Op de deining van de wetenschap. Leven en werk van Gustaaf Frederik Tydeman (1858-1939), zeeofficier en hydrograaf

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Summary and conclusion

In Tydeman's lifetime the most important task of the Royal Netherlands Navy, in its capacity as one of the national armed forces, was the defence of the home country, its colonies and the national merchant navy and fishery. The hydrographic survey of the Dutch coastal waters and the seas of the Malay Archipelago and the Dutch West Indies was another task of the Navy. The navigational and hydrographic expertise acquired by naval officers during their many years of service could also be applied to other than survey endeavours. Examples are the scientific expeditions in the East and West Indies, at sea as well as inland of the colonies.

The regular conduct of business of the Navy as a seagoing company required scientific knowledge of navigation and related specialities like astronomy, magnetism, meteorology and hydrography. Ever since the middle of the nineteenth century these sciences were taught within the Navy and developed and put into practise in the Netherlands as well as in the Netherlands East Indies. As a result naval officers got in touch with civil scientists. The co-operation between Science and Navy culminated in two large oceanographic expeditions in the Netherlands East Indies and in the exploration of the seas and the interior of the East Indies and of Surinam.

Important are the role and working method of the Navy in scientific research and the motives to deploy naval ships and manpower for that purpose. Naval officers had their own reasons to participate in hydrographic work and to join scientific expeditions.

In 1829 the Dutch Navy got its own Naval College with navigation as one of the important subjects and a matter of scientific interest. Required abilities and qualifications were laid down in a training programme of which teachers with practical experience were the custodians.

While in the Navy the maritime training and education of officers was part of the Naval organisation, the situation in the world of the merchant navy was different. Nautical colleges were independent institutions and shipowners could state their own requirements concerning the training of their future officers. More uniformity and consequently more professionalism of the profession of the navigating officer in the merchant navy took some time to evolve.

In the twentieth century navigation as a scientific subject was part of the curriculum of the Naval College and civil nautical colleges. Very often former naval officers were director or teacher in these colleges.

Navigation linked the Navy with the merchant navy and with civil nautical colleges.

During the nineteenth century naval officers together with their civilian counterparts began publication of periodicals dedicated to navigation. They also, in their capacity of teacher at the Naval College, published textbooks in their field. These instructions were also used in civil nautical colleges. It is in the area of nautical sciences that an early bond between science and the Navy developed together with a feeling of shared commitment between naval and civilian teachers.

A second and stronger tie between science and Navy was to be found in the practice of the hydrographic survey. The methodology of the hydrographic survey, by which data collected by measuring resulted in knowledge of the deep sea, proved to be applicable in oceanographic research. Collecting samples from the sea and the sea bed, being the basis of deep sea research, while at the same time fixing the true position of the ship as the location of origin of the samples and measurement of the sea depth at the same spot resulted in an interesting combination of data. Moreover it proved to be possible to combine this exploration of the deep sea with hydrographic survey of the same area under study. The training and experience of naval officers who were qualified as hydrographer matched with the scientific procedures of natural scientists. The hydrographers combined their data with the results of the scientific exploration of the deep sea. They proved to be qualified to do the same work not only at sea but also during explorative expeditions ashore in the Dutch East Indies and in Surinam. The vast colonial territories became the main theatre, at sea as well on land, of hydrographic surveys in support of scientific expeditions.

The first and foremost duty of hydrographers in the Dutch East Indies was the time consuming survey and mapping of the seas of the Malay Archipelago. From the outset this work was done on an occasional basis. During the first half of the nineteenth century Dutch naval officers published three different Pilots of important waterways as replacements of British Sailing Directions. Subsequent surveys on a large scale were stimulated by foreign influence. To support international shipping Britian demanded reliable waterways in the archipelago and in case the Dutch could not meet those demands the Royal Navy would provide for them. A British hydrographic survey of the seas of the Dutch East Indies would threaten Dutch prestige. The possibility of British intervention and the imperialistic motive of the hydrographic survey of the East Indian seas being proof of Dutch colonial power and authority were both elements of influence on the hydrographic efforts of the Netherlands Navy.

As a result of the survey and mapping of seas and coastal areas commercial seaways developed in the archipelago. Dutch and foreign shipowners asked for those seaways. The Koninklijke Paketvaart Maatschappij suggested specific survey operations for its own benefit and the profit of trading-companies. Commercial importance of seaways influenced the priority of survey operations.

