

Warrior

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Grey Wolf

U-Boat Crewman of World War II



Gordon Williamson • Illustrated by Darko Pavlovic



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Dedication

This book is respectfully dedicated to all those, of whatever nationality, who lost their lives at sea during World War II.

FRONT COVER **A veteran warrant officer wearing the standard senior NCO peaked cap.**

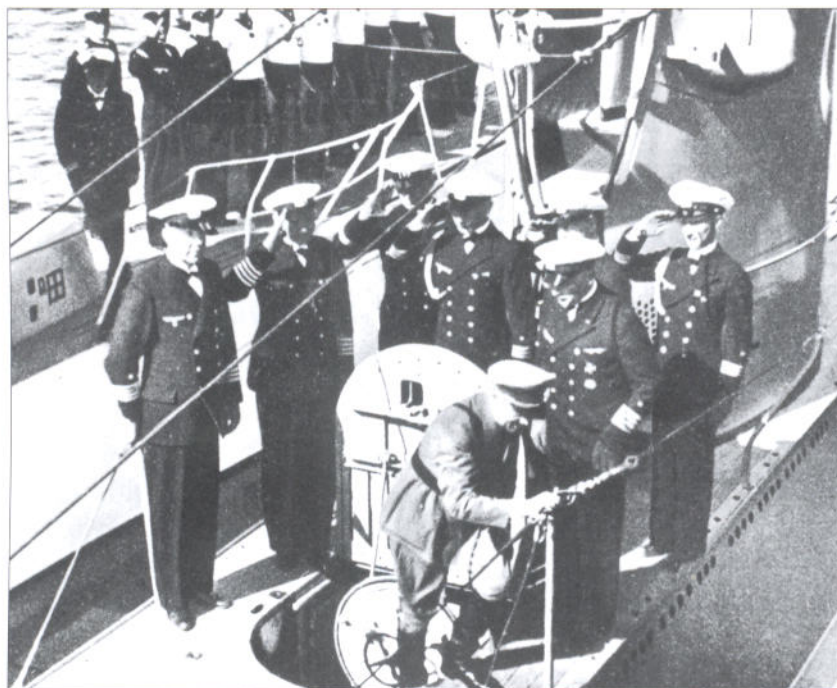
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GREY WOLF U-BOAT CREWMAN OF WORLD WAR II

INTRODUCTION

Few members of any elite formation in the Second World War sacrificed so many of their number in battle as the crews of the German U-Boot Waffe. Estimates of losses vary between 75 and 80 percent, but in spite of this horrific rate of attrition, the U-Boot Waffe maintained an amazing *esprit de corps* to the end. Despite the appalling conditions under which they fought, and the low survival rate of the average U-boat in the second half of the war, the 'Grey Wolves' of Grossadmiral Karl Dönitz fought their war in a fashion which retained an admirable degree of chivalry towards their foes. Apart from the notorious Peleus incident, for which Kapitänleutnant Eck was executed in November 1945, their record in this respect is far better than that of their Allied opponents. So much so, in fact, that Allied war heroes such as Admiral Chester Nimitz came forward to speak in defence of Dönitz's tactics when he was tried at Nuremberg. The media, however, has made sure that the world knows what the Germans were supposed to have done to others, but not what was done to the Germans, and the numerous reports of German survivors being killed have barely been investigated.



This early pre-war photo shows Adolf Hitler on a formal visit to 1 Unterseebootsflotille *Weddigen*. He is emerging from the aft hatch on a Type II coastal submarine, known to their crews as 'canoes' due to their small size. Just how little space there was on these vessels can be gauged by the crowded scene, bearing in mind that the inner, pressure hull is even smaller than the outer appearance would suggest.

Kurt Baberg once wrote, 'Those who did not share our hardships will never know the strength of the bonds which tie us together.' The nature of U-boat warfare meant that every man must have complete confidence in his fellow crewmen, for the lives of every man on board might at some point depend on any other individual member of the crew. An average of 48 men on a Type VII (55 on a Type IX) lived, ate, slept and socialised (in what little free time they had), in a tiny, dark, smelly steel tube sometimes for months at a time and often in the appalling weather conditions of the North Atlantic. The bonds that were formed between these men, as with most truly elite forces, were deeply felt and long lasting. Even today, half a century later, former U-boat men retain a well-deserved pride in their accomplishments against tremendous odds.

Despite more recent post-war works which have sought to play down the achievements of Dönitz's U-boats, those who served in the U-Boot Waffe can take great pride in the famous quotation from Winston Churchill: 'The only thing that ever really frightened me during the war was the U-boat peril.'

CHRONOLOGY

1 October 1933	<i>Unterseebootsabwehrschule</i> founded.
29 June 1935	The launch of <i>U-1</i> .
27 September 1935	Unterseebootsflotille 1 <i>Weddigen</i> commissioned by its first chief, Fregattenkapitän Karl Dönitz.
1 January 1936	The appointment of Kapitän zur See Karl Dönitz to the post of Führer der Unterseeboote.
4 August 1938	The first Type IX U-boat commissioned.
4 September 1939	Liner <i>Athenia</i> sunk by <i>U-30</i> .
14 October 1939	Battleship <i>Royal Oak</i> sunk at Scapa Flow by <i>U-47</i> under Kapitänleutnant Günther Prien in the U-Boot Waffe's first major success.
7 March 1941	Günther Prien killed in action around this date (exact date not known).
17 March 1941	Joachim Schepke killed in action and Otto Kretschmer captured. Germany has now lost three of its top aces.
9 May 1941	<i>U-110</i> captured intact by the British.
14 November 1942	Aircraft carrier <i>Ark Royal</i> sunk by <i>U-81</i> .
15 November 1941	Launch of <i>U-459</i> , the first Type XIV tanker U-boat, or so-called <i>Milchkuh</i> .
25 November 1941	Battleship <i>Barham</i> sunk by <i>U-331</i> .
13 January 1942	Operation <i>Paukensschlag</i> offensive against shipping off the American coast begins. The start of the second 'Happy Time'.
5 July 1942	Convoy PQ17 decimated by combined U-boat/air attacks.
12 September 1942	<i>U-156</i> sinks the passenger liner <i>Laconia</i> and is attacked by Allied aircraft while rescuing survivors, resulting in a prohibition of future rescue attempts.
30 January 1943	Karl Dönitz appointed Großadmiral and Supreme Commander-in-Chief of the Navy.
20 March 1943	Largest-ever convoy battle, with wolf pack attacks on <i>HX229</i> and <i>SC122</i> .
24 May 1943	Scale of U-boat losses prompts Dönitz to withdraw all U-boats from the North Atlantic.
17 April 1944	Launch of the first Type XXIII U-boat.
12 May 1944	Launch of the first Type XXI.

RECRUITMENT

Although the U-Boot Waffe was by no means the volunteer force it is sometimes portrayed as, for most of the war there was no shortage of German sailors willing to volunteer for the so-called 'Freikorps Dönitz'. The massive unemployment levels in Germany, which resulted from the slump of the late 1920s and early 1930s, allowed the German navy to be particularly selective when choosing from the seemingly unlimited pool of available manpower. Generally speaking, the navy looked for men with a technical background, such as mechanics or metal working.

Prior to the outbreak of war, applicants for the navy had to be between the ages of 17 and 23. A prospective sailor would apply in writing to the II Admiral der Nordsee (North Sea) or Ostsee (Baltic) with full personal details such as height, weight, age, religion, etc., plus details of any qualifications including educational achievements (at least a satisfactory standard leaving certificate from *Volksschule*), technical skills, knowledge of foreign languages, sporting achievements and service with the *Reichs Arbeitsdienst* and any political organisations such as the *Marine Hitler Jugend*.

