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School ships for midshipmen in the Dutch, British and U.S. navies in the 19th and beginning of the 20th century

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- 18 Guyot, Henri Daniël, geboren te Nijmegen op 7/5/1836. Hij komt in 1850 in dienst van de marine. Adelborst 1^e klas in augustus 1853. Hij werd bevorderd tot 2^e luitenant in januari 1856 en in juli 1866 tot 1^e luitenant. In september werd hij kapitein-luitenant ter zee en in 1882 kapitein ter zee. Tenslotte bereikt hij in maart 1890 de rang van Schout bij Nacht. Nadat hij op diverse schepen een aantal reizen heeft gemaakt naar Oost-Indië wordt hij in februari 1862 geplaatst op de nieuw gebouwde Zr.Ms. Amstel. Na zijn verblijf in Suriname keert hij in 1865 terug naar Hellevoetsluis. Daarna onderneemt hij nog een aantal reizen naar Oost-Indië en zet hij zijn carrière voort. Op 1 juli 1887 gaat hij met eervol pensioen, met een jaargeld van Fl. 2.100,-. Hij mag op zijn verzoek het uniform blijven dragen en is nog actief als vertegenwoordiger/representant van de marine. Wellicht is dat de reden waarom hij na de pensioendatum wordt bevorderd. Guyot heeft diverse eervolle vermeldingen en eretekenen verzameld tijdens zijn loopbaan. Zij heeft hij onder meer de Boni en Atjeh-medailles en is hij Ridder in de Orde van de Nederlandse Leeuw. Algemeen Rijksarchief (ARA), toegangsnummer 2.12.06.2, inv.nr. 2, folio 159.
- 19 Kieviet, Pieter werd geboren op 20 juli 1830 te Sommelsdijk. Hij neemt dienst bij de marine als lichtmatroos op 2/7/1848 en begint dan aan een carrière bij de marine die hem herhaaldelijk in gevechtssituaties zal brengen. In 1853 volgt zijn bevordering als matroos 2^e klasse. Hij dient op verschillende schepen in Oost-Indië. In november 1858 neemt hij deel aan een actie in Oost-Sumatra. Voor 'be-toonde moed bij de bestorming en inname der benteng van den Panlima Besaar te Reteh op 1/11/1858' krijgt hij de Militaire Willemsorde der 4^e Klasse. In 1857 wordt hij bevorderd tot kwartiermeester. In juni 1862 wordt hij aan boord van de Zr.Ms Amstel geplaatst. In het stamboek wordt ook zijn deelname aan de actie bij Rac à Rac vermeld. 'Heeft op 10 november 1862 deelgenomen aan een expeditie tegen de boschnegers te Rac à Rac en is bij die gelegenheid licht gewond geraakt'. In 1863 wordt hij tijdelijk gedegradeerd voor een periode van twee maanden tot matroos 1^e klasse. Een reden wordt niet vermeld. Bevordering tot provoost volgt op 29 maart 1870. Hij heeft dan inmiddels de Bronzen-, Zilveren- en Kleine Gouden medaille benevens de eremedaille voor Borneo verkregen. Op 31/7/1875 wordt hij 'wegens langdurige dienst ontslagen'. Zijn pensioen bedraagt Fl.420,- per jaar. Hij zou in 1903 overlijden. ARA, toegangsnummer 2.12.07, inv.nr. 5, stamboeknummer 4848.
- 20 Over de adelborst A. Smith van den Broeke meldt het scheepsjournaal van Zr.Ms. Zoutman in het dagrapport van 11 november dat zij hem zwaar gewond weer aan boord nemen en overbrengen naar het hospitaal in Paramaribo. In het dagrapport van 14 november daaraanvolgend wordt gemeld dat hij die dag als gevolg van zijn verwondingen in het hospitaal is overleden. ARA, toegangsnummer 2.10.50, inv.nr. 571, folio 46.
- 21 Hafkenscheid, Johannes Wilhelmus geboren op 12 december 1816 te Bergh (Gelderland). Begon zijn militaire carrière op 17 mei 1842 wanneer hij als 'plaatsvervanger' voor een periode van vijf jaar de dienstplicht van Willem Boerendans vervult, bij het 10^e Regiment Infanterie. Na afloop van zijn contract gaat hij in 1848 als beroepsmilitair over naar de 'Staande Armee' voor een periode van twee jaar. Het contract wordt in 1850 met een periode van twee

jaar verlengd. Op 9 juni 1852 komt hij als marinier 2^e klasse in dienst. Hij doet dienst op verschillende schepen in de Oost. Bevordering tot korporaal volgt op 20 februari 1858. Hij wordt op 10 april 1862 sergeant en kort daarna geplaatst aan boord van de Zoutman. Hij heeft inmiddels zowel een Bronzen- als een Zilveren Medaille voor trouwe dienst verkregen. Op 30 september 1866 wordt hij uit de dienst ontslagen. Bij zijn ontslag ontvangt hij een bedrag van Fl. 85,- als compensatie voor 'de lange dienst en voor lichaamsgebreken'. Zijn jaarlijkse pensioen bedraagt Fl. 150,-. ARA, toegangsnummer 2.12.08, inv.nr. 35, stamboeknummer 8335.

22 Littel, Willem geboren te Schoonhove (ZH) op 18/12/1832. Werd tot kwekeling aan de Rijkskweekschool voor de Militaire Geneeskunde te Utrecht benoemd in september 1851. Bevordering tot Officier van Gezondheid 3^e klasse volgde in 1856. Op 23 februari 1862 werd hij OvG 2^e klasse en op 11 maart 1871 1^e klasse. Vanaf 1856 maakte hij diverse reizen op verschillende marineschepen naar de Oost. Hij werd op 11 februari 1862 op Zr.Ms. Amstel geplaatst. In juni 1865 keert hij terug naar Willemsoord. Daarna zal hij beurtelings dienst doen in Nederland en in de Oost. In 1878 werd hij vanwege ziekte uit de Oost gerepatriëerd naar het ziekenhuis te Willemsoord. Op 1 mei 1881 gaat hij met pensioen met een jaargeld van Fl.2.300,-. Littel heeft diverse onderscheidingen verkregen o.a. voor Boni, Atjeh en Borneo. ARA, toegangsnummer 2.12.06, inventarisnummer 12, folio 37a.

23 Buyze, Marinus Cornelis geboren te Zierikzee op 23/7/1840. Werd tot kwekeling aan de Rijkskweekschool voor de Militaire Geneeskunde te Utrecht benoemd in september 1857. Benoeming tot Officier van Gezondheid 3^e klasse volgde in juli 1861. Op 8 april 1865 volgde benoeming tot 2^e klasse en op 1 januari 1871 tot OvG 1^e klasse. Tenslotte werd hij benoemd tot Dirigerend Officier van Gezondheid der 2^e Klasse met ingang van 1 augustus 1887. Hij werd nadat hij diverse reizen had gemaakt met ingang van 16 juni 1862 geplaatst aan boord van Zr.Ms. Zoutman. Na zijn verblijf in Suriname zou hij wisselend dienst doen in Nederland en in de Oost. Op 1 juni 1888 ging hij op eigen verzoek met nonactiviteitsverlof. Buyze heeft diverse eretekenen waaronder de Atjeh-medaille met gesp en is Officier in de Orde van Tunis. ARA, toegangsnummer 2.12.06, inv.nr. 12, folionummer 58a.

24 Een 'morgen' is een oude oppervlaktemaat waarvan de grootte in verschillende streken zeer uiteenloopt. Etymologisch moet het begrip worden verklaard uit het oppervlak dat iemand in een morgen kan ploegen.

School ships for midshipmen in the Dutch, British and U.S. navies in the 19th and beginning of the 20th century¹

MARC A. VAN ALPHEN

INTRODUCTION

Although the era of sail has passed away a long time ago, many Nautical or Naval Colleges still possess (old) sailing ships. Some are museum pieces, others function as boarding ship or floating school or are used for yachting. Several "Grand Old Ladies" are still in active service as sea-going practice ship for midshipmen.

It is unknown where and when such ships dedicated exclusively to (sail-) training of midshipmen were used for the first time.² Perhaps it was in France, where in 1682 three frigates set sail to give future naval officers experience at sea. In maritime empires like England and the Dutch Republic, special practice ships were unnecessary for a long time. In those countries boys who choose to join the navy were not put together on special practice ships. They embarked at regular men-of-war and learned their profession at sea under the motto "practice makes perfect". But even in countries with long maritime traditions like the Netherlands and Great Britain, the habit of training future officers on the job disappeared. In the 19th century practice sailing ships became a normal phenomenon all over the world. It was not until the beginning of the 20th century this policy changed. In the era of steam power, sailing ships were no longer necessary for the education and training of midshipmen.

There are many books and articles written about individual sailing ships, including school ships. However, publications about the history of school ships in general or in a specific country, are rare.³ In this article I will try to give an overall picture of the Dutch sailing school ships for midshipmen. Which ships were commissioned,

why were school ships introduced and how were they used? Next, the development in the Netherlands, where the first school ships for midshipmen were introduced in 1798, will be compared with the use of sailing ships for the education and training of midshipmen in Great Britain and America, the two countries the Dutch took warning from most in maritime and naval matters. Analyzing the use of school ships, there must be made a distinction between stationary and sea-going school ships. The so-called stationary ships were floating schools, boarding vessels or ships only used for sail instruction ashore or alongside the quay. The sea-going school ships were primarily for sail training and gaining practical experience at sea. Steamers with auxiliary sails and sailing ships with auxiliary steam power are included.

THE FIRST DUTCH SCHOOL SHIPS

Until about 1800 the Dutch Navy did not have any experience with training vessels or sea-going school ships. All naval personnel from shipboys to officers received their first training on board of operational warships. Stationed in the direct vicinity of the commanding officer the candidate naval officers learnt the important aspects of command and shipboard life straight from the horses mouth. The first mate instructed them in the art of navigation and familiarised them with the setting, reefing and bracing of the sails. For theoretical knowledge midshipmen relied on self study and courses taken ashore. Although the demands regarding theoretical knowledge grew in course of the 18th century the only real way to gain knowledge and experience remained to serve on board a warship on active duty.

