

## **THE WHITEHEAD FACTORY AND THE ORDERS OF THE AUSTRO-HUNGARIAN NAVY, ESPECIALLY THE WHITEHEAD SUBMARINES 1904-1914**

**Dr. phil. Mihály Krámlí**  
Transport museum, Budapest, Hungary

The development of the Austro-Hungarian Navy came to a sudden standstill for about a decade and a half following Wilhelm von Tegetthoff's death (1871). The slow improvement of the fleet began in the 1890s. The budget of the navy amounted 7 percent of that of the whole armed forces's at that period. As a result of the energetic development, having commenced afterwards, the rate of the fleet's budget rose above 10 percent after the turn of the century and reached 25 percent in 1913.<sup>1</sup> Although it was only later that intensive improvement began, the 1890s brought in important changes. While the navy strongly depended on armour and gun imports before, this decade witnessed the growth of its industrial background in Austria, stimulated by an increasing number of domestic orders from the command of the naval forces. All this had a positive effect on the navy: due to the growing number of orders, previously anti-fleet Austrian politicians became adherent of fleet developments.

Hungary, having paid a share proportion - the so called quota - of the budget of the common army and thus the navy (31.4-36.4 percent), practically did not get any orders from the navy before the 1890s, except Whitehead torpedoes. In 1893 Hungarian legislation (delegation) had its first claim on the navy giving Hungary more orders.<sup>2</sup> In the same time members of Austrian delegation began to call upon the navy to give more orders to the Austrian industry. While in Austria,

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<sup>1</sup> The navy's budget was 24.959 million Crowns in 1893, 56.078 million Crowns in 1904, and 210.193 million Crowns in 1913.

<sup>2</sup> Közösügyi Bizottság (Hungarian delegation), napló (records) 1893. 37. The speech of count Tivadar Batthiány.

The two delegations – the Austrian and the Hungarian – voted the common budget of the Dual Monarchy. The two half of the Empire paid the own share of the common budget, of which the greatest part was the budget of the common army and the navy, according to the quota. Originally, in 1867 the Hungarian quota was 30 % and the Austrian quota was 70 %. Around the turn of the century the Hungarian quota began to growing. Finally, the Hungarian quota reached in 1906 the 36,4 %.

thanks to the growing naval orders the situation seemed to be satisfactory, in Hungary, although it had positive consequences, no fundamental changes occurred during the following years. Having seen the situation, by means of a resolution in 1897, the Hungarian delegation demanded, that the navy should give its orders in the two parts of the Austro-Hungarian Monarchy in proportion to their shares.<sup>3</sup> In that year, while having paid a share of 31.4 percent, only 12.3 percent of the navy's budget spent at home fell to Hungary.<sup>4</sup>

Hermann von Spaun, the new commander of the navy (1897-1904), had the fleet's intensive improvement in view, but his program owing to the resistance of Hungarian politicians failed. Spaun understood that Hungarian politicians, hostile to the increase of the navy's budget should be won over to his future plans. The only possibility was to meet the Hungarian requirements to some extent. In August 1898 Spaun made a written promise that the Hungarian industry's share in the navy's orders will be in proportion to the quota in the future.<sup>5</sup> The main problem lay in the fact that the promise, due to the underdeveloped Hungarian industry, could not be kept. Despite the promises the rate of the orders had not increased essentially until 1900.<sup>6</sup> In that year both the Hungarian government and the Hungarian delegation put greater pressure on the naval forces, the government uttered veiled threats to vote down the budget.<sup>7</sup> The growth began afterwards; in 1904 the share of the Hungarian industry reached 21.48 % at a 34,4 % quota.<sup>8</sup>

The time to make an agreement between the navy and Hungary came in 1904. In that year Spaun requested the delegations to vote for an extraordinary credit of 120 millions Crowns. Before the meeting of the delegations the Hungarian Prime Minister, Count István Tisza made clear what he wanted in exchange: a bilateral agreement on the share of the orders of the navy.<sup>9</sup> In June 1904, a week after the voting for the the credit the agreement between the navy and the Hungarian government was reached, which regulated the divisions of the orders of the navy in 14 articles. The contract provided compensation for Hungary in certain cases,

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<sup>3</sup> Közösügyi Bizottság (Hungarian delegation), irományok (writings) 1897. 29.