The hydrographic survey was a set task for the Navy, carried out with dedication and pleasure by many individual naval officers. They produced continuity and routine in surveying and together they build up a common body of experience and knowledge. As hy-

drographers naval officers were monopolists, in the East Indies together with the officers of the Gouvernemenstmarine. There was no challenging competitor, with the occasional exception of a foreign navy.

Hydrographers were not only committed to duties at sea but also on land, notably in New Guinea and Surinam. In both territories besides scientific curiosity also a polical side served as a motive for exploration. On the Eastern border of New Guinea the Dutch had to deal with German and British colonial neighbours and Surinam shared borders with Brasil and French and British Guyana. The mission of the expedition of 1910 in the Eastern borderland of Dutch New Guinea was to define the exact border between German and Dutch territories. On completion of the exploration of the border area the Dutch cooperated with the Germans in a combined expedition in German territory in which Dutch naval ships took part. The borders of Surinam were defined by the Southern mountain-ridge and the more or less known course of the rivers in the Eastern and Western borderlands of the country. Many expeditions in the mountainous interior between 1901 and 1938 were needed to determine the accurate geographical location of mountain ridges and course of rivers and after that the border between Surinam and its neighbours.

In Tydeman's lifetime scientific research and exploration initiated and carried out by the Navy concerned almost exclusively hydrographic survey. Survey was done by surveying ships but also by other naval vessels. It was possible to combine patrolling the Indian seas and the Dutch coastal waters through the means of surveying.

In the second half of the nineteenth century and the beginning of the twentieth century the initiative in the Netherlands to engage in civil maritime research was not taken by the national government but by individual members and directors of private societies. Members of those societies were scientists and interested persons, among them naval officers. The interest and membership of naval officers supported and favoured the relation between the scientific world and the Navy. The scientific interest of naval officers resulted from their nautical knowledge and experience. It was a basic element in their involvement in oceanographic and geographic research and the reason why they supported the foundation of the Geographical Society. A few years later around fifty naval officers either in active service or retired were registered as members.

Scientific societies and institutions like the Meteorological Institute and the Society for the Advancement of Science in the Dutch Colonies have stimulated research with enthusiasm. During many years of deliberation and preparation expeditions finally took a definitive shape after which members of the board of institutions began searching for resources like financial support of the national government and the assistance of private individuals. They often ended up in the Navy. Talks between scientists and individual naval officers at the ministry of the Navy or amogst the staff of the Commander in Chief of the Navy in the Netherlands East Indies created a running contact between scientific societies and the Navy. When it came to an agreement on assisting in scientific research the final decision on this arrangement was formally taken by the minister of the Navy.

Depending on the request of the scientists the Navy offered a ship with crew included or solely manpower.

The Netherlands Navy as an organisation made no proposals to arrange oceanogaphic explorations but maintained a solid blueprint of the survey of the seas of the archipelago of the Netherlands Indies. This general plan was made and kept up by successive Chief Hydrographers who were responsible for the execution of it.

Starting halfway the nineteenth century the Navy joined with naval personnel or with manned ships in polar expeditions, research in the North Sea in assistance of national fisheries and scientific explorations in the tropics, at sea as well as on land. Naval officers with hydrographic experience took part in all those enterprises.

The motives of a naval officer to engage in hydrographic work or to take part in scientific expeditions formed a mixture of the pleasure of enjoying nature while working on the border of sea and land, the satisfaction at counting and calculating and producing a visible and tangible result. Collecting and combining data felt as an experience of a meaningful activity. Contrary to these incentives were the disadvantages of long and monotonous working days and the slim chance of a succesful career when specialized in hydrography only. Therefore many naval officers decided, if possible, to restrict their involvement with hydrography to only one appointment as hydrographer. A small number of officers chose to specialize in hydrography, they frequently returned to hydrograhic billets and finally became commanding officer of a surveying vessel. Experienced hydrographers were selected to participate in expeditions, even when the area of those explorations was on land. Several hydrographers took part in expeditions in the East Indies. Exploring and mapping of Surinam was to a large extent the work of naval officers who earlier in their naval career had gained hydrographic experience in the Netherlands or the East Indies. The cooperation of the Navy and scientific institutions in preparing and executing civil scientific enterprises resulted in two large oceanographic expeditions and several explorations on land in which naval hydrographers made their contribution.