During the Batavian and French Period (1795-1813) the so-called training on the job or fleet-education became more and more difficult and new ways were sought to alleviate this. The former Dutch Republic now conquered by France, found herself at war with Great Britain. In the 17th century the English and Dutch fleets were well matched. However circa 1800 Great Britain ruled the waves and for fear of losing too many vessels the Dutch fleet remained bottled up in port. So, what could be done for training of midshipmen? On the 15th of June 1798 the naval command suddenly assigned two brigs to the task of becoming training vessels to continue the education of midshipmen. The ten year old *Vlieg* (Fly) and brand new *Arend* (Eagle) were chosen for this purpose. Each school ship was armed with six canons and manned with forty hands: a captain, two lieutenants, a master, a first mate, a surgeon, a cook, six sailors and 27 midshipmen. To help train the large number of midshipmen a second mate was also assigned. The midshipmen on board the *Vlieg* and the *Arend* were not all young and inexperienced. Some had already served the navy for many years while others had no experience at all. Their ages ranged from barely twelve to almost thirty. The first sea-going school ships of the Dutch Navy only sailed in coastal waters. However the plan for sail training vessels had not thoroughly worked out and was badly prepared.⁴ Both brigs were only used for the sail training of midshipmen till November the 1st 1799. So this remarkable initiative was terminated after less than one and a half years.

After the disappearance of the two "Cadet-brigs" *Vlieg* and *Arend*, the naval command kept on searching for an alternative for the fleet-education of midshipmen. The newly founded (1801) Raad van Marine (Navy Council) assigned commander second class C.J. Wolterbeek (1766-1845) to the task of conceiving a plan for the implementation of a Naval College ashore. On April the 26th 1803 the new Naval

College under the name of "Cadets Institute for the Navy of the Batavian Republic" was opened. This Naval College was housed on board the guard-ship *Euridice* which was stationed in Hellevoetsluis (near the city of Rotterdam). The idea was that this frigate would double as both stationary schoolship as well as sea-going practice vessel. Unluckily the peace treaty implemented in Amiens in 1802 was short-lived. Once more the Dutch found themselves at war with Great Britain, so the planned training voyages had to be cancelled. In 1805 it was even decided to change the role of the *Euridice* completely and to use her for troop transportation to the East Indies.

Because there was no other ship available, the Naval College moved ashore and was established in a former plague-house on a small island called Feijenoord on the left bank of the Muese River in Rotterdam. For practical sail-training two brigs, the *Zeemeeuw* (Sea gull) and the *Haay* (Shark), both build in 1800, were assigned to the Naval College. The college stayed ashore but was replaced several times. In 1809 it moved to a number of empty East India Company warehouses in Enkhuizen. For instruction and practical lessons the brig *Irene* was made available. Three years later the college was closed by Napoleon. After the defeat of Napoleon and the liberation of the Netherlands, the Naval College was restored in 1816 in Delft, a town in the countryside where the education and training of army cadets was already concentrated. In Delft there was no direct link to the sea. In 1818 the Naval College received a stationary school ship: the armed schooner Zr.Ms. *Kapitein van Brakel* (HNLMS Captain van Brakel). This three masted ship was moored in a canal behind the institute for almost ten years. For a proper dose of salt water the pupils of the Naval College were dependent on operational warships on which cruises were undertaken.⁵

Table 1. Dutch Naval School Ships 1798-1828.

Number	Ship's Name	Type	Launching	Used as School Ship
(1)	<i>Arend</i>	brig	1798	1798-1799
(2)	<i>Vlieg</i>	brig	1788	1798-1799
(3)	<i>Euridice</i>	frigate	1802	1803-1805
(4)	<i>Zeemeeuw</i>	brig	1800	1806
(5)	<i>Haay</i>	brig	1800	1807-1809
(6)	<i>Irene</i>	brig	1807	1810-1812
(7)	<i>Kapitein van Brakel</i>	schooner	1803	1818-1828

THE HEYDAY OF THE DUTCH PRACTICE SHIPS

In 1828 the army moved its cadets to a new military training institute, the Royal Military Academy, at Breda. The midshipmen in Delft did not follow their colleagues of the army. It was decided to establish a separate naval institute at Medemblik, a small harbour on the Zuiderzee. This site was considered to be more appropriate to the navy than landlocked Breda. On 28 August 1829 the Royal Netherlands Naval College (RNNC) at Medemblik was officially opened.⁶ From now on every future naval officer had to follow the courses of the institute in Medemblik and pass the exams. The introduction of this condition was a radical change in the training of midshipmen. Till 1829 the most popular way of training future naval officers still was to take the boys directly to sea. Since the end of the 18th century only a small minority was first educated ashore at the Naval College (*Euridice*, Feijenoord, Enkhuizen, Delft) or at the private Nautical College in Amsterdam before they embarked on an operational men-of-war. Only this group was familiar with stationary or sea-going school ships. In 1801 no more than 5% of the midshipmen of the Dutch Navy was trained on this type of vessel. In 1817 still 81% of the midshipmen did not have any experience with school ships. About fifteen years later however, this proportion would be completely different.

The RNNC was a three/four-year-training program culminating in examinations⁷. In Medemblik theoretical knowledge was emphasised but there was also substantial attention for practical lessons like sail training. The Minister of the Navy, rear admiral C.J. Wolterbeek⁸, and the first commander of the RNNC, captain W. Kreekel (1773-1834), were all for it. During the early days of the RNNC in Medemblik a small cutter *Ever* (Wild boar) was used as practice ship.⁹ This was a temporary measure. In 1830 at the naval wharf in Amsterdam the keel was laid of a sea-going school ship specially designed for the RNNC.¹⁰ Two years later she was launched and from 1834 the midshipmen had the disposal of the well-equipped instruction corvette Zr.Ms. *Urania* (HNLMS *Urania*). This marked a new era. From now on trips made with a sailing school ship on the Zuiderzee were a fixed part of the education of every midshipman. In the second half of the 19th century naval officers without any school ship experience became scarce.

Thanks to the naval officer Pieter le Comte (1802-1849) we know exactly what the *Urania* looked like. He described the school ship in his book that was published shortly before her launch.¹¹ The wooden instruction corvette was 28.5 metres long, armed with ten carronades, and was both optically as well as practically well laid down. There were no unused spaces. In every nook and cranny often in the most ingenious way storage space had been created. The sailors and non-commissioned officers had

Table 2. Officers with School Ship Experience in the Dutch Navy.¹¹

Year	Total Number of Naval Officers	Trained on a School Ship
1801	334	24 [7%]
1817	286	96 [33%]
1832	323	112 [35%]
1847	339	232 [69%]
1862	359	342 [95%]

their own stairs and quarters amidships. The officers and midshipmen also had a separate staircase to their respective quarters. The area designated to the cadets was called "the large room". This adjoined the quarters for the sailors and was fitted with sixteen wardrobes, eight on each side, for equipment. There was also a cabinet for books and instruments and a buffet with washbasin. Iron hooks were attached to the deckbeams from which the hammocks were hung. The "officers room" (the Longroom) contained a cabinet and two cabins with fixed berths and a washbasin. Towards the stern the Longroom was connected to the captains cabin by a door. This tastefully fitted out area had a fixed berth and a decorated sliding door. There were also two prettily decorated sofas where bottles of wine could be stored in.

Every year the school ship of the RNNC made several trips – each of about six weeks – with midshipmen in the third or fourth. Moored in front of the institute the ship was also used as stationary school ship for lessons in rigging. Climbing the masts of the *Urania* was even propagated by the Minister of the Navy vice-admiral E. Lucas (1785-1870) and seen as a useful form of recreation. Miles ahead of the usual leisure activities at the Naval College in Medemblik, bowling, drinking coffee and smoking cigars, according to Lucas. The students of the RNNC probably saw this in a different light. The actual cruises with the ship were highly appreciated by them both educationally as well as recreationally. The midshipmen gained experience in different positions,

were given responsibility for various tasks and also had to perform "sailor's tasks". The training-voyages had a positive effect on the team spirit of the midshipmen. Harbour visits also played an important role in this development.

The first years the RNNC was troubled by limited financial resources and scepticism from naval officers of the "old school", i.e. officers trained on the job. However the practice vessel of the RNNC was beyond all criticism. In 1849, when the commander of the RNNC rear admiral H.F. Tengbergen (1795-1876), forced by a policy of retrenchment of the government, suggested to replace the *Urania* by a cheaper stationary school ship ashore, the Minister of the Navy, J.C. Rijk (1787-1854) was very put out over that proposal. The next year the successor of Rijk, Lucas, agreed to amalgamate the RNNC with the Royal Military Academy in Breda. An abrupt end came to the cruises with the *Urania*. To compensate for the loss of the use of the *Urania* the midshipmen in Breda were offered a yearly training voyage on an operational man-of-war.¹³ The marriage of convenience between army and navy did not last long. In 1854 it was decided that besides Breda also Willemsoord – an important naval base on the North Sea-coast in Den Helder – should become a place where midshipmen would be trained and educated. The naval cadet training-school in Breda was closed down shortly afterwards. From 1857 future naval officers were only trained at the RNNC in Willemsoord. The same year the *Urania* was once more assigned to the Naval College and regained her former function.¹⁴ For more

Table 3. Stationary School Ships RNNC 1829-1908.

Number	Ship's Name ¹⁶	Type	Launching	Used as School Ship
(1)	<i>Urania</i>	corvette	1832	1834-1850 1855-1857
(2)	<i>Rijn</i>	frigate	1816	1854-1856
(3)	<i>Kortenaer</i>	ship-of-the-line	1833	1856-1870
(4)	<i>Astrea</i>	corvette	1832	1867-1888
(5)	<i>Ternate</i>	brig	1849	1888-1893
(6)	<i>Aruba</i>	schooner	1873	1894-1907

than ten years instruction corvette Zr.Ms. *Urania* would have Willemsoord as its homeport. On September 1867 the vessel was withdrawn from service. The following year she was renamed *Astrea* and began a new life as stationary practice vessel of the RNNC.

