. (1973). Thomas A,B, Spratt, the English Admiral of the last Century and some of the Geological opinions on the Island of Crete. *Hellenic Oceanology and Limnology*, Praktika of the Institute of Oceanology and Fishing Research, xi (1972):91-120 In Greek, with English summary on pp. 116-117.
6. SPRATT, T.A.B. For references relating to Spratt's publications and Charts, see the "Chronological list of Publications" (pp. 296 - 301) and "Hydrographic Charts prepared on the Tracks and Plans of T.A.B. Spratt" (pp. 301-303) respectively. References to the latter are indicated by the prefix "Chart" followed by date of issue.

safe to navigation. He also helped in the extension of the Marsa Harbour (Chart 1857a) and contributed to the setting up of the Breakwater (Chart 1857b). He charted nearby Channels (Charts 1857c, 1860a, 1861b, 1861c, 1863a) and discovered treacherous reefs (Chart 1854)⁷ and shallow submarine ridges (1857b, Charts 1861e, 1862a). In addition, he helped Malta's economy by locating and determining the extent of the 'Coral beds' in the vicinity of the western coast of the Maltese Islands especially Gozo (1862b, Chart 1862c).

Spratt studied local Tertiary rock formations and stratigraphy and gave the earliest correct account of Maltese Geology (1843). In addition he excavated Maltese Quaternary deposits (1867) and contributed considerably to the identification and description of most of the characteristic Pleistocene fauna of the Island. His activities and career were particularly influenced by two men with whom he established a very friendly relationship early in his career. These were Thomas Graves, his Commanding officer from 1832 to 1849, and the naturalist Edward Forbes whom he met on HMS *Beacon* in April 1841 when the ship was in Malta.

Spratt was very fortunate in having served in the *Mastiff* (1832–36), *Beacon* (1836–46), *Volage* (1847–48) and *Spitfire* (1848–49) under Captain Thomas Graves R.N., F.R.S., who besides being a very capable surveyor was also an educated naval officer who encouraged liberal education in his men. He thought his junior officers and surveyors always to have a wide-angle view of life. He encouraged them to 'look well beyond the coastline' of the country whose seas they were charting and to investigate its topography, geology, archaeology, history and its people.⁸ This was in the tradition of Admiral H.W. Smyth (1788–1865) under whom Graves had served. This attitude and this spirit of enquiry were encouraged also by the then Admiral Sir Francis Beaufort (1774–1856) who was himself a hydrographer (1829–55).

The other major influence in Spratt's life was the naturalist Edward Forbes. On the invitation of Graves, Forbes had accompanied the *Beacon* on its 1841–42 trip to survey the eastern Mediterranean basin. Spratt's interest in natural history and oceanography, particularly his interest in sea fauna and in the physical conditions of the sea (currents, salinity, temperature) date back to this period and his contact with Forbes. With him Spratt established very cordial relationship and scientific collaboration. Spratt's naval career, his drive towards natural history, his interests and achievements, as well as the influence he exerted on the development of oceanography

7. See also *The Malta Government Gazette* No. 1829, January 9, 1855, pp. 31–32.

8. It is ironic that Captain Thomas Graves, RN, FRS (1828–56) – the man who initially encouraged Spratt to take an active interest in local geology archaeology and history – should have been assassinated by a revengeful Maltese boatman. Graves was stabbed in the abdomen on August 25, 1856 only two hours before he was due to leave the Island on board the *Alexandria*. He had been carrying out his duties as 'Superintendent of Ports of Malta' since October 1, 1853 (*Report of the Proceedings of the trial of Giuseppe Meli for wilful murder of Captain Thomas Graves RN. Translated from the notes of the short-hand writer Sig. M.A. Bottari.* 134pp., (160 × 100mm), English Press, Malta, 1856). I am grateful to Dr Albert Ganado LL.D. for drawing my attention to this publication in his private library.



ADMIRAL T.A.B. SPRATT. C.B. F.R.S. &c.

Undated studio portrait of Admiral T.A.B. Spratt. (Courtesy: Royal Geographical Society, London. Ref. X195/021356. Negative C.3609).

in the Mediterranean, were vividly narrated by Margaret Deacon in 1971⁽⁹⁾ and in 1978⁽¹⁰⁾. "While continuing to gain expertise as a surveyor and to take keen interest in archaeology", she records in her 1978 Maritime Monograph, Spratt's "scientific interests widened and he began to contribute to the subjects Forbes had pursued. Both in choice of fields and in his broader ideas of the nature of science and in his experience of it, Forbes's influence is often evident".⁽¹¹⁾

Career

In June, 1827, at the age of sixteen years, Thomas Abel Brimage Spratt joined the Royal Navy as a First Class Volunteer on board the *Victory* 104, flagship of Sir Robert Stopford at Portsmouth. Later on he served for some time on the *Britomart* and on June 22, 1832 he was appointed to the surveying vessel *HMS Mastiff*.⁽¹²⁾ From 1832 to 1863, he saw services, almost uninterruptedly, as a surveyor and hydrographer with the Admiralty in the Mediterranean. The services which he rendered were excellent and his eminently distinguished career is fully described in Commander Dawson's *Memoirs of Hydrography*⁽¹³⁾ and in Deacon's Maritime Monograph No. 37.⁽¹⁰⁾

Spratt started his career in the surveying branch of the naval service as Midshipman on board *HMS Mastiff* under James Wolfe and Thomas Graves (1832-36). On January 27th, 1835 he passed his promotion examination as a Mate and on August 2, 1836 (? June 21, 1836) he was transferred to another surveying ship, *HMS Beacon*, likewise under the command of Thomas Graves.⁽¹⁴⁾

In October 1837 Spratt was specially recommended for further promotion. The two main factors leading to these recommendations were his act of gallantry in jumping overboard to save a man who had fallen into the sea whilst scraping the side of his ship *Beacon* and the valuable work he was carrying out in the hydrographic service. Commander Thomas Graves detailed the occurrence to the Commander-in-Chief and then went on to testify to the Lords Commissioners of the Admiralty that "during the servitude of upwards of five years", Spratt's conduct with him had been "invariably most exemplary" and that he was "a most indefatigable and attentive as well as a valuable assistant" in the particular service in which he was employed.⁽¹⁾

The 1840s were very important and influential years for Spratt. In 1840 he became Assistant Surveyor and on the following year, towards the end of April 1841, his ship the *Beacon* – carrying on board the naturalist Edward Forbes as special guest of

9. DEACON, Margaret. *Scientists and the Sea 1650–1900*, Academic Press, London, 1971. pp. 319-320.
10. *Vice-Admiral T.A.B. SPRATT and the development of Oceanography in the Mediterranean 1841 – 1873*. Maritime Monographs and Reports No. 37, 1978. 74pp., 13 figs. Published by the Trustees of the National Maritime Museum, Greenwich.
11. DEACON, M. 1978, *op.cit.*, p. 3.
12. PUBLIC RECORDS OFFICE Muster and description books of *HMS Mastiff ADM. 37/9336*
13. DAWSON, L.S. *Memoirs of Hydrography including Brief Biographies of the Principal Officers who have served in H.M. Naval Surveying Service between the years 1750 and 1885 compiled by Commander L.S. Dawson R.N. in two parts*. Eastbourne, Henry W. Keay. The Imperial Library, 1885, 8° (250 × 180mm). Part II pp. 41 - 45.
14. PUBLIC RECORDS OFFICE. 'Records and Officers' service' *ADM. 196/1 f.459*.

the Captain – left Malta for survey work in the Aegean.⁽¹⁵⁾ The year which Forbes spent on the *Beacon* (April 1841 to March 1842) had a tremendous influence on Spratt's scientific attitude, for his young receptive mind had already been primed by the teachings and encouragements of Captain Graves to explore the topography, geology, archaeology, and history of the countries visited during his survey trips.

On October 15, 1841, Spratt received his Commission as a Lieutenant in the British Royal Navy. He was on his Aegean tour of duty when the happy news reached him. On this occasion, Captain W.A.B. Hamilton, the Private Secretary to Lord Haddington, wrote to Commander James Spratt informing him that it was "with great satisfaction" that he had recommended to the Board the promotion of "this young officer so highly spoken of. . . both by Capt. Beaufort, Hydrographer of the Admiralty and Capt. Graves."⁽¹⁶⁾

When in March 1842 the *Beacon* sailed from Asia Minor, Lieut. Spratt, Edward Forbes and the Reverend Edward Daniell (1804 – 43) (a young clergyman who had joined the *Beacon* at Izmir while on her way to Xanthus) stayed behind to journey into the interior of the country. It was decided that Spratt was to map the country and its ruins, Forbes to examine its natural history and Daniell to study its antiquities. Their observations on past and present Lycia were embodied in a monograph published jointly by Spratt and Forbes in 1847 (1847d).

Forbes helped also with the identification of Maltese fossils collected by Spratt, Dr J.W. Collings M.D. and Miss Attersoll and contributed a "Note"⁽¹⁷⁾ and a "Report"⁽¹⁸⁾ on the subject. These were appended to Spratt's "On the Geology of the Maltese Islands" (Spratt 1843, 1852, 1854). Likewise, when Spratt studied the geology of Karabournou, Forbes investigated the fossils of that region and appended his notes to Spratt's publication (Spratt 1845).

On February 27, 1844, while on a visit to England, Lieutenant Thomas Abel Brimage Spratt of HMS *Beacon*, married Sophia Price, only daughter of Edward Price Esq.. That same year, Admiral Beaufort requested a series of Magnetic observations and as Graves was due to leave Malta, the project was entrusted to Spratt. He went into the subject wholeheartedly and when Graves returned to Malta in the spring of 1845, he found that Spratt had established a Magnetic Observatory on the Island. Graves did not allow the magnetic data collection activities to distract his young and promising officer from his survey duties.⁽¹⁹⁾ This notwithstanding,

15. Deacon, 1878, *op.cit.*, p. 56 footnote 2 records that while in London in 1841, Graves put an advertisement in *The Times* inviting on board his ship (for a trip to the eastern Mediterranean), a naturalist who would be "willing to share a sailor's life for a year or two". Forbes, who is said to have been in Ireland when he heard of the offer, sailed immediately to Malta to catch the *Beacon*.
16. O'BYRNE, W.R. 1849, *op.cit.*, p. 1106.
17. FORBES, Professor E. 'Note on the Fossils found by Lieut. Spratt in the several beds of the Tertiary Formation of Malta and Gozo by Prof. E. Forbes, Curator, Geological Society of London' *Proceedings of the Geological Society*, London, 4(97):230-231, Nov. 1, 1843.
18. "CURATOR, Geol. Soc. Lond.'" (FORBES, Prof. E.). 'Report on the Collection of Tertiary Fossils from Malta and Gozo Presented by Lieut. Spratt, Dr J.W. Collings M.D. and Miss Attersol. Read March 20, 1844 (*sic*)'. *Proc. Geol. Soc.*, Lond., 4(97):231-232, Nov. 1, 1843.
19. Graves to Beaufort, 1 April, 1845. Hydrographic Department, Ministry of Defence, *Surveyors' Letters* 27c. For the contents of these official letters relating to Naval matters, I have relied on Deacon's well-documented Monograph (1978, *op.cit.*)

however, Spratt's Magnetic Observatory is known to have been still functioning in the winter of 1846.⁽²⁰⁾

Spratt served under Graves on board the survey vessel *Beacon* till 1846.⁽²¹⁾ In August of that year, after twenty three years of service, this wooden three masted vessel was declared unseaworthy and was laid off at Malta.⁽²²⁾ By now Spratt's professional competence and efficiency had already been brought to the attention of his father. In a letter dated 1846, Sir William Parker (1781 – 1866), Commander-in-Chief on the Mediterranean station, informed Commander James Spratt that his "eldest son, now five years a Lieutenant in the surveying services, stands decidedly high in the branch of his profession".⁽¹⁾

Upon being promoted to the rank of Captain, Thomas Graves requested (and was granted) HMS *Volage* as a substitute for the *Beacon*. Officially Spratt served on this new ship *Volage* for one whole year (March 1847 – April 1848), but in December 1847, he succumbed to malaria and had to be sent home on sick leave. He was still not well on February 24, 1848, the date when he requested an extension of his sick leave. The warning by his physician that further recurrence of the debilitating fever might be dangerous to his life seems to have scared Spratt, for on April 18, 1848, he wrote to Beaufort (the Hydrographer) requesting to be discharged from the *Volage*.

Spratt was still away from work on March 5, 1849 when he was promoted Commander. On October 25, 1849, however, after hearing that Graves was going out on leave, he again wrote to Beaufort and offered his services, informing him that his health had greatly improved and that he was able to resume his duties.⁽²³⁾ Meanwhile, HMS *Volage*, the only surveying vessel in the Mediterranean, was laid off in Malta on October 20, 1849.

For reasons of economy, surveying in the Mediterranean had come to a stop for two years and the *Volage* was then replaced by HMS *Spitfire* again under the command of Graves. In April 1851, shortly after having passed a first class examination in steam engines at Woolwich, Spratt succeeded Capt. Graves in command of this survey vessel (21 April 1851 – December 1855). When in 1851 the Admiralty resumed its surveys in the Mediterranean, Spratt was ordered to prepare the *Spitfire* for sea and resume his soundings around Crete.

With the *Spitfire*, Spratt continued surveying the Mediterranean for several years, covering eastern Crete (1851 – 52), Rhodes (July 1853), Skiros (October 1853), Constantinople (November 1853), the entrance to the Sea of Marmara (December 1853), the Dardanelles (December 1853 and February 1854) and finally Salonika and Valos, Greece (March 1854).

20. DEACON, M. 1978, *op.cit.*, p. 14

21. Admiral Sir George H. RICHARDS 'Obituary', *Proceedings of the Royal Geographical Society*, London 1888, (n.s.) 10:242-244 states (p. 242) that Spratt "continued to serve on the latter vessel (*Beacon*) until his promotion to the rank of Lieutenant in 1841". Spratt was transferred to the *Beacon* on 21 June 1836 (?2, August 1836), and left it in 1846.