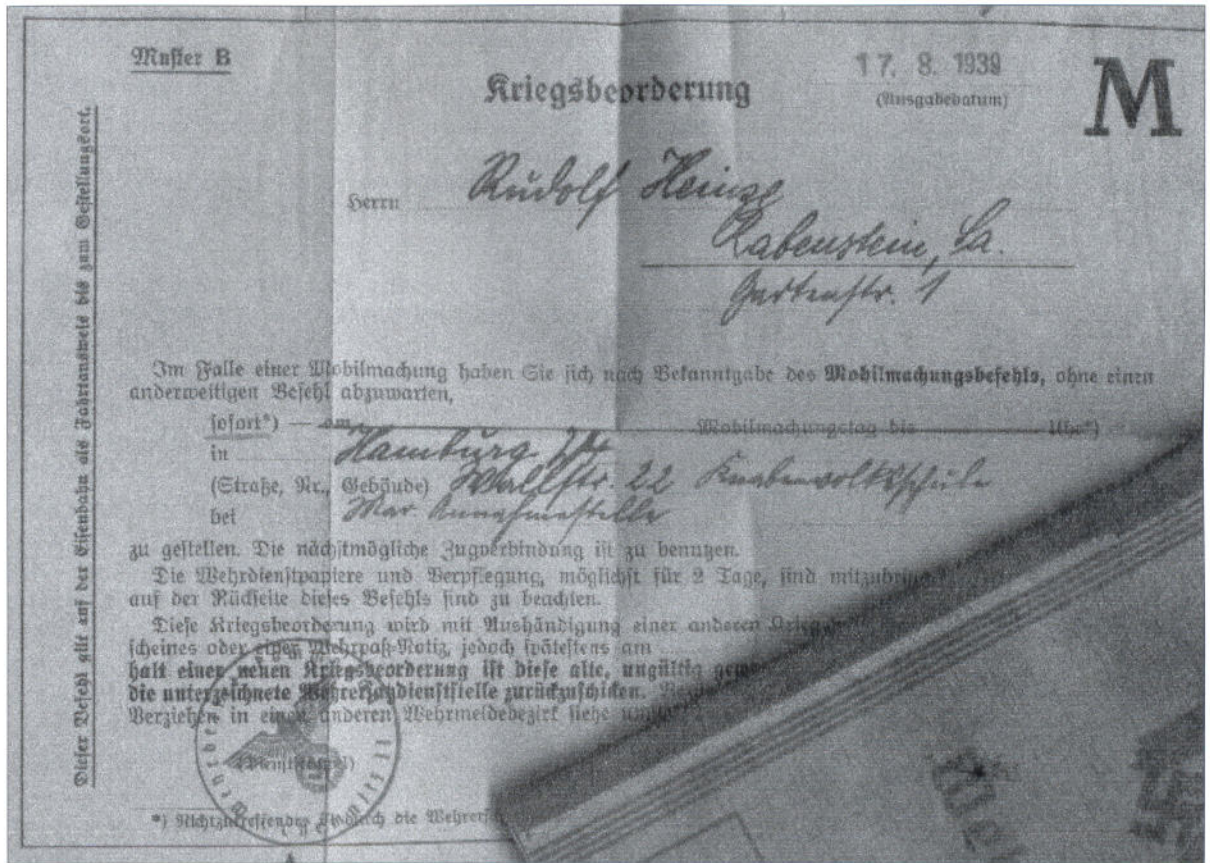
This was to be accompanied by two passport photographs and a Volunteer Certificate, which was only available from the police and proved that the applicant had no criminal record and that the personal details he had supplied were accurate. A declaration of Aryan origin and German nationality was also required later. If considered suitable, the applicant would be required to fill in a questionnaire and undergo a medical with a local doctor. Interestingly, it was also considered important that the prospective sailor had good teeth!

Assuming he was acceptable, he would then attend the local military district (*Wehrkreis*) registration office where he would undergo a more stringent medical and complete the paperwork required to formally enlist him. It would not be until 1941 that entry requirements would be relaxed somewhat to allow the general induction of unskilled manual workers. Having gone through the induction process, the sailor would be allocated to one of the Sailor Reserve Pools (*Schiffsstammdivision*) to begin training.

In Germany during the Third Reich period, on completing his education, the average young man would spend six months with the *Reichs Arbeitsdienst* (Labour Service) to carry out

A recruiting poster for the Kriegsmarine. Note that the image of the submarine features prominently in the design, an indication of the high esteem in which the U-boats were held by the German public.





The dreaded call-up notice instructing the recipient to report for duty with the navy immediately. Actually, when this notice was issued, just before the outbreak of war, morale would have been extremely high, and an idealistic recruit may well have welcomed rather than dreaded its arrival.

construction projects, though it was effectively a paramilitary unit. On completion, he was liable for call-up. A telegram from the appropriate military district contained instructions to report for assessment and registration for military service. He would then be issued with a military pass (*Wehrpass*) as a form of personal ID, showing that he had either registered or that he had been assessed unfit for military service; it proved that he had been officially 'processed'. On actual call-up this pass would be replaced with his official ID/paybook, the *Soldbuch* which he would carry until killed in action or discharged at the end of his service, at which point the *Wehrpass* with details of his service and discharge would be returned to him or his next of kin.

In the period between registering and call-up, young men could volunteer for a particular branch of service rather than waiting to be allocated to one by the authorities. For many of those with technical skills, service as a volunteer in the navy would no doubt seem far preferable to service as a conscript in the army. Recruiting teams for the navy travelled throughout Germany, and much of the statistical data relating to naval recruitment survived the war.

Germany made skilled use of propaganda. Successful U-boats and their commanders were heavily publicised, and postcard photographs of U-boat aces were avidly collected. Despite its massive superiority in sea power, Britain was being made to suffer, and the German people took the men of the U-Boot Waffe to their hearts. Magazines such as *Signal* and *Die Kriegsmarine* regularly featured photographic coverage of heroic



A pre-war recruit during training, posing in his best blues and proudly sporting the cap ribbon of the *Unterseebootsschule*.

U-boat crews, and the feature film, *U-Boote Westwärts*, released in May 1941, was a major hit. Small wonder then, that right through to the end of the war, many were still volunteering for service with the U-boats.

Although one may be forgiven for assuming the bulk of naval recruits would have come from the coastal areas of north Germany or the great sea ports such as Hamburg or Kiel, statistics show that the typical U-boat crewman came from central Germany, principally Saxony. He was from a working-class background and had completed elementary schooling (*Volksschule*). He was probably Protestant and from a family background of skilled artisans. It is interesting to note that even among those U-boat men from a middle-class background, most came from a family where their fathers were master craftsmen. Only a tiny handful came from families with a military background. The typical recruit into the U-boat service of the navy was a skilled blue-collar worker.

Those who elected to serve as a seaman, where the highest attainable rank was that of Oberbootsma at (senior bosun, a chief petty officer grade), had to sign on for a minimum

of 12 years. For those who were slightly more ambitious and who elected for an NCO career, a minimum service term of 12 years was also required. In this case progression through the ranks to Oberfeldwebel, and later Stabsoberfeldwebel was possible. This was a warrant officer rank, more commonly expressed in terms of the serviceman's career grouping or trade – Stabsobersteuermann (senior coxswain), Stabsobermaschinist (machinist), etc. There was no option to choose a specific trade, which was decided by the navy on the basis of an assessment of the sailor's abilities.

Those who wished to become officers faced the most gruelling training. Officers had to sign up for a term of 25 years' service, and the requirements, physical, intellectual and psychological, were the most strenuous of all. After initial basic training, every U-boat officer served three-and-a-half months before the mast on a sailing bark, followed by a 14-month stint on a cruiser, one year at naval academy, six months specialist training, and then one year on an active warship to gain experience and responsibility, before being voted to a commissioned rank by his peers if he had completed the training satisfactorily. Only then did he commence training as a U-boat officer. Officer training was

physically arduous, with great emphasis placed on sporting activities. One test of strength and character was to hold up a heavy iron bar through which an electrical current, powerful enough to be very painful, was passed. The cadet was expected to withstand the pain without dropping the bar. In age terms, the average wartime U-boat crewman was in his mid-twenties, with the commander or 'Old Man' aged around 27. As the war progressed, the mean age dropped slightly and towards the latter part of the war, a U-boat commander was about 24 years of age.

In more recent times, much doubt has been cast on just how much truth there is to the image of the U-boat service as being filled purely with volunteers. Pre-war, the average annual intake into the navy was 13,000 men. Only 33 percent of those who volunteered for the U-boat service would be considered suitable, and only 60 percent of them were accepted. It is estimated that until mid-1941, all U-boat crewmen were 'genuine' volunteers. But as the war progressed, Kriegsmarine losses had to be replaced and with competing demands for manpower from the army and Luftwaffe, conscripts began to appear in the U-Boot Waffe. In some cases they were already serving sailors from other branches of the navy, but others were fresh recruits sent straight to the U-boats after training. By the war's end, it is estimated that only 36 percent of U-boat commanders were 'pure' U-boat men with no service in any other branch of the navy. In some cases, the transfers were simply expedient. After the disastrous battle of Narvik where the German destroyer fleet was decimated (but the majority of crewmen survived), many destroyer crewmen, with their ships gone, volunteered for service in the U-boats, and many junior officers were simply reassigned whether they approved or not.

By 1942, naval intakes had reached 42,000 per annum, with Dönitz seeking authority to almost double this figure. The demands for replacements for losses on the Eastern Front, however, meant that Dönitz's requirements were never fulfilled. So by the middle of the war, fewer and fewer U-boat crewmen were volunteers in the true sense. But it is not true that in some way the quality of U-boat crews had diminished, or that their status as a true elite had slipped, even if recruitment was no longer purely voluntary. Even at a stage in the war, when U-boat losses were mounting and Allied anti-submarine measures were taking a terrible toll of U-boat men, there *were* sufficient volunteers to supply the U-Boot Waffe. As late as 1944, it is estimated that only 37 percent of those volunteering for U-boat service were accepted. It was the selectivity of the U-Boot Waffe itself, in its determination to keep standards as high as possible, that resulted in so many being turned down, and not a shortage of volunteers. The navy then made up the shortage in suitably qualified personnel by transfers from other branches, or by allocating new draftees directly to the U-boats.