THE STATIONARY SCHOOL SHIPS OF THE ROYAL NETHERLANDS NAVAL COLLEGE

In Willemsoord the training and education of midshipmen was not established in a building (like before in Medemblik and Breda) but (as in 1803) aboard a guard-ship, the frigate Zr.Ms. *Rijn* (Rhine). This choice was made under pressure. Because of the austerity policy of the government the accommodation in Willemsoord had to be cheap. And also quickly to complete, because the Minister of the Navy wanted the curriculum for midshipmen to start before the end of 1854.

In a few years the stationary school ship *Rijn* became too small and had to be replaced by an old ship-of-the-line *Kortenaer*. After this replacement the accommodations remained primitive and restricted.¹⁵ The midshipmen slept and ate aboard but there was not enough space for recreation and group teaching. Six days a week the midshipmen had to go ashore and march to a nearby naval dockyard, where provisional classrooms had been equipped in one of the storehouses.

However, the uncomfortable conditions

were not the only target of criticism. The *Rijn* and *Kortenaer* were both active as guard ships. As such, there were crew members aboard, and seamen who knew all the tricks were considered to be bad influences on young, inexperienced midshipmen. Somebody who complained regularly about this situation was Commander L.G. Brocx (1819-1880), headmaster of the RNNC since 1857. In 1868 he left the RNNC and became Minister of the Navy. Now he was in the position to fulfil his own dream: the construction of a specially designed building for the education and training of midshipmen in Den Helder. On 1 May 1870 this new building was officially opened. The accommodation of the RNNC on the dockyard regained the original function of storehouse. The *Rijn* lost its role as stationary school ship. However the RNNC still possessed two vessels for sail-instruction: the stationary school ship *Astrea* and the *Urania*, the second school ship for midshipmen with that name.

THE END OF THE SAIL-TRAINING VESSELS FOR DUTCH MIDSHIPMEN

After the *Urania* had been renamed *Astrea*, the RNNC received a new *Urania*.¹⁷ Just like its predecessor, the *Urania* that was attached to the RNNC from May 1868 was a wooden corvette built on the naval yard in Amsterdam. Her keel was laid in 1865 and she was launched two years later. In 1868 she was transferred to the



1. Midshipmen aboard the sail training vessel HNLMS Urania in 1907 or 1908. This school ship, built for the Royal Netherlands Naval College in Willemsoord (Den Helder), was launched in 1867. Collection Institute for Maritime History, The Hague.

naval base Willemsoord, Den Helder. The second Urania was almost ten meters longer than her predecessor was but she had a much lighter armament. Instead of twelve she only had four canons on board. The Zuiderzee was still the main cruising ground. Because of her shallow draft of 2.8 meters the Urania was less suitable for trips on the North Sea. During a summer-cruise the ship had a crew of eighty men. About a quarter were midshipmen.¹⁸

The replacement of the first Urania by another sailing ship took place in a period of transition. In 1870 a substantial part of the Dutch naval fleet – about 40% – still consisted of wooden sailing vessels.¹⁹ Of these sailing ships only a few regularly made voyages. The others were in service as guard ship, stationary train-

ing vessel, boardingship or, like the small gunboats, could only be used for the coastal defence. In the second half of the 19th century steamers and armoured ships became the norm.²⁰ However the importance of sail training already lost weight before 1850. The “first” Urania had it all till 1847. Then the RNNC received a paddle steamer bought by the navy from the Koninklijke Stoomboot Maatschappij (Royal Steaming Company). As with the Urania training-trips were undertaken on the Zuiderzee. The benefit of a sailing school ship was not boundless. In 1861 the headmaster of the RNNC Brocx decided to stop the annual cruise with the Urania for the midshipmen who were in the third. According to Brocx many of these boys could not miss the usual theoretical

Table 4. Sea-going School Ships RNNC 1829-1908.

Number	Ship's Name	Type	Launching	Used as School Ship
(1)	Ever	cutter	?	1831-1832
(2)	Urania	corvette	1832	1834-1850 1857-1867
(3)	Urania	corvette	1867	1868-1908
(4)	Argus	schooner	1882	1905-1907

lessons at the RNNC. Besides that, after the trip with the sailing school ship most midshipmen were too tired and sleepy to concentrate on the lessons ashore.²¹ From 1862 only the midshipmen in the fourth embarked on the Urania and stayed at sea for about two months.²² In 1879, short after the period of education and training was extended with a year, the old situation was restored. However in the new situation a part of the time originally reserved for a cruise with the Urania was transferred to a cruise with a steamer.

Although sail training became less important, for midshipmen the cruise on the Zuiderzee with the Urania stayed the climax of their training period at the RNNC.²³ Understandable. It was their first sea voyage and a welcome change after years of going to school. However in the beginning of the 20th century the attitude of midshipmen towards sail training changed. Publishing yokes about the Urania was no longer inappropriate.²⁴ Knowledge about sailing or sail vessels lost its value for a future naval officer. Sailing had become a sport and a healthy form of recreation.²⁵ Steamers did not need auxiliary sails anymore. Around 1900 the Dutch Navy only possessed two big sailing ships: the instruction corvette Nautilus, for the education and training of shipboys and sailors, and the Urania.

In 1908 both vessels lost their function. The instigator was commander Frits Bauduin (1864-1943). In 1908 he reported on the cruise he recently had made as commander of the Nautilus.²⁶ Bauduin did a hatchet job on the school

ship. He described sailing with the Nautilus as a pleasant expensive sport of no use for the education and training of modern naval personnel.²⁷ The minister, vice-admiral J. Wentholt (1851-1930) agreed with Bauduin. In the summer of 1908 the Urania made her last trip with midshipmen. When she left the harbour of Den Helder she was waved goodbye by a crowd of (retired) naval officers from all over the country who wanted to see their former school ship for the last time in action. Nostalgia at the end of an era. Until 1938 midshipmen only gained experience on cruises with operational men-of-war and small steamers of the RNNC.

EDUCATION AND TRAINING OF FUTURE NAVAL OFFICERS IN GREAT BRITAIN

In naval affairs the Dutch always kept an eye on Great Britain. In the 19th century for instance Dutch naval officers regularly visited British naval yards to study the use and development of steam-engines. In the field of education and training of future naval officers both navies followed the same line till the 18th century. Both Dutch and British naval officers learned their profession at sea. However, the Dutch system of training naval cadets on the job was less formal. Officers and first mate's instructed the boys without any official appointment as teacher or instructor. Aboard British men-of-war there was since about 1700 a crewmember explicitly in charge of the education of future naval officers, the so-called schoolmaster. Schoolmasters were required to teach the theo-



2. There are many publications about the oldest commissioned ship of the Royal Netherlands Navy, the *Urania*, a sea-going school ship for midshipmen. In 1938, after decades without a sail-training vessel, cruises made with this *Urania* became a fixed part of the curriculum of the Royal Netherlands Naval College again. The commissioning of this sailing ship more than sixty years ago was a remarkable event. However, the present school ship *Urania* built in 1928 is hardly to compare with her armed, much bigger predecessors. In the 19th century sailing a school ship was an introduction in real life aboard a man-of-war. Nowadays character building, teamspirit, yachting and showing the flag hold a prominent place. Collection Institute for Maritime History, The Hague.

ry and practice of navigation.²⁸ There must have been hundreds of these sailing teachers in the Royal Navy.²⁹ This form of ship-board instruction was not the only way future naval officers were schooled. In the 18th century the Admiralty also introduced a form of training and education ashore: the Naval Academy at Portsmouth.

The Naval Academy was established by Order in Council in February 1729, and opened its doors to forty young sons of noblemen and gentlemen in 1733. The opinions differ on the reason why the Admiralty established a Naval Academy and on the quality of this school.³⁰ In Portsmouth the young gentlemen were instructed in 2-3 years in subjects like arithmetic,

drawing, fencing, navigation, fortification, mathematics and French. After one year the scholars were excused from school two afternoons in each week. One afternoon they were instructed by the master shipwright in ship construction. The other afternoon they were carried by one of the masters "into the rigging house, store houses, and sail lofts". He also took them afloat. The Academy did not have a sea-going or stationary school ship by herself. For practical lessons in rigging and gunnery the Governor of the Academy could apply for "a vessel of small size".³¹

In 1806 the Naval Academy was renamed Royal Naval College (RNC). The building was enlarged and the number of places raised to

Table 5. Stationary School Ships of the Britannia system 1857-1905.

Number	Ship's Name	Type	Launching	Used as School Ship
(1)	<i>Illustrious</i> ³²	two-decker	1803	1857-1858
(2)	<i>Britannia</i>	three-decker	1820	1859-1869
(3)	<i>Hindustan</i>	two-decker	1841	1864-1905
(4)	<i>Britannia</i>	screw ship	1860	1869-1905

seventy, of which forty were reserved for the sons of officers. The curriculum did not change. Sail training stayed of minor importance. When the collegians embarked at Portsmouth it was to visit ships, go to Haslar Creek on Saturdays afternoon for cricket or to make an occasional cruise round the Isle of Wight in a small vessel.³³ In spite of several improvements like the appointment of James Inman, a first class mathematician, as headmaster, the Royal Naval College was just like the Naval Academy, no success. Both institutions were unpopular among naval officers. Only a small minority of the officer entry joined the navy from the college: 2.7% during the period 1806-14 and 11% after 1815. In 1837 the RNC was closed.³³ The training and education of future naval officers came again, just like before 1733, completely in the hands of sailing schoolmasters, now called naval instructors. In the Netherlands the development was just the opposite. In the beginning of the 19th century there were also teachers, called schoolmaster or instructor, working aboard Dutch men-of-war.³⁴ However, this form of ship-board instruction for naval cadets disappeared after the establishment of the Royal Netherlands Naval College in 1829.