<sup>4</sup> Közösügyi Bizottság (Hungarian Delegation), irományok (writings) 1898. 50-51.

<sup>5</sup> KA (Kriegsarchiv, Wien) MS/PK (Marinesektion/Präsidiakanzlei) XV-7/3 2464 ex 1898

<sup>6</sup> KA MS/PK XV-7/2 502 ex 1902. In 1900 only 13.5 percent of the naval budget spent at home fell to Hungary.

<sup>7</sup> KA MS/PK X-5/3 2124 ex 1900 (the resolution of the Hungarian government of 7. February 1900), KA MS/PK XV-7/6 3104 ex 1900 (the new resolution of the Hungarian delegation of May 1900).

<sup>8</sup> KA MS/PK XV-7/6 2227 ex 1906. The total share of Hungary in 1904 was 24.09 % including the non industrial orders as food, charcoal, etc; but the resolution of 1900 of the Hungarian delegation stipulated that non-industrial orders had not to be counted in the quota.

<sup>9</sup> KA MS/PK XV-7/6 341 ex 1904

in return for Austrian deliveries exceeding the quota. The essence of the agreement was included in the secret clause, having promised warship orders and a 50 % rate of shell (later ammunition) transport to Hungarian industry.<sup>10</sup> The great winners of this agreement were the Danubius Co. which founded a new shipyard in Rijeka and the Weiss Manfréd Works of Csepel. The Austrian government, that was omitted from the contract, and Austrian industrial circles protested vehemently against the agreement.

In 1906 the contract was signed again, with the Austrian government involved. The new, trilateral agreement, thanks to the Hungarian political crisis, and to the weaker Hungarian position was rather unfavorable for Hungary, but the secret clause remained valid.<sup>11</sup> With this contract the navy ensured that to get the support of the Hungarian government and the Hungarian delegation's majority to the further development of the fleet.

The navy attained its goals with this agreement: the Hungarian delegate voted for the budget by turns. The budget was only once imperiled, in 1908, when the navy was going to violate the secret clause, but the danger was averted by a modification of orders. The agreement worked properly, despite the fact that the share of the Hungarian industry did still not exceed 27 %, while the quota had increased to 36,4 %. A new phase in the relation of the Hungarian industry and the navy began in 1911, with a new agreement signed in connection with the dreadnought program.

In 1909-1910 it was evident that the expenses of the desired new battleships could be covered only with an extraordinary credit. The Austrian and Hungarian delegations were to vote for the credit in February 1911, but the navy made decision on the distribution of the 312 million Crowns as early as 31 January 1911: the share of the Hungarian industry was fixed in 113 million Crowns, and the Danubius Co. was to build one of the four 20 000 ton battleship.<sup>12</sup> This agreement was the proviso of Hungary's voting for the Credit. Thanks to this agreement the share of the Hungarian industry exceeded 30 %, in the next years.

#### **THE TORPEDO ORDERS OF THE AUSTRO-HUNGARIAN NAVY 1904-1914**

The decade long struggle of the Hungarian politics and industrialist for getting the greater possible share from the orders of the navy attained its goal with the agreements of 1904/1906 and of 1911. The big winners of the agreements were Danubius Shipyard, Weiss Manfréd Works, and the State Steel-Works in Diósgyőr. They had increased profit. It was due to the military orders concluded between the Hungarian government and the navy and the common (Austro-Hungarian) army.

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<sup>10</sup> KA MS/PK XV-7/6 1582 ex 1904

The Whitehead didn't belong to this circle, although it was considered as a "Hungarian" firm. According to the agreement every firm working in the Hungarian part of the Monarchy was considered as Hungarian quite apart from the owner, the firms in Croatia and in Rijeka as well. Rijeka (Fiume) belonged to the Hungarian Crown from 1868 up to 1918. So the orders put at the Whitehead, were counted as parts of the navy budget spent in Hungary. In spite of this fact the Whitehead did not belong to the circle of the favourite firms of the Hungarian government.

The main reason of this problem was the English ownership and the fact, that members of the highest Hungarian politics had no interests in the Whitehead like in the Danubius.<sup>13</sup> That's why the Hungarian government and the delegation did not lobby on behalf of the Whitehead, to give it orders of ships and submarines, besides torpedoes.

