

## Sea Mines September – December 1939 (2\_14)

### Introduction

#### *Sea mines and weather modification*

Sea mines, bombs planted at different levels under the sea surface, are an excellent means for a magnificent experiment to study weather modification. As oceans are huge, one certainly needs more than a few mines for proper effect. But if the experiment is more confined, let us say to the North Sea and Baltic Sea, any result may become visible and be felt quickly. Something of this nature happened in late 1939. Within a period of just four months after parties to the war had planted thousands and thousands of mines in the North Sea between Scotland, Dover and Skagerrak and in the Baltic Sea, Northern Europe experienced an extremely cold winter. This is not the only surprise. In the Netherlands and North Germany, immediately adjacent to the German Bight and Southern Baltic Sea, where the bulk of the mines had been laid in autumn 1939, the winter was the coldest in more than 100 years. About 100 to 300 years ago, Europe and the northern hemisphere had been in the icy grip of the so-called 'Little Ice Age'. Suddenly the period before 1850 returned.

#### *Using sea mines as a weapon*



During WWII Allies and Axis countries laid about 600,000 sea mines in European and Atlantic waters. While comparing mining activities during the period of four autumn months of 1939 and those 65 months that followed from 1940 to 1945, one may tend to think that this short

period of four months is hardly significant and can be summarily ignored. That would be wrong for the following reasons:

1. During the first four months of war the 'monthly-average' of mines laid was possibly 10 times higher than during the next five years and could have been in the range of between 50,000 to 100,000 or more, due to the fact, that

- a. the countries could immediately use their accumulated stockpile,
  - b. sea mines were regarded as ‘cheap’ weapons and it was not difficult to produce them in large numbers,
  - c. neutral countries also could and did use mines as a ‘defensive measure’.
2. At the time WWII started in September 1939, the oceans and seas were in their “natural status”. But the exploding of sea mines and other military activities as the war progressed through days, weeks and months, interfered with the ‘common processes’. And within a month of the start of the war, sea areas in question lost their ‘common seasonal average’, as it had existed before.

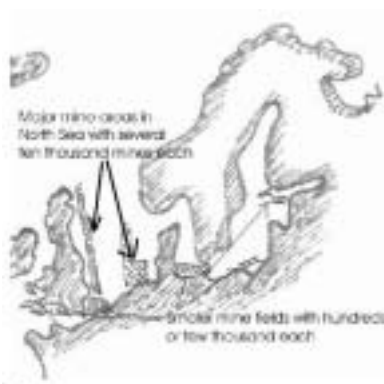
For reasons stated above, while discussing the issue of sea mines, only the period from September to December 1939 will be covered here. However, heavy impact of the war machinery on European waters will be dealt with in two further chapters elsewhere. (A)

Further details: (A) Sea war events 1939, 2\_13; and Depth charging 1939, 2\_15.

### **Mining the North Sea** (September - December 1939)

#### *England’s east coast*

British mined their East coast from Dover to the Orkneys successfully during the first few months of war. In September 1939 alone, the British minelayers *Adventure* and *Plover* planted 3,000 mines across Dover Street (English Channel). In the second half of September the barrage was completed by 3,636 U-boat mines, consequent to which Germany lost three U-boats in October<sup>1</sup>.



The British set up the East Coast Barrier, a mine barrage between

<sup>1</sup> Rohwer

twenty and fifty miles wide from Scotland to the Thames, leaving a narrow space between the barrage and the coast for navigation. In late 1939 the British Admiralty intended laying a 500-mile minefield of unprecedented size, a barrage in a strip of thirty to forty miles. That was a “gigantic effort to check the German submarine campaign”. (NYT, 31 December 1939).

Even though it is difficult to verify the number of mines laid by the British in the North Sea immediately after commencement of the war, the total number of mines laid during autumn 1939 would certainly have crossed 10,000. Presumably the number was much higher, if one can rely on a report by the NYT in early January 1940. : “British naval vessels are sowing some of the last mines needed to complete Great Britain’s 30,000,000-pounds protective shield for east-coast shipping. The minefield extending from Kinnairds Head, Scotland, almost to the mouth of the Thames, is the most extensive field ever laid.” (NYT, 11 January 1940). If one assumes that the weight of those mines varied between 300 and 1,200 pounds, the number of mines laid in autumn along the east coast alone, would be between 25,000 and 100,000 mines.