THE STATIONARY VESSELS OF THE TRAINING SHIP SYSTEM

Almost 25 years after the establishment of the RNC, the Royal Navy introduced a radical change in the way naval cadets were schooled. The Admiralty did not consider the Dutch op-

tion – a Naval College ashore with here own practice ships. Probably, the bad reputation of the old institutions at Portsmouth, the Naval Academy and Royal Naval College, prevented the Admiralty to establish a school ashore. The traditional so called pitch-fork system with schoolmasters was however not satisfactory either.³⁵ In Great Britain training ships became the base of a new system for the education of naval cadets.³⁶ The new approach was to become known as the Britannia system. The establishment of a harbour training ship for future naval officers was intended to act as a filter to eliminate unsuitable candidates before they reached the seagoing Navy.³⁷ It was initiated by Admiralty Circular 288 of 23 February 1857. This Circular came into force in May 1857 and directed that officer entrants were not sent directly to sea anymore but to a dedicated training vessel. The curriculum was a combination of academic study – with subjects like algebra, geometry and French – and a comprehensive course in seamanship which included rigging and sail handling.³⁸ The cadets lived and were instructed on a harbour training ship. The ship was relocated several times, in 1862 she moved from Portsmouth to Portland and from there in 1863 to Dartmouth, but the concept stayed in force for almost half a century. The first stationary schoolship for cadets – HMS *Illustrious* – was only in commission for a short period. After two years she was succeeded by a larger, more commodious vessel: HMS *Britannia*. In 1864 the Admiralty decided to supplement the *Britannia* with another old ship, HMS *Hindustan*.³⁹ Five years later the *Britannia* was replaced by a large screw ship, the *Prince of Wales*,

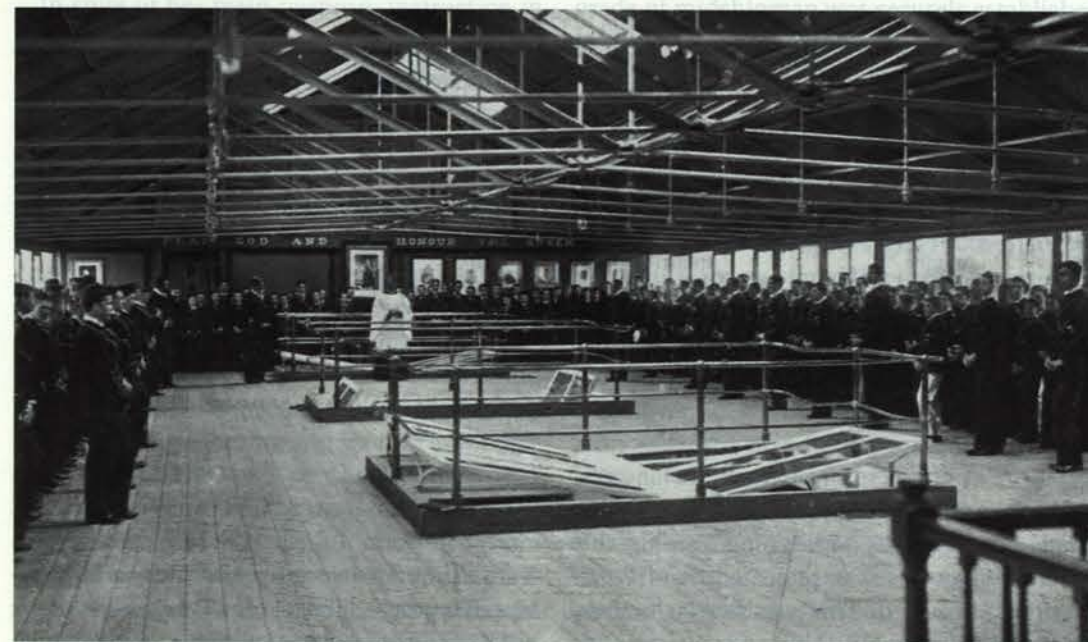


3. Two important ships of the Britannia system, HMS Hindostan (on the left) and HMS Britannia, anchored near Dartmouth, around 1900. Picture taken from E.P. Statham, *The Story of the "Britannia"* (London/Paris/New York/Melbourne, 1904).

that was renamed Britannia. Here predecessor was a wooden sailing ship with three masts that, if necessary, could spread her wings and sail away. The Prince of Wales was laid down in 1848 as a sailing three-decker but subsequently lengthened and eventually launched in 1860 as a screw ship. She never went to sea and when she was in commission as training vessel for cadets, "only one mast was supplied, so that she presents much more the aspects of a sheer hulk than the old ship".⁴⁰ Both training ships – the Hindostan and Britannia – were practically one by virtue of a connecting bridge.

The Britannia system was a success. The education and schooling of naval cadets was put on a higher plan, and the number of cadets that did not pass the lieutenant's examination decreased after 1857. The first years there was a shortage of space aboard the school ship and there were complaints about her location. At Portsmouth

the ship was moored in a muddy unhealthy creek. Ashore the sporting facilities were limited, while there was dangerous recreation (prostitution) in abundance. In December 1861 the Admiralty decided that the school ship would relocate to an isolated anchorage at Portland. It was a temporary solution. Because of new problems, like a lack of recreation facilities and the difficulty of leaving the ship in bad weather, the school ship was moved again in 1863. This time to the enclosed anchorage of Dartmouth. Six years later the shortage of space aboard was definitely solved, when the screw ship Britannia was moored right behind the stern of the Hindostan. Sometimes there were complaints about the accommodation, especially in relation to the health of the cadets. But these problems were solved or proved to be of minor importance. The naval cadets themselves hardly ever complained about there floating school. However, new



4. Cadets at prayers on board HMS Britannia, around 1900. Picture taken from E.P. Statham, *The Story of the "Britannia"* (London/Paris/New York/Melbourne, 1904).

naval technologies demanded laboratories and other special rooms for research and instruction. The old hulks of HMS Britannia and HMS Hindostan were unsuitable for that. In the beginning of the 20th century the Britannia system was broken up and the education and training of naval cadets came back ashore.⁴² Not at one place but two: the Royal Naval College at Osborne⁴³ (opened in 1903) and Dartmouth (started in 1905). The curriculum was four years. After two years at Osborne the cadets moved to Dartmouth. From the summer of 1905 the Royal Navy and Royal Netherlands Navy had the same concept again; a college ashore with sea-going training vessels nearby.

THE SEA-GOING VESSELS OF THE TRAINING SHIP SYSTEM

Why the *Illustrious*, *Britannia*, *Hindostan* and *Prince of Wales*/*Britannia* were chosen by the Admiralty to become a school ship for future naval

officers is unclear. None of these vessels was designed as school ship. They were probably old or surplus at the right time, and available. About the school ships used for practical sail instruction we even know less. There is no list of all the ships once attached to HMS Britannia as a sea-going tender for cadets.⁴⁴ Especially the first years of the existence of the training ship system are badly documented. However in those early days around 1860 the syllabus was not dominated by sail-based seamanship, but by academic subjects like mathematics.⁴⁵ The cadets were instructed on the harbour training ship for a year, rounded off with an examination. The next three months were reserved for a cruise with a sea-going training ship. But there is no evidence that the ships that were commissioned for this purpose, like the frigate *Eurydice*, were actually employed at this time.⁴⁶ There is also a brig mentioned, the *Sealark*, that "continued to be tender to the *Britannia* up to the end of 1861".⁴⁷ But whether this brig was structural or incidentally used for sail-training, is un-

Table 6. Sea-going School Ships of the Britannia system 1857-1905.

Number	Ship's Name	Type	Launching	Used as School Ship
(1)	Sealark	brig	1843	? - 1861
(2)	Eurydice	frigate	1843	? - ?
(3)	Britannia	three-decker	1820	1862
(4)	Bristol	steam frigate	1861	1868 - ?
(5)	Ariadne	steam frigate	1859	? - 1873
(6)	Dapper	steam gunboat	1860	1871 - 1884
(7)	Wave	steam bark	?	1884 - ?
(8)	Syren	schooner yacht	?	? - ?
(9)	Arrow	schooner	?	? - ?
(10)	Racer	screw sloop	1884	1896 - 1902

known. In 1862 the stationary school ship *Britannia* functioned as a sea-going training ship herself, when she was relocated from Portsmouth to Portland. This was her last sailing voyage.

In 1869 the character of the *Britannia* concept changed when a floating hulk replaced the old school ship. The next year aboard this hulk "there was talk for the first time of a college ashore".⁴⁸ After that it regularly cropped up for discussion.⁴⁹ It can be purely accidental, but in 1870 the Royal Netherlands Naval College moved ashore. Two years after the arrival of the new sea-going practice vessel *Urania* at Den Helder, the stationary harbour school ship *Kortenaar* was replaced by a brand new building, specially designed for the education, training and lodging of naval cadets. In the opinion of Dutch midshipmen the British training ship system was now an old fashioned concept.⁵⁰

In August 1869 the Lords Commissioners of the Admiralty decided to increase the time during which naval cadets would be under training. The period in the new *Britannia* was extended from one to two years. On passing out of the *Britannia*, the cadets were appointed for a year to a sea-going training-ship, HMS *Bristol* superseded after a short time by the *Ariadne*.⁵¹ Both steam frigates were operational man-of-war and no tenders of the *Britannia*. They could also go under sail. With these ships the naval cadets

made long cruises to see "blue water". For a short voyage in front of the harbour the naval cadets were allowed to use one of the three sailing cutters that were available. However, after a tragic accident during a cruise with the *Ariadne* which cost the lives of ten crewmembers, the Admiralty in 1873 cancelled the orders concerning the sea-going trainingship.

That sea-going training was abolished did not mean the end of the practical sail-instruction. The *Dapper*, a tender of the *Britannia*, was not only employed in going to Plymouth for stores, etc. This old steam gunboat was rigged as a bark for instructional purposes and cruised with senior classes outside the harbour under sail.⁵² In 1884 another bark-rigged tender, the *Wave*, replaced her. The next year, a regular training squadron was established. However, these ships were operational men-of-war and they were not attached to the harbour school ship *Britannia*, like the *Wave*.

Because the main purpose of the *Wave* was to provide instruction in steam, a high powered committee appointed by the Admiralty in 1885, recommended that a ship-rigged corvette should be introduced for sailing instruction.⁵³ The commander of the *Britannia*, Captain Sir Nathaniel Bowden-Smith did not agree. In his opinion masts and rigging were fast becoming obsolete and there was a sailing yacht and plenty of boats for boys to handle under oars or sail.⁵⁴

In spite of her main purpose, instruction in steam, the engine of the *Wave* was only used to enter or leave the harbour. Around 1893 this 'bark with auxiliary steam power' was still cruising outside the harbour under sail. Besides the tender there were at that time also two schooners (the *Syren* and the *Arrow*) to take the cadets of the *Britannia* and *Hindustan* out for a cruise. In 1896 a new tender arrived at Dartmouth, the *Racer*. Even this screw sloop was used in the traditional way. Classes were embarked in her for instruction in seamanship and steam, but she cruised under sail and only used steam for entering and leaving harbour.⁵⁵ During the winter the *Racer* was laid up.