The orders of the navy for torpedoes and launchers were always guaranteed for the Whitehead because it was the only torpedo-factory in the Monarchy. But the value of these orders was little before 1904. So the incomes of the Whitehead came first of all from the export till 1914. The Whitehead had profit indirectly from the agreements between the Hungarian government and the navy. After 1904 the agreements with the Hungarians made possible the development of the navy on the level never seen before. The value of the Austro-Hungarian orders for torpedoes increased five times more than earlier.

In the period 1890-1902 the value of the orders for the torpedoes at the Austro-Hungarian navy was little. The allocated amount for torpedoes in the ordinary part of budget of the navy was 28 400 Crowns per year. In the extraordinary part there was 120 000 Crowns per year. They turned usually less, or they put orders abroad.<sup>14</sup> The value of torpedo-orders was 1% of the orders for construction and maintenance of the ships in this period.

The more intensive developing of the Austro-Hungarian navy coincided with development of the torpedo-engineering after 1904. In 1904 rumours were current, that Whitehead was constructing an experimental 45 cm torpedo at Rijeka capable of running 3000 metres, while the most torpedoes were capable of running 1500-1800 metres.<sup>15</sup> The next major advance in the field of torpedo

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<sup>11</sup> KA MS/PK XV-7/1 859 ex 1906

<sup>12</sup> KA MS/PK XV-7/5 960 ex 1911

<sup>13</sup> There was member of the of the board of directors for example Manfréd Weiss. József Sztérényi the under-secretary of state of the Trade Ministry (1906-1910) was in relationship with Manfréd Weiss.

<sup>14</sup> See the details of the budgets. Közsügyi Bizottság (Hungarian Delegation) irományok (writings) 1890-1902

<sup>15</sup> The Naval Annual 1904 337.

engineering was the incorporation of the heater. At the trials in England in 1906 it was demonstrated that a torpedo fitted with a heater could travel for double the distance at a given speed. At the end of the first decade of the 20-th century the torpedo became a real, rather than an imagined threat. As the torpedoes had been getting bigger and stronger, they became more and more expensive.<sup>16</sup>

The passing of the extraordinary credit of 120 million Crowns voted for in 1904, was mainly due to the agreement with the Hungarians. This credit made possible the modernization of the torpedo boat force which had been neglected for a long time. There were ordered 12 destroyers (400 tons) and 36 torpedo-boat (200 and 110 tons) in Rijeka and in Trieste. The budget of this programme was 34 million Crowns.<sup>17</sup> The torpedoes and the launchers of these boats were delivered by the Whitehead, as well as for the three battleships of the RADETZKY-class (under construction in Trieste) and for the cruiser ADMIRAL SPAUN.

Owing to the increasing needs the torpedo orders became greater and greater. In the period 1904-1910 the value of the torpedo-orders was 1,601 million Crowns in the ordinary budget. This sum was completed with 1,2 million Crown from the extraordinary credit in the period 1906-1909.<sup>18</sup> The price of the launchers (each 3600 Crowns) of the torpedo boats and of the destroyers was totally 450,000 Crowns from the 2,801 million Crowns. The prices of the 45 cm torpedoes varied from 10 500 to 11 500 Crowns.<sup>19</sup>

The navy could meet the costs of the new TEGETTHOFF-class, cruisers, destroyers and torpedo-boats from a new extraordinary credit. The navy and the Hungarian government made an agreement about sharing of the credit on January 31. 1911 before it's loaning. According to the agreement the Hungarian industry got 113 million Crowns from the 312 million credit. The sharing of the money and the ordering of a battleship in a Hungarian shipyard were the main conditions of the Hungarian loan. By the sharing of the credit Hungary, namely Whitehead got all orders of the torpedoes. The sum of these orders was 4,16 million Crowns by the original sharing. The prices of the torpedo-equipment were the following: Battleship 620.000 Crowns, cruiser 100.000 Crowns, destroyer and

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<sup>16</sup> The development is demonstrated by the following data. The Whitehead 45 cm M/91 torpedo weighted 541 kg, carried a warhead of 89 kg, its speed at 500 m was 31 knots, at 800 m 28 knots. The Whitehead A/470 torpedo of 1914 weighted 830 kg, carried a warhead of 150 kg, its speed at 2000 m was 38 knots, at 6000 m 25,5 knots. The greatest Austro-Hungarian torpedo of the First World War, the Whitehead 53 cm A/408 weighted 1666 kg, carried a warhead of 215 kg, its speed at 7000 m was 31.5 knots, at 10 000 m 28 knots. KMA TM (Közlekedési Múzeum Archívuma, témagyűjtemény; Archiv of the Hungarian Transport Museum, Collection of Historical Records) 210/13 Technical datas of Whitehead torpedoes.