#### *Helgoland Bight (Deutsche Bucht)*

German Navy engaged in planting contact mines probably much more actively from Holland’s coastal waters (off Terschelling) northwards across the Helgoland Bight up to the entrance of the Skagerrak, at a distance between 50 and 100 km off the coast of Schleswig-Holstein and Denmark, called “Westwall”. The most north-westerly point announced by the Germans as ‘Dangerous zone’ was the position: 56° 30’ North and 4° 25’ East. That was about half the distance between Skagerrak and Scotland. The first minefield locations were off Terschelling, Esbjerg, near Helgoland and two places off Jutland. (NYT, 5 September 1939). Specific warnings had been given to more than 100 Danish fishing cutters from Esbjerg. (NYT, ditto). It was reported that one unidentified cutter had been blown up seventy miles west of Wyl light ship. (NYT, ditto). For about three weeks a flotilla of at least 25 naval vessels was engaged in laying mines along the “Westwall”.

It was difficult to verify how many mines the flotilla had planted within the first few weeks, as it was not possible to get reliable figures about the stockpile the Germans had on September 1<sup>st</sup>. The number of mines laid during the period in question could be as few as 20,000 or as many as 200,000. But as the distance from Terschelling to 56° 30’ North is about 350 kilometres (170 sea miles) and as the deployed 25

naval vessels were able to put in place several thousand mines per day it seems reasonable to assume that, by the end of September at least the first 10,000 mines and by the end of October 20,000 were in place and the “Westwall” was more or less completed in the following months. According to a report by the NYT – Magazine, as many as 300 mines an hour could be laid by one minelayer. (NYT, 18 February 1940). From the total of more than 200,000 sea mines the German Navy used in WWII, presumably one-third of the total would have been laid in the North Sea during the early days of the war.

In a number of missions Home Fleet’s surface vessels laid mines close to the Axis shipping lanes and channels, e.g. the British destroyers *Esk* and *Express* laid mines at assumed ‘exit channels’ close to the “Westwall” as early as mid September<sup>2</sup>, while the British East Coast was frequently supplemented with contact mines laid by surface vessels and magnetic mines laid either by German naval vessels, U-boats or air planes.

#### *Mining along the West coast of Britain, 1939*

The Home Fleet organised the laying of a number of mine fields on the Atlantic coast of Great Britain and the English Channel, e.g. in the Northern Channel (north entrance of the Irish Sea), at the entrance to Liverpool, Cardiff, Plymouth, Southampton and the Eastern part of the English Channel (Isle of Wight, Le Havre, Dover). (NYT, 17 December 1939, section 4).

#### *Mining the Baltic Sea, 1939*

War had just started when 1,555-ton Greek ship *Kosti* hit a German mine two miles south of Falsterbo/Sweden on 4<sup>th</sup> September and a “terrific explosion was reported in the minefield south of the Great Belt, west of the Danish island of Zealand”. (NYT, 5 September 1939). The Danish Government announced plans to plant mines in its waters. (NYT, ditto). Actually, the Germans laid about 1,000 mines on September 4<sup>th</sup> at the entrance to the Danish waters, the ‘Belts’. Mine laying continued. The situation worsened day-by-day for six long years. How many mines the Germans planted in the Southern Baltic is difficult to verify. In the Western Baltic it would have been many thousands before the winter of 1939/40 arrived and as a result the German Baltic waters fell prey to a compact ice cover.

---

<sup>2</sup> Rohwer, 09 Sept.39

Other riparian countries planted mines as well. Even the hard pressed Poles with the help of minesweepers *Czajka*, *Jasolka* and *Rybitwa* managed to drop 60 mines south of Hela (Gdanska Bight) on September 12<sup>th</sup>. The Soviet Navy started laying mines in the Gulf of Finland in late September, which also saw a number of mining activities by Germans, Finns and Russians during November and December 1939.