Sails as auxiliary power survived till the end of the century. The end of the *Britannia* system more or less went together with the end of practical sail instruction for naval cadets and cruises under sail.⁵⁶ In 1902 the *Racer* made her last cruise under sail with naval cadets of the *Britannia*. The next year she moved to the new Royal Naval College at Osborne. There she was still used as an instructional ship, but now denuded of her yards and sails.⁵⁷ However, at the Osborne College, a cruise in the *Racer* under steam, stayed one of the features to which the cadets looked forward.⁵⁸ During the last three years of the *Britannia* system, also the cadets of the harbour school ships only made cruises under steam.⁵⁹ In 1902, thirty years after the accident with the *Ariadne*, cadets of the *Britannia* made again a blue-water cruise.⁶⁰ This time with a ship under a cloud of smoke, not of canvas like in 1872.

THE AMERICAN WAY

Since the 17th century the Dutch navy kept a close watch on Great Britain. However in the 19th century the Dutch also focused on another, rising maritime power: America. How was the education and training of midshipmen organised in the New World? Did school ships play an important role in the U.S. Navy too?

At the beginning of the 18th century the

grade of midshipman was securely established as the primary step in the life of an American sea officer. Prior to the Revolution the training received on board was supplemented by naval schools ashore. Several colonies had instituted such schools, but only for their own naval forces.⁶¹ After the Revolution a Navy Department was established in 1798. From that moment the training of midshipmen was assigned to schoolmasters, just as in Great Britain. The schoolmaster system was far from perfect. In 1800 Secretary of War James McHenry submitted to Congress, with the approval of president John Adams, a plan for the establishment of a National Academy to train young men for the army and navy.⁶² Because the idea was generally held that practical work on board a ship was the only proper training for a sea officer, the plan only served as the basis for an Academy of the Army. In 1802 the Military Academy at West Point was founded.

The following decades, different Secretaries of the Navy urged the establishment of a permanently organised naval school. In spite of many attempts made to induce Congress to establish such an institution, it took more than forty years before a naval school of instruction corresponding with the Military Academy was founded. March 1845 George Bancroft became Secretary of the Navy in the cabinet of president James K. Polk. He was an authority on education. His plan to establish a naval school for midshipmen at Annapolis without the necessity of securing an appropriation from Congress, was realised in less than a year. On October 10 of 1845 the Naval School was formally opened by her first superintendent, commander Franklin Buchanan.⁶³ After five years the name, Naval School, was changed in United States Naval Academy.

SUMMER CRUISES AND SEA-GOING SCHOOL SHIPS FOR MIDSHIPMEN

The importance of a practice ship attached to the school was already noticed by commander

Buchanan. In his plan of the Naval School, drawn up at Bancroft's request in August 1845, Buchanan asked that a "sloop of war, or brig be connected with the institution as a school of practice in seamanship, evolutions and gunnery".⁶⁴ In spite of Bancroft's approval the Naval School started in Annapolis without such vessel. The course comprised five years, but only the first and last were spent at school, the intervening three at sea. During the period Buchanan served as superintendent he urged Secretary Bancroft several times to have a school ship. However, when Buchanan left the Naval School in 1847 there was still no practice vessel.

In 1850-1851 the school was reorganised. The Naval School became the U.S. Naval Academy and the course changed too. The course at the Academy was made a consecutive one of four years with an annual summer practice cruise of three months.⁶⁵ The previous idea of sending students to sea during an intermediate three years was dropped. Buchanan's express wish for a practice ship was fulfilled. In 1851 two ships were sent to Annapolis for duty as a practice ship at the Naval Academy, a small steamer, *John Hancock* and a sloop-of-war, the *Preble*. The steamer was new, but she only served for a Chesapeake Bay cruise and left at the end of the summer.⁶⁶ The *Preble* however, launched in 1839 and commissioned in 1840, was assigned to the Academy and served as a practice ship for midshipmen until 1858. The first foreign summer practice cruise was made in 1852. According to the regulations of the U.S. Naval Academy, published in 1855, the midshipmen were required on board the practice vessel 'to steer; have the lead and log; assist in sending up and down yards and masts; in the management of sails; working ship, and such other duties connected with practical seamanship'.⁶⁷ During the summers of 1855, 1856, 1859 and 1860 another sloop-of-war, the *Plymouth*, also served as a training ship for midshipmen.⁶⁸ In 1859 when the already crowded academy was quickly running out of space for

the increased number of midshipmen, the *Plymouth* was transformed into a floating dormitory.⁶⁹ But, according to midshipman Oliver Ambrose Batcheller, even then the opportunities for education were unsurpassed. "We have to go through with all manoeuvring of the ship: reefing sails, managing great guns and practising small arms is part of our daily exercises" he wrote his parents in the winter of 1859.⁷⁰

In 1860 the *Constitution* was attached to the U.S. Naval Academy as school ship after five years of decommissioned status.⁷¹ Short after the arrival of this 63 years old famous frigate, the Civil War disturbed the routine of cruises and caused a temporary removal of the Academy to Newport, Rhode Island.⁷² There the *Constitution* was used as a stationary school ship. In 1862 another frigate, the *Santee*, reached Newport and became a stationary school ship of the Naval Academy "in exile" too. Midshipmen lived, studied and attended classes in both frigates. Life in these ships was grim. For washing there were no shower-baths, only a few bowls and a week-end tub.⁷³ The practice cruises were made with the famous racing schooner *America*, the sloops-of-war *Macedonian* and *John Adams*, and the frigate *Marion*.

In 1865 the Naval Academy moved back to Fort Severn at Annapolis. There the *Constitution*, *Santee*, *America*, *Macedonian* and *Marion* continued their duty as school and practice ships. A few years later, the Head of the Department of Seamanship at the Naval Academy concluded that the advantages derived from the combination of "theoretical instruction at the Academy with the practical work of seamanship on board a vessel attached to the institution were soon evidenced".⁷⁴

In 1871 the Naval Academy's practice vessels got company of a bigger sailing ship: the *Constellation*. No other sailing ship has been attached to the Naval Academy for such a long time as a sea-going training vessel. She was the permanent ship for the summer practice cruises until the early nineties.

Table 7. Sea-going School Ships U.S. Naval Academy 1850-1912.

Number	Ship's Name	Type	Launching	Used as School Ship
(1)	<i>Preble</i>	sloop-of-war	1839	1851-1854 1856-1858
(2)	<i>Plymouth</i>	sloop-of-war	1844	1855-1856 1859-1860
(3)	<i>Constitution</i>	frigate	1797	1860-1871
(4)	<i>John Adams</i>	frigate	1799	1862
(5)	<i>Marion</i>	sloop-of-war	1839	1862-1870
(6)	<i>Macedonian</i>	frigate	1836	1863-1870
(7)	<i>America</i> ⁷⁵	schooner yacht	1851	1863-1873
(8)	<i>Dale</i> ⁷⁶	sloop-of-war	1839	1867-1884
(9)	<i>Constellation</i> ⁷⁷	corvette	1854	1871-1893
(10)	<i>Hartford</i>	screw sloop-of-war	1858	1899-1912
(11)	<i>Chesapeake</i>	bark	1899	1900-1909

After the *Constellation* had left the Naval Academy, it became the practice for the cadet engineers to make their cruises independently of the sailing ships.⁷⁸ Around 1900 there were still two sailing ships attached to the Naval Academy for the midshipman cruises, the *Hartford*, and the *Chesapeake*. The *Hartford* was launched in 1858 by the Boston Navy Yard. Before she became a training and cruise ship for midshipmen in 1899 she was rebuilt at Mare Island. From 1900 the Naval Academy had at her disposal a unique ship: the *Chesapeake*. This practice ship was brand new – launched in 1899, commissioned in 1900 – and more important, she was constructed especially for the midshipmen cruises. The *Chesapeake* (renamed *Severn* on 15 June 1905) was a three-masted wooden bark with auxiliary steam power and the last square-rigger to be built for the U.S. Navy.

A remarkable development compared with the British approach, was that around 1900 practical sail instruction and sailing cruises for midshipmen were criticised. Of course midshipmen of the U.S. Navy also made cruises with steamers without auxiliary sails, just like their Dutch and British colleagues.⁷⁹ The practice ship USS *Chesapeake* served the Naval Academy only for ten years. She was not the last sail-

ing ship that was attached to the U.S. Naval Academy as sea-going practice vessel. In 1912 the old *Hartford* was transferred from Annapolis to Charleston, S.C., for use as station ship. That year marked "the disappearance of sail" and "the loss of the Academy's individual practice ships".⁸⁰ From now on all midshipmen made cruises on board operational men-of-war, all ships without (auxiliary) sails.

THE STATIONARY SCHOOL SHIPS OF THE U.S. NAVAL ACADEMY

1912 was also a special year for the stationary school ships of the Naval Academy, because it marked the end of the frigate *Santee*. This stationary school ship served the Naval Academy without interruption for half a century. After the Academy was moved back in 1865 to Annapolis, the *Santee* was used as a gunnery ship and barrack ship for beginners and punished midshipmen. She ended her long career as stationary school ship on 2 April 1912 when the 57 year old frigate sank at her mooring and was sold for scrap.

The *Santee* was the first full-time stationary school ship of the Naval Academy. She served

5. Midshipmen manning the yards for sail drill aboard USS Chesapeake, about 1901. Collection U.S. Naval Academy Museum, Annapolis.



in Annapolis without sails, mizzenmast and fore- and main topmast. Some practice vessels, like the *Constitution* and *Chesapeake* also functioned as stationary school ship, but only when they were not needed for sea-going purposes. However the successor of the *Santee*, the 25 year old cruiser *Reina Mercedes*, was exclusively used as a stationary ship or floating hulk. Just like

the *Santee* she provide quarters for midshipmen under disciplinary restriction.

One of the last sailing ships that was attached to the Naval Academy as stationary school ship was the *Cumberland*. This steel-hulled sailing bark was launched in 1904 and sent to Annapolis in 1919. She was maintained at the Naval

Table 8. Stationary School Ships U.S. Naval Academy 1850-1957.