<sup>17</sup> KA MS/PK XV-7/10 1655 ex 1904

<sup>18</sup> See the details of the budgets. Közösügyi Bizottság (Hungarian delegation) irományok (writings) 1903-1910

<sup>19</sup> KMA TM 210/12 The price list of Pola Arsenal

torpedo-boat 70.000 Crowns per ship.<sup>20</sup> In the case of the battleships the high prices involved the costs of the guard-nets imported from England, so Whitehead got a less money in this area.

According to the original programme the order of the navy contained 74-130 pieces 53 cm. torpedoes (battleships were made with double ammunition supply, it means 2×14 pieces of torpedoes) 72 pieces 45 cm. and 27 training torpedoes. We wonder if they ordered for the battleships and the destroyers 45 cm torpedoes or the more expensive 53 cm. torpedoes? The launchers of these ships were adequate to launch both types. It seems that the 45 cm. torpedoes were used by the cruisers.<sup>21</sup>

The number of the torpedo-boats of 250 tons changed: the navy finally ordered 27 pieces instead of 12 originally planed. It means that the Whitehead got 1 050.000 Crowns surplus receipts ( of course it was a little summit only compared to 16,5 million Crowns loss came from the lost order of the submarines). There were very strict trials for the torpedoes and the launchers: there were 24 trial-launches with every ship on the trials of destroyers and the torpedo-boats. The Whitehead productions were excellent on every trial.<sup>22</sup>

Owing to the developing navy on the eve of the First World War Whitehead had 10 times greater income than 15 years before.

### **THE WHITEHEAD SUBMARINES OF THE AUSTRO-HUNGARIAN NAVY**

Last among the great sea powers the Austro-Hungarian Monarchy began to build a submarine flotilla in 1907. The navy altogether ordered six submarines for experimental purposes, a couple of three different types, all of which displaced between 230 and 260 tons. As in Germany, the Austro-Hungarian submarines got Roman numerals instead of names. In early 1915 the Roman numerals were changed to Arabic numerals.

Two submarines (U I-II) were built in the Pola Arsenal from a design provided by the American firm Simon Lake, two (U III-IV) were purchased from the Krupp Germania Shipyard of Kiel, and two (U V-VI) were built in Rijeka by Whitehead from a design provided by the American Holland firm. The Whitehead bought the plan of the OCTOPUS, which was a single hull submarine of the American Electric Boat and Co.

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<sup>20</sup> KA MS/PK XV-7/5 960 ex 1911

<sup>21</sup> KMA TM 210/13 The Whitehead factory made the same type of 45 cm L/5.5 torpedo for the destroyers of the HUSZÁR- and TÁTRA-class, the 250 ton torpedo-boats (74-100), the battleships of the RADETZKY-class and the cruisers of the HELGOLAND-class, although the latest ships were equipped with 53 cm launchers.

<sup>22</sup> KMA TM 210/13 Records of the trials of the TÁTRA-class destroyers and of the 82-97 F torpedo boats.

The contract between the navy and the shipyard was entered on 3 December 1907.<sup>23</sup> The specifications of the contract were: 22 months as term of delivery, 8.5 knots underwater speed, 30 meters diving depth, 48 nautical miles underwater range.<sup>24</sup> The price of the two 240 displacement tons (surface) submarines was altogether 2,7 million Crowns. According to the contract the navy paid 2 million Crowns within six weeks to the Whitehead. The contract prohibited the shipyard from building submarines of such type for other countries. This prohibition has lapsed later. During the construction the naval technical committee often came forward with amendments of the plans.<sup>25</sup>

During the construction the navy's greatest problem was the question of the periscope. Little time after the beginning of the construction, the navy knew from a report that the shipyard was going to break the fifth article of the contract: the shipyard intended to fit the submarines with fixed periscopes, although the navy claimed retractable periscopes.<sup>26</sup> After some wrangling they agreed finally: the shipyard makes retractable periscopes but without paying penalty for delay.<sup>27</sup> The new periscope was not perfect too, it could be used only totally extended. In half-extended position this type of periscope was useless because it was too short. The navy also feared of the resonance at the totally extended position at greater speeds.<sup>28</sup>