22. The survey ship HMS *Beacon* was originally the bomb *Meteor* and was launched in 1823. She became the '*Beacon*' in 1832 and was sold at Malta in August 1846 (Pers.comm D.S. Stonham, Historic Photographic Section, National Maritime Museum, Greenwich, 11.8.1986).

23. Spratt to Beaufort, Hydrographic Department, Ministry of Defence, *Surveyors' Letters*, 41a.

With the outbreak of hostilities with Russia (Crimean War 1853 – 56), his ship was ordered to join the Black Sea Fleet. With this unit, Spratt saw naval action and rendered very valuable service to the Nation. In April 1854, in preparation for an allied landing, he surveyed the Black Sea port of Varna in Bulgaria and in July of that same year he reconnoitred the route from Kustengeli to the Danube (1856b). This was a diversionary run intended to lure the enemy (Russians) into thinking that the Danube, rather than the Crimea, was to be the site of the offensive.

Spratt was present at the naval bombardment of Sevastopol on October 17, 1854, during which he managed to tow away the French ship *Bellerophon* from the shoals that immobilized her and rendered her a sitting duck for enemy fire. For this action he was highly commended by the French and, with some delay, also by the British Admiralty.

During the survey of the Gulf of Perekop late in 1854, Spratt discovered “Chongor Kupree” – a secret bridge connecting the Crimea to the rest of Russia across the central part of the Putrid Sea. As this bridge was being used by the enemy to sneak in supplies and reinforcements to the front, his discovery was much appreciated by the allies. That same year, Spratt contributed to another important discovery in the Black Sea when he investigated the Erekli coal mine (Spratt 1854c, 1877).

Spratt’s technical knowledge as a surveyor was frequently resorted to for positioning the ships during attacks. He diligently surveyed all the places required for anchorage or operations of the British or French Fleet and some of his work was carried out under enemy fire. For the excellent and devoted services which he rendered during these operations, the naval authorities were highly appreciative and rewarded him with an early promotion to the rank of Captain on January 3, 1855.

In the spring of 1855, the *Spitfire* captained by Spratt, surveyed the Kertch Straits leading to the Sea of Azov, and from June to September he surveyed the approaches to the enemy fortifications and coast and subsequently planned the night attack on Kinburn.⁽²⁴⁾ To ensure that his contribution to the war effort did not go unnoticed, by the Admiralty, Spratt compiled a memorandum of all his services during the war.⁽²⁵⁾

On July 5th of that same year (1855), Spratt was nominated for a *C.B.* distinction and at the close of the war (1856), the French Government (Napoleon III) awarded him the distinction of Officer, Légion d’Honneur, Fourth Class of the Medjidie. For his services in the Crimean War, Spratt received also the Baltic, Crimean and Turkish Medals and the Azov clasp⁽²⁶⁾ and was specially commended by the Hydrographer (Admiral Sir Francis Beaufort), the First Lord of the Admiralty (James Graham) and his Commander-in-Chief (E. Lyons).⁽¹²⁾

24. *THE TIMES*, London, March 15, 1888 page 6 (Obituary), (Anon.), RICHARDS, G.H. 1888, *op.cit.*, p. 243.

25. RITCHIE, G.S., *The Admiralty Chart: British Naval Hydrography in the nineteenth century*. Hollis and Carter, London, Sydney, Toronto, 1967. pp. 269-273. DEACON, M., 1978, *op.cit.*, p. 60, fn.20.

26. *THE TIMES*, London, March 15, 1888, p. 6 (Anon. Obituary).

The Crimean War over, Spratt returned to the Mediterranean and from January 1856 to 1863 he commanded the survey ship HMS *Medina* which brought him further fame and praise for his excellent hydrographic work in this sea.

Soon after being appointed 'Governor of Malta and its Dependencies' in 1851, Sir William Reid inspected the Island's fortifications and to his great dismay discovered that Malta looked like a "disarmed fortress". Throughout his entire Governorship (1851 – 58), Reid strove ceaselessly to improve this image. In 1856, Captain Spratt of HMS *Medina* and three other experienced Captains – G. Ryder (HMS *Dauntless*), J. Darlymple (HMS *Hannibal*) and W.R. Meads (HMS *Prince Albert*) – were requested to advise on how best to achieve this. Their recommendations formed the basis of *A Private Memorandum on the Defence of Malta*, prepared by Reid on 4th February 1856, at request of Lord Palmerston through the Secretary of State for the Colonies.⁽²⁷⁾

A draft of some proposals made by Spratt in 1856 for improving the Island's defence is now at the National Maritime Museum, Greenwich.⁽²⁸⁾ The document is faded and hard to read but it is undoubtedly, the basis of Reid's *Memorandum*.

That same year (1856), Spratt was involved also in the extension and improvement of the Marsa Harbour (Chart 1857a) and in the construction of the Breakwater at the entrance to the Grand Harbour (Chart 1857b). His main task on HMS *Medina*, however, was to survey and charter the Mediterranean during 1856 – 57 and to route and assist in the laying of submarine telegraph cable from 1858 to 1861.⁽²⁹⁾

While carrying out deep soundings between Malta and the Greek Archipelago on Monday May 18, 1857, Spratt located a "well defined but more deeply submerged ridge (deeper than the Bank of Adventure)" connecting the southeastern end of Malta with Tripoli (Spratt 1857b:393). He named this ridge the 'Medina Bank', after his survey ship HMS *Medina*.⁽³⁰⁾ In 1861 and 1862 he carried out two further tracks over this same Bank and incorporated his findings in Admiralty Charts 1861e and 1862a respectively.

The Medina shallows which Spratt discovered in 1857 stand between Malta and

27. SAMUT-TAGLIAFERRO, A. "British Fortifications and Defence of Malta" *Archivium*, The Journal of Maltese Historical Research, 1(1):65-93 Malta. pp. 74, 92.

28. Pers.comm. Miss Margaret B. Deacon, Department of Manuscripts, National Maritime Museum, Greenwich, Letter 19 July, 1976.

29. DEACON, M., 1978, *op.cit.*, p. 21.

30. SPRATT, T.A.B. 1857b:393; 1867:292. (See "Chronological List of Publications by T.A.B. Spratt"). The '*Medina*' was one of the three sister ships – *Medina*, *Merlin*, *Medusa* – built to the same design as Admiralty Paddle Mail Steam Packet Vessels at Pembroke Dockyard in 1840 and was refitted and sent to the Mediterranean as a Packet Vessel. After a further refit, she entered the surveying service in 1854. In 1860 she was converted as a tug and was broken up in 1864 (Pers.comm. Mr G.A. Osbon, Pictures Department, National Maritime Museum, Greenwich 19 July, 1974, through Miss Deacon). The name *Medina* (which has been used several times as a ship's name during the nineteenth century) probably had its origin in the Arabian city. The star and crescent moon on the ship's stationary seem to prove this. It is not related (as might be expected) either to the sixteenth century Spanish cosmographer Pedro de Medina, author of the now classical book *Libro de Cosmographia*, or to the river by that name passing close to the shipbuilding yard on the Isle of Wight.

Libya and as recent geophysical surveys reveal them to be promising sites for oil exploration, both countries (as well as Italy) claimed jurisdiction rights over the area. The case was reviewed by the International Court of Justice at The Hague⁽³¹⁾ and a ruling was given on June 3rd, 1985.⁽³²⁾

In this line of soundings between Malta and Crete, Spratt discovered not only Medina Bank – “a plateau or bank from 50 to 70 fathoms only below the surface extending to about thirtyfive miles east of Valletta” (Spratt, 1857b:393), but also the Hellenic Through – the deepest part of the Mediterranean (about 2,200 fathoms/over 4000m). He sounded these depths using weighted silk line and a ‘Bonnici’s Claw’ – an ingenious instrument devised by Carmelo Bonnici, the Maltese blacksmith on board the *Spitfire*.⁽³³⁾

In 1858-61, Spratt was involved chiefly in laying telegraph cables. He charted the sea bed and advised others on where and how to lay the cable. His first operation along this line involved laying a cable on behalf of the Greek Government. Many things went wrong during this enterprise and over 800 miles /1280 km are said to have been lost. His second operation, which involved laying another cable from Malta to Alexandria via Tripoli in 1861, was a huge success and he was highly complemented for it. Following this success, he published (1862) some information and advice on cable laying (Spratt 1862).

In 1859 he completed the survey of Western Crete and in 1860 surveyed the Island of Karpathos. On the following year, by order of the Lord Commissioners of the Admiralty he published ‘*Sailing directions for the Island of Candia or Crete*, a 33 page H.M.S.O. publication printed at the Hydrographic Office (Spratt 1861a).

An important episode in Spratt’s life was his Suez Canal controversy. As early as November 1855 he had shown interest in the Port Said area and had requested the Admiralty for HMS *Spitfire* to survey the Alexandria region. His request was denied but the site was subsequently surveyed by one of his former Lieutenants (Lieut. Mansell) on the *Tartarus* in 1856 – 57.⁽³⁴⁾

31. *THE TIMES*, Malta, No 1406, Thursday 28 April, 1983, p. 1, “Malta, Libya exchange pleadings on Continental Shelf”; *THE DEMOCRAT*, Malta, No 421 Sat. December 1, 1983, p. 1, “Median Line issue – Italy claims right over some areas disputed between Malta and Libya”. Italy’s demand was submitted to the International Court of Justice, The Hague, on July 26, 1983.

32. *THE TIMES*, Malta, No 2059, Tuesday June 4, 1985, pp. 1, 15.

33. In a letter to Rear-Admiral John Washington (No. 1855), Spratt referred to the value of ‘Bonnici’s Claw’ as a means of obtaining correct soundings and sea bottom samplings at great depths. This gadget was one of many ingenious devices invented by Carmelo Bonnici the Maltese blacksmith on board the *Spitfire* and later also on the *Medina* (Spratt 1865a:323 footnote; 1865c). It consisted of a double hook with weighted, movable arms that released a sampling cylinder upon touching bottom. It was attached to the silk line about 10 fathoms above the lead (22 lbs). “No instrument that I have ever seen or heard of” Spratt tells the Admiral “equals for ingenuity, simplicity and neatness the instrument I now bring to your notice” (Spratt 1865a, 1865c; see also DEACON, M. 1978, *op.cit.*, p. 23).

At first Spratt had great confidence in this gadget, but later on he realised that it was best to have sounding and sampling carried out in two operations and by two different instruments. He subsequently devised his own instrument for bottom sampling. A refined version of it is described and illustrated in his book on Crete (1865a:320).

34. DEACON, M., 1978, *op.cit.*, p. 34.

After learning of Lasseps' Suez Canal project with an opening at Port Said, Spratt publicly expressed his concern about the outcome and challenged its practicality (1856c). He firmly believed that such a project was doomed to failure as eastward drifting deposits from the Nile would soon block the Port Said end of the Canal completely.⁽³⁵⁾ He suggested instead that the opening be shifted further westward of Port Said, thereby getting westward of the Nile delta sedimentary deposition.

As Spratt's opinion was not to be taken lightly, a special commission was established to look into his objections but as the findings ruled against them, the project went ahead as planned.⁽³⁶⁾ In addition, Spratt was warned in no uncertain way that he was not to interfere any longer – either by taking further soundings or by his writings – with Lasseps project of cutting a canal through the isthmus of Suez.⁽³⁷⁾ His objections were subsequently found to be theoretically correct, but the amount of silt deposited at the Port Said end of the canal could be controlled by dredging.

In the 1860s Spratt got involved in (or rather, was the cause of), another controversy. This time it was over the nature and cause of ocean currents. Basing himself on personal observations (at times arbitrary) made during his deep sea soundings, he wrongly maintained that ocean currents tapered off to a standstill at a depth of 40 fathoms. He firmly believed that below this level there was no movement at all and that the 'apparent' motion of the deeper waters was due to the force of the surface currents.⁽³⁸⁾

In July 1862 a certain 'Mr Michele Criscuolo' was carrying out a survey of the seas around the Maltese Islands for the discovery of coral beds. The search was successful and coral beds were located off the western coast of the islands, particularly in the vicinity of Gozo. The survey, however, was called off by the local authorities as it was learned that it was being carried out 'clumsily' and by 'inexperienced men' who were causing extensive damage to the coral colonies.⁽³⁹⁾

In view of Criscuolo's discovery (which the Chamber of Commerce "calculated to develop a trade and source of industry of great commercial benefit to the Island"), it was considered necessary to properly chart the coral beds and to check their extent.⁽⁴⁰⁾ For such work, the Governor of the Maltese Islands requested the favour

35. SPRATT, T.A.B. 1859a, 1859b, 1859c; 1870b.

36. PIM, Commander Bedford, RN, FRGS. 'Remarks on the Isthmus of Suez with special reference to the proposed Canal'. *Journal of the Royal Geographical Society*, London, 3:177-197, Discussion pp. 197-206. (Criticism to Spratt's objections to the formation of the Suez Canal with an opening at Port Said). Proceedings of May 23, 1859.

37. Vice-Admiral W.F. MARTIN to T.A.B. Spratt, 2 March, 1861. National Maritime Museum, Greenwich: *Spratt's Collection*, SPR/5; DEACON, M., 1978, *op.cit.*, pp. 32, 68fn.42.

38. SPRATT, T.A.B. 1858g/1865b and also 1871.

39. PALACE ARCHIVES, VALLETTA. *Letters from Chief Secretary* vol. 34, fol. 174, Secretary to Government to Mr Sciortino, Chamber of Commerce. Draft No. 8367.

40. It is interesting to note that in recent years the Maltese Government has again shown an interest in this 'Coral Industry'. See Prime Minister Mintoff's last speech in Parliament on Saturday, 22 December, 1984. *Il-Gzejjer* (1985) 14(1):9-23, Malta 1985 (page 19).