Number	Ship's Name	Type	Launching	Used as School Ship
(1)	<i>Constitution</i>	frigate	1797	1860-1870
(2)	<i>Santee</i>	frigate	1855	1862-1912
(3)	<i>Chesapeake</i>	bark	1899	1900-1909
(4)	<i>Reina Mercedes</i>	cruiser	1887	1912-1957
(5)	<i>Cumberland</i>	bark	1904	1919-1946

Academy until decommissioned in 1946. The decommissioning of the *Reina Mercedes*, that left her pier only a few times for necessary repairs, followed in 1957. The era of sailing ships used for the accommodation of midshipmen was over.

CONCLUSION

The American, British and Dutch navies all used school ships for the education and training of their midshipmen. But not at the same time and not for the same reason. During the years 1795-1813 the Netherlands were dominated by France. The instruction vessels that set sail in 1797 and the establishment in 1803 of a Naval College on board a guard ship, both were "French solutions". Because Great Britain blockaded Dutch harbours, the traditional training on the job on board of warships in service was impossible. These first naval school ships used in the Netherlands around 1800 were not satisfactory. After the Naval College had moved ashore in 1805, it became a custom to attach one or more practice vessels to this institution. In this way midshipmen could already gain practical experience before they left the Naval College and were sent to the fleet. Because only a small minority of the midshipmen were schooled at a Naval College, most naval officers did not have any experience with school ships. However this changed in 1829 when the Naval College moved from Delft to Medemblik and every future naval officer had to pass the exams of this institution

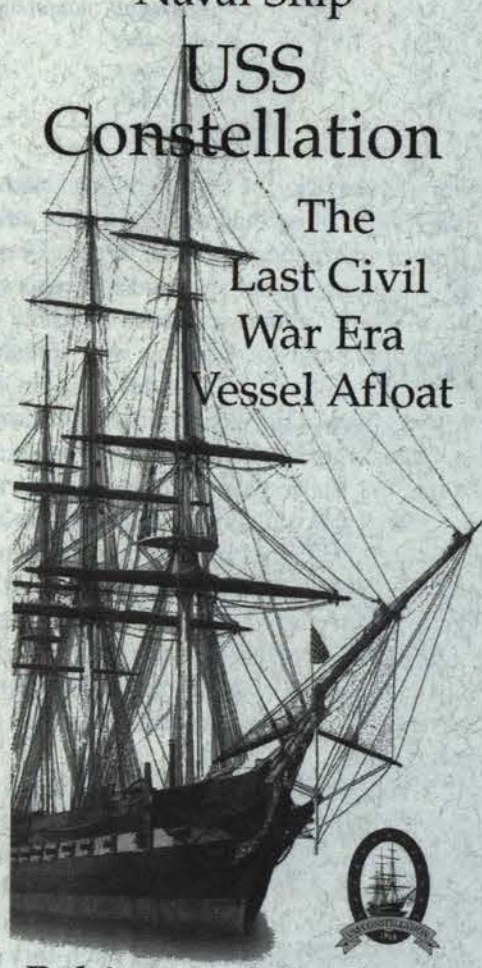
ashore. From 1834 the so-called Royal Netherlands Naval College had the disposal of a fully equipped instruction corvette: *Zr.Ms. Urania*. This sea-going school ship and her successor with the same name were both specially designed and build for cruising with midshipmen. Till 1908 cruises under sail on the *Zuiderzee* were a fixed part of the education of every midshipman. A cruise with the sea-going school ship *Urania* was not only an important part of the curriculum at the RNNC. It was also the most appreciated part of the program. It motivated the midshipmen and was good for their esprit de corps. In contrast with the sea-going practice vessels, the stationary schools ships of the RNNC were of minor importance. On the other side of the North Sea, it was just the opposite.

In Great Britain stationary school ships became the backbone of the training system for midshipmen. This system of training future naval officers first on board a harbour school ship before sending them to sea, started in 1857. It replaced the traditional pitch-fork system with schoolmasters and naval instructors. One of the sailing men-of-war involved, the *Britannia*, gave her name to the new training ship system. Several tenders and other vessels that were attached to the harbour school ship were used for practical sail instruction. However after a tragic accident with one of the training ships in 1872 sea-going training was abolished. It took thirty years before midshipmen of the *Britannia* made again a blue-water cruise. This time on board a cruiser with steam power and no (auxiliary) sails. The last cruise

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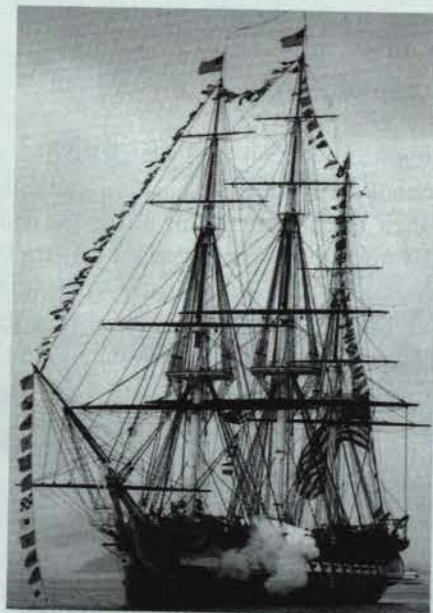
USS Constitution Museum

Charlestown Navy Yard, P.O. Box 1812
Boston, MA 02129
617-426-1812
www.usconstitutionmuseum.org

Hours: May 1-Oct 31, daily 9:00am-6:00pm; Nov 1-Apr 30, daily 10:00am-5:00pm; closed Thanksgiving, Christmas, New Year's Day. Free admission, donations accepted, gift shop. Group reservations required.

The USS Constitution Museum, adjacent to "Old Ironsides" in the Charlestown Navy Yard, is a private, nonprofit institution dedicated to collecting, preserving, and displaying objects related to *Constitution* and the men and women who have served on board.

The ship's 200-year history is told through the comprehensive exhibition "Old Ironsides" in War & Peace" and interactive exhibits where visitors can sail *Constitution* into battle, fire a cannon, and build a ship model. Lectures, programs, and special exhibits occur throughout the year; visit the museum's web site for the program schedule.



6. Publicity brochures from 1999 of two former American school ships for midshipmen, USS *Constellation* and USS *Constitution*, both preserved as floating exhibits. The sailing corvette *Constellation* is located in Baltimore inner harbour. The frigate *Constitution*, the oldest commissioned warship afloat in the world, is moored at the Charlestown Navy Yard in Boston. Collection Institute for Maritime History, The Hague.

made under sail was with one of the tenders of the *Britannia* in 1902. Three years later the training ship system was history too. In 1905 the training and education of midshipmen moved from the stationary school ships in the

harbour of Dartmouth to a brand new building ashore.

The training system used in the United States of America had more in common with the Dutch approach than with the *Britannia* system.

After the foundation of a Naval School at Annapolis in 1845 – renamed in 1850 United States Naval Academy – the education and training of American midshipmen was no longer in the hands of schoolmasters on board the larger men-of-war. From 1851 sea-going school ships were attached to the Naval Academy for sail training and summer cruises. The summer cruises became an important part of the curriculum. Nevertheless it took almost half a century before a sea-going sailing ship that was specially built for the education and training of midshipmen was attached to the U.S. Naval Academy. However only twelve years later – in 1912 – the era of sail was also closed at the Naval Academy.

From 1860 till 1957 the U.S. Naval Academy used (old) sailing ships as stationary school ships to accommodate (punished) midshipmen. But these ships hardly ever sailed and they were no part of a special concept like the *Britannia* system. In spite of that, one of these old Naval Academy stationary school ships – the frigate *Santee* – was characterised in 1976 by the Naval History Division Department of the Navy as "a strong and memorable agent in moulding the nation's naval officers".⁸¹

In the literature about the education and training of midshipmen in the 19th century there has always been much attention for the leading authorities at the institutions. In America the superintendents of the Naval School and U.S. Naval Academy, in Great Britain the officers who commanded the *Britannia* and in the Netherlands the commanders of the Royal Netherlands Naval College. Of course, the idea's and activities of these men were important but for midshipmen their first cruise with a practice vessel or the time they spend in a stationary school ship made deeper impression. Therefore it is strange that in all those books and articles about the education and training of future naval officers in the Netherlands, Great Britain and the United States of America nobody focuses on the school ships involved.⁸² If these vessels would have been better docu-

mented and studied, than the recent well-known controversy about the age of the USS *Constellation* probably would never have happened.⁸³

NOTES

- 1 This article is an adapted version of a paper presented at the Fourteenth Naval History Symposium, U.S. Naval Academy, Annapolis, Maryland, U.S.A., 23-25 September 1999.
- 2 In the Netherlands in the 16th century personal servants of the commanding officer of a ship were called "gentilhommes" or "adelborsten" (midshipmen). See L. Sicking, *Zeemacht en Onmacht. Maritieme politiek in de Nederlanden 1488-1558* (Amsterdam, 1998) 203. In the 17th century midshipman became the usual term for a future naval officer. Only during the Batavian-French Period (1795-1813) in which the Netherlands were dominated by France, this name was replaced by "cadet". In Great-Britain future naval officers were known as "volunteers". There were two types of volunteers: the "Captain's Servant" and the "Volunteer per Order" or "King Letter Boy". In 1843 the term "Naval Cadet" appears for the first time. This term became the usual name for future naval officers. Naval cadets who passed their examination and were sent to the fleet for further practical experience, were called "midshipmen". Just like the Netherlands, in America too, future naval officers were called midshipmen. Only between 1882 and 1902 the name "midshipman" was temporary replaced in the U.S.A. by "naval cadet". See R. Earle, *Life at the U.S. Naval Academy. The making of the American Naval Officer* (New York/London, 1917) 23-24.
- 3 See: *Sail Training and Cadet Ships* (Glasgow, 1956) from Harold A. Underhill, *The sailing school-ships* (London, 1962) from A.A. Hurst and *Die Deutschen Schulschiffe. 1818 bis heute* (Hamburg, 1998) from Otto Bönisch.
- 4 For more information about the first Dutch naval school ships, see: Marc van Alphen, 'The history of the sail training vessel HNLMS *Uranian*', in: H.P.G. Vogelzang e.a. (eds.), *Hr.Ms. Urania. Caveo non timeo* (Delft, 1999) 6-26.
- 5 In the summer of 1817 midshipmen of the Naval College made a cruise on board the brig *Zr.Ms. Havik* (HNLMS *Hawk*), an operational man-of-war. From 1818 the summer-cruises were made with the brig *Zr.Ms. Koerier* (HNLMS *Courier*).
- 6 Marc A. van Alphen, 'Education and Training of Officers of the Royal Netherlands Navy (1829-1870)', in: William B. Cogar (ed.), *New Interpretations in Naval History. Selected Papers from the Twelfth Naval History Symposium. Held at the United States Naval Academy 26-27 October 1995* (Annapolis, 1997) 166.
- 7 Those who passed the exams went to the fleet for four years to gain practical experience. Thus, it took at least eight years before a midshipman could become lieutenant. Marc A. van Alphen, 'Education and Training', 167.
- 8 He was the architect of the first Naval College in the Netherlands in 1803. Constantijn Johan Wolterbeek became director-general of the Ministry of the Navy (later called Minister of the Navy) on the first of January 1830,