The hull of the first submarine (U V) was finished fully on 1 December 1908. Its mechanical system was ready up to 92%. The hull of the second submarine had degree of completion 92% and 90 % in the mechanical system. The engines were ready up to 40% and 30%.<sup>29</sup>

The marked date of the launching of the first submarine (U V), end of January 1909, must have been postponed because of the delay of some subcontractors. The U V was launched finally on 10 February 1909.<sup>30</sup> On 8 April the Whitehead reported that the preliminary trials of the U V can be started. The management had waited for the trials. Their future depended on success of the trials, because, thanks to the prohibition of international sale of this type, the only possible future customer was the Austro-Hungarian Navy. This prohibition was not clear for the

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<sup>23</sup> KA MS/II. GG (Marinesektion/II. Geschäftsgruppe) 47C/10 766 ex 1908

<sup>24</sup> The technical data of these submarines. Displacement: 240/273 tons, dimensions: 32×4.2×3.9 m, range: 800/60 nm, engine: 2 petrol engines/2 electric motors, 500/230 hp, speed: 11,4/9,7 knots, armament: 2×45 cm torpedo launcher, 1×3.7 cm gun.

<sup>25</sup> KA MS/II. GG 47C/10 4497, 9494, 10329 ex 1908

<sup>26</sup> KA MS/II. GG 47C/10 7799 ex 1908

<sup>27</sup> KA MS/II. GG 47C/10 10329 ex 1908

<sup>28</sup> KA MS/II. GG 47C/10 11272 ex 1908

<sup>29</sup> KA MS/II. GG 47C/10 14138, 14139 ex 1908

<sup>30</sup> KA MS/II. GG 47C/10 1123, 1771 ex 1909

management, because this type was well known in the world, but Count Edgar Hoyos, the director of the Whitehead promised in his letter to keep the agreement with the navy.<sup>31</sup>

The submarine U VI was launched on 12 June 1909 and the trials of U V were started on 24 June. The trials of the torpedo launchers were successful in August and September 1909. Before the trials of the torpedo launchers the navy and the firm debated over the costs of the accidental loss of torpedoes on the trials for long. Finally they came to an agreement.<sup>32</sup>

The results of the engine trials ( U V in summer, U VI in autumn) were not so good. The engine of the U V has had been out of order 26 times during the trials, but the engines of the German built U III were much more inferior.<sup>33</sup> After a series of defects the shipyard finally had to change the cylinders and the cylinder-heads at its own costs because the material of these parts was inconvenient.<sup>34</sup> There was an other problem connected with ventilation of the fuel-tanks, which caused constant danger of explosion. The costs of delay also imposed the shipyard.<sup>35</sup>

The two submarines finally entered in service in 1910. The background of the technical defects was not so much the factory having been unprepared, as the primitiveness of submarine technology of the time. The submarine became a reliable weapon after 1911-12, with the introduction of the Diesel engine.

After 1911 the Austro-Hungarian Navy cancelled the prohibition of international sale of this type submarine, and the Whitehead built several Holland-type submarines for the Dutch navy. In 1910-11 the factory built an additional Holland-type submarine, the S. S. 3. on its own risk, hoping that the navy takes it over in the future. In 1913 in the time of the Second Balkan War the Whitehead offered it to the navy, but Admiral Anton Haus rejected the offer, referring to the new modern submarines of the navy under construction in Germany. The navy finally bought this submarine in August 1914 for 500 000 Crowns.

It was clear already during the construction of the first submarines that the navy needs bigger and faster submarines. The shipbuilding programme of the navy in 1910-11 and the extra credit 312 million Crowns reckoned with six modern submarines. Whitehead showed two plans to the navy in month of October 1910:

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<sup>31</sup> KA MS/II. GG 47C/10 4574 ex 1909

<sup>32</sup> KA MS/II. GG 47C/10 12354 ex 1909

<sup>33</sup> KA MS/II. GG 47C/10 13391 ex 1909

<sup>34</sup> KA MS/II. GG 47C/10 16359 ex 1909

<sup>35</sup> KA MS/II. GG 47C/10 14628 ex 1909

- C1 (developed from the Holland type) 525/630 ton, 3200/1160 Hp, 17/11 kn, 3 320 000 Crowns per boat.
- K1 (Dutch colonial type) 319/380 ton, 1700/630 Hp, 16/11 kn, 2000.000 Crowns per boat.