So, while the image of the U-Boot Waffe as a purely volunteer force is perhaps not completely accurate, neither is the alternative view of unhappy draftees being pressed into U-boat service to make up numbers. Although many were drafted into the U-Boot Waffe without option, one choice that was often given was whether the sailor wished to serve on a Type VII or a Type IX boat. The Type VII was much smaller and more uncomfortable, whilst the Type IX was in comparison quite

roomy. However, in the case of an emergency crash dive, the Type VII could be under water some ten seconds faster and thus gave an increased chance of survival, so it was something of a 'Hobson's Choice'.

It is also worth pointing out that U-boat crews had to operate as an efficient, motivated team, with complete trust in their comrades. Just like a well-oiled machine where one faulty part can cause a disastrous breakdown, a reluctant recruit who resented his posting and did not fit in with the rest of the crew, could spell disaster to a U-boat. In such a situation the commander would be as keen to replace him as the draftee was to leave. There is no strong evidence to suggest that U-boat crewmen were forced to serve in submarines against their will; on the other hand, there is no shortage of evidence of those who failed to meet the high standard expected of them being removed, for the good and safety of all. Clearly, once they had undergone the rigorous training, which saw them moulded into an efficient part of a well-motivated team, draftees were, in the main, content to remain.

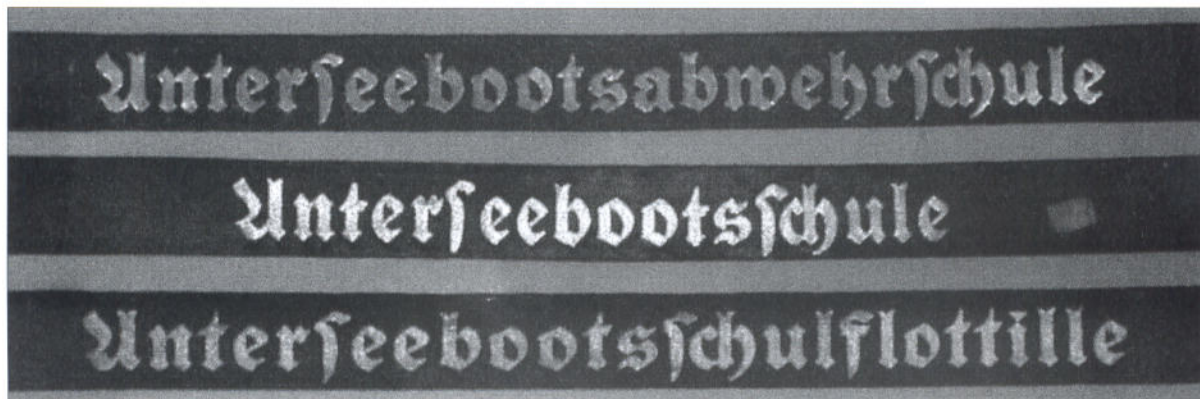
TRAINING

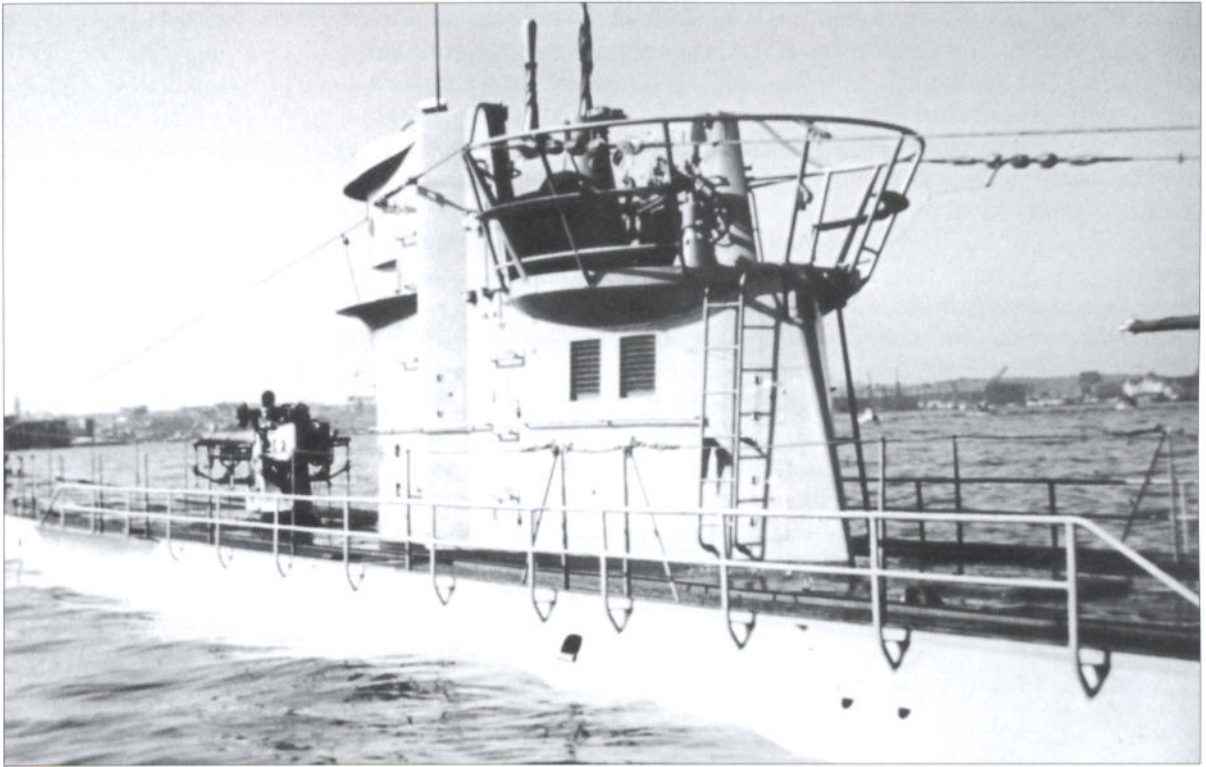
U-boat training in the Kriegsmarine began in 1933 with the establishment of the *Unterseebootsabwehrschule* in Kiel. Ostensibly a school for anti-submarine defence, its name was intended to conceal the fact that it was actually training U-boat crews. Trainees received theoretical training in all aspects of submarine duties; the design and construction of submarines; weapon systems; the diesel and electrical propulsion systems; escape training, etc.

In 1935 the *Unterseebootsflotille 1 Weddigen* was formed, with *U-7* through to *U-12* (*U-1* to *U-6* were designated as training boats and attached to the U-boat school at Neustadt). These boats were small Type II coastal craft, known as 'canoes' to their crews.

U-boat men now had extensive practical exercises to back up the classroom theory. The U-Boot Waffe grew considerably in the intervening years and in 1937 a new training establishment was built for what was commonly called the *Unterseebootsschule* at Neustadt. By the outbreak of war in 1939, this establishment had doubled in size and had attained the status of a flotilla, the *Unterseebootsschulflotille*. In April 1940, the school was redesignated as *1 Unterseebootslehrdivision* (normally abbreviated as

Cap ribbons of the U-boat training establishments. At top is the first U-boat training ribbon, issued when the unit masqueraded as an anti-submarine warfare school. In fact the school was busy training some of the great aces. At centre is the ribbon for the U-boat training school at Neustadt, once its existence was openly admitted, and at bottom the final form, for the *Unterseebootsschulflotille*. (Author's Collection)





ULD) and moved to Pillau on the Baltic. Seven months later, 2 ULD was formed at Gotenhafen. By the end of the war four ULDs had been established. The training divisions had on their strengths a number of former liners, which had been converted to provide accommodation or act as depot ships for the U-Boot Waffe. At any one time up to 4,000 trainees might be attached to one of these training divisions. A full flotilla of U-boats was attached to each training division, 21 Unterseebootsflotille with 1 ULD and 22 Unterseebootsflotille with 2 ULD.

In the early part of the war at least, U-boat men received a full six months of U-boat training (over and above the normal navy basic training). Growing demands for rapid replacement of wartime losses saw the gradual reduction of this period down to three, then as little as two months. It should be noted that this was an average, however. There are examples of men being drafted into the U-boat arm and allocated to a boat with no special training at all, while even in the closing stages of the war there are further instances of men receiving extended training. The length of an individual's training depended on the assessment of his trainers.

NCO Training

By the end of the First World War, it became clear that naval NCOs required both specialist training and a more clearly defined system of recruitment and promotion. In future, the corps of naval NCOs would need to be trained professionals, and be willing to commit to a period of service of not less than 12 years. There was no facility for joining the Reichsmarine (and later the Kriegsmarine) as an NCO aspirant (in direct contrast to the situation with officers). Potential NCOs were selected for training after two or three years' satisfactory service in the

A Type IX U-boat. Note that the pedestal mount on the AA platform to the rear of the conning tower does not have its weapon fitted. The immaculate condition would suggest that this photo was taken prior to the outbreak of war, probably while the boat was still 'working up' after commissioning.

ranks, having already exhibited such positive characteristics as self-discipline, loyalty and dedication. They first attended the appropriate trade school for enhanced training in their allocated career branch which could last anywhere between three and 10 months. On satisfactory completion of this training they would report to *Marineschule*, Friedrichsort, the NCO training school. At this stage it would probably be fair to say that most NCO candidates, who had already served in the navy for several years, had much greater levels of experience and ability than aspirant officers.