41. PALACE ARCHIVES, VALLETTA. *Letters from Chief Secretary*, vol. 34, fol. 188, Chief Secretary to Rear-Admiral Codrington C.B., Draft No. 8395 of 17 July, 1862.

of the *personal* help of Capt. T.A.B. Spratt and of his survey vessel *Medina*.⁽⁴¹⁾ Within fifteen days of the request, Spratt had located the 'coral rocks' and charted their extent for on July 31, 1862, he submitted his detailed Report (1862b) and the accompanying chart of his survey (Chart 1862c).⁽⁴²⁾

Throughout 1862, Spratt was granted several months sick leave, probably for recurrence of his malaria.⁽⁴³⁾ While recuperating his health in England, he is known to have contacted Sir Charles Lyell, then President of the Geological Society of London, and to have discussed with him several topics of scientific interest including the ability of the *Hippopotamus* to swim across long stretches of water. Their discussion was continued later on through correspondence, as revealed by a number of letters to Charles Lyell at the Edinburgh University Archives.⁽⁴⁴⁾

On the following year, HMS *Medina* was replaced by HMS *Hydra*, but Spratt worked on this vessel for only five weeks (10 November – 16 December 1863) and then left the Mediterranean and returned home for health reasons. After 1863 he had no further service afloat but remained on shore based duties till his retirement in 1870. During this period he published, in 1865, the book that brought him further fame and praise. This was *Travels and Researches in Crete*⁽⁴⁵⁾ which in his Annual Presidential Address to the Royal Geographical Society in London, Sir Roderick Murchison described as being "a masterly illustration of the physical geography, geology, archaeology, natural history and scenery of the diversified island of Crete".⁽⁴⁶⁾

During the period 1866–73, Spratt acted a Commissioner of the Irish Fisheries becoming a Rear-Admiral on the retired list in October 1872 and a Vice-Admiral in March 1878. From 1879 to his death at Clare Lodge, Ephraim Road, Tunbridge Wells on March 10th, 1888, he was Acting Conservator of the River Mersey and

42. PALACE ARCHIVES, Valletta. *Letters from the Chief Secretary*, vol. 34, fol. 332, Chief Secretary to Rear-Admiral H.I. Codrington C.B. Despatch No. 8490 of 31 July, 1862.

43. PUBLIC RECORDS OFFICE. ADM 196/1 fol. 459, *Records of Officers' services Hydrographic Department, Surveyors' Letters* 41c; DEACON, M. *op.cit.*, p. 69, fn.

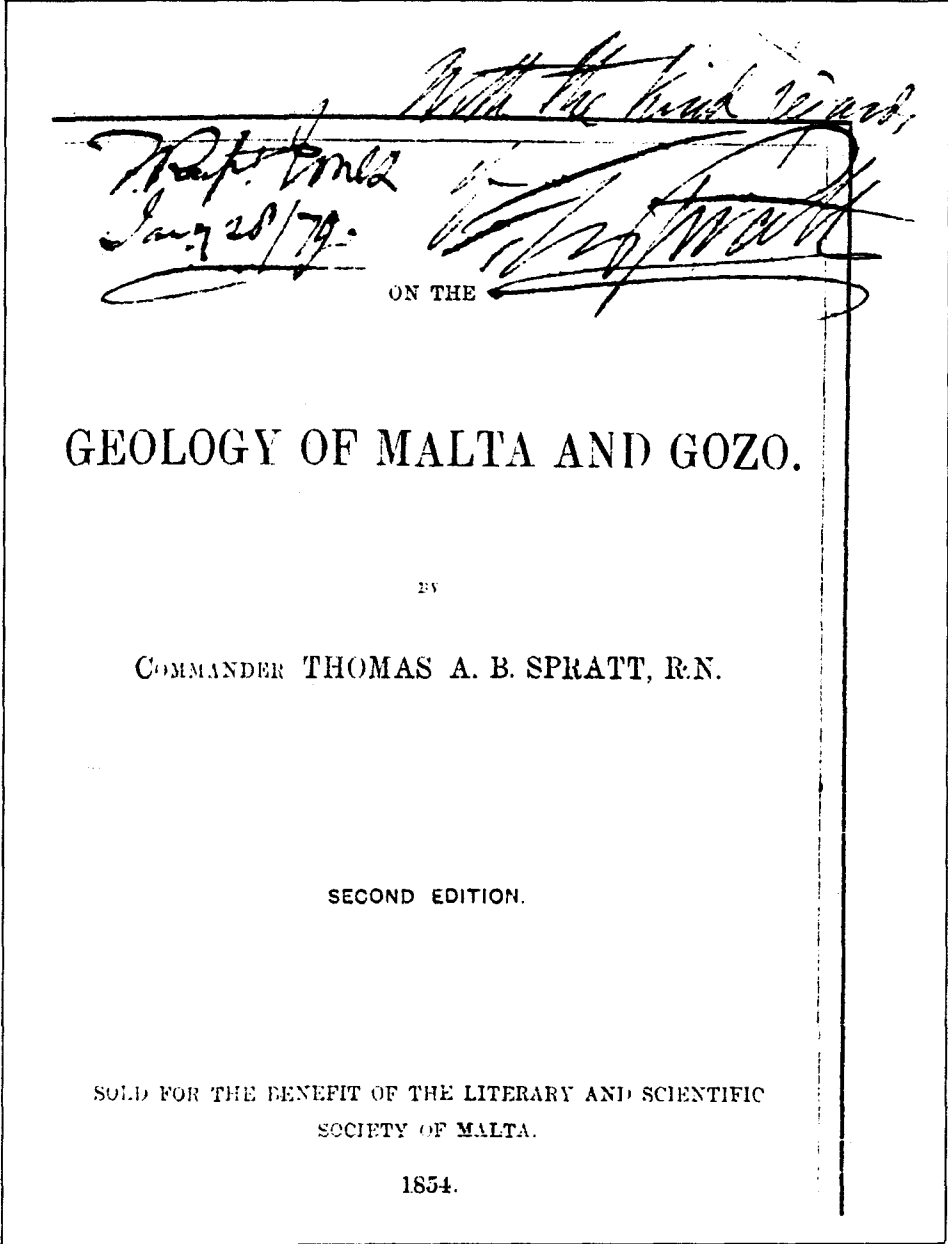
44. DEACON, M. 1978, *op.cit.*, p. 44. University of Edinburgh, Spratt to Lyell, Dec. 2, 1862.

45. SPRATT, T.A.B. 1865a. Almost all the illustrations included in this book on Crete were drawn by "J. Schranz from sketches made by Spratt in the field". This is probably John (Minorca 1794 – Malta 1882), eldest son of the German artist Anton, who in 1817 left Minorca and settled in Malta with his entire family. John's younger artist brother Joseph had left Malta in the early 30s and settled in Constantinople. (D. CUTAJAR, 'The Schranz family of Artists', *Mid-Med Bank Limited Desk Diary 1986*, 4 pp., 8 col. pls., Malta).

Geological Maps of Eastern Crete were "surveyed by Lieut. Mansell, Mr Stokes Master, Messrs G.R. Wilkinson Mate and F.W. Brooker 2nd Master under the direction of Capt. Spratt R.N." and Maps of Western Crete were carried out "under the direction of Capt. Graves RN and Capt. Spratt RN".

46. MURCHISON, Sir Roderick I, President's Annual Address, May 22, 1865. *Proceedings of the Royal Geographical Society*, London, vol. 9, p. 243, fn. 18.

In addition to the above, Sir Roderick, as President of the Society reviewed Reports received from the Hydrographer of the Navy and praised Spratt's work in his Annual Address of: May 24, 1858, 'Admiralty surveys in the Mediterranean', (*Proc. Roy. Geogr. Soc.*, Lond. 2:264-265); May 23, 1859, 'Delta of the Nile, Suez Canal, and Branches' (*Proc. Roy. Geogr. Soc.*, Lond. 3:308-310); and May 23, 1870, (*Proc. Roy. Geogr. Soc.*, Lond. 14:314 'Note').



Spratt's signature on presentation copy of his brochure on Maltese Geology to Professor Thomas Rupert Jones. (Courtesy: Trustees British Museum).
 Brochure is in Palaeontology Library BM(NH) but accompanying letter is in the Handwriting Collection of the same Department.

Chairman of the Conservancy Board.⁽⁴⁷⁾

His obituaries were published in the *Proceedings* of the Royal Society⁽⁴⁸⁾, Royal Geographical Society⁽⁴⁹⁾ and Antiquaries Society⁽⁵⁰⁾ of which he was an active Fellow.

Contributions in the field of Maltese Geology

Outlining T.A.B. Spratt's practical and scientific contributions in an obituary notice given at a Meeting of the Royal Geographical Society of London in 1888, Admiral Sir George Richards records that

“during his long career in the Mediterranean, he (Spratt) not only rendered great service to the seamen and navigators of all nations by his numerous and excellent surveys, but his cultural tastes and scientific training enabled him to combine with his practical contributions to navigation, the classical and geological history of the various islands of the Grecian archipelago, the coast of Asia Minor and other portions of the Mediterranean Sea”.⁽⁵¹⁾

When on shore leave Spratt undertook the investigation of the geology, palaeontology of that Mediterranean country wherever his ship happened to be temporary stationed. His scientific contributions are consequently necessarily linked with the various phases of his career. As Malta was then the Royal Navy's main base in the Mediterranean, much of Spratt's work relates to this Island. His ship HMS *Beacon* (1836–46) and later on also HMS *Medina* (1856–63), spent long stretches in Malta's harbours and it was during such periods that Spratt explored the Maltese islands, studied their rock formations, collected their fossils and investigated their Quaternary deposits.

Studied Maltese rock formations

Spratt was the first person to give a clear and accurate exposition of Maltese geology. His systematic description of local rock formations appeared in 1843 when he was still a young Lieutenant on the *Beacon*. He then considered Maltese rocks to be of Miocene age and classified them into four “Groups. . . distinguishable both by their mineral characters and by their fossils”. From above downwards he labelled these groups as No. 1, No. 2, No. 3 and No. 4, calling them respectively also “Coral Limestone, Marl, Calcareous sandstone and semi-crystalline limestone”.⁽⁵²⁾

47. DAWSON, L.S., 1885 *op.cit.*, p. 45; RICHARDS, Admiral Sir George H. (Obituary), *Proc. Roy. Geogr. Soc.*, Lond. 1888, (n.s.)10:242-244; *THE TIMES*, London, March 15, 1888, p. 6; ‘W.J.W.’, *Proceedings of the Royal Society*, London, 1888, 43:xi-xii, Obituary.

48. ‘W.J.W.’, *Proceedings of the Royal Society*, London, 1888, vol. 43, pp. xi-xii, portrait.

49. Admiral Sir George H. RICHARDS KCB, FRS, *Proceedings of the Royal Geographical Society*, London, 1888, (New Series) vol. 10, pp. 242-244.

50. John EVANS, *Proceedings of the Antiquaries Society*, London, 1888–89, vol. 12, p. 144. *Proceedings* of April 23, 1888. John Evans DCL, LLD, FRS was the President of the Society.

51. RICHARDS, L.S., 1888, *op.cit.*, p. 243.

52. The nomenclature now in use is after Murray (1890), ‘The Maltese Islands with special reference to their Geological structure’, *Scottish Geographical Magazine* 6:449-448, 6 figs., col.geol.map, Sept 1890. In order of deposition, the Maltese geological sequence consists of lower Coralline Limestone,

His groups No. 1 and No. 3 were again subdivided into two and five 'beds' respectively, so that the entire Maltese stratigraphic series was considered to comprise nine beds labelled A to I from above downwards. Bed G Group 3 represents "the fossiliferous beds in the Calcareous sandstone" and abound in nodules of organic origin, "coprolithic or otherwise". The nodules are so numerous that Spratt often refers to these conglomerate deposits in Bed G as "Nodular beds". He admits, however, that "this perhaps is a misleading term on my part, because it is a pure result of segregation or accretion from the greater presence of animal matter... phosphatic... that was deposited upon the sea bottom when this bed was being formed".⁽⁵³⁾

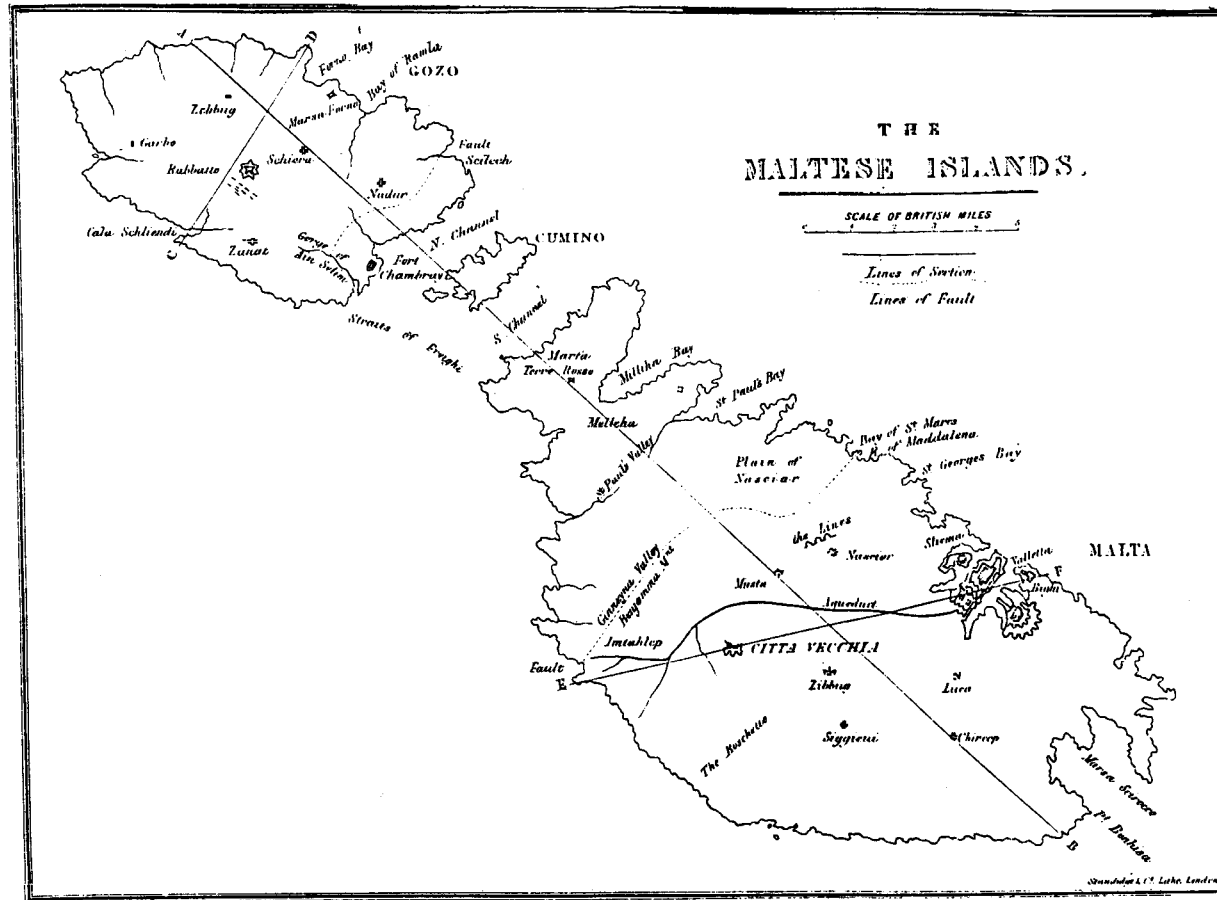
The phosphatic composition of the nodules renders Bed G of particular economic importance as a natural fertilizer. In 1852, Spratt recommended its exploitation as "manure or dressing to certain soil by crushing"⁽⁵⁴⁾ – a recommendation that was strongly voiced also by Cooke in 1892.⁽⁵⁵⁾