The German Germania yard made an offer to Austro-Hungarian navy for a modern submarine (506 c 580/725 ton, 2500/1290 Hp, 18/11 kn, 3 040 000 Crown per boats) in December 1910.<sup>36</sup> Hungary namely Whitehead got order for 6 submarines at the sharing of the extraordinary credit. The agreement concreted this time, contained too law summit, 10 million Crowns.<sup>37</sup> In spite the agreement there were still two plans: Whitehead 48 type (3 275000 Crowns) and Germania yard 506 d type (3040 000 Crowns). The navy reduced the number of the orders to 5 pieces from 6 and the price was fixed to 16,5 million Crowns. Although Korvettenkapitän Franz von Thierry and other officers supported the Whitehead, Admiral Montecuccoli the Commander of the navy gave the order to Germania yard in January 1913. The main reason beside the law price was unreliability of the submarines of the Whitehead.<sup>38</sup> The boats of the Germania yard were cheaper and better but the Austro-Hungarian navy have never got these boat because of the war.

If the Danubius had been the Hungarian shipyard which didn't get the order, the Hungarian delegation threatened with rejection of the budget. But Whitehead didn't belong to the interest of the Hungarian politicians. The Hungarian industry further got the compensation instead of the lost order for submarines: the navy ordered 17 torpedo boats from the Danubius in 1913.

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<sup>36</sup> Aichelburg, Wladimir: Die Unterseeboote Österreich-Ungarns. 52-53.

<sup>37</sup> KA MS/PK XV-7/5 960 ex 1911

<sup>38</sup> Aichelburg 53.

**Sažetak****WHITEHEADOVA TVORNICA I NARUDŽBE AUSTROUGARSKE MORNARICE,  
POSEBICE ZA WHITEHEADOVE PODMORNICE, 1904. – 1914.****Mihály Krámlí**

Mađarska, koja je platila svoj dio budžeta (31,4%) za zajedničku vojsku, pa tako i ratnu mornaricu, praktički nije dobivala narudžbe od mornarice prije 1890-ih. Jedina je iznimka Whiteheadova tvornica torpeda. Whiteheadova tvornica, koja se nalazila u Rijeci, a Rijeka je bila sastavnim dijelom Ugarske krune između 1868. i 1918., smatrana je "mađarskom" tvrtkom. To je značilo da su narudžbe ratne mornarice bile smatrane dijelom budžeta mornarice koji se troši u Mađarskoj. Ali radilo se o skromnoj svoti: u to vrijeme trošilo se godišnje oko 60 – 80.000 kruna, manje od 1% industrijskih narudžaba ratne mornarice. Situacija je bila sve samo ne zadovoljavajuća za mađarske političare i industrijalce, međutim, nije tako bilo i za Whiteheada koji se uglavnom oslanjao na izvoz.

Mađarska vlada, zajedno s industrijskim krugovima, započela je bitku da dobije što veći dio narudžaba austrougarske ratne mornarice 1897. – 1898. Njihov je krajnji cilj bio dobiti 36,4% narudžaba. Zapovjedništvo mornarice moralo je to prepoznati radi budućeg razvoja u kojemu je pomoć Mađarske bila neizbježna tako da je 1904. sklopljen sporazum o razdiobi narudžaba. Veliki pobjednici u ovom sporazumu bili su Danubius Co., koji je osnovao novo brodogradilište u Rijeci, i tvornica Weiss Manfred. Korist za Whiteheada došla je s druge strane, ali je također imala veze s ovim sporazumom. Ovaj je sporazum omogućio da prođe posebni kredit od 120 milijuna kruna. Taj kredit omogućio je mornarici izgradnju 12 razarača i 36 torpednih čamaca, što je predstavljalo znatan broj koji nikada prije nije viđen. Mornarica je sva torpeda i lansere naručila od Whiteheada, a vrijednost narudžbe iznosila je više od 2 milijuna kruna.