At Friedrichsort, they would undergo extremely rigorous training, broken down into four main disciplines: theoretical classroom training, infantry training, nautical studies and sport. Although infantry training might seem somewhat anomalous, it was an essential part of the development of an NCO. It was here that he learnt to give clear, concise and firm orders, especially on the parade ground in extensive drilling exercises, and developed the ability to command and earn the respect of his men. Sport was also considered of great importance (especially to the U-boat man who certainly needed to be fit and agile to move smoothly and at speed through the close confines and narrow hatches of a submarine in combat).

The NCO training branch of the navy was expanded in 1935 with the opening of a second NCO *Marineschule* in Wesermünde. At this time the *Marineschulen* specialising in NCO training were redesignated as *Marineunteroffizierlehrabteilung* 1 and 2. Finally, in 1938, a brand-new purpose-built NCO school was established at Plön.

Particularly successful U-boat crews were feted like heroes. This photo shows members of the crew of U-47 on their way to a state reception in Berlin after the sinking of the battleship *Royal Oak* at Scapa Flow. Interestingly, the censor has failed to remove the name of the flotilla on the sailors' cap ribbons: the full title, *Unterseebootsflotille Wegener*, can be seen.



Officer Training

The standard training programme for a typical officer began with basic training which lasted around five months. On arrival at the officer selection camp at Dänholm, a two-day physical fitness selection test was held. This was extremely strenuous and around 25 percent of the intake usually failed. Those who did not make the grade were invited to reapply once they had built up their physical stamina.

This was followed by sail training lasting for four months on a three-masted sailing bark. It was extremely arduous, and fatalities were not unknown. The worst recorded disaster was in 1932 when the bark *Niobe* capsized in a storm, with the loss of 70 trainee officers. The C-in-C Navy, Admiral Erich Raeder, subsequently invited the major commercial and merchant shipping lines to come to the aid of Germany and transfer their best men to the navy. Among those who found their way into the navy in this way were the future U-boat aces Gunter Prien and Heinrich 'Ajax' Bleichrodt.

Officers who had successfully completed the first two stages were usually granted formal acceptance to the rank of Seekadet and progressed to cruiser training, an assignment aboard a warship, usually a cruiser. This took the form of a cruise into foreign waters, often virtually a 'round the world' trip with courtesy calls into many ports, lasting for up to nine months.

Having completed their sea cruise, potential officers transferred to the famous naval academy at Mürwick for seven months. On completion, they were promoted to the rank of Fähnrich zur See (midshipman). Up to this point, the training given was standardised, no matter what the eventual branch of the trainee. Most U-boat candidates were line or engineering officers. Later in the war, some of the larger submarines were also allocated a medical officer.

Line officers followed the training at Mürwick with a weapons training course, where they learned about naval armament. They were then attached to a warship for up to six months, at the end of which, assuming satisfactory reports, they were promoted to Oberfähnrich (senior midshipman). Senior midshipmen served at this rank for up to three years learning their trade, until, by a vote of their peers, they were promoted to the rank of Leutnant zur See.

In this photograph, taken in port at Gdansk, the boat's senior ranks are taking the opportunity to have refreshments in the open air at a small table set up on the deck. Note that hatches are left open to circulate fresh air through the boat.



Engineering officers took extra engineering exams after their course at Mürwick. If successful, they carried out workshop training for up to five months. This was followed by six months' attachment to a warship, after which they were eligible for promotion to Leutnant (Ing.).

Officers destined for the U-Boot Waffe underwent a 12-week training course in which exercises at sea were alternated with classroom theory. Fully equipped simulators were constructed in the training schools, enabling prospective officers to practise attack runs on model convoys. A total of 15 successful simulated attacks were required before the candidate could progress to the next stage of his training. The best and most promising candidates were often posted directly to an operational U-boat to hone their skills under the tutelage of an experienced commander. On completion of their training, others were posted to an operational training flotilla such as 23 Unterseebootsflotille in Danzig or 24 Unterseebootsflotille in Gotenhafen where they practised underwater attack procedures.

Other flotillas carrying out advanced training were:

19 Unterseebootsflotille	Pillau	Boat handling techniques training
20 Unterseebootsflotille	Pillau	Basic tactical theory instruction
25 Unterseebootsflotille	Danzig	Shooting instruction
26 Unterseebootsflotille	Pillau	Shooting instruction
27 Unterseebootsflotille	Gotenhafen	Tactical training

Where a crew was assembled to take over a newly constructed boat, a typical training scenario might be as follows.

Baubelehrung (Familiarisation Training). A captain and senior crew members were sent to the shipyard where their new U-boat was being constructed, giving them the opportunity to learn just what made their boat 'tick,' and to see it through its constructional stages so that they



This Obersteuermann snatches a few moments sleep on the AA platform at the rear of the conning tower. Such opportunities would be unlikely on active service and once again suggest a training boat in one of the Baltic training flotillas.



were totally familiar with every aspect of their vessel. This stage might last for up to three months leading up to the launch. In the last few weeks of this period, they might be joined by the remainder of the crew, normally a mixture of new personnel and seasoned veterans.

Unterseebootsabnahmekommando – UAK. The boat went through acceptance testing, with diving trials, silent running tests, testing of all machinery and equipment. This would normally last two to three weeks.

Technische Ausbildungsgruppe für Frontunterseeboote – Agrufront (Technical Training Group for Front U-boats). This was a much feared process where the boat, once formally accepted and commissioned into the navy with its new commander and crew, was put through the most rigorous training in realistic battle conditions. An experienced combat veteran, acting as 'umpire' and trainer, would accompany the boat, suddenly informing the commander that a certain piece of machinery or equipment was deemed inoperative, to see how the captain would react to the new emergency. Deep diving exercises were also held. Just how intensive and dangerous this training process was can be judged by the fact that during the Second World War, 30 U-boats were actually lost in training, taking 856 men to their deaths. Once judged to have passed this stage and finally declared '*Frontreif*', or ready for front line service, the boat would go back to the dockyard for a final overhaul. At this point, the crew would be given their final leave before returning to front line combat service. Once reassembled, the crew would join the U-boat and move to Kiel for final fitting and the taking on board of torpedoes, ammunition, etc.

As well as the various schools and training establishments already mentioned, of particular importance to the U-boat crews were the

A U-boat crosses a choppy Bay of Biscay early in the war. The Bay of Biscay would eventually become a killing ground where many U-boats were lost to Allied air patrols. The crew of the flak gun in the nearest vessel are wearing fully inflated life vests.



The crew of a Type VII U-boat muster on deck for the ceremony known as the *Indienststellung* when the boat was officially accepted into service and the Reichskriegsflagge was raised. Note that the anti-aircraft weapons have not yet been fitted to their mounts on the AA platforms to the rear of the conning tower.

Marinenachrichtenschule (Naval Signals School), the *Torpedoschule* (Torpedo School), the *Schiffsartillerieschule* (Ships Artillery School), *Sperrschule* (Naval Defences School dealing in blocking defences such as mines) and the *Steuermannschule* (Coxswain School).

APPEARANCE

In general terms, the basic service uniform of the U-boat sailor was identical in almost all respects to his counterparts in the remainder of the navy. There was, however, a range of specialist clothing, some of which was unique to U-boat crews, as well as other garments which were certainly worn more widely by that branch. The combinations of 'mixed-dress' worn by U-boat men are almost legion in their numbers. Almost any of the garments described here could be found worn in conjunction with almost any of the others. In fact, just about the only thing that can be said with certainty about the appearance of typical U-boat men on operations was that there were probably no two in the crew who dressed the same. There are three forms of dress in particular, however, which will be seen with great regularity in photographs of U-boat men at sea.

The most common form of dress worn by the U-boat crewman was the protective leather clothing. This was no new development and had been around since the Kaiser's day. Leather clothing was produced in black and dark brown, but the versions which the U-boat men made



A group photograph of the officers of a Type VIIC U-boat. The commander, second from right, is an Oberleutnant zur See. All wear normal dark blue service dress and for the occasion, presumed to be the commissioning ceremony, also wear their brocade dress belts and naval dirks. Judging by the awards worn, at least two of the officers, the commander included, are former minesweeper personnel, and none has yet won the coveted U-boat War Badge.

their own were those cut in pale grey leather. They also wore strong leather over-trousers lined with charcoal-black wool, which had no waist-belt and were held up by braces. A matching leather jacket was supplied, also lined in black wool. 'Engine' personnel (*Maschinenpersonal*) wore a single breasted version, buttoned right up to the neck with a simple stand-up collar. It had two skirt pockets and one pocket on the left breast. Another 'reefer' style was produced from 1937 which was double-breasted, with a wider collar and normal lapels. Intended for deck or bridge personnel, it was particularly favoured by officers and warrant officers. These garments gave some protection against dirt, oil and burns in the close confines of an engine room, and also helped protect against the cold when on bridge watch in the chilly waters of the North Atlantic.