Spratt's paper on Maltese Geology (1843) was reprinted in 12mo form that same year and a second edition of his work was published in 8vo form by the *Mail Office*, Malta in 1852. To each of these pamphlets are appended two papers by Professor Edward Forbes, then Curator of the Collections of the Geological Society of London.⁽⁵⁶⁾ They relate to fossils collected from the Maltese Tertiary strata by Lieut. Spratt, Dr J.W. Collings,⁽⁵⁷⁾ and Miss Attersoll.⁽⁵⁸⁾ In 1854, with permission of

Globigerina Limestone, Clays and Marls, Greensand and Upper Coralline Limestone. The rocks range in age from Chattian (Upper Oligocene, c.30 million years) to Late Messinian (Upper Miocene, c.5.5 million years).

53. T.A.B. Spratt to Professor T.R. Jones, 25.1.1879. British Museum (Natural History), Palaeontology Library, Handwriting Collection. See also section "Spratt's journal, letters and other documents".
54. T.A.B. Spratt, 1852 (and 1854), p. 7 footnote. No such footnote exists in the 1843 edition.
55. COOKE, J.H., "The Phosphatic beds of the Maltese Islands", *The Engineering & Mining Journal*, Aug. 28, 1892, pp. 200-201.
56. FORBES, Professor E. See footnote 17 and 18.
57. No information could be found relating to "Dr. J.W. Collings M.D." who was in Malta in the 1830s or early 40s. A note affixed to back page of '*Regulations & Instructions. Charitable Institutions of the Island of Malta and Gozo*' (s.d.) kept with '*Minutes by the Governor, 21st April, 1851*', Palace Archives, Valletta, records that a Dr J.B.H. Collings M.D. was "Inspector of the Government Charitable Institutions & of Prisons" and in 1851 was "named by His Excellency the Governor of Malta to be on the Board of Commissioners of Charity".
58. In 1839, "Emilia Attersoll of Weymouth" is quoted by Woodward, A.S. '*History of the Collections of the Natural History Department of the British Museum*' British Museum Trustees Vol. I, 1904, p. 205 as having presented to the British Museum "a few invertebrata chiefly lamelli-branches and echinoderms from the Tertiary of Malta". The relative Minute of the Trustee records that on June 8, 1839, "Mr Children reported that Miss Attersoll, lately in the suite of the Queen Dowager, had collected at Malta various objects of Natural History expressly for the Museum and that she had been at some expense for the packing cases which Mr Children concluded it would be the pleasure of the Trustees to discharge. It appears that this was done and in addition, another £12 was paid to cover her collecting expenses" (*Trustees, Minutes*, British Museum, Central Archives, Bloomsbury; See also '*Officers' Reports, Jan-June 1839*', Report to the Museum Trustees by J.G. Children (Keeper, Zoological Branch of the Natural History Department), 6 June 1839, recording that the collections of Miss Attersoll included also "some fine corals and shells and a few reptiles in spirit".

The Geological Society of London, which donated its fossil Collections to the BM(NH) in 1911, hold no information relating either to Dr J.W. Collings M.D. or Miss Attersoll.



Spratt's topographical maps of the Maltese Islands, published in 1843 (fig.6) and 1852-1854 (Fig.7) respectively, showing the earliest representation of local faults. (Autor's Library). (see footnote 69).

Captain Spratt, Sir William Reid, one of the very few English Governors of Malta who had the study of Maltese geology at heart, had the 1852 "Second Edition" brochure re-published at his own expense.⁽⁵⁹⁾

The title page of an 1854 copy in the author's possession carries a printed note dated "Palace Valetta, 1st Feb., 1854" informing the reader that "This paper on the Geology of the Islands of Malta and Gozo was by my request given to me by the Author, Captain Spratt R.N., with his permission to print it, and I do so in the hope that it may lead to a closer investigation of the structure of these Islands. Since the first edition was printed, a collection of specimens, illustrative of the Geology of Malta and Gozo, has been formed by the Librarian, Dr Cesare Vassallo and placed in the Public Library of Valletta. William REID, Governor".

The author's copy carries also another printed note glued to the same page. It was added at request of Capt. Spratt to inform readers that "Through the recent researches of Professor Forbes, the President of the Geological Society of London, Malta, with other contemporary deposits in the Mediterranean and France, are considered to be part of a late Eocene period and not Miocene as was formerly supposed".

The 1854 brochure includes a large pull-out view of Gozo, a pull-out outline map of the Maltese Islands with three lines of section (Fig. 7) and two further pull-out sheets with coloured geological sections at these lines, but no geological map. The map is larger (185 × 230mm) but with less topographical features than that of 1843 (Fig. 6). The geological sections were originally (1843) included in the same page as the map (140 × 172mm) and lacked colour.

Discovered and identified a number of faults in Malta and Gozo

During his excursions in the Maltese countryside, Spratt was struck by the ridge crossing the Island from Ras ir-Raheb near Fomm ir-Rih on the West, to Madliena near St Andrews on the East, and correctly identified the structure as a major tectonic feature. He called it "The Great Fault of Malta" and represented it on his (1843) topographical map (Fig. 6) along with another major fault crossing Gozo.⁽⁶⁰⁾ None of the other minor faults which he encountered on both Islands is represented on his map. As early as 1791, Dolomieu had also noted this surface feature, but he missed completely its real origin and referred to it merely as "a chain of craggy rocks".⁽⁶¹⁾

59. A statement printed on cover records that the 1854 edition was printed at Whitefriars, England, at the personal expense of Sir William Reid, Governor of Malta and was "sold 6d per copy for the benefit of the Literary and Scientific Society of Malta".

60. The Gozo fault is mistakenly shown on Spratt's 1843 map as extending from Mgarr ix-Xini and passing on to Ghajn Sielem and Dahlet Qorrot (instead of to Ras il-Qala). What Spratt represents on the map is actually a combination of two faults, for the Dahlet Qorrot fault is a separate feature and does not meet the Mgarr ix-Xini – Ghajn Sielem – Ras il-Qala fault. See also ADAMS, A.L. 1870 *op. cit.* p. 144, fn. 1.

61. DOLOMIEU, Deodat de, 'Catalogue de Principaux Fossiles de Malte' In: GUIGNARD, F.E. de (Comte de Saint Priest), *Malta par un voyageur Francois*. 1791, Book II, pp. 106-112. Dolomieu who first attempted a description of the Maltese beds in 1791, called the ridge 'a chain of craggy rocks'. The elevation of the strata he attributed to their being part of a mountain, whilst the NNE inclination of the beds he attributed to a past sudden and extensive submergence towards the south.

By his discovery, Spratt initiated a new series of local studies – the Tectonics of the Maltese Islands – a research that was later on taken up by Leith Adams (culminating in his discovery of the Maghlaq Fault in 1861, but publishing his find in 1870),⁽⁶²⁾ Hutton⁽⁶³⁾ and Hobbs.⁽⁶⁴⁾ Vaufrey⁽⁶⁵⁾ and Zammit Maempel⁽⁶⁶⁾ have both contributed illustrations of tectonic features, but the research which Spratt and Adams had initiated in this field was brought to its present perfection through the excellent work carried out in recent years by Wosmerbauer,⁽⁶⁷⁾ Illies⁽⁶⁸⁾ and Reuther.⁽⁶⁹⁾

Correlated Maltese strata with those on the North African coast

In the account of his travels to Crete (1865a:378), Spratt records encountering in the North African cliffs near Derna (Cyrenaica, Libya) strata “resembling the Maltese deposits with many of the Malta fossils in them”. This is probably the earliest attempt at correlation of Maltese stratigraphy with that of other adjacent Mediterranean countries. It is interesting to note that in recent years (1974), Rose correlated the same two localities on the basis of their contained echinoid fauna.⁽⁷⁰⁾

- To account for all these phenomena, as well as the barrenness of the rocks along the ridge and the fossiliferous Pleistocene deposits jamming fissures and caves, Dolomieu postulated a convulsion in the neighbourhood. This, he assumed, resulted in a tsunami wave that passed over the Island washing away all the soil, killing local fauna and stacking it in fissures and caverns (See also SPRATT, T.A.B. 1867:296, ADAMS, A.L., *Notes of a naturalist in the Nile Valley and Malta*, Edmondson & Douglas, Edinburgh 1870, xvi-295pp. 11pls, text figs. 8°, p. 154, fn. 1.
62. ADAMS, Andrew Leith, ‘Notes of a naturalist in the Nile Valley and Malta’, Edmondson & Douglas, Edinburgh 1870. xvi + 295pp. 11pls, text figs. 8°, pp. 144-147, Fig 1 (p. 147), Fig. 2 (p. 174).
 63. HUTTON, F.W. ‘Sketch of the Physical Geology of the Maltese Islands’, *Geological Magazine*, London 1866, 3(22):145-151, 2pls.
 64. HOBBS, H.W., ‘The Maltese Islands. A tectonic-Topographic study’, *The Scottish Geographical Magazine*, 1914. 30:1-13, 14 figs.
 65. VAUFREY, R., ‘Les elephants nain des iles Mediterranee’, *Archive de l’Istitute de Paléontologie Humaine*, Mem.6, 216pp., 45 figs., 9pls, Paris, Masson et Editeurs, Oct. 1929.
 66. ZAMMIT MAEMPEL, G., ‘An Outline of Maltese Geology’, Privately Printed, Progress Press, Malta. 44pp, 6 text figs, 29pls.
 67. WOSSMERBÄUMER, H., ‘Malta. Ein Beitrag zur Geologie und Geomorphologie der zentral-mediterranee Raumes’. *Würzburger Geographischen Arbeiten*, Heft 38, x, 213pp, 55 figs.
 68. ILLIES, J.H., ‘Form and Formation of Graben Structures: The Maltese Islands’, *In: Mobile Earth*, DFG Research Report, pp. 161-184, Boldt 1980; ‘Graben Foramtion. The Maltese Islands. A case history? *Tectonophysics* 73:151-168, 1981.
 69. REUTHER Claus-Dieter, ‘Tectonic investigations of the Pantelleria Rift System’, *International Symposium on Continental Interplate Tectonics*, dedicated to Henning Illies, University of Karlsruhe, 17-18 May 1983 (Abstract 2pp, unpaginated); ‘Tectonic pattern and processes on the Maltese Islands caused by the Pantelleria Rift – Central Mediterranean Sea’, *Terra Cognita* 3(2-3): 87-88; 1983 REUTHER, C-D. & EISBACHER, G.H. Pantelleria Rift – crustal extension in a convergent intraplate setting: *Geologische Rundschau* 74(3):585-597, 6 figs, Stuttgart, December 1985.
 70. ROSE, E.P.F., ‘Stratigraphical and facies distribution of irregular echinoids in Miocene limestones of Gozo, Malta, and Cyrenaica. Libya’. *Memoires du Bureau de Recherches Géologique et Minières*, 1(78):349-355, 3 figs, 1974.

Collected Maltese Tertiary fossils

The fossils collected by Dr J.W. Collings M.D., Miss Attersol and Lieut. Spratt from the Tertiary rocks of the Maltese Islands and presented to the Geological Society, comprise 80-90 different species.

Fossil sharks' teeth were examined by Sir Philip Grey Egerton who identified "*Corax aduncus*, *Carcharias megalodon*, *C. productus*, *Oxyrhina xiphodon*, *O. hastalis*, *O. mantelli*, *Hemipristis serra*, *H. paucidens* and other squalidae".⁽¹⁷⁾ Cetacean remains were investigated by Professor Owen, whilst other organic remains went to Professor Forbes. Forbes published a "Note" as well as a "Report" on the entire fossil Collection and appended these to Spratt's "On the Geology of the Maltese Islands" (1843, 1852, 1854). In the 'Note'⁽¹⁷⁾ Forbes classified local fossils stratigraphically – according to Beds A to I from which they had been recovered – whilst in the "Report"⁽¹⁸⁾ he dealt with the Maltese fossils systematically.