Osim torpeda i lansera, istodobno su izgrađene dvije podmornice. Whitehead je izgradio 240-tonske podmornice U5 i U6 1908. – 1909., na temelju američkih nacrti, ali ipak za 2,7 milijuna kruna. Zbog nekoliko kvarova, podmornice su stavljene u pogon tek 1910. Razlog tehničkim kvarovima nije bila nepripremljenost tvornice nego tadašnja primitivna tehnologija podmornica. Poslije je Whitehead izgradio nekoliko podmornica istoga tipa za Nizozemsku. Na vlastiti rizik tvornica je 1910. – 1911. izgradila dodatnu podmornicu nizozemskog tipa S.S.3. Godine 1913. tvornica je podmornicu ponudila ratnoj mornarici, ali ju je mornarica kupila tek poslije, nakon izbivanja Svjetskog rata za 500.000 kruna.

Početkom 1911. dvije su delegacije konačno glasale za kredit u iznosu od 312 milijuna kruna. Tijekom raspodjele kredita narudžbe za sva torpeda, lansere i moderne podmornice bile su dodijeljene mađarskoj industriji. Vrijednost narudžbe torpeda iz programa 1911. – 1914. godine bila je 4,16 milijuna kruna, što je deset puta veći godišnji prihod nego petnaest godina prije. Narudžba za pet modernih podmornica u vrijednosti od 16 milijuna kruna prvotno je dodijeljena Whiteheadu, ali je s vremenom mornarica promijenila svoje mišljenje te je konačno početkom 1913. godine naručila podmornice u Njemačkoj. Mađarska industrija kao cjelina, a ne tvornica Whitehead, dobila je kompenzaciju za taj gubitak: ratna mornarica naručila je 16 torpednih čamaca u brodogradilištu Danubius u Rijeci.

*Abstract*

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NAVY, ESPECIALLY THE WHITEHEAD SUBMARINES, 1904-1914**

**Mihály Krámlí**

*Hungary, having paid a share proportion (31.4 %) of the budget of the common army and thus the navy, practically did not get any orders from the navy before the 1890s. The only exception was the Whitehead torpedo factory. The Whitehead, situated in Rijeka – which city was the part of the Hungarian Crown between 1868-1918 - was treated as a “Hungarian” firm. This meant the orders giving from the navy were counted as parts of the navy budget spent in Hungary. But it was a modest sum: in this period yearly around 60-80 000 Crowns, less than 1% of the industrial orders of the navy. The situation was all but satisfactory for Hungarian politics and industrialist, but not so for the Whitehead, the later relied mostly upon the export.*

*The Hungarian government, together with the industrial circles started struggle for getting the greater possible share from the orders of the Austro-Hungarian Navy in 1897-98. Their ultimate purpose was to obtain 36.4 % of the orders. The command of the navy had had to recognise that in favour of further developments the help of Hungary was inevitable, so an agreement has been born in 1904 on the divisions of orders. The great winners of this agreement were the Danubius Co., which founded a new shipyard in Rijeka, and the Weiss Manfréd Works. The benefits for the Whitehead came from other side, but it was connected to this agreement too. This agreement helped the pass of an extraordinary credit of 120 million Crowns. This credit enabled the navy to build 12 destroyers and 36 torpedo boats, a quantity never seen before. The navy all the torpedoes and launchers ordered from the Whitehead, and the value of this order was over 2 million Crowns.*

*In addition to torpedoes and launchers, two submarines were built at the same period. In the Whitehead the 240-ton U 5 and U 6 were produced in 1908-1909, on the basis of American plans, altogether for 2.7 million Crowns. On account of several breakdowns, they were only put into service in 1910. The background of the technical defects was not so much the factory having been unprepared, as the primitiveness of submarine technology of the time. Later the Whitehead built several submarines of the same type for Holland. In 1910-11 on its own risk the factory built an additional Holland-type submarine, the S. S. 3. In 1913 the firm offered it to the navy, but the navy bought it only after the outbreak of the World War for 500 000 Crowns. At the beginning of 1911, the two delegations finally voted for the 312 million Crowns credit. In the course of the credit distribution the orders for all torpedoes, launchers and the modern submarines were allocated to Hungarian industry. The value of torpedo order of the 1911-14-program was 4.16 million Crowns, a yearly income more than ten times greater than fifteen years ago. Originally the 16 million Crowns order for five modern submarines was allocated to the Whitehead, but in the course the navy's opinion changed, and finally in early 1913 they ordered the submarines in Germany. The Hungarian industry as whole, and not the firm Whitehead received compensation for this loss: the navy ordered 16 torpedo boats from the Danubius shipyard of Rijeka.*