Another form of essential dress was the regulation foul weather clothing. These were not personal issue garments, but were on the ship's inventory and were only issued to individuals on watch. A rubberised cloth sou'wester (exactly like any other sou'wester worn by sailors and fishermen all over the world) was worn in conjunction with a large, rubberised, double-breasted, knee-length over-jacket with elasticated cuffs and a large collar which could be turned up to protect the side of the face and neck. Matching rubberised over-trousers were also worn.

One of the most unusual forms of dress worn by crewmen was the special U-boat uniform, which was almost an exact copy of British battledress in its styling. It consisted of a waist-length blouse with patch

pockets cut from a grey-green denim cloth, with a button front and integral waist-belt. Matching trousers were also issued. The blouse was often worn without insignia, though senior ranks such as officers and warrant officers usually wore shoulder straps. The national emblem of the eagle and swastika in either cloth or metal form was usually, but not always, worn on the left breast. Occasionally, metal points, in brass, were worn on the collar by petty officers to replicate the braid worn on the pea jacket.

When France fell to the Germans in 1940, vast stocks of captured war matériel fell into their hands, including many uniforms, such as the British battledress. As these were very similar to the U-boat uniform, apart from being in brown denim rather than grey-green, they were issued to U-boat crews. In black-and-white photos it is often impossible to tell whether crewmen are wearing German issue or captured British clothing. At least at sea on an operational U-boat, there was no danger of crewmen wearing British captured clothing being mistaken for the enemy!

There were other forms of regulation naval issue clothing, which, though not specifically intended for wear by submarine crews, was often utilised by them. The pre-war working dress was a



OPPOSITE TOP A U-boat Obermaat wearing the dark blue pea jacket. Note the U-boat War Badge worn just below his Iron Cross on the left breast and, of special interest, the Spanish Cross in bronze on the right breast which indicates that the sailor was a veteran of the Spanish Civil War.

OPPOSITE BOTTOM A Kapitänleutnant greets his men on the occasion of the award of military decorations. Note that all now wear the Iron Cross First Class on the left breast of their pea jackets, and all bar the Maat at extreme right have also qualified for the U-boat War Badge. The sailor's cap with ribbon was rarely worn by U-boat men on occasions other than formal parades, or on leave.

RIGHT This warrant officer wears the typical denim battledress blouse popular with U-boat crews, and the standard senior NCO peaked cap. He is a veteran who has also served on minesweepers before transferring to U-boats.



single-breasted jacket with open collar and two patch pockets on the skirt. It came with matching straight-legged trousers and was cut from a brownish tan-coloured cloth. This form of dress was often used totally devoid of insignia though it may occasionally be seen with sleeve trade/rank patches on normal dark blue backing, stitched to the left sleeve.

Tropical service dress consisted of a single-breasted open-necked tunic with pleated patch pockets to the breast and skirt. It was cut from a golden tan denim twill material. Shoulder straps indicated rank, and in some cases a special blue rather than gilt braid was used on tan tropical NCO shoulder straps; the normal shoulder straps from the dark blue uniform were often worn by both NCOs and officers. A national emblem was worn on the left breast in either silk weave in gold on a tan backing, or in a gilt metal pin-on version. This tunic could be worn with either shorts or long trousers.



This group of U-boat crewmen in a Mediterranean port wear tropical-issue shirts and shorts with some highly irregular straw hats which may well have been salvaged from the flotsam of one of their victims.

The commander (second from left) wears the Knight's Cross and the tropical-issue service tunic with a rare tropical version of the officer's peaked cap.



The issue sports vest was often worn in tropical climates, or by those working in particularly hot areas such as the engine room. It was simply a white sleeveless vest with a large woven national emblem stitched in blue thread on a white ground. It was often worn with standard naval issue sports shorts.

U-boat men often wore checkered shirts, a most un-nautical form of dress. They were actually issue items, but no doubt many men wore shirts they had provided themselves. These warm wool shirts were very popular among U-boat crews and are said to have originated from the

vast stocks of French clothing which fell into German hands after the campaign of 1940.

Examination of wartime photographs of U-boats at sea will show that almost any form of headwear could be worn with any form of tunic or clothing. Probably the most popular and widely worn item of clothing was the *Bordmütze*, a side cap cut from navy blue woollen cloth, and featuring a yellow thread national emblem on the front of the crown and a cockade in the national colours on the front of the flap. It was a smart and convenient form of headgear for wear in the close confines of a submarine. Officers could wear a version with gilt braided piping along the edge of the flap, but often elected to wear the standard Other Ranks version. U-boat men most often wore the elected emblem of their vessel on the side of their *Bordmütze*. A white version was also manufactured for wear in the tropics but was not widely used.

Officers and warrant officers usually wore their peaked service cap or *Schirmmütze*, which was made from dark blue wool with a black woven mohair band and black leather chinstrap. The peak was in black leather or fibre, bound in leather, for warrant officers. A hand-embroidered national emblem was worn on the front of the crown, with a national colours cockade wreathed in oakleaves, on the band. For officers, the peak was covered in dark blue cloth bound in leather, with the edge embroidered in gilt wire or yellow cellulose thread to indicate rank. In most cases, the U-boat commander was a Kapitänleutnant zur See or Oberleutnant zur See, so the edge of the peak was embroidered in a scalloped design. Occasionally, higher ranks such as Korvettenkapitän commanded U-boats and in this case the edge of the peak was embroidered with a

single wide band of oakleaves. The commander of the U-boat generally wore a white cover to his cap, making him instantly recognisable. This white cover was only to be worn on board; when on shore the commander reverted to wearing a standard blue topped cap.

The peaked field cap was occasionally worn in tropical regions. Similar to the famous Afrikakorps field cap, it was cut from tan denim with a long peak to shade the eyes from the sun. A national emblem woven in golden yellow on a tan base was worn at the front of the crown, over a cockade in the national colours.

Very occasionally photographs show U-boat crewmen wearing the large and cumbersome tropical pith helmet, a cork helmet covered in tan or white canvas. Quite how the space was found to store these on an operational U-boat is difficult to imagine. A small number of steel helmets might also be carried, for wear by the gun crew or the anti-aircraft gunners should the boat go into action on the surface.

Finally, mention should be made of the popular *Pudelmütze*, a knitted woollen cap with a pompon. Despite its non-military appearance, it was actually a piece of issue kit.

In the course of combat operations, when merchant ships were sunk, the sea was often littered with wreckage, which might include bales or crates of clothing. U-boat men were never slow to take advantage of such opportunities, and a number of photographs show all sorts of bizarre forms of dress, particularly headdress. Straw boaters seemed a popular form of headwear, and one photo shows a returning U-boat commander wearing a top hat, with the lapels of his reefer jacket covered in small cloth 'victory pennants'. An indication, perhaps, of just how far some U-boat commanders identified with their crew and were willing to join in the fun. On the other hand, a few more strict commanders insisted on their men being as smart as reasonably possible at all times, though, thankfully for the average U-boat crewman, they were very much in the minority.

The appearance of U-boat crewmen varied enormously; they wore an almost limitless combination of uniform and non-uniform items. Certain pieces of equipment were not 'uniform' items, but were worn with great regularity. The most important was the so-called '*Dräger Lung*' or *Tauchretter* life jacket. It consisted of an orange-brown inflatable waterproof 'collar' with a single strap at the back of the neck, which passed down the wearer's back, through his legs and buckled to the base of the collar at approximately waist height. An oxygen cylinder was contained inside the lower part of the apparatus, connected to a breathing hose and mouthpiece; there was also a canister containing carbon dioxide-absorbing material. Should air supplies on a submarine be run low, the *Tauchretter* was used in uninflated form as a simple



The popular *Pudelmütze* is worn by this bearded U-boat man. From the head and shoulders shot alone, he could pass for a merchant seaman as no military insignia is visible.

In a relaxed pose in safe waters, this crewman wears a non-inflated life preserver and a civilian plaid scarf at his neck.



breathing apparatus. With the collar inflated, and with its own oxygen supply, it could act as an escape apparatus for evacuating a sunken submarine, which was by far its most common application.

A standard life vest without the special Dräger apparatus was also used. Available in numerous patterns, it was often used by crews of the U-boat's deck gun. Most patterns were in a yellowish-orange rubberised canvas with an internal oxygen bottle for inflation, and a back-up mouthpiece should the oxygen fail, it consisted of the traditional collar/breast panels with canvas straps passing around the wearer's back and crotch to hold it in place.

An alternative version of the Dräger carbon dioxide filter, consisting of just the filter canister with hose and mouthpiece, was used to extend the air supply should the boat remain submerged for a lengthy period.

CONDITIONS OF SERVICE

When considering the conditions of service, two principal factors are important: the physical conditions in which the U-boat crew served, i.e. the U-boat itself, and the pay and benefits received for serving in this elite branch of the navy.