- and kept this function for more than ten years. In 1831 he was promoted to vice-admiral.
- 9 The stationary school ship of the Naval College in Delft was not moved to Medemblik but sold for scrap.
 - 10 The Design Engineer First Class P. Schuijt jr. was the designer and builder of the vessel.
 - 11 Marines are excluded. The figures of table 2 are taken from: Naamlijst van het corps zee-officieren by 's Lands marine voor het jaar 1801 (Den Haag, [1801]), Naamlijst en rangschikking van het vaste corps zee-officieren, in dienst van zyne Majesteit den koning der Nederlanden. Zoo als hetzelfde zich bevond op den eersten april 1817 (Den Haag, [1817]), Koninklijke Nederlandsche Marine, op den 1 Januarij 1832 (Den Haag, 1832), Koninklijke Nederlandsche Marine, op den 1 Januarij 1847 (Den Haag, 1847) Koninklijke Nederlandsche Marine, op den 1 Januarij 1862 (Den Haag, 1862) and M.A. van Alphen, 'Voorlopers van het Koninklijk Instituut voor de Marine. De opleiding van adelborsten tot 1829', in: *Mars et Historia* 3 (1996) 11-39.
 - 12 P. le Comte, *Afbeeldingen van Schepen en Vaartuigen in verschillende bewegingen* (Amsterdam, 1831) 30-33.
 - 13 This was the brig Zr.Ms. Zeehond (HNLMS Seal).
 - 14 After the summer cruise of 1850 the *Urania* had been moved to Hellevoetsluis and laid up there. Shortly after this the former sail-training vessel was brought into service as accommodation vessel in Rotterdam. From 1855 she was moored in Willemsoord and used as stationary training vessel for midshipmen. Two years later the *Urania* also regained her old function of sea going practice ship of the RNNC.
 - 15 Van Alphen, 'Education and Training', 169.
 - 16 Several of these school ships were renamed men-of-war, like the *Rijn* (originally called *la Vestale*) and *Kortenaar* (ship's name till 1844 *Jupiter*). Before 1867 the *Astrea* was already assigned to the RNNC as the sea-going school ship *Urania*.
 - 17 It was understandable that the name *Urania* kept reserved for the sail-training vessel of the midshipmen. In the Greek mythology *Urania* is the muse of astronomy. In the 19th century astronomy was an important subject at the RNNC.
 - 18 The Hague, National Archive (Algemeen Rijksarchief), Archive Ministry of the Navy, Ship's logs, inv. nr. 7312, Log of the school ship *Urania*, 1873.
 - 19 'Staat van de Nederlandsche zeemagt op 1 november 1870', *Jaarboekje voor de adelborsten van het Koninklijke Instituut voor de Marine te Willemsoord* (Nieuwediep, 1871) 41-42. From the Dutch fleet (123 ships in total) fifty vessels were wooden sailing ships.
 - 20 Anita M.C. van Dissel, 'Embarking on a new course: personnel, ships and administrative reforms in the Royal Netherlands Navy, 1814-1914', in: P.C. van Royen, Lewis R. Fischer and David M. Williams (eds.), *Frutta di Mare. Evolution and Revolution in the Maritime World in the 19th and 20th Centuries*, Proceedings of the Second International Congress of Maritime History 5-8 June 1996, Amsterdam and Rotterdam, the Netherlands (Amsterdam, 1998) 106-108.
 - 21 The Hague, Institute for Maritime History (hereafter IMH), Archive Royal Netherlands Naval College, Annual Report of the Headmaster of the RNNC, 22 November 1861.
 - 22 The days before the embarkment were reserved for a final exam in the theoretical subjects. The last day of the cruise the midshipmen took an exam in the practical subjects aboard the *Urania*. Every naval cadet who passed both exams was promoted to midshipman first class and left the RNNC. After the usual summer leave these midshipmen went to the fleet. After four years of practical experience a midshipman first class could become lieutenant.
 - 23 Since 1871 the midshipmen of the RNNC published a yearbook. In these yearbooks there are many odes to the *Urania*. Also retired naval officers who published their memoirs were always enthusiastic about the sail ship *Urania* when they described their time of education and training at the RNNC in Medemblik or Willemsoord.
 - 24 See for instance the yearbook of the RNNC of 1907, 88-89.
 - 25 In 1904 midshipmen of the RNNC established a sailing and rowing club for naval cadets.
 - 26 *Jaarboek van de Koninklijke Marine 1907-1908* (Den Haag, 1909) 101-125.
 - 27 It is curious that the end of sail training for midshipmen with the *Urania* in 1908 was caused by one of the founders of the Koninklijke Marine Jacht-Club (the Royal Naval Yacht-Club). See H. Vandersmissen (ed.), *Zeilen voor Zee-manschap. 100 jaar Koninklijke Marine Jacht-Club* (Witmarsum, [1999]) 25-26.
 - 28 See for the schoolmaster's regulations and instructions, Brian Lavery (ed.) *Shipboard life and organisation, 1731-1815*. Publications of the Navy Records Society, Vol. 138 (Aldershot/Brookfield, 1998) 43.
 - 29 F.B. Sullivan, 'The Naval Schoolmaster during the Eighteenth Century and the Early Nineteenth Century', in: *The Mariner's Mirror* 62 (1976) 311-325.
 - 30 According to Christopher Lloyd, 'The Royal Naval Colleges at Portsmouth and Greenwich', in: *The Mariner's Mirror* 52 (1966) 145, the Naval Academy at Portsmouth was an obscure and unpopular institution. In his critical opinion the Admiralty had founded the Academy only "to provide a mode of entry into the Navy for its own nominees which would be an alternative to the usual method favored by naval officers, whereby their proteges entered as Captain's Servants." For a completely different opinion, see E.P. Statham, *The Story of the "Britannia"* (London, 1904) 8 and 14. Statham calls the Naval Academy a complete success and explains the founding of this institution as a "recognition of the necessity for some preliminary scientific training for young naval officers before sending them to sea". In more recent publications like N.A.M. Rodger, 'Officers, gentlemen and their education 1793-1860', in: *Les empires en guerre et paix 1793-1860. Journées franco-anglaises d'histoire de la Marine*, Portsmouth, 23-26 mars 1988 (Vincennes, 1990), Lloyd's view is followed.
 - 31 Statham, *Story of the "Britannia"*, 254.
 - 32 Ibidem, 24 and 31.
 - 33 In 1839 the college at Portsmouth was reopened. But as an institution of higher education for young gentlemen and officers of the fleet and not for naval cadets.
 - 34 The schoolmasters of the Royal Netherlands Navy often had an ambivalent position aboard and were also working as bay man.
 - 35 Sir James Kay-Shuttleworth, in 1839 appointed as secretary of the Committee of the Privy Council on Education, concluded in 1840 "that a king's ship is as compared to a school, what a slave estate in Carolina is to an English park". See David McLean, *Education and Empire. Naval Tradition and England's Elite Schooling* (London/New York, 1999) 58.
 - 36 Just like the start of the Naval College, the founding of the training ship system does not have an univocal explanation. The vision of E.P. Statham that Sir James Graham, First Lord of the Admiralty from 1853 to 1855, was the founder of the training ship system in Great Britain, has recently been criticized by H.W. Dickinson, "Britannia Rules": The Early Years of Modern Royal Naval Officer Training', in: W.B. Cogar (ed.), *New Interpretations in Naval History. Selected Papers from the Twelfth Naval History Symposium* (Annapolis, 1997) 142-143.
 - 37 Rodger, 'Officers, gentlemen and education', 148.
 - 38 H.W. Dickinson, 'Britannia at Portsmouth and Portland', in: *The Mariner's Mirror* 84 (1998) 435.
 - 39 The Hindostan was practically everlasting because she was not build of British oak but Indian teak.
 - 40 Statham, *Story of the "Britannia"*, 80.
 - 41 According to David Lyon, *The Sailing Navy List. All The Ships of the Royal Navy - Built, Purchased and Captured, 1688-1860* (London, 1993) 112, there was a men-of-war with the name *Illustrious* already stationed at Portsmouth before 1854. This ship, a 74-76 gun two-decker of the so-called *Fame/Her* class 1799, was launched in 1803 and became an ordinary guard ship at Portsmouth. In 1853 she functioned as a hospital ship. In 1859 the *Illustrious* was reverted to ordinary guard ship. Nine years later she was broken up. This ship is probably the predecessor of the well-known *Britannia*, launched in 1820.
 - 42 The initiator behind the modernization of the training and accommodation of naval cadets, was Admiral Sir John Arbuthnot Fisher. In 1901 he came to the Admiralty as Second Sea Lord. Three years later he was appointed First Sea Lord.
 - 43 See for the history of this college on the Isle of Wight, M. Partridge, *The Royal Naval College Osborne. A History 1903-21* (Wiltshire, 1999).
 - 44 There are several detailed books and articles about the training ship system, but in none of these publications there is an overall picture of all the ships involved. In accordance to E.A. Hughes, *The Royal Naval College Dartmouth* (London, 1950) 36, there is a model "of HMS Calliope, once attached to HMS Britannia as a sea-going tender for cadets". However, no other author mentions this tender.
 - 45 Dickinson, 'Britannia at Portsmouth and Portland', 439 and 441.
 - 46 Statham, *Story of the "Britannia"*, 57-58 and Dickinson, 'Britannia at Portsmouth and Portland', 435.
 - 47 Statham, *Story of the "Britannia"*, 58.
 - 48 S.W.C. Pack, *Britannia at Dartmouth. The Story of HMS Britannia and the Royal Naval College* (London, 1966) 43.
 - 49 *How to become a Naval Officer. Life at the Royal Naval Colleges at Osborne and Dartmouth* (London, 1913) 43.
 - 50 *Jaarboekje der Adelborsten* (Nieuwediep, 1877) 141 and 147.
 - 51 Pack, *Britannia at Dartmouth*, 43.
 - 52 Statham, *Story of the "Britannia"*, 88.
 - 53 Pack, *Britannia at Dartmouth*, 45.
 - 54 Ibid., 61-62.
 - 55 Hughes, *Royal Naval College Dartmouth*, 22.
 - 56 Statham, *Story of the "Britannia"*, 233-234.
 - 57 Ibid., 249.
 - 58 Hughes, *Royal Naval College Dartmouth*, 46.
 - 59 These sea-going training cruisers were the *Isis* and the *Aurora*.
 - 60 After the cruise the naval cadets went to sea as midshipmen of the fleet.
 - 61 *The United States Naval Academy. A Sketch containing the History Entrance Requirements Curriculum, Athletics after Graduation Service and other Factual Information*. Presented by Senator David I. Walsh, Chairman of the Committee on Naval Affairs of the Senate. 75th Congress, 3rd Session, Senate Document No. 181 (Washington, D.C., 1938) 2.
 - 62 Ibid., 4.
 - 63 For a brief outline of the foundation and first years of the Naval School at Annapolis, see Henry Francis Sturdy, 'The Foundation of the Naval Academy by Bancroft and Buchanan', in: *United States Naval Institute Proceedings* 10 (1935) 1367-1385.
 - 64 Ibid., 1378.
 - 65 Earle, *Life at the U.S. Naval Academy*, 17.
 - 66 The *John Hancock* was launched by the Boston Navy Yard at 26 October 1850 for service as a steam tug and water tank in that yard. *Dictionary of American Naval Fighting Ships Volume III* (Washington, 1968) 531.
 - 67 Regulations of the U.S. Naval Academy at Annapolis, Maryland (Washington, 1855) 28.
 - 68 *Dictionary of American Naval Fighting Ships, Volume V* (Washington, 1970) 331.
 - 69 Anne Marie Drew (ed.), *Letters from Annapolis. Midshipmen write home, 1848-1969* (Annapolis, 1998) 31.
 - 70 Ibid., 33.
 - 71 *Dictionary of American Naval Fighting Ships, Volume II* (Washington, 1963) 176. According to B.W. Labree e.a., *America and the Sea: A Maritime History* (Connecticut, 1998) 405, the Constitution already served as a Naval Academy school ship in 1858.
 - 72 K.W. Patrick, 'Midshipman Cruises', in: *United States Naval Institute Proceedings* 10 (1935) 1545.
 - 73 Jack Sweetman, *The U.S. Naval Academy. An illustrated history* (Annapolis, 1995, 2dn ed.) 64-65.
 - 74 'The Departments', in: *United States Naval Institute Proceedings* 10 (1935) 1417.
 - 75 In 1873 the school ship *America* was sold. However in 1921 she was stationed again at the Naval Academy, after a Yacht Club had presented her to the Navy Department for preservation as a relic. The famous racing schooner stayed at Annapolis until scrapped in 1945.
 - 76 According to *Dictionary of American Naval Fighting Ships, Volume II* (Washington, 1963) 233, the sloop-of-war *Dale* was recommissioned in 1867 and served as training ship at the Naval Academy until 1884. In articles and books about the history of the Naval Academy the authors hardly pay any attention to this practice ship.
 - 77 In 1940 the *Constellation* was recommissioned by order of President Franklin D. Roosevelt who looked for a source of inspiration for the navy and the country to be vigilant against German aggression. Fifteen years later the frigate was decommissioned and transferred to Baltimore to be exhibited. However in the 1970s the *Constellation* became a controversial subject. Several historians had doubts about the identity of the ship. Was she really the legendary Baltimore-built frigate of 1797, like the Navy said, or not? In the 1980s it became clear that the *Constellation* that had served the Naval Academy for many years, was not the well-known frigate of the 18th century but a corvette with the same name launched in 1854. The history and future of the corvette *Constellation* is still a touchy subject. See Frank D. Roylance, 'The *Constellation*: Living Classroom?', in: *Naval History. United States Naval Institute* 1 (1999) 39-42, John D.