In 1843, the whole assemblage of fauna from the four major formations described by Spratt were referred by these eminent palaeontologists to the Miocene as defined by Charles Lyell on the basis of the Tertiary faunas of continental European outcrops only a few years previously.⁽⁷¹⁾ In 1854, however, Forbes attributed Maltese rocks and fossils to a late Eocene period (see note glued to the 1854 edition of Spratt's brochure on Maltese Geology). On the basis of their microfossils Maltese rocks have since been found to range from Chattian (Upper Oligocene) to Messinian (Late Miocene).⁽⁷²⁾

Excavated and investigated Maltese Pleistocene deposits

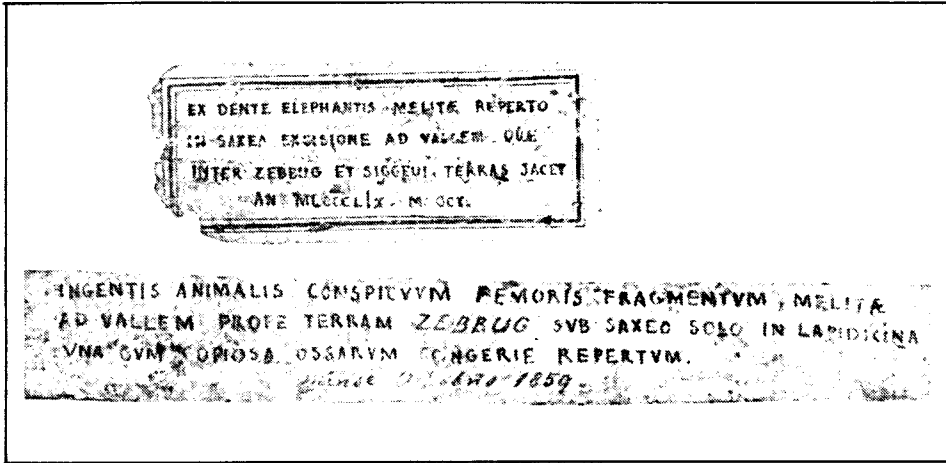
In 1857, Dr Francesco Spiteri Agius recovered an incomplete dwarf elephant's molar from a Globigerina Limestone fissure in a building-stone quarry at Ta' Gandja, limits of Mqabba and donated his find to the Natural History Museum of the Malta University. This is the earliest *authenticated* remains of Maltese fossil elephant and is thought to have been the stimulus that led Spratt to excavate for exuviae on the Maltese Islands.⁽⁷³⁾

71. LYELL, Charles, *Principles of Geology* – an inquiry how far the former changes of the earth's surface are referable to causes now in operation. 1830–33. Originally published in four volumes. The fourth volume, devoted to historical geology, was afterwards published under the title of *The Elements of Geology*.

72. FELIX, R., *Oligo-Miocene Stratigraphy of Malta and Gozo*, H. Veenman & Zonen, BV. Wageningen, 1973, 104pp., (Ph.D. Thesis); GIANNELLI, L. & SALVATORINI, G., I foraminiferi planctonici dei sedimenti Terziari dell'Arcipelago Maltese. I. Biostratigrafia del 'Globigerina Limestone'. *Atti Soc. Tosc. Sci. nat., Mem.*, Pisa, August 1972. (A) 79:49-74 1 pl., 2 text figs.

73. This historical molar was traced by the author amongst the uncatalogued material at the National Museum of Natural History, Mdina, Malta, and was catalogued by him as M/Q.171.

It is strung to an old wooden board (20 × 14.5x1cm) to which is affixed a worm-eaten label that once carried the following handwritten inscription: "Animal tooth which led to the discovery of the Maltese Elephant in 1857". A transcription of this is pencilled at the back of the board along with another piece of information (also in pencil): "Found by Dr F. Spiteri Agius" (See also BUSK, G. 'Description of the remains of three extinct species of Elephants collected by Capt. Spratt CB, RN in the Ossiferous Cavern of Żebbuġ in the Island of Malta. Partly from the Notes of the late H. Falconer M.D., F.R.C.S.' (Read to the Society June 27th, 1865). *Transactions of the Zoological Society of London*, 1868, 6(5):227-306, Pl.44-53, 44 figs.



Original 'Spratt Collection' labels with Latin manuscript inscription proving that the 'Żebbug fissure cavern' was excavated by him in October 1859 (see footnote 76).

(a) Label (72 × 30mm) accompanying Elephant molar M.49210.

(b) Label (145 × 20mm) accompanying a fragment of Pleistocene Elephant femur M.49215. (Courtesy: Trustees British Museum).

Spratt dug up Żebbug Cavern at Wied Qirda (a valley between Żurrieq and Siggiewi), the site known locally as Halq is-Sigar at Maghlaq, limits of Qrendi (his 'Qrendi Cave')⁽⁷⁴⁾ and the Pleistocene deposits at Mellieħa in the region of the Cemetery.⁽⁷⁵⁾ From them he recovered a large number of organic remains and passed these on to various authorities for further study.

The account of his excavation of 'Żebbug Cave' and of the unearthed remains was

74. Spratt does not seem to have made any effort to find out the exact name of the locality of his excavations. Instead, he calls these three sites after the nearest village: 'Żebbug Cave', 'Crendi Cave' and 'Mellieħa Caves' respectively.

'Crendi Cave' of Spratt is one of the "Maghlaq Caves" of Adams. The Second or Middle Cave was discovered by Adams in 1861 (Adams 1870, *op.cit.*, p. 77).

For Falconer's notes on the fossil bones unearthed by Spratt from 'Crendi Cave' see MURCHISON, C. (Ed.), *Palaeontological Memoirs and Notes of the late Hugh Falconer A.M., M.D., Vice President of the Royal Society. . . With a Biographical sketch of the Author compiled and edited by Charles Murchison M.D., F.R.S., Fellow of the Royal College of Physicians of London*. Robert Hardwicke, 2 vols., 1868. Vol. II, pp. 300, 305-308.

75. The Mellieħa Cave was discovered in 1863. For the contribution of Spratt and Sir William Reid (Governor of Malta) in its discovery, see ADAMS, A.L. 'Observations on the fossiliferous caves of Malta', *Journal of the Royal Dublin Society*, 4(2):11-19, 2pls, 1863. Read Nov. 18, 1863 – p. 13 footnote.

read to the Geological Society of London on May 22, 1867. The evidence as to *when* the site was discovered⁽⁷⁶⁾ as well as *to whom* its finds were despatched (Geological Society or British Museum)⁽⁷⁷⁾ is somewhat conflicting. It is known however, that the avian bones were reported upon by Parker in 1865 and 1869,⁽⁷⁸⁾ and subsequently also by Lydekker in 1890 and 1891⁽⁷⁹⁾, and more recently by Harrison⁽⁸⁰⁾ and Northcote.⁽⁸¹⁾ Chelonian remains came under the scrutiny of A.L. Adams,⁽⁸²⁾ whilst the elephantine remains were studied by George Busk and Hugh Falconer. Professor Busk described his findings in a paper read to the Zoological Society of London in 1865 but published in 1868.⁽⁷³⁾ Dr Falconer, however, died before he had time to put his notes and observations into print. These were edited and published posthumously by his medical colleague Charles Murchison in 1868.⁽⁷⁴⁾

To explain the pell-mell arrangement in which the organic remains were encountered, Capt. Spratt (1867:296) revived the old theory that was once propagated by

76. The date of discovery of the 'Zebbug cavern' has long been disputed. Spratt (1867:292) records that Medina Bank (sounded on Monday 18, 1857), was discovered "soon after the discovery of the elephant cavern of Zebbug" . . . suggesting 1856/57 as the probably date of discovery. Busk (1868, *op. cit.*, p. 227) states that he was reporting on the bones which were "collected by Spratt from the Zebbug cavern in 1859". Spratt (1856:391; 1867:287-288) records the discovery of the Zebbug cavern to have occurred two years subsequent to that of 'Crendi Cave' - which he states, was discovered "in the summer of 1858". This makes the revealing of Zebbug cavern in the summer of 1860, probably another blatant mistake (see Adams 1870, *op. cit.*, p. 167 footnote 3). See also MURCHISON, C. 1868, *op. cit.*, p. 299-230 footnote 2. Investigation of Spratt's original manuscript labels (pl.8) accompanying his "Zebbug Collection" at the BM(NH) reveal that the remains were collected from a rock fissure "in the valley between Zebbug and Siggiewi (= Wied Qirda) in October 1859" thereby proving that the correct date of the discovery of the Zebbug cavern was 1859, as stated by Busk.
77. Woodward (1904, *op. cit.*, pp. 230, 328) records that the Zebbug organic remains were sent to the *British Museum*, where Parker and Falconer examined the collection and became aware of the avian nature of some of the specimens, Murchison (1868, *op. cit.*, II, p. 299, fn. 2, Editor's note), however states that the Zebbug specimens were despatched to the *Geological Society in London* in 1860 and that Falconer undertook their examination in July 1860. The latter opinion is probably the one to be accepted.
78. PARKER, W.K. 'Preliminary notes on some Fossil Birds from the Zebbug Cave, Malta, *Proceedings of the Zoological Society*, London, Dec. 12, 1865, (49):752-753: 'On some fossil birds from the Zebbug Cave, Malta', *Transactions of the Zoological Society*, London, 6(13):119-124, pl. xxx, 1869 (Read and Received for publication Dec. 12, 1865).
79. LYDEKKER, R., 'On the remains of some large extinct birds from the Cavern deposits of Malta', *Proceedings of the Zoological Society*, London, 1890, (28):403-411, 3 text figs, 2 pls., 'Catalogue of Fossil Birds in the British Museum', British Museum (Nat.Hist.) Trustees, 1891, xxvii, 368pp., 75 woodcuts, 8°
80. HARRISON, C.J.O., 'The extinct Maltese Crane', *Il-Merill*, Jan-Dec. 1979, (20):14-15, Malta.
81. NORTHCOTE, E. Marjorie, 1982a. 'The extinct Maltese crane *Grus melitensis Ibis* 124:77-80, 3 figs, 1pl. (pl. 6); 1982b, 'Size, Form and Habit of the extinct Maltese Swan *Cygnus falconeri*; *Ibis*. 124:148-158, 7 tabs, pl. 7-9; 'The Giant Maltese Swan', *Il-Merill*, 1981-83 (22):6-8, Malta 1983; Crane *Grus* from the Maltese Pleistocene', *Palaeontology*, 27(4):729-735, 4 text figs; 1984; 'The Giant Maltese Crane', *Il-Merill* 1984-85 (23):1-4, 6 figs., Malta 1986.
82. ADAMS, A.L., 'On bones of fossil Chelonians from the ossiferous caves and fissures of Malta', *Quarterly Journal of the Geological Society of London*, 22:594-595, Read June 20, 1866.

Dolomieu in 1791 – that a great wave or tsunami had at one time over-run the Island denuding it of much of its superficial soil deposits, killing its Pleistocene fauna and stacking the soils and organic remains into rock fissures and caverns.⁽⁶¹⁾

Interpreted correctly the significance of neighbouring shallow submarine banks

With the discovery of the abundant extinct mammalian fauna in the ‘Żebbug’, ‘Qrendi’ and Mellieħa Pleistocene deposits, the shallow submarine ridges around the Island sounded by Spratt and others, suddenly assumed a much greater significance than originally suspected. It then became clearly evident that these banks did not represent merely the extension of the Maltese Islands and of the neighbouring continents in bygone ages, but also former landbridges between Malta and the European continent. They are the pathways by which the extinct mammalian fauna recovered from Maltese caves and fissures reached the Island during the Glacial Phase of the Ice Age, when sea levels in the Mediterranean were considerably lower than they are today.

Discovered a recent species of land shell

During one of his excursions in the north of the Island in the region of St. Paul’s Bay, Spratt discovered a new species of Recent land shell allied to the genus *Helix*. He later on found out that the shell was also “Common in winter on the bare limestone and cliffs of the west highlands of Gozo”.⁽⁸³⁾ The species, which is said to be limited to the Maltese Islands⁽⁸⁴⁾ was studied and described by Pfeifer in 1846 and by him named *Jacosta spratti*, after its discoverer.⁽⁸⁵⁾ It was subsequently attributed to the genus *Helicella*, but is now considered to be a member of the genus *Trochoidea*.

During excavations of the Pleistocene deposits at Mnajdra gap, Adams came across two further specimens of this same (?) species associated with a fossil elephant’s jaw.⁽⁸⁶⁾ *Trochoidea spratti* (Pfr.) and *Clausilia* are thought to be the only two animals that survived from the Pleistocene and that are peculiar to the Maltese Islands.⁽⁸⁴⁾

Maintained interest in Maltese Geology and Palaeontology

Even after leaving the Island, Spratt maintained his interest in Maltese geology and palaeontology. He took an active part in the discussions that followed the reading of papers relating to Malta at Meetings of the Geoloical Society

83. ADAMS, A.L., 1870, *op.cit.*, p. 419.

84. CARUANA GATTO, A. ‘Fauna and Flora of the Maltese Islands . *Daily Malta Chronicle, Eucharistic Congress Number*, April 1913, pp. 8-9, Malta.

85. PREIFFER, L., *Symbolae ad Historiam Heliceorum*. Cassel, 3 vols. I, 1841, 88pp., II, 1842, 142pp; III, 1846, 100pp. (*Jacosta spratti*: III, 1846a., p. 69); PFEIFFER, L. In: MARTINI & CHEMNITZ (1846–53), ‘*Systematisches Conchylien Cabinet*...’, Nürnberg. (*Jacosta spratti*: 1846b., I, p. 174, pl. 23, figs. 9-11.) I am grateful to Mr Martin Thake (Malta) for supplying above information.