Already in his teenage years Tydeman was sure of his choice of a profession. The choice was based on the impression made upon him by midshipmen and their training-ship. A supposed romance and a boy's dream of an adventurous life could both be misleading reasons for such a choice. The reality of daily life would almost certainly be different, as Tydeman found out shortly. But very soon he found a better reason to become a naval officer. As a midshipman he loved arithmetic and other exact sciences and enjoyed solving mathematical problems. At the end of three years of training and studies at the Royal Naval College Tydeman finished, together with a class-mate, as first student among his peers in his class. Soon after his first years at sea as a junior officer he asked to be posted at the Hydrographic Service. During ten years after 1884 Tydeman was involved in hydrography, surveying in the East Indies and the Dutch coastal waters and as a member of the staff of the Hydrographic Office at the Ministry of the Navy. As commanding officer of a surveying vessel Tydeman was fully responsible for the survey of a large part of the north-east coast of Sumatra. Again as commanding officer of a gunboat Tydeman

surveyed a year around coastal areas in the Netherlands. On the conclusion of his many years as hydrographer he was posted at the Royal Naval College to teach navigation and seamanship. During four years Tydeman lost himself in his nautical specialities and published articles in his fields of interest in different journals. Writing was his own choice, he was not under any obligation to publish. A surprising conclusion of a lengthy period in the world of maritime sciences was Tydeman's command of HNeth.MS *Siboga* during the oceanographic expedition in the East Indian Archipelago. It embodied the culmination of his naval career. As a professional naval officer he took care of a matchless execution of the expedition and as a hydrographer he contributed to the final reporting on the results of the scientific research.

Tydeman continued his years in the Navy along the lines of a successful career. He was the commanding officer of the Royal Naval College, of different large ships and of a squadron in the East Indies. The lengths of his commands of larger ships were of a short duration by which it was impossible to mould the crew and the team of officers into a well trained and efficient unity. And precisely that is the task and goal of every commanding officer. Also when in command of the East Indian squadron showing the flag in China and Japan Tydeman was more a diplomat representing his country than the commanding officer of an operational naval unit. The main aspect of the deployment of the squadron were the port visits and not the skill and readiness of the fleet.

Tydeman's many-sided career and his record as a naval officer made him eligible for promotion to flagofficer. Although the promotion to flagofficer was exclusively by selection, seniority remained a required condition.The disposable vacancy was the command of the naval establishment in Amsterdam. Tydeman found his job not very satisfying. He mentioned his disappointment in a letter to his friend Weber. His many interests were to be found in the world of maritime and natural sciences. When retired he mainly focused his attention on subjects and themes in this field. Tydeman's membership of various societies and committees offered him the opportunity to get involved in interesting projects, often resulting in active participation. He also set himself to the research of physical phenomena which had been fascinating him already for a long time. His essays on these subjects did not meet the approval of scientists. Tydeman's interpretation of this rejection was a lack of understanding of his readers. But being a devotee of science the negative response of scientists also annoyed Tydeman, as he showed to close friends. Even so to his relatives, friends and colleagues Tydeman remained an amiable and erudite elderly gentleman who in his written reminiscences looked back on his life as a junior officer with a mild sense of humour.

Tydeman enjoyed the two years in later life which he spent in the United States together with his son and for some time also with his granddaughter and daughter-in-law. He had neve8r beeb to this country before and loved the scenery of the coastal area of California in the company of his relatives. These years could be seen as the wonderful conclusion of an interesting and travelling life.

Back home in The Hague Tydeman spent his time reading and writing letters to rela-

tives and friends. His last publication, *Verbleekte films*, was in remembrance of his early years as a naval officer.

The question presents itself whether Tydeman – hydrographer, commanding officer of a naval ship on a scientific expedition, a publishing devotee of science and finally flagofficer – was in his life and time in the Royal Netherlands Navy an officer with an exceptional career? Earlier we found that during Tydeman's years in the Navy in any given year nearly five per cent of all naval officers served in hydrographic positions and also that about twenty per cent of every graduation year of the Naval College served at least once in a regular hydrographic posting.

As a naval officer with hydrographic experience Tydeman belonged to a minority, but not an exceptional one. To participate in a scientific expedition as hydrographer, like Tydeman did, was not something that would happen to every hydrographer. About twenty naval officers who were also experienced hydrographers participated in arctic regions, the Netherlands East Indies or Surinam. Tydeman was one of them. The ones among those officers who were the most interested in science published in their fields of navigation or hydrography and the expeditions or on the history of these subjects. Based on this last selection the most all-round and many-sided hydrographers were Tydeman, De Goeje, Luymes, L'Honoré Naber, Pinke and Posthumus Meyjes. Warnsinck was a hydrographer, but published as a maritime historian and hydrography and navigation were not his topics. Eminent hydrographers were the successive chiefs of the Hydrographic Service. When Tydeman was a midshipman captain A.R. Blommendal was chief hydrographer. His successors were P.J. Buyskes, 1875-1885, H.A. de Smit van den Broecke, 1885-1899, C.J. de Jong Pzn, 1899-1914, J.M. Phaff, 1914-1920, J.L.H. Luymes, 1920-1935, J.C.F. Hooykaas, 1935-1940. Phaff made a remarkable career after his retirement. In 1921 he became member of the board of the International Hydrographic Bureau in Monaco, founded in the same year. Phaff was appointed to the chair in 1926 and promoted vice-admiral in a titular rank.