- Barnard, 'Last of the sailing Corvettes', in: *Naval History. United States Naval Institute* 4 (1999) 22-26, and Michael D. Nauton, 'The Constellation Comes Home', in: *Naval History. United States Naval Institute* 5 (1999) 57-58.
- 78 K.W. Patrick, 'Midshipman Cruises', in: *United States Naval Institute Proceedings* 10 (1935) 1547.
- 79 During the first decade of the 20th century midshipmen of the U.S. Naval Academy also made summer cruises with the battleship *Indiana* and the cruiser *Olympia*. Both ships were built in the early 1890s and did not have auxiliary sails.
- 80 Patrick, 'Midshipman Cruises', 1549. After 1912 sailing ships were still available at Annapolis for midshipmen, to give them opportunity for gaining experience in handling larger sailing vessels. But these ships – like the yawl *Argo* or the cutter *Robert Center* – did not make summer cruises. See Earle, *Life at the U.S. Naval Academy*, 151 and Robert W. McNitt, *Sailing at the U.S. Naval Academy* (Annapolis, 1996) 35-42.
- 81 *Dictionary of American Fighting Ships*, Volume VI (Washington, 1976) 325.
- 82 Even H.W. Dickinson, who recently studied the early years of the *Britannia* system, does not give any detailed information about the first ship of this system HMS *Illustrious*. He only mentions that the predecessor of HMS *Britannia* was a "72-gun, two-decker". Dickinson, 'Britannia Rules', 144 and 'Britannia at Portsmouth and Portland', 434. For more information about the two-decker *Illustrious* see note 41.
- 83 See note 77.

Mededelingen

DE J.C.M. WARNSINCKPRIJS VAN DE NEDERLANDSE VERENIGING VOOR ZEEGESCHIEDENIS 2000

De J.C.M. Warnsinckprijs van de Nederlandse Vereniging voor Zeegeschiedenis is door het bestuur van de vereniging met ingang van 1989 beschikbaar gesteld. Het bestuur besloot de prijs in 1990 voor de eerste maal uit te reiken en sedertdien is de prijs vijfmaal toegekend.

Volgens het reglement wordt de prijs uitgelooft voor een prestatie op het gebied van de zeegeschiedenis, die kan bestaan uit zowel een maritiem-historische studie als enigerlei inspanning of verrichting die de belangstelling voor de zeegeschiedenis heeft bevorderd of waardoor de kennis van de maritieme geschiedenis is vermeerderd.

Dit aldus gezegd hebbende kan het U niet verbazen dat het bestuur besloten heeft de prijs voor het jaar 2000 toe te kennen aan de heer J.M. Dirkzwager.

Deze prijs is Jan Dirkzwager, geboren in 1925, eigenlijk op het lijf geschreven. Als Delfts scheepsbouwkundig ingenieur maakte hij professioneel carrière bij de Koninklijke Marine; in de jaren zestig als hoofd Wetenschappelijke Zaken bij het Bureau Scheepsbouw van de Directie Materieel en vervolgens, in de bredere defensie-omgeving, als Directeur Wetenschappelijk Onderzoek en Ontwikkeling bij het Ministerie van Defensie. Het waren functies waarbij de toekomst en techniek een belangrijke rol speelden; onderzoek naar nieuwe ontwikkelingen.

Zonder verleden, geen heden, geen toekomst, moet Jan Dirkzwager gedacht hebben toen hij al in de jaren zestig een actieve interesse ontwik-

kelde in het verleden, in de maritieme geschiedenis. Niet verwonderlijk lag die interesse in de geschiedenis van de maritieme techniek.

In 1970 verdedigde hij aan de Universiteit van Amsterdam met succes zijn dissertatie over Bruno Johannes Tideman (1834-1883), de grondlegger van de moderne scheepsbouw. Ingenieur en doctor in de letteren, toen – en ook nu nog wel – een ongebruikelijke combinatie. De Senaat van de Universiteit van Amsterdam stond Dirkzwager toe te promoveren op speciaal verzoek van de Onderafdeling Scheepsbouwkunde van de Technische Hogeschool Delft.

Dr.ir. J.M. Dirkzwager is gefascineerd door hetgeen generaties voor ons deden op het gebied van de maritieme techniek, doet historisch onderzoek om hen en hun tijd te doorgronden maar hij houdt er evenzeer van zijn kennis aan anderen door te geven. Dat blijkt niet alleen uit het docentschap techniek-geschiedenis aan de Technische Hogeschool van Delft en uit de vele voordrachten die hij in de loop der jaren in binnen- en buitenland voor een uiteenlopend publiek gaf, het blijkt vooral ook uit de lange lijst van publicaties die hij op zijn naam heeft staan. Meer dan vijftig in getal, in uiteenlopende media als *Alle Hens*, *De Ingenieur*, *Spiegel Historiael*, *De Zee*, *Nehelennia*, *Schip en Werf* en niet te vergeten ons eigen *Tijdschrift voor Zeegeschiedenis*.

Daarnaast leverde hij bijdragen aan standaardwerken als de *Maritieme Geschiedenis der Nederlanden* waarin hij in deel IV het hoofdstuk 'Scheppen' voor zijn rekening nam en aan het *Biografisch Woordenboek van Nederland* waarin hij lemma's schreef over Bartel en John Henri Wilton, Laurens Troost en Cornelis Verolme. In de 6-delige *Geschiedenis van de techniek in Nederland*, *De wording van een moderne samenleving 1800-1900*