Further details: A fairly detailed account of what had happened in the Gulf of Finland when the Soviet Union invaded Finland in December 1939 is given in the paper: Russian-Finnish war, 2\_41.

### Minesweeping and Countermeasures



Minesweeping is the task of detecting implanted mines and making them harmless in a variety of ways including blowing them up with explosives.

A standard mine in WWI and at the start of WWII was the moored contact mine, a buoyant material filled with explosives of up to 1,000 kg. To nullify their effect special ships used distant means to cut the mooring chain or wire attached to the mines to float them. Sometimes they exploded before reaching the surface but if it surfaced it was blown up by rifle shots.

Germans used magnetic mines for the first time in November 1939. The NYT soon reported that: “Some wild stories have appeared here suggesting that the Germans have invented a so-called ‘magnetic mine’”. (NYT, 22 November 1939). Actually, one magnetic mine was discovered on the shore near Southend on November 22<sup>nd</sup> and was examined by the Navy’s mining school<sup>3</sup>. Only two countermeasures were available against magnetic mines. One was to explode the mine by towing a cable, which passed an electric current through the water. From the point of view of climate, this was the worst possible result.

<sup>3</sup> Elliot, p.30

The mine exploded at its location, at a depth of 20, 50, 100 metres or more, producing the highest possible “stirring” effect in the water column above. The other countermeasure was to deactivate the ship’s ‘magnetism’ so that it could pass near the mine without activating it. This may have saved the ships in a few cases, but the mine remained a threat until it exploded later or until it was deactivated mechanically<sup>4</sup>.

The same was the case with Oyster mines, which were equipped with pressure mechanisms and were first used by Germans off Normandy and Cherbourg in 1944. Sweeping them in WWII meant exploding them by countermining. Limiting the ship’s cruising speed to less than four knots gave them some protection.

British Navy mostly used antenna mines, mines that can be planted at any depth and from which long thin copper cables supported by small metal buoys reach up to within a few feet of the surface. These exploded when a submarine (or metallic body) touched the antenna, thus making it unnecessary for the submarine to strike the mine itself. (NYT, 31 December 1939).

Mines, while exploding mix a column of water within seconds. Sweeping for mines proved to be a tremendous round the clock operation travelling millions and millions of miles in the sea for detecting and destroying the ‘weapon in waiting’. The efforts made during WWII had been tremendous. German Defence machinery against Allied mining involved 46,000 personnel, 1,276 sweepers, 1,700 boats, and 400 planes, whereas the British Defence against Axis mining involved 53,000 men and 698 sweepers<sup>5</sup>. When on November 19<sup>th</sup>, 1939 five ships were destroyed by mines the urgent need for a huge mine sweeping operation became obvious. (NYT, 20 November 1939). The discovery of a ‘sample mine’ on November 22<sup>nd</sup> confirmed the effectiveness of countermeasures significantly. The British Admiralty quickly put a pre-war plan into action, whereby 800 commercial trawlers, drifters and whalers were requisitioned, fitted out with wire sweeping gear and their crews trained accordingly<sup>6</sup>.

### **What did the Mine Warfare do to the Weather?**

At this point one can skip explaining the principal threat: ‘stirring’ the sea by exploding mines as well as effects of either throwing or eliminating mines by surface vessels. Such events coupled with the sinking of vessels with resultant pollution caused by cargo of the

---

<sup>4</sup> Hartmann, p, 127

<sup>5</sup> Hartmann, p.244

<sup>6</sup> Elliot, p.30

doomed ships, would have changed the ‘common status’ of the sea, and thus the general ‘blueprint’ for the weather. The pre-winter months are particularly sensitive in storing summer heat or losing it prematurely by storm, wind or war activities. The mechanism of heat storage and release seems obvious. The question is how many mine related events have occurred during the pre-winter months, i.e., September to December 1939 that affected the composition of the weather?