86. ADAMS, A.L., 1870, *op.cit.*, p. 183.

of London⁽⁸⁷⁾ and helped Andrew Leith Adams procure grants from the British Association for carrying out excavations at local Pleistocene sites. Adams himself acknowledges receiving such help when he states that “at the suggestion of Dr Falconer, Mr Busk and Capt. Spratt, the British Society for the Advancement of Science liberally voted £60 in aid of the exploration at Mnajdra gap” in the early 1860.⁽⁸⁸⁾

Donated or sold his Maltese fossil collections to scientific institutions

Spratt made extensive collections of both Tertiary and Pleistocene organic remains from the island of Malta and from time to time he made small donations of such items both to the Geological Society and to the British Museum.⁽⁸⁹⁾ In 1867, he represented “9 microscope slides of Maltese forams and pteropods” to the Geological Society of London. These would certainly have been acquired as a donation for the Society very rarely purchased. In 1878, Rear-Admiral T.A.B. Spratt CB, RN, FRS presented the British Museum with a very valuable collection of vertebrate remains originating from the Żebbug fissure cavern.⁽⁹⁰⁾

The Trustees’ Meeting Minute for 9th March 1878 records the reading of a Report prepared two days earlier by Mr George Waterhouse, Keeper, Mineralogical and Geological Branch of the Natural History Department

“acquainting the Trustee that Admiral Spratt had offered the Museum a valuable collection of Maltese fossils numbering 167⁽⁹¹⁾ and including a fine series of remains of pygmy elephants of Malta, on condition that he should receive in exchange three sets of casts of the figured specimens of the pygmy elephant which casts Mr Waterhouse stated he had obtained from Prof. Paul Gervaise of the Museum d’Histoire Naturelle, Paris”.⁽⁹²⁾

87. Spratt, Busk and Adams participated in the discussion that followed the reading of A.A. CARUANA’s paper “Further discovery of fossil elephants of Malta”, *Quart. Jl. Geol. Soc.*, Lond. 1870, 26:434–36 (Read by A.L. Adams). In addition, Spratt, P.M. Duncan, Rupert Jones and G. Busk participated in the debate that followed the reading of J.W. HULKE’s ‘Notes on some reptilian fossils from Gozo’, *Quarterly Journal of the Geological Society*, London, 1871, 27:29-32.
88. ADAMS, A.L., 1870, *op.cit.*, p. 181 footnote 1.
89. FORBES, E., 1843b., *op.cit.*, p. 231; WOODWARD, A.S., 1904 *op.cit.*, p. 328.
90. WOODWARD, A.S., 1904, *op.cit.*, p. 328.
91. The *Book of Presents 1877–78*: 8th June 1878, ‘Report to the Trustees, by George R. Waterhouse’. This Report records that the number of ‘specimens of Maltese fossils’ presented by Rear Admiral Spratt CB, FRS was 250 and not 167 as stated in the *Trustees Minutes* of 9th March, 1878. British Museum, Central Archives, Bloomsbury.
92. *Trustees Minutes, British Museum*, ‘Meeting for 9th March, 1878’, British Museum Central Archives, Bloomsbury. The Central Archives hold also the following records of gifts from T.A.B. Spratt R.N. *Book of Presents 1846–54* (not paginated 5 Aug., 1848, ‘A small bas relief from Halicarnassus, supposed to have formed part of the Mausoleum’; *Book of Presents 1854–61*, p. 23, 13 May 1854: ‘Two marble statues, one of them draped, but without head or hands; the other the torso of a male figure; from Commander Spratt’ *Book of Presents 1866–68*, P. 491, 12 December 1867: ‘2 *Clausilia nigricans*’; *Book of Presents 1873–74*; p. 102, April 9, 1873: ‘One hundred specimens of shells, sponges, from the Mediterranean; presented by Captain Spratt, Ephraim Road, Tunbridge Wells’; *Book of Presents 1873–74*, p. 726, 8 Dec. 1874: Greek antiquities, 8 items .

The donated Collection included:

- (1) *Mammalia* – A fine series of the remains of the extinct pygmy elephant of Malta (*Elephas Melitensis* Falc. and *Elephas Falconeri* Busk), comprising the teeth, vertebrae and limb bones being the ‘type specimens’ figured and described by Dr. H. Falconer (*Palaeontological Memoirs* Vol. II p. 292, pl. xi-xiv) and Prof. Busk (*Trans.Zool.Soc.Lond.*, vol. vi); also remains of a large extinct Dormouse (*Myoxus Melitensis* Falc.) from the Żebbuġ Cave, Malta. . .
- (2) *Aves* – Remains of several species of birds, including the bones of a large extinct swan (*Cygnus Falconeri* Newt.) from the Żebbuġ Cave, Malta. . .
- (3) *Reptilia* – Specimens of *Testudo Spratti* Adams, *Testudo robusta* Adams and *Lutremys europaea*(?) from the Żebbuġ Cave, Island of Malta. Many of the remains are described and figured by Prof Leith Adams in the *Quart.Journ. Geol.Soc.*, Lond., vol. xxxiii, 1878, 1878.⁽⁹³⁾

There is no evidence to show that Spratt ever donated Maltese specimens to local or foreign museums other than the British Museum and the Geological Society of London. In 1911, the fossil collections of this Society (which included also Spratt’s specimens) were donated to the BM(NH), so that now practically all the entire material collected by Spratt from the Maltese islands is at the British Museum (Nat. Hist.). Most of the pre-1880’s ‘*Records of Acquisition*’ by the Natural History Department of this Museum are among the Central Archives, British Museum, Bloomsbury, but the *specimens* are at the BM(NH) in South Kensington.

Through his donations to scientific institutions, Spratt ensured that his Maltese material would be well curated and available for study by future generations of scholars. Some of the avian remains which he donated to the BM(NH) were, in fact, later on examined by Lydekker⁽⁷⁹⁾ and more recently by Harrison⁽⁸⁰⁾ and Northcote.⁽⁸¹⁾

93. ADAMS, A.L. On remains of Mastodon and other Vertebrata remains of the Miocene beds of the Maltese Islands. *Quarterly Journal of the Geological Society* London 1879, vol. 35, pp. 517-531, plate xxv (Read 18 Dec. 1878).

Chronological List of Publications by T.A.B. Spratt

- 1838 'Remarks on the supposed situation of Minea and Nisaea.'
Journal of the Royal Geographical Society, London, 8:205-209.
- 1842a. Map of the rivers of the Plain of Troy (Map only, insert.)
In: Peter Wilhelm FORCHHAMMER (1842). "Observations on the Topography of Troy to illustrate a map of the plain of Troy made by Mr T.A.B. Spratt, Mate, under the direction of Mr Thomas Evans, Lieut., R.N."
Journal of the Royal Geographical Society, London 12:28-44.
- 1842b. 'Notices connected with the geology of the island of Rhodes'
Proceedings of the Geological Society, London, 1842' Vol. 3 part 2, no. 9, pp. 773-775.
- 1843a. 'On the Geology of the Maltese Islands'
Proceedings of the Geological Society, London Vol. 4 pt. 2 No. 97 pp. 225-230. 8vo
- 1843b. 'On the Geology of the Maltese Islands.'
8pp. (representing *Proceedings, Geological Society of London* vol. 4, pt. 2, no. 97, pp. 225-232, including the "Note" and "Report" on Maltese fossils by Edward Forbes). 12mo.
1845. 'On the Geology of the southern part of the Gulf of Smyrna and the promontory of Karabournou.'
Quarterly Journal of the Geological Society of London, 1845 1:156-162 (followed by notes on the fossils by Forbes).
1846. 'Remarks on (the) lakes of Benzerta in the Regency of Tunis made in May, 1845, by Lieut. Spratt, HMS *Beacon*.'
Journal of the Royal Geographical Society, London, 16:251-255.
- 1846a. 'Remarks on the isthmus of Mount Athos (By Lieut Spratt of HMS *Beacon*). Read by Commander Graves F.R.G.S. on March 9, 1846.'
Journal of the Royal Geographical Society, London, 17:145-150.
- 1847b. 'Remarks on the geology of the island of Samos'.
Quaternary Journal of the Geological Society, London, 1847, 3:65-67.
- 1847c. 'On the geology of a part of Euboea and Boeotia'
Quarterly Journal of the Geological Society, London, 1847, 3:67-73.
- 1847d. (SPRATT, T.A.B. and E. FORBES). '*Travels in Lycia, Milyas and the Cibyrates*, in company with the late Rev. E.T. Daniell 2 Vols. London 1847. 8vo. Map and illus.
- 1848a. 'On the influence of temperature upon the distribution of the fauna in the Aegean Sea'.
Report of the Eighteenth Meeting of the British Association for the Advancement of Science, 1848, pt. 2, pp. 81-82.
- 1848b. 'On the influence of temperature upon the distribution of fauna of the Aegean Sea.'
Philosophical Magazine, September 1848, (3)33(221):169-174.
1852. 'On the Geology of Malta and Gozo'
With maps, 24pp. *Malta Mail Office*, Malta. 1852, 8°.Ed.2.

- 1854a. '*On the Geology of Malta and Gozo*'
With maps. 16pp., 4 pull-outs (including coloured geological sections).
Whitefriars, England. Reprint of 1852 Edition and 'Sold for the Benefit of
the Literary and Scientific Society of Malta'. 8°, 1854.
- 1854b. 'Extract of a letter from Spratt R.N. on Crete. Communicated by Colonel
Leake F.R.G.S.' Read March 13, 1854. (Published without Spratt's
knowledge).
- 1854c. 'Remarks on the roadstead of Kosloo, the anchorage off Erekli, and a report
on the Turkish coal mines near Erekli'. *Nautical Magazine* 23:345.
- 1856a. '*An investigation of the movements of Teignmouth Bar*', London, 1856. 8°.
(Original Manuscript draft of Spratt's reports and suggested improvements,
as well as his surveys and plans of Teignmouth harbour carried out between
April 1850 – January 1851 are in the National Maritime Museum: SPR./5).
- 1856b. 'Route between Kustenje' and the Danube by the Kara-su and Yeni-Keni
Valleys, with Observations on the Navigation of the Kara-su Lakes and their
Origin; also on the requirements necessary to render the Water and Land
Communication practicable; being the result of an examination made during
a recent journey with Lieut.-Col. Hon. A. Gordon and Lieutenant-Colonel
J. Desaint de l'Etat Major. By Capt. Spratt R.N., C.B., of HMS
SPITFIRE. July 1854.
Communicated by Capt. Washington R.N., F.R.G.S. Read June 23, 1856.
Journal of the Royal Geographical Society, London 26:203-210, 1 map.
- 1856c. 'Bonnici's deep sea sounding instrument'
Nautical Magazine, March 1856, 25:157-158.
- 1857a. 'On the geology of Serpent Island', by Captain T. Spratt C.B., HMS
Medina. Communicated by the Lords Commissioners of the Admiralty.
Read June 1857. See Admiralty map of 1857.
Journal of the Royal Geographical Society, London 27:220-224
- 1857b. 'Report of Deep Soundings between Malta and the Archipelago.'
Nautical Magazine, August, 1857, 26:393-412, pull-out col. map plan and
sections showing the soundings between Malta and Crete and from Crete to
Psara, by Capt. Spratt R.N., C.B. in HMS *Medina*, May 1857. . .
- 1857c. 'Report on the Deep Soundings between Malta and the Archipelago in 1856
and 1857 – with remarks on the best means of obtaining Deep Soundings –
by Capt. T. Spratt R.N., C.B. Printed for the Hydrographic Office,
Admiralty, 8vo. July 1857, 23pp.
- 1857d. 'On the geology of Varna, and the neighbouring parts of Bulgaria'.
Quarterly Journal of the Geological Society, London, 1857, 13:72-82.
- 1857e. 'On the freshwater deposits of Euboea, the coast of Greece and Salonika'.
Quarterly Journal of the Geological Society, London, 1857, 13:177-184.
- 1857f. 'Report on the delta of the Danube with plans and sections. Fol., London,
1857.
- 1858a. 'On the geology of the north-east poart of the Dobrutcha'.
Quarterly Journal of the Geological Society, London, 1858, 14:203-212.
- 1858b. 'On the freshwater deposits of the Levant'
Quarterly Journal of the Geological Society, London, 1858, 14:212-219.

- 1858c. *'An Inquiry into the soundness of M.de Lesseps' Reasonings and Arguments on the Practicality of the Suez Canal.* . . With plans, 16pp., 3pls., Eyre & Spotteswoode, London, 1858, fol. (Reviewed by Sir Roderick I. Murchison in Presidential Anniversary Address to the Royal Geographical Society, London, 1859, 3:308-310 "Delta of the Nile. Suez Canal and branches".)
- 1858d. *'Remarks on the Comparative conditions of the Different Mouths of the Danube'*.
Parliamentary report, London, 1858. Folio. Maps and plans.
- 1848e. "Deep soundings in the Mediterranean Sea east of Malta; Report of deep sea soundings between Malta and the Archipelago in 1856 and 1857", London 1858.
- 1858f. 'Experiments and results on the currents of the Sea of Marmara, Dardanelles et 8°, 1858. See also MURCHISON, Sir Roderick I., Anniversary Address by the President (May 24, 1858): "Admiralty surveys in the Mediterranean. . .", *Journal of the Royal Geographical Society*, London, 1858, 2:264-265. See also Spratt 1871 .
- 1858g. Superficial and undercurrents of the Mediterranean
Hydrographic Office, 1858. See also 1865b. Publication not traced.
- 1859a. *'Reports on the delta of the Nile, with reference to the Nile deposit, and the true position of Farama and Pelusium*, H.M. Stationary Office, London 1859.
(This was Spratt's official report. Some of the contained items appeared also individually).
- 1859b. *'The Delta of the Nile. An investigation of the effect of the prevailing wave influence of the Nile's deposits.'* London, 1859, fol. Printed by George Edward Eyre ad William Spotteswoode. H.M.S.O. 26pp., 5 pull-out col. sheets (Charts and Sections).
(See criticism to Spratt's objections to the Suez Canal project by Commander Bedrod Pim R.N., F.R.G.S. Remarks on the Isthmus of Suez with special reference to the proposed canal", *Quarterly Journal of the Geological Society*, London, 3:198).
- 1859c. *'A Dissertation on the true position of Pelusium and Farama. . .* With plans. G.E. Eyre & W. Spotteswoode, London, 1859, 24 fols., 2 col.maps, 1 pl. (3 pull-out coloured sheets).
(A Dissertation on the true position of Pelusium and Farama:pp.1-8; Account of Researches in the Bay of Pelusium relative to the Identity of the situations of Pelusium and Farama:pp.9-18; Concluding Remarks on the Evidences of the Encroachment on the shore in Pelusium Bay since Strabo's time:pp.19-24).
- 1859d. 'The proposed Suez Canal considered in reference to the influence of the Nile. From "An investigation" of the subject by Captain Spratt R.N., C.B.' *Nautical Magazine* May 1859, 28:244-250; June 1859, 28:308-31. (This article was reprinted in 1870 as "Report of Captain Spratt R.N., C.B., on Port Said", see 1870a).
- 1860 'On the freshwater deposits of Bessarabia, Moldavia, Wallachia and Bulgaria'
Quarterly Journal of the Geological Society, London, 1860, 16:281-292.