In his last years in the Navy Tydeman held the post of commanding officer of a naval establishment as rear- and vice-admiral. These ranks came with the position. Another hydrographer who was promoted to flagofficer was C.C. Käyser. He was commanding officer of the East Indian Squadron in 1929 and promoted rear-admiral.

Tydeman made a notable career by his command of HNeth.MS *Siboga* and his contribution to the success of the oceanographic expedition, while at the same time together with two fellow hydrographers mapping a large area of the East Indian seas. On completion of the Siboga-expedition he continued his career as commanding officer of ships, the Naval College and the East Indian Squadron. He commanded the squadron as captain and not as flagofficer due to a lack of required seniority for promotion at the time. Although promotion to flagofficer was exclusively by choice, seniority remained a required condition for promotion. In his last post in the Navy Tydeman rose to the rank of vice-admiral.

The combination of two careers, one as hydrographer and oceanographer and another as regular naval officer, made Tydeman an exception among his contemporaries in the Navy. As all-round hydrographer and prolific author he stood out in Dutch naval history. Tydeman was the only hydrographer ever who attained the rank of flagofficer in a regular post in the naval organisation and was promoted vice-admiral according to the rules. Taking this into account, combined with his naval career and his achievements as hydrographer and commanding officer of a ship on a scienticic expedition, the inevitable conclusion is that Tydeman's career as naval officer was exceptional.

Tydeman's legacy consists of his fame as an educated naval officer who was devoted to the civil side of his profession, navigation and hydrography. The success of the Siboga-expedition, to which Tydeman contributed largely, enlarged the good reputation of the Royal Netherlands Navy. As a role model of a professional hydrographer during all his years in the Navy Tydeman was honoured in a remarkable way. During his lifetime a naval surveying ship was named after him and years later after his death this happened again.

Apart from this imaginary legacy there is also the tangible heritage of some commendable publications. First and foremost are to be mentioned volumes II and III of the scientific report of the Siboga-expedition, including the wonderful depth chart of the eastern part of the Indian archipelago, published in 1903. Years later, in 1922, Tydeman wrote two chapters in the jubilee-edition of the KNAG, *De Zeven Zeeën van Nederlandsch Oost-Indië*. Both chapters, 'De diepten der zeeën met dieptekaart' en 'Opmerkingen betreffende de temperatuur van het zeewater' ('The depths of the seas with depth chart' and 'Remarks regarding the temperature of the seawater') fill together seventy informative pages. Along with articles in periodicals like *De Zee*, *Marineblad* and *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap* Tydeman wrote two chapters in *Gedenkboek 1898-1923*, edited by De Bas and published on the occasion of the silver jubilee of Queen Wilhelmina. Towards the end of his life Tydeman published *Verbleekte films* in 1937, a collection of often witty and sometimes moving reminiscences of his junior years in the Navy.

In 2004 HNethMS *Tydeman* was decommissioned. A replacing naval ship destined for oceanographic research was not foreseen. Two newly built surveying vessels came into service and are still operational. Both ships face an extensive hydrographic programme based on modern procedures. During the survey data such as the geographical position of the ship, the depth of the water, the force of the magnetic field and the speed of sound in seawater are continually and automatically collected by different sensors. With this equipment the productivity of the surveying vessels has increased enormously compared to the results of earlier ships of the Hydrographic Service. Three crews are available to man the two ships resulting in an almost continuous use of both ships.

When necessary or desirable meteorologists specialized in oceanography are detached to naval ships to investigate the safety of seas and waterways and the local meteorological and oceanographical circumstances.

Although HNethMS *Tydeman* was also available for civil oceanographic observations, NIOZ continued to strive for its own ship. From 1975 ships were chartered and in 1991 the *Pelagia* was commissioned as research vessel of NIOZ. Two other small vessels are available for research in the Waddenzee and the coastal area.