The number of ships, sunk by mines until the end of 1939, was significantly large, but the exploding mines involved in the sinking of about 200 ships alone would hardly have raised great concern. The number of mines



exploded due to mine sweeping operations (see previous paragraph) is actually much higher. It is a fact that mines often tend not only to be “weapons in waiting” but also a “weapon that dies lonely”, either by mere erosion or explosion due to other reasons than war. In both cases, actual numbers are not available. If mines exploded prematurely during laying procedure, the information rarely left the inner circles of the Navy concerned. If mines exploded due to stormy seas, bombing or drifting ‘the matter’ will go totally unnoticed or go on record only in a few cases. A few examples of such cases are mentioned below:

- The US *Mormachawk* sailed with pilot assistance through a German minefield in early September 1939 when five loose mines blew up 500 to 800 yards away. (NYT, 20 September 1939).
- There were unexplained explosions around the East Coast of England, which were later discovered to have been magnetic mines going off prematurely. Casualties became so serious that at one stage Thames at Southend was closed for 36 hours, and Humber for two days<sup>7</sup>.
- “Gales have loosened several hundred mines in the German mine field... drifting mines exploded on the coast near the suburbs (of Copenhagen)... So many mines are floating around that it is impossible to destroy all of them due to bad weather.” (NYT, 6 November 1939).

<sup>7</sup> Elliot, p.31

It will be never known as to how many mines exploded during storms, bombing, shelling or drifting cargo or wrecks in large mine fields like the German North Sea “Westwall”, and along England’s East Coast barrage with possibly several ten thousand mines. However, it will be significantly higher than any data on ship-sinking and mine sweeping would suggest.

At the end of the war when great efforts had to be made to clear the sea of mines, it was observed that about 85% of the mines laid had “disappeared” due to various causes and only a small fraction could be found and eliminated, either by explosion below surface or at sea surface<sup>8</sup>.



The following List of Events, even though in no way comprehensive, gives a brief account of how mine warfare was resorted to in the North and Baltic Sea in late 1939. A full picture would possibly require the reproduction of thousands of reports relating to stirring, shaking and mixing of Northern European waters.

### **Some Mining Events during late 1939**

The purpose of the following list of events is to give a brief illustration of what happened in the first few months of WW II, how they contributed to changes in weather conditions of the North and Baltic Sea so much that an extremely cold winter could grip Europe and provide Central Northern Europe with the coldest winter in 110 years. It is a fact that the use of a huge number of sea mines from the first day of war together with other naval and military activities such as patrolling, shelling, anti-aircraft fire, bombing, depth-charging, and such other measures that turned the sea ‘upside-down’, has significantly contributed to the break-in of arctic conditions.

3 September 1939: North Sea (Helgoland Bight); The German navy commences laying contact mines from the Dutch island Terschelling 150 sm (ca 277 kilometres) north with 5 cruisers, 16 destroyers, 10 torpedo boats and 3 mining ships<sup>9</sup>. The mining field is called the “Westwall” as an imaginary extension of the “Westwall” stretching from Basel/Switzerland along the river Rhine to the northern border of Holland with Germany. The first mining activities lasted until 20

<sup>8</sup> Elliot, p.193

<sup>9</sup> Rohwer

<sup>10</sup> Elliot, p.30



September. Other mining missions were undertaken at the same time (e.g. laying of the ‘Martha mine barrage’, as part of the North Sea ‘Westwall’). Exact figures of the number of mines laid in the first three weeks or in subsequent missions are not easy to establish. According to Elliot, the Germans were thought to have started the war with a stock of 200,000 moored mines<sup>10</sup>. This figure seems a little bit too high. As the previously mentioned flotilla was able to manage the laying of up to 3,000 mines per working day, it seems possible to lay of 20,000 to 50,000 mines within a period of three weeks’.

04 September 1939: “Danish Government has decided to place mines at the entrance to Mongedybet, Hollaenderdyet and Drogden. The purpose is said to be facilitating control of these waters”. (NYT, 5 September 1939).



3-9 September 1939: Four U-boats drop magnetic mines in the estuaries of Orfordness, Flamborough, Hartlepool and the Downs drowning four vessels with a total of 16,000-tons and damaging one ship of 11,000-tons<sup>11</sup>.