- 1861a. *'Sailing Directions for the Island of Candia or Crete'* Official. H.M.S.O. London 1861, 8°. Tables of positions and Index, 38pp. Printed for the Hydrographic Office, Admiralty. Published by order of the Lords Commissioners of the Admiralty. (A Second Edition was published in 1866).
- 1861b. *'Instructions sur l'Ile de Crète ou Candie'*. Traduction par A. Le Gras. Paris 1861, 8°.
- 1862a. 'On the proper depths for electric cables as at present constructed.' *Nautical Magazine*, January 1862, 31:1-18.
- 1862b. 'Coral Rocks in the vicinity of the Island of Malta' Report dated 'HMS *Medina*, 29th July 1862'. Hydrographic Office. 11pp.(Ms), 1 fig.
- 1865a. *'Travels and Researches in Crete'*. 2 vols., London, Van Voorst, 1865. 8° (With col.illus. by J. Schranz from sketches in the field by T.A.B. Spratt). (Reviewed by: Murchison, Sir R.I. *Proceedings the Royal Geographical Society*, London, May 22, 1865). *Journal of the Royal Geographical Society*, London, 9:252-253.
- 1865b. 'Remarks and Experiments on the superficial and supposed undercurrents of the Mediterranean. . .'. *In: Travels and Researches in Crete* (1865a, vol. II, Appendix 2, pp. 333-345.) (These observations were first published by Spratt in a pamphlet issued by the Hydrographic Department in 1858).
- 1866a. *'Sailing Directions for the Island of Candia or Crete'* Edition 2. London, 1866 38pp., Tables of positions, Index. Printed for the Hydrographic Office, Admiralty, H.M. Stationery Office. (see 1861a).
- 1866b. Spratt's comments and experience on the Santorini eruption of 1866. 'Additional Notes', *Journal of the Royal Geographical Society*, London 10(1865-66):120-121, Proceedings of March 12, 1866.
1867. 'On the Bone Caves near Qrendi, Żebbuġ and Mellieħa on the Island of Malta'. *Quarterly Journal of the Geological Society*, London, 23(1):283-297, 3 text figs. (Proceedings of May 22, 1867).
- 1870a. 'Report of Captain T.A.B. Spratt R.N., C.B., on Port Said' *Nautical Magazine*, 39:81-87; 128-135. (see 1859d).
- 1870b. *'On the evidences of the rapid silting in progress at Port Said, the entrance to the Suez Canal'* Taylor and Francis, London, 1890. 8°. 24pp., 2 pull-out coloured sections of Port Said, 1 pull-out Hydrographic chart. (see MURCHISON, Sir R.I., Anniversary Address, May 23, 1870, *Journal of the Royal Geographical Society*, London, 1870, 14:314 'Note').
1871. 'On the undercurrent theory of the Ocean, as propounded by recent explorers'. *Proceedings of the Royal Society*, London, (1870-71), 19:528-556.
- 1876a. Exhibition and description of the marble statue of Venus, found at Gnosus in Crete. Meeting of June 29, 1876. (This statue had already been alluded to by Spratt in his *Travels and Researches in Crete*, 1865 vol. I, pp. 72-73, 1 pl.).

- Proceedings of the Society of Antiquaries*, London, 7:79-80.
- 1876b. 'On the Cretan Venus found at Gnosus'. Privately printed. 7pp., 1 photo on frontispiece, (26 × 23cms). In the dedication on page 1 of the copy at the Society of Antiquaries Library, London, Spratt records that "a few copies are now published for private circulation, one of which is with much pleasure presented by T.A.B. Spratt, C.B., Rear-Admiral, FRS, FSA, etc., Tunbridge Wells, May 1877".
1877. 'Remarks on the coal-bearing deposits near Erekli (the ancient Heraclea Pontica of Bothynia).
Quarterly Journal of the Geological Society, London, 1877, 33:524-533.
1879. 'On certain Archaic Gems procured in Crete and the Aegean Islands'.
Proceedings of the Society of Antiquaries, London, May 1, 1879, 8:118-123, 1 pl.
1880. 'A suggestion for the improvement of the entrance to the Mersey – by Rear Admiral T. Spratt C.B., F.R.S., etc. Acting Conservator of the Mersey'. London, January 1880, 8°. Map, 20pp.
1884. 'On the Dorian Peninsula and Gulf. With Notes on the discovery made by himself many years ago, of a Temple of Latona at the head of that Gulf.
Proceedings of the Society of Antiquaries, London, January 31, 1884, 10:49-50, 1 fig. (Statue of Latona).
(see also 1886b, *Archaeologia* 1886, 49:345-354, 1 fig. and 1886c).
- 1885a. 'On a Statue of the Youthful Dionysos, in his possession, photographs of which he exhibited'.
Proceedings of the Society of Antiquaries, London, May 7, 1885, 10:298.
(See also 1886a, *Archaeologia*, 1886, 49:318-322, 1 pl. with two photos).
- 1885b. 'On Island of Smyni and on Dorian *Acanthus*'
Proceedings of the Society of Antiquaries, London, May 7, 1885, 10:341.
(See also: 1886b, *Archaeologia* 49:360-365, 1 fig. of Brooch; 1886b, *Archaeologia*, 49:355-357).
- 1885c. 'On the Gulf of Smyni, in continuation of a paper previously read Jan. 31, 1884, on the Dorian Gulf.'
Proceedings of the Society of Antiquaries, London, May 7, 1885, 10:298.
(See 1886b, *Archaeologia*, 49:357-360).
- 1886a. 'Remarks on a new Torso of a Youthful Dionysos' Statue found at Aiidin, ancient Tralles, Asia Minor .
Archaeologia 1886, 49:318-322, 1 pl. (2 photos). Read May 7, 1885. (see also 1885a).
- 1886b. 'Remarks on the Dorian Peninsula and Gulf, with Notes on a Temple of *Latona* there.
Archaeologia 1886, 49:345-365, 2 figs, 1 map.
Publication includes: I. "The Dorian Peninsula and Gulf" (pp. 345-351); II. "The Temple of Latona" (pp. 351-354, 1 fig.); III. "On the Dorian *Acanthus*" (pp. 355-357); IV. "On the Smyni Gulf" (pp. 357-360, 1 double-page map of the Gulf of Kos, Doris and Smyni, the ancient Sinus Ceramicus and Sinus Doridis, 1883); V. "On Smyni Island" (pp. 360-365, 1 fig.) .
- 1886c. 'Remarks on the Dorian Peninsula and Gulf with Notes on the Temple of

Latona there'.

Westminster (London), printed by Nicholas & Sons, 1886, 4to. 21pp., 1 map. (see also 1884, 1886b).

1887. 'Note on the gold coins from Crete.

The Numismatic Chronicle and Journal of the Numismatic Society (3)7:308-311, illus. Bernard Quarritch, London; MM. Rollin et Feuarent, Paris, 1887.

Hydrographic Charts

Prepared on the tracks and plans of T.A.B. Spratt R.N.

A. Charts relating to the Maltese Islands

List based on official Catalogue and Records at the Admiralty Hydrographic Office. Orthography as original.

Abbreviations: *Adm. Off. Mk.*: Admiralty Official Mark; *d*: an indication of the scale, 1 degree latitude; *m*: mile; *Pl./pl.*: Plans; *Tr./tr.*: Tracks; *Ch.*: implies a survey performed with a projected chart in mind (see Chart 1863a); *HOp 2623*: implies a survey to correct the named chart (see chart 1860a).

1846 – *Malta. Eastern end – St George's Bay to Il Mingba, including Valletta Harbour, Marsa Scirocco, etc.*

(pl. & tr.) Capt Graves VOLAGE, 1846 and Comdr. Spratt SPITFIRE, 1853.

1 mile = 3.05 inches (Adm.Off.Mk. L.9206 & L.9104)

1853 *Search for Auckland Rock, reported East of Malta.*

Tracks of RETRIBUTION, MODESTE, NIGER and SPITFIRE, 1853 – Comm. T.B Spratt, SPITFIRE, 1853.

Scale: m = 0.25 inches (Adm.Off.Mk. L.9103)

1852- *St. Julians Bay to Valletta Harbour*

1856 (tr.) Capt. Graves & Spratt 1852-56.

m = 20.5 (Adm.Off.Mk. D.1876)

Island of Malta from Valletta to Marsa Scirocco.

Chart 2249. (May be based upon a Survey by Graves and Spratt (Adm.Off.Mk. L.9104 5h) dated 1846-1853.

1856a. *Valletta Harbour – Grand Harbour: Dockyard Creek*

(Tr.) Capt. Spratt, MEDINA, 1856.

Scale: 50 feet = 1.0 (Adm.Off.Mk. D.1877)

1856b. *Valletta Harbours – Grand Harbour: Pietà Creek*

(tr.) Capt. T.A.B. Spratt, MEDINA, 1856

m = 20.8 (Adm.Off.Mk. D.1879)

1856c *Valletta Harbours – Grand Harbour, The Marsa & French Creeks*

(tr.) Capt T.B. Spratt, MEDINA, 1856

m = 20.8 (Adm.Off.Mk. D.1879)

1857a. *Valletta Harbours – Grand Harbour, The Marsa – Proposed extension and improvements*

- (Tr.) Capt T.B. Spratt, MEDINA, 1857
Scale: 75 feet = 1.0 (Adm.Off.Mk. D.4073, D.4074)
- 1857b. *Valletta Harbours – Grand Harbour. Proposed Breakwater, etc. Sections, etc.*
Capt. Spratt, Director of Works, etc. 1857
Scale: various (Adm.Off.Mk. D.4075, D.4080)
- 1857c. *Comino Channels*
(pl.) Capt. T.A.B. Spratt, MEDINA, 1857
Scale: m = 3.0 (Adm.Off.Mk. D.3490)
- 1860a. *Comino Channels. Additions East of Mellieħa Bay*
(HOp 2623). Capt. T.A.B. Spratt, 1860
m = 3.0 (Adm.Off.Mk. D.5002)
- 1860b. *Mellieħa Bay to Valletta Harbour*
(pl.) Capts. Graves & Spratt, 1860
m = 3.0 (Adm.Off.Mk. D.5158)
- 1860c. *Madalena Point to Ricasoli Pt. including Valletta Harbour*
(pl.) Capt. Graves VOLAGE & Capt. Spratt, MEDINA, 1860
m = 9.0 (Adm.Off.Mk. D.5001)
- 1860d. *Madalena & St. Georges Shoals (Rough)*
(pl.) Capt. Graves, VOLAGE & Capt. Spratt, MEDINA, 1860
m = 9.0 (Adm.Off.Mk. A.1116)
- 1861a. *Malta to Lampedusa to Tripoli – Soundings for Cable*
(Tr.) Capt. T.B. Spratt, MEDINA, 1861
Scale: d = 3.8 (Adm.Off.Mk. D.5298)
- 1861b. *Malta to Tripoli – Soundings for Cable*
(Tr.) Capt. T.B. Spratt, MEDINA, 1861
Scale: d = 3.8 (Adm.Off.Mk. D.5290)
- 1861c. *Malta to Tripoli – Cable*
(Tr.) Capt. T.B. Spratt, MEDINA, 1861
Scale: d = 3.9 (Adm.Off.Mk. D.5351)
- 1861d. *Malta to Tripoli – Soundings for Cable*
(Tr.) Capt. T.B. Spratt, MEDINA, 1861
Scale: d = 3.9 (Adm.Off.Mk. D.5451)
- 1861e. *Medina Bank & Line of Soundings*
(Tr.) Capt. T.B. Spratt, MEDINA, 1861
Scale: d = 1.9 (Adm.Off.Mk. D.9023)
- 1862a. *Medina Bank & Soundings East of Malta*
(Tr.) Capt. Spratt, MEDINA, 1862
Scale: m = 0.24 (Adm.Off.Mk. D.5921)
- 1862b. *Valletta Harbour – Grand Harbour: French & Dockyard Creeks*
(Tr.) Capt. T.B. Spratt, MEDINA, 1862
Scale: 100ft = 1.0 (Adm.Off.Mk. D.7076)
- 1862c. *Coral Chart of Malta and Gozo*
‘Chart of the Coast of Malta and Gozo showing the positions in which Coral has been recently found during the search for Coral rocks along it by HMS “Medina” or previously, and also where it has been occasionally found by

fishermen as well as where it may probably be found from the bottom and depth being favourable.' (Ms., Not published, No scale, Size of chart: 70 × 60 cms. Accompanied by Report (Spratt 1862b)).

1863a. *Malta and Gozo*

(Ch.) Capts. T. Graves & T.B. Spratt, VOLAGE & MEDINA, 1863

Scale: m = 1.17

(Adm.Off.Mk. D.6386)

1863b. *Hurds Bank & Soundings East of Malta*

(Tr.) Capt. T.B. Spratt, MEDINA, 1863

Scale: m = 1.0

(Adm.Off.Mk. D.6521)

B. Other Hydrographic Charts

Listed by Dawson (1885:45) as having resulted from Spratt's numerous Surveys in the Mediterranean

Xeros Islands.

Baklar Port.

Candia or Crete Island (Two sheets).

Anchorage in Standia Island.

Kherosonesos and Eremopoli Bays, Hierapetra or Girapetra.

Crete, Sitia and Grandes Bays, also Kalo Limniones.

Kustenjeh anchorage.

Kustenjeh to Chernavoda and Rassoava, with the Karasù Lakes.

Poro Bay and Port Nikolo.

Ports Grabusa, Rhithymno, Lutro and Kutri.

Tigani Port, Samos Island.

Stampalia Island.

Maltezana Port.

Scarpanto and Casso or Caxo Islands.

Dardanelles entrance and Port of Tenedos.