As it prepared to set out on a war cruise, which might last for around 12 weeks, a U-boat would carry up to 14 tons of supplies, as well as a full load of fuel and ammunition. Every square inch of available space would be crammed full of fresh foods such as eggs, potatoes, fruit, vegetables, bread, and meat, which would obviously be consumed first, preferably before they started to rot. Three meals a day would be served (combat conditions permitting), washed down with a variety of drinks such as coffee, tea, milk, fruit juice or cocoa. Once the fresh supplies had been exhausted, canned foods were used, backed up with vitamin supplements. On occasion, a merchant ship sunk by a U-boat would be carrying small livestock such as pigs or chickens, as in the case of the *Parnhya*, sunk by *U-162* in May 1942. If the livestock survived the sinking, the U-boat crew recovered them as a much-appreciated source of additional fresh meat.

What might sound like a very favourable rationing situation should be tempered by a number of considerations. U-boats travelled on the surface whenever safe to do so in order to preserve the boats' battery power and to increase speed. This often meant putting the boat at the mercy of atrocious surface weather conditions, which meant that the ship's stove could not be used and therefore hot food was not available.

This view of the crew's quarters in one of the torpedo rooms shows just how cramped conditions were on an operational U-boat.



Interiors of U-boats on active service were notoriously damp. When on the surface in rough seas, water constantly cascaded in through the open hatches to run into the boat's bilges. When submerged in warmer climes, poor ventilation and the great heat being given off by the boat's machinery meant that temperatures of over 122° F (50° C) were not unknown. This heat, combined with high levels of humidity, meant that damp clothes rarely had a chance to dry, and fresh foodstuffs rapidly rotted. Mouldy food was almost an occupational hazard for U-boat crews. Nevertheless, all things considered, the U-boat crewman had access to a much higher standard of provisioning than most other service personnel.

Space on an active service U-boat was at a premium. Although a typical Type VII or Type IX U-boat may seem quite large, it must be remembered that what the viewer sees is the exterior hull, which encased the 'real' hull, known as the pressure hull. The gap between the two was open to the sea and was often used simply as storage space (for torpedoes, ammunition, life rafts, etc). At its widest, the pressure hull was just under 5 metres in diameter, and of course tapered to a narrower section towards the bow and stern. Most of the interior was taken up by engines, electric motors, batteries, machinery and all sorts of essential equipment, leaving very little space to accommodate the crew. There were simply not enough sleeping spaces for all members of the crew. Most of the compartments dedicated to a specific element of the crew were barely longer than the bunks they occupied.

Only the commander had the great luxury of quarters fitted with a curtain he could pull across to gain a modicum of privacy. But the commander's quarters were located as close as possible to the 'nerve centre' of the boat which was manned at all times and rarely totally quiet.

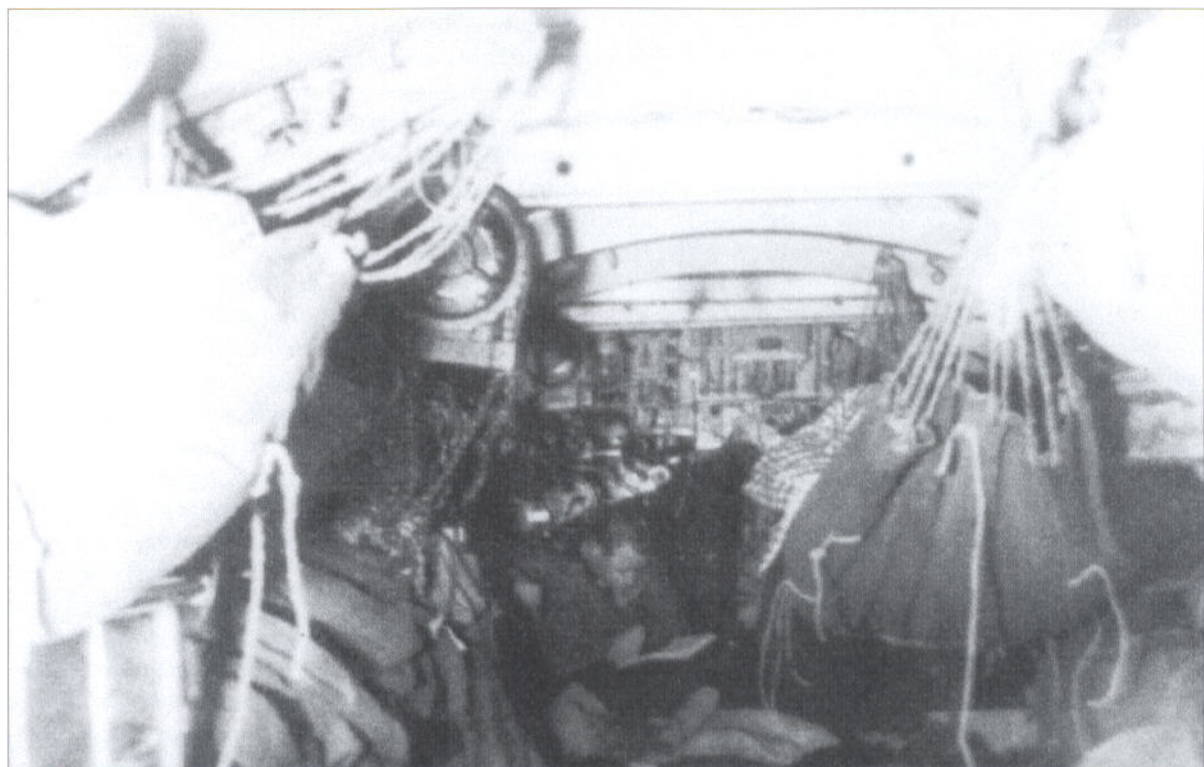
The officers' quarters doubled as the wardroom and had the luxury of a permanent rather than a fold-away table. Senior ranks slept in bunks and most junior ranks in hammocks, with a few of the less fortunate ratings being required to sleep on simple matting laid on the deck plates. Two men shared each sleeping place, with one in occupation while the other was on watch. Junior ranks tended to be quartered in the bow or stern torpedo room, which could be an active, noisy place with no privacy whatsoever.

OPPOSITE TOP Lower ranks did not have the luxury of a bunk. These ratings had to make do with hammocks.

OPPOSITE BOTTOM These senior ranks (junior ranks did not have the luxury of sitting at a table) enjoy some hot coffee and food. Note the civilian-style plaid shirts, very popular among U-boat crews.

BELOW A Type IX U-boat in safe waters. Some of the crew are taking the opportunity to come up on deck for some fresh air. Note the fairly spacious deck on this larger type of boat.







By the end of a long war cruise, most U-boat men sported a full growth of beard.

Generally, formal discipline on board most submarines was relaxed. The strong levels of *esprit de corps* and sense of kinship among U-boat men resulted in very high levels of self-discipline and trust. Although a few commanders were known as martinets, most took a relaxed view of discipline.

The nature of life on a U-boat meant that the traditional navy blue service dress uniforms were not appropriate, so in most boats men wore pretty much anything that was comfortable. So long as a crew were efficient, effective, and could be depended on to do their duty, most commanders allowed their men considerable latitude in how they chose to dress.

The extreme shortage of fresh water on a submarine meant that little, if any, could be spared for such luxuries as washing or shaving. Most men returned from their war cruises heavily bearded. Although special soap was issued to allow a lather to be raised with sea-water, few U-boat men bothered. Although any beards grown were to be shaved off immediately on return to port, photos exist of fully bearded U-boat men posing in their blue walking-out dress. However, it is assumed these were simply souvenir snapshots for the family album, as beards were definitely frowned upon once back in port.

The typical U-boat had two toilets or 'heads'. In the early part of the cruise one would be used as storage for fresh foodstuffs, which left just one small toilet to accommodate over 50 men. Not

only would the smell be an unpleasant addition to the existing odours of the U-boat, but flushing the toilet was in itself a potentially unpleasant and dangerous task. Incorrect manipulation of the levers used in this complex operation could result in the contents being 'back-flushed' over the user. At least one U-boat (*U-1206*) was lost due to incorrect handling of the toilet flushing apparatus. In this case the U-boat had to surface immediately to ease water pressure and was attacked and fatally damaged by Allied aircraft on reaching the surface. The boat was fairly close inshore at the time, and the entire crew reached safety. There may well have been many other boats, which suffered a similar fate in the unforgiving waters of the Atlantic with no one surviving to tell the tale. When on the surface in safe waters, crew members would often use the 'outside toilet'.