10 September 1939: The British destroyers *Esk* and *Express* laid an offensive mine barrage on assumed German shipping channels along the „Westwall“<sup>12</sup>.

4-20 September 1939: Baltic Sea; Several naval vessels prepared minefields, with at least 1,000 mines in the Western Baltic to control the Danish waterways to Kattegat and Skagerrak, in which the Greek ship *Kosti* hit a mine and sank on 4 September<sup>13</sup>.

8 September 1939: The Dutch Navy loses the minelayer *Willem van den Zaan* (1,270-tons) and the minesweeper *Willem van Ewijk* (460 tons) to its own mines<sup>14</sup>.

<sup>11</sup> Rohwer

<sup>12</sup> Rohwer

<sup>13</sup> Rohwer

<sup>14</sup> Rohwer

<sup>15</sup> Rohwer

<sup>16</sup> Rohwer

11 September 1939: “The German Government has broadcast a warning to all ships to stay out of three dangerous zones near the entrance to the Baltic. ...The announcer said that the second and third zones must not be entered at all and the first only behind a pilot ship. Presumably these zones have been mined.” (NYT, 11 Sept.39).

12 September 1939: Baltic Sea; Polish minesweeper *Czajka*, *Jasolka* and *Rybitwa* throw 60 mines south of Hela, near Gdansk<sup>15</sup>.

11.-16 September 1939: British minelayers *Adventure*, *Plover* and support vessels laid 3,000 mines across the Strait of Dover<sup>16</sup>.

21 September 1939: Soviet Navy plants mines in Gulf of Finland to protect Kronstadt and Leningrad. (NYT, 22 Sept. 1939).

25 September – 23 October 1939: U-boat sea mines barrage with 3,636 mines is laid across the Strait of Dover (between Folkestone and Cap Gris Nez). After three U-boats were lost in October 1939, no further attempts were made by U-boats to reach the English Channel through the Strait of Dover<sup>17</sup>.

October 1939; North Atlantic: Britain places 2,600 mines between Orkney, Faroe and Iceland<sup>18</sup>. Presumably, the actual number (for 1939) could have been much higher, as Britain laid 110,000 Mk XX mines between Orkney and Iceland between 1940-1943<sup>19</sup>.

16 October 1939 „A report from Falsterbo, Sweden, today said that a German pilot boat was blown up south of Oresund when it struck its own mine.“ (NYT, 17 October 1939).

17 October 1939: Mine operation off Humber by German torpedo boats and destroyers sank seven vessels<sup>20</sup>.

21 October 1939: On 21<sup>st</sup> October and 25<sup>th</sup> November own mines sank German Coast Guard ships south of the Great Belt. (NYT, 26 November 1939).

6 November 1939: Off Copenhagen shore: “Gales have loosened several hundred mines in the German mine field... drifting mines exploded on the coast near the suburbs (of Copenhagen), breaking windows and frightening citizens with their terrific detonations. Naval

<sup>17</sup> Rohwer

<sup>18</sup> Ledebur p. 191

<sup>19</sup> Hartmann, p.241

<sup>20</sup> Rohwer

<sup>21</sup> Rohwer

<sup>22</sup> Rohwer

<sup>23</sup> Rohwer

crews have destroyed no fewer than forty-three mines from Koege Bay up to Amager Island, where 100,000 Copenhagen residents live in a district comparable to Brooklyn. Along the whole southern coast mine alarms often make it necessary to evacuate villages while experts empty or explode the mines. So many mines are floating around that it is impossible to destroy all of them in the bad weather.” (NYT, 6 November 1939).

12 November 1939: North Sea; in two different missions a total of seven German destroyers undertook mining operations off the central Thames delta, resulting in the sinking of two destroyers, one trawler and about 20 cargo vessels, respectively ca. 60,000 tons<sup>21</sup>.

18 November 1939: North Sea, Humber Estuary, the mines of three destroyers sink seven ships with a tonnage of about 40,000<sup>22</sup>.

20 November 1939: Magnetic mines are flown and dropped by German Navy planes on British shores for the first time<sup>23</sup>.