Dardanelles (Narrows).

Marmara Sea.

Baynuq Chekmejeħ Bay.

Princess Islands.

Pyrgos or Burghas Gulf.

Varna.

Baljek Bay.

Delta of Danube River and entrance to Razemm Lake.

Mouths of the Kilia Branches.

Sulina Mouth, Fido Nisi Island.

Balaklava Port.

Ras Bulcou to Alexandria.

Gharah Island to Dernah.

Koslu Bay.

Bender Erekli.

Ali-agma Port.

Smyrna Harbour.

Budrum.

Dernah to Ras Bulcou.

Tripoli Harbour.

Spratt's journal, Letters and other Documents

Spratt's journal could not be located. A small number of his letters and documents are to be found in various archives in England and Scotland, but very few of these relate to the Maltese Islands.

The British Museum (Natural History) Palaeontology Library (Manuscripts Collection) hold a single item of correspondence from Spratt to an unspecified person (Prof. Thomas Rupert Jones). It is a small double-sheet of paper, pleated to give twelve pages (190 × 125mm) and dated "Clare Lodge, Tunbridge Wells, Kent, January 25, '79".⁽⁹⁴⁾ The letter, which is written in a very sprawling hand (often illegible), accompanied a presentation copy of the brochure *On the Geology of Malta and Gozo* (1854a). The latter carries Spratt's peculiar and very striking 'boxed-in' signature on its outer cover.⁽⁹⁵⁾ As stated in the letter, the booklet was being offered in the hope that it would "enable Jones to understand the general details regarding thickness and deposition of the beds" of the Maltese Islands "which for distinction I divided into 4 groups, as being the most marked in character, and sufficient, with their several subdivisions for identification by any one."

The letter gives important details about the nature and formation of the phosphatic conglomerates ("Nodular beds") in the Globigerina Limestone formation and about the organic remains found in the Clays and Marls of the Island. It is a typical example of Spratt's long-winded style in correspondence. His sentences are never-ending with hyphens and explanatory clauses instead of separate sentences.

In addition to the letter, the Palaeontology Library possess also his "List of casts of bones of the pigmy elephants (figured and described by Busk in *Trans. Zool. Soc. Lond.*, VI and by Murchison in *Palaeontological Memoirs*)".⁽⁹⁶⁾

A collection of Spratt's papers is kept at the National Maritime Museum, Greenwich. It comprises a note on the Crimean War, reports on scientific and other topics (including a much-faded draft of the document dated 1865 relating to Spratt's proposals for the improvement of Malta's defence system), items relating to his book on Crete, a few letters and official orders and some papers on Irish Fisheries.⁽²⁸⁾ A number of other letters are to be found also at the Hydrographic Department, Ministry of Defence ("Surveyors' Letters").

The University of Edinburgh, Scotland, holds his letters to Sir Charles Lyell from 1856 to 1873. These refer to his work on Crete, Lyell's account on Mediterranean deep water currents (mentioned in his *Principles of Geology*) and his controversy with W.D. Carpenter over the differing interpretation of water movements in the

94. In Ephraim Road. See footnote 92, British Museum *Book of Presents 1873-74*, p. 102.

95. The most striking features in Spratt's signature are its 'boxed-in' appearance, the detached, upward sloping bar of the initial T, the terminal flourishes and the hooking of his lines, the single backward sloping stroke cutting both terminal Ts, the bold and exaggerated initial S and the artistic terminal flourish in the form of a line pleated on itself underling his surname (See Fig. 1).

96. British Museum Central Archives, Bloomsbury, Manuscript *Catalogue of Geological Collections I*, p. 366 (new enumeration)/55 (old enumeration).

Strait of Gibraltar and the Bosphorus.⁽²⁸⁾

The Geological Society, Zoological Society, Royal Geographical Society and the Antiquaries Society of London all have certificate of his candidature to their respective Society but no other important documents. In addition to this, the Royal Geographical Society has also got a few letters from Spratt. These, however, do not concern his work but merely matters to do with his membership and with the forwarding and return of proofs of his articles. None is written from Malta. The only references the Society has to his work on the Island are contained in that section of the President's Annual Addresses reviewing reports received from the Hydrographer of the Navy.⁽⁹⁷⁾

The Picture Collection of the Society has three undated studio portraits of Spratt but nothing of him in the field. The portrait of a be-medalled Admiral reproduced in this study is from this Collection. The Royal Society, London, too holds another undated studio portrait of an elderly Spratt in civilian clothes, as well as two original letters (none of which relate to Malta).⁽⁹⁸⁾

The Geological Society, London, holds records of a donation by Spratt of "9 microscope slides of Maltese forams and pteropods";⁽²⁹⁾ the Central Archives British Museum, Bloomsbury⁽¹⁰⁰⁾ and the Palaeontology Archives of the BM(NH) in Kensington⁽¹⁰¹⁾ hold records of acquisition of Maltese vertebrate material which he donated to them, whilst The Society of Antiquaries has in its files evidence of a bequeath of a marble Corinthian capital which was handed to the Society by his son, Major E.J.H. Spratt in April 1888.⁽¹⁰²⁾

The original correspondence exchanged between Spratt and Falconer about the Maltese Pleistocene fauna (especially dwarf elephants) could not be located, but some of these letters were published by Murchison (1868) in his *The Palaeontological Memoirs of the late Dr Hugh Falconer*.⁽¹⁰³⁾

Recognition of Spratt's contribution to Science and His Affiliation in scientific societies

The Admiralty showed appreciation of Spratt's logistic work during the Crimean War and of his excellent hydrographic services in the Mediterranean by promoting him to the rank of Captain on January 3rd, 1855. The Nation honoured him for his faithful and efficient services by making him a Commander of the Bath (*C.B.*) on July 5th, 1855, and at the close of the Crimean War in 1856, France awarded him the unique distinction of Officer of the *Légion d'Honneur*.

97. Pers. comm. Mrs C. Kelly, Archivist Royal Geographical Society, London, 30 April, 1984.

98. Pers. comm. N.H. Robinson, Archivist, Royal Society, London, 29 March, 1984.

99. John C. Thackray, Archivist, Geological Society, London, 2 March, 1984.

100. Pers. comm. Miss K. Janet Wallace, Archivist, British Museum Central Archives, Bloomsbury, 3 August, 1984.

101. Pers. comm. Miss Dorothy Norman, Archivist, British Museum (Nat.Hist.), 11 April, 1984, and Miss Ann Lumm, Librarian, Palaeontology Department, BM(NH), 11 May, 1984.

102. Pers. comm. F.H. Thompson, General Secretary, Society of Antiquaries, London, 17 April, 1984.

103. MURCHISON, C. (Ed.) 1868, *op.cit.*, pp. 292, 296, 297, 299, 301, 302-306.

Prestigious scientific societies enrolled him as one of their members: On March 31st, W. Hamilton, Sir Roderick Murchison, Hugh Strickland and others recommended "Lieutenant Thomas A.B. Spratt of the Royal Navy attached to the study of Geology" as being "a proper person to become a Fellow of the Geological Society of London". He was elected Fellow (F.G.S.) on May 10th, 1843.

The Royal Society of London elected him Fellow (F.R.S.) on June 5th, 1856. For this honour he had been recommended by eight other Fellows, amongst whom were Sir Charles Lyell, Sir Roderick Murchison, Admiral Ramsay, Ia. Smith and Captain (afterwards Admiral Sir) Francis Beaufort, Hydrographer of the Admiralty.

Spratt was a Life Fellow of the Royal Geographical Society of London (F.R.G.S.), having been elected on January 10th, 1859, when Sir Roderick I. Murchison was President. He contributed a number of short articles to the *Proceedings* of this Society but none of them relates to Malta.

On May 29th, 1873, he was elected Fellow of the Society of Antiquaries of London and amongst those recommending him as "likely to become a useful Member" were Augustine D. Franky (Director) and Lord Stanhope (President). He was a very active Member of the Society and served on the 1877-78 Council. From time to time he exhibited objects of interest (Spratt 1876a, 1885a) and made communications. Several of his papers were published in the *Proceedings of the Antiquaries Society* (which preceded the *Antiquaries Journal*) and *Archaeologia*. His links with the Society were largely archaeological, particularly in the field of Mediterranean and classical archaeology.

In 1883, towards the end of his life, Spratt became a Fellow of the Zoological Society of London (F.Z.S) but made no contribution to the *Proceedings* or *Transactions* of that Society.⁽¹⁰⁴⁾ He made extensive collections of coins of the Mediterranean countries which he visited and in 1887, he communicated to the Numismatic Society of London an interesting paper on some of the rare gold coins on the island of Crete. There is no record, however, that Vice-Admiral Spratt was ever a Member of the Society.⁽¹⁰⁵⁾ For his many contributions in the field of Archaeology, Spratt was nominated 'Honorary Member' of the Archaeological Institute of Berlin and Rome.⁽¹⁰⁶⁾

To perpetuate his memory, some authors dedicated books to him⁽¹⁰⁷⁾ while others called species after his name.⁽¹⁰⁸⁾ The Maltese species that carry Spratt's name are: *Trochoidea spratti* (Pfr.) – a Recent landshell peculiar to the Maltese Islands and

104. Pers. comm. R. Fish, Librarian, Zoological Society, London.

105. Pers. comm. J.E. Cribb, Hon. Secretary, Royal Numismatic Society, London.

106. See SPRATT, T.A.B. (1865a) *Travels and Researches in Crete*, vol. II, p. 411 and title page.

107. MURCHISON, C., 1868, *op.cit.*; ZAMMIT MAEMPEL, G., 1977, *op.cit.*

108. PFEIFFER, L., 1846a, 1846b, *op.cit.*, *op.cit.*; WRIGHT, T., On the fossil echinoid of Malta. With traditional notes on the Miocene beds of the Island, and the stratigraphical distribution of the species therein by A. Leith Adams A.M., M.B., 22nd Regiment, *Quarterly Journal of the Geological Society*, 1864, vol. 20, pp. 470-491, pl. 21-22, (p. 490, pl. xxi, fig 6a-d); GREGORY, J.W., 'The Maltese fossil Echinoidea and their evidence on the correlation of the Maltese rocks', *Transactions of the Royal Society of Edinburgh*, 1891, vol. 36, pt. 3, No. 22, pp. 585-639, 2 pls. (pp. 603-604, 630).

surviving locally from Pleistocene times⁽¹⁰⁹⁾ and *Studeria spratti* – a Tertiary irregular echinoid from the Globigerina Limestone originally figured and named (but not described) by Wright in 1864 as '*Pygorrhynchus*'.⁽¹¹⁰⁾ The type fossil (BM/46450) was subsequently described (but not re-figured) by Gregory as a *Studeria*.⁽¹¹¹⁾ The large-sized Pleistocene chelonian *Testudo spratti*, originally described and figured by Adams in 1866⁽¹¹²⁾ has now, unfortunately, fallen in synonymy with *Geochelone robusta* (Adams),⁽¹¹³⁾ thereby destroying a great historical link with Malta's past.

Conclusion

For over thirty years (1832 – 63), Spratt surveyed and charted the Mediterranean and carried out scientific work relating to various Mediterranean Islands, including the Grecian archipelago, Crete and Malta. The results of his researches are embodied in a number of books, scientific papers and hydrographic charts. His greatest contribution was, undoubtedly, his excellent and accurate surveys carried out at a time when the modern amenities of the sonar and the automatic recording instruments were non-existent. In those early days, weighted lines were the only means used to sound the sea bottom and accurate readings depended considerably on the personal abilities of the surveyor, his experience in the field and the interpretation of his results.

In the 'Report' wherein he records the discovery of Medina Bank on Monday May 18, 1857, Spratt stresses the importance of choosing the right type of sounding-line according to the specific bathymetric requirements and gives detailed advice on the subject. A few months previously, he had published a paper (Spratt 1856c) on an ingenious device – Bonnici's claw – that helped him successfully achieve deep-sea soundings.

Spratt's accurate surveys, charts and sketches were a boom to navigators of all nations sailing the Mediterranean. They assisted navigators to clear reefs around the Island⁽¹¹⁴⁾ and rendered safer the approaches to Maltese harbours. Some of his charts contributed also to making the local Grand Harbour a much safer place for berthing. This is because in 1857, Spratt surveyed the site of the future breakwater and 'in conjunction with the Director of Works and other people', prepared sections thereof (Spratt, Chart 1857b).

In between his survey trips, this young naval officer spent considerable time on shore leave in Malta and he utilized this most fruitfully by carrying out research on local geology and palaeontology. Thus in Maltese scientific circles, Spratt's name is

109. ADAMS, A.L., 1870, *op.cit.*, pp. 149, 188; CARUANA GATTO, A., 1913, *op.cit.*, *loc. cit.*

110. WRIGHT, T., 1864, *op.cit.*, p. 490, pl. xxi, fig. 6a-d.

111. GREGORY, J.W., 1891, *op.cit.*, pp. 603-4, 630.

112. ADAMS, A.L., 1866, *op.cit.*

113. AUFFENBERG, W., Checklist of fossilised tortoises (Testudinidae). *Museum of Biological Science*, 1974, vol. 18, no. 3, pp. 121-151, 10 + 5 figs, Gainesville.

114. *THE MALTA GOVERNMENT GAZETTE*, No. 1829, January 9, 1855, pp. 31-32.

linked, not solely with the hydrographic services which he most diligently rendered, but also (and mostly) with the first clear exposition of Maltese geology, the earliest identification of local tectonic features and with the excavation of local Pleistocene deposits.

It was through Spratt's indefatigable labours in the field and through his diligent researches and collection of organic remains from such deposits that the Maltese pygmy elephant (*Palaeoloxodon melitensis Falconer*) and most of the other Pleistocene fauna of the Maltese Islands were identified and described by Parker (1865, 1869), Adams (1866, 1870), Busk (1868), Falconer (1868) and later on also by Lydekker (1890, 1891).

The scientific world in general, and Malta in particular, owe much to Vice-Admiral Thomas Abel Brimage Spratt CB, RN, FRS, FGS.

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