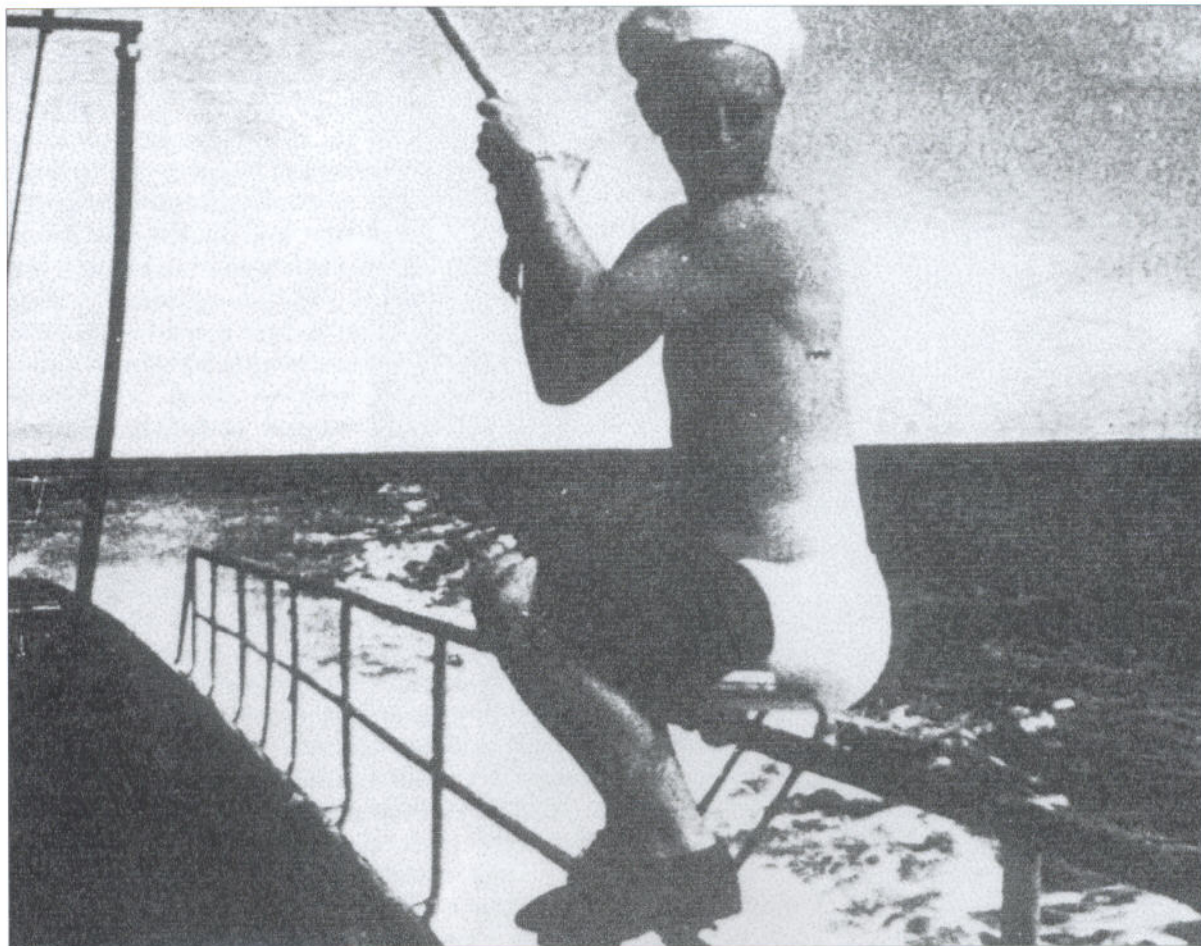
Probably the most unpleasant working conditions were those in the main diesel compartment. The main power source for most U-boats was two 6-metre-long turbo-charged diesel engines. When these were operating (which was wherever possible, to minimise the power drain on the boat's batteries), the noise in the diesel room was intense. Many engine room crew members suffered hearing problems, sleeplessness, stress and even digestive problems after being subjected to this environment of constant intense noise.

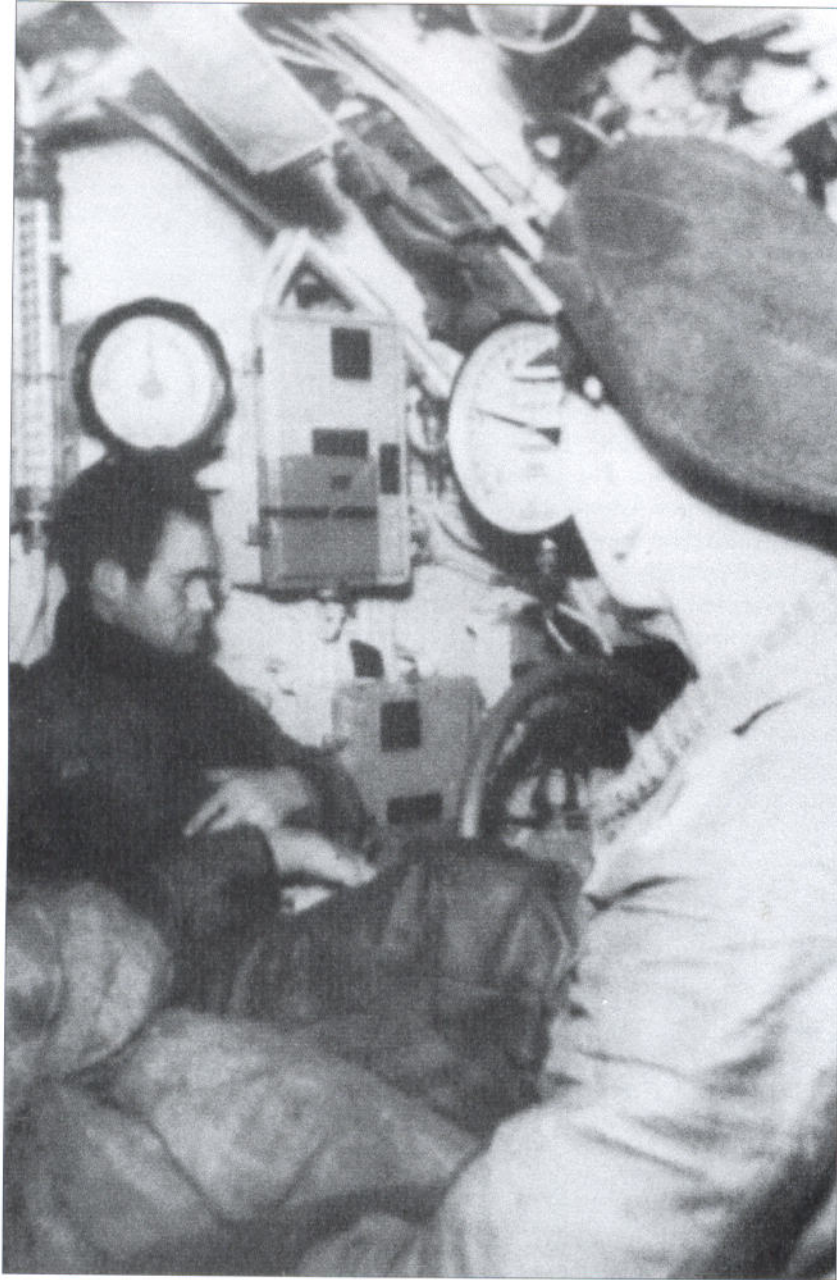
The galley provided for the ship's cook was tiny. It had just enough room to accommodate a small, two-burner electric stove, with a sink/wash space. Here, the dietary needs of almost 50 men had to be catered for. As it was not always safe to surface simply to dump waste food material and leave possible clues of the boat's presence, rotting foodstuffs often had to be retained onboard.

So, one can well imagine the odours prevalent in a U-boat after a few weeks at sea: an unpleasant cocktail of diesel fumes, rotting food, toilets and the smell of unwashed bodies. Not surprisingly the use of eau de cologne was widespread. One piece of equipment often used for reasons other than those for which it was intended was the *Bold* device, a launcher which discharged a metal canister approximately 10 cm in diameter with a valve to allow ingress of seawater. The canister was filled with calcium hydride, which would react with water to create a mass of hydrogen bubbles. The canister would hover at about 30 m depth giving a sonar 'picture' which it was hoped the enemy would mistake for the real U-boat. The crew, of course, found an alternative use for it, packing cans with rubbish and firing them from the *Bold* launcher in an effort to cut down on the amount of rubbish accumulating on board.

Pay, of course, plays an important part in motivating and maintaining the morale of any serviceman. In fact, the basic pay of a U-boat crewman

Use of the 'outside toilet' involved perching rather precariously on a small seat set up on the deck guard rail while holding on to a safety rope. Not a very dignified process, but in many ways preferable to the tiny, stinking 'head' below decks.





The engineering officer and one of his mates at the control position for the hydroplanes.

was pretty much the same as his equivalent rank in any other service. What made all the difference were the special additional allowances. U-boat men could receive an allowance for serving in confined spaces (*Raumbeschränkungszulage*), diving pay (*Tauchzulage*) and numerous other allowances related to specialist training. The total additional allowances payable could almost double the U-boat crewman's salary and many were known to live off their allowances and bank their entire pay.

Another important factor was that the specialist training made many U-boat men eligible for faster promotion, especially in wartime when combat losses had to be made good. Promotion also brought higher pay,

so U-boat men were generally well-off and would usually have plenty of cash to spend when off duty or home on leave.

The leave system for U-boat men was also highly advantageous. After a 12-week cruise the boat would be laid up in port for refit, repairs and cleaning. No more than half, but sometimes only a small skeleton crew, would be left on board while the remainder were given 12 days' home leave. Guard duty would be rotated so that everyone took their fair share. A special express train (known as the *BdU Zug* or 'C-in-C's U-boat train') would speed the U-boat men home to Germany from their ports so that as little leave time as possible was lost in travelling. It is estimated that most U-boat men would have had around two weeks' leave every six months. This should be compared with the unfortunate infantryman on the Eastern Front, for example, who might easily go for a year to 18 months, or even longer, with no leave at all. Considerable efforts were also put into providing sporting and leisure facilities for U-boat men on leave.