21 November 1939: Danes mine sea way; (NYT, 21 November 1939).

22 November 1939: Thirty-nine drifting mines seen near England (NYT, 23 November 1939).

23 November 1939: Mines sink 22 ships in six days. (NYT, 23 November 1939).

1 December 1939: England claimed to have mined an area of 300 square miles midway between the Schelde and Thames estuary. The freighter *Sheaf Crest* of 2,730 tons struck a mine and sank at a south coast town. (NYT, 1 December 1939).

December 1939: British East coast, numerous mining operations by U-boats sinking ca. 7 vessels<sup>24</sup>.



<sup>21</sup> Rohwer

<sup>22</sup> Rohwer

<sup>23</sup> Rohwer

<sup>24</sup> Rohwer

<sup>25</sup> Rohwer

3 December 1939: “A British tanker was sunk by mines off the southeast coast of England.... She (*San Calisto*, 8,010-tons) struck two mines, which went off with such a force that the blast shook buildings on shore”. (NYT, 3 December 1939).

4 December 1939: “More than thirty mines were washed ashore on the Netherlands coast today, but were exploded by military patrols without damage”. (NYT, 4 December 1939). “Mines and wreckages washed ashore on the Netherlands coast on weekend. Westerly storms were silent witness to the naval war raging outside the three-mile limit. Many mines exploded on shore, but strict precautions taken by the Netherlands authorities prevented casualties”. (NYT, 5 December 1939).

4 December 1939: “A third German mine patrol ship was blown up this afternoon north of the mine fields off Denmark. German ship sank in less than two minutes, her entire bottom blown up”. (NYT, 5 December 1939).

5 December 1939: German cruiser *Nürnberg* lays mines off Kristiansand/Skagerrak<sup>25</sup>.

6 December 1939: Sweden mined her waters opposite of Aland Islands. (NYT, 6 December 1939).

6 December 1939: Two destroyers drop mines off Comer, sinking two ships, damaging another<sup>26</sup>.

6 December 1939: German naval motor gliders drop 27 mines in the Humber and Thames estuaries<sup>27</sup>.

11 December 1939: Russians claim that they have cleared the Finnish



<sup>25</sup> Rohwer

<sup>26</sup> Rohwer

<sup>27</sup> Rohwer

<sup>28</sup> Rohwer

port Petsamo (Barents Sea) of Finnish mines. (Hamburger Anzeiger, 11 December 1939).

12 December 1939: Two days of German mining missions off Newcastle by five destroyers resulted in the sinking of 11 vessels with a total tonnage of ca. 19,000 tons<sup>28</sup>.

14 December 1939: “Seven crew members of the Swedish battleship *Manligheten* were killed today in an explosion while investigating a floating object in the vicinity of Goeteborg....A small boat was sent to retrieve the object. Suddenly there was a terrific explosion.” (NYT, 14 December 1939).

17 December 1939: Four British destroyers laid 240 mines in the river Ems delta<sup>29</sup>.

30 December 1939: The small village of Huisduinen near Helder was severely affected by a drifting mine, presumably of Netherlands, which exploded on being washed ashore at 7 o'clock this morning”. (NYT, 31 December 1939).



Minelayer

---

<sup>29</sup> Rohwer

### Summary

Even a small record of mine operation events during a short time period of the initial four months of war, viz. September – December 1939, would give a strong indication of the enormous forces that began to interfere with the marine environment. This happened thousands of times each day. The sea was ‘turned upside-down’ at innumerable locations. In September 1939, military activities either increased evaporation, or forced warm surface water into depths. Later in autumn the war machinery reversed the process, forcing cooled surface water down and warmer water up. (A) However, due to their shallowness the Northern European seas have only a limited heat storage capacity. Once the heat is taken out, a maritime winter climate is lost as well. This happened in the first war winter of 1939/40. Consequently, since the first week of January 1940, Northern Europe had gone back into the ‘Little Ice Age’. (B)

Further details: (A) Cooling the North Sea; (B) Northern Europe plunged into arctic conditions, 2\_11.