Relaxation on board the U-boat was another matter. The greater part of a U-boat's war cruise would often be spent in fruitlessly searching for a convoy to attack. When not at action stations, the crew's greatest enemy was probably boredom, with little to do other than read books or play cards. When travelling underwater, lighting was often cut to a minimum to save electrical power, so even reading was virtually impossible. A selection of records would be taken to sea for playing over the boat's p.a. system and, unlike civilians for whom listening to an enemy radio station was a serious offence, U-boat men would often be permitted to listen to music or news from British or American stations. Many commanders would invent simple competitions to keep the men occupied, the first prize in which might well be the commander taking over the winner's watch for him. Needless to say, in foul weather conditions in the North Atlantic, this would be a highly valued prize.

Wherever possible, if the boat found itself in safe waters (an increasingly rare situation as the war progressed), thoughtful commanders would allow crewmen on deck for fresh air or even to sunbathe or swim (with someone keeping a weather eye open for

Spud-bashing, U-boat style.
These off-duty personnel occupy themselves peeling potatoes for the cook. The large circular hatch in the background is the door to one of the torpedo tubes.



sharks). On occasions such as crossing the equator, great efforts would be put into arranging traditional ceremonies on deck, with one of the crew dressed as Neptune putting some poor unfortunate through an initiation ceremony, usually involving being dunked and drinking some disgusting concoction involving sea water and various foul liquids. The initiate might then be given a fancy hand-drawn scroll and perhaps be awarded a 'medal' cut from scrap tinplate.

A good U-boat commander valued his crew greatly. Many highly decorated U-boat aces insisted that their Knight's Cross or Oakleaves were worn on behalf of the crew. U-boat commanders were known to pull strings behind the scenes on behalf of their men when they got into scrapes, and even the C-in-C U-boats, Karl Dönitz, interceded on behalf of his commanders if they in turn fell foul of the authorities.

BELIEF AND BELONGING

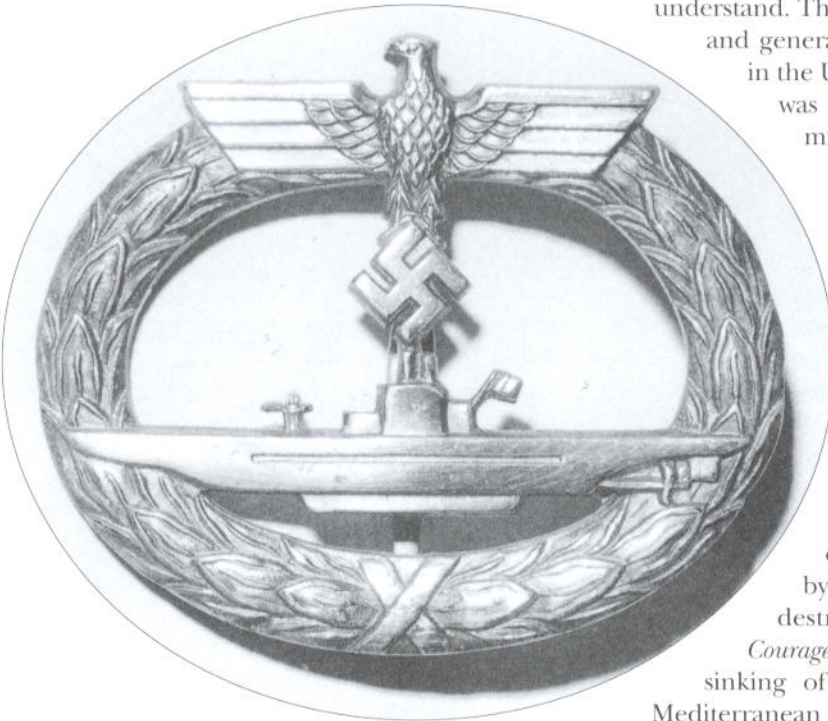
The coveted U-boat War Badge, symbol of a seasoned U-boat warrior. Tragically, as the war drew on, more and more U-boat crewmen were killed in action before they had the chance to earn this highly respected insignia. The badge itself was only slightly modified from the original U-boat badge of the Imperial German Navy, an eagle with swastika replacing the Hohenzollern crown.

'I was fascinated by the unique sense of comradeship, engendered by sharing the same fate and hardship in the community of a U-boat crew in which everyone depended on everyone else and in which every man was an indispensable part of the whole. Surely every submariner has sensed in his heart the glow of the open sea, and the task entrusted to him, and felt as rich as a king, and would have traded places with no one.' (Grossadmiral Karl Dönitz)

'It is the duty of every captain to have faith in his men.' (Kapitänleutnant Wolfgang Lüth)

There are many factors, which must be taken into account when considering the great sense of belonging and belief, which pervaded the U-boat arm. The sense of belonging is easy to understand. The intense feeling of comradeship and generally high morale which persisted in the U-Boot Waffe throughout the war, was similar to that in many elite military organisations.

The U-boats and their victories were widely publicised, and the most successful aces became household names throughout the Reich. It was recognised that, much as in the Great War, it was the U-boat that gave Germany a chance to successfully oppose the vastly superior strength of the Royal Navy. Spectacular successes such as the sinking of the *Royal Oak* at Scapa Flow by Günther Prien in *U-47*, the destruction of the aircraft carrier *Courageous* by Otto Schuhart in *U-29*, the sinking of the battleship *Barham* in the Mediterranean by Hans Diederich Freiherr von





Seated in the centre of this photograph is Korvettenkapitän Heinrich Lehmann-Willenbrock, commander of *U-96*, the real boat on which the movie *Das Boot* was based. Note that the flotilla mascot, a billy goat, has the famous smiling sawfish emblem of *U-96* on its coat.

Tiesenhausen and the destruction of the pride of the Royal Navy, the carrier *Ark Royal*, by Friedrich Guggenberger in *U-81* could only serve to enhance the already high standing of the U-Boot Waffe in the eyes of the German people. Many popular tunes were written to celebrate the U-boats and their exploits (the '*U-Boot Lied*', the '*Kretschmer Marsch*', '*Torpedo Los*' and '*Ritter der Nordsee*' to name but a few). The tough conditions in which the U-boat men served were brought home to German audiences by realistic movies such as *U-Boote Westwärts*. U-boat men were truly the heroes of the hour.

The men of the U-Boot Waffe held their commander Admiral Karl Dönitz in high regard, referring to him as '*Der Löwe*' (the lion) and he in turn called them his 'Grey Wolves', a name which could relate to both the grey-painted U-boats themselves or the crews in their special grey leather clothing. Dönitz took great pains to keep himself informed on personal facts about his men and their welfare, and when meeting a U-boat and its crew on return from a war cruise would chat on personal matters as well as military, a habit which greatly endeared him to them. If, for instance, a sailor at sea on a war cruise became a father, Dönitz would ensure that a message reached the proud new parent. Although Dönitz expected his men to fight to the end even when the chances of surviving combat with the enemy were negligible, this seemed to do little to affect the esteem in which he was held. This esteem was not universal; Dönitz did have his detractors even within the U-Boot Waffe, but given the attrition rate in the U-boat service towards the end of the war, he did retain the admiration of his men to an amazing degree.

Although beards were usually shaved off immediately the boat returned to port, this crewman has donned his best blues and had his portrait photo taken while still fully bearded, such was his pride in his whiskers as a symbol of the U-boat man.



'I have a reactionary Army, a National Socialist Air Force, and a Christian Navy,' said Hitler, and the navy was regarded as the least political of the three services. Nevertheless, there were undoubtedly many within the Kriegsmarine and in the U-Boot Waffe itself who wholeheartedly supported the National Socialists – at least in the early days of the Third Reich. At least one of the most highly respected and chivalrous U-boat aces was an early party member and even held rank in the SS, but was obliged to give up his membership of both organisations when joining the navy in 1934. On the other side of the coin, one of the great early aces, Joachim Schepke, was not a party member, yet was known for his loyalty to the Nazi cause and is on record as having made several anti-Semitic remarks. The U-Boot Waffe contained all sorts of characters, from loyal Nazis to those who vehemently opposed the tenets of the regime they served. Interestingly, though himself an admirer of Hitler, Dönitz ensured that so called 'National Socialist Leadership Officers' (similar to Soviet 'political commissars') were never allowed

to serve on U-boats, despite assertions to the contrary by some writers.

It seems that the U-Boot Waffe often went to great lengths to protect its own. Despite being half-Jewish, Kapitänleutnant Helmut Schmoeckel was permitted to serve in the Kriegsmarine throughout the war, firstly on the heavy cruiser *Admiral Hipper*, and then in command of his own U-boat, *U-802*. U-boat ace Werner Henke, commander of *U-124*, fell foul of the Gestapo after they tried to harass some of his friends. He stormed into the head-quarters of the local Gauleiter, and then the Gestapo headquarters itself, branding them as thugs and gangsters. Despite an earlier incident when he struck an SS officer, Henke received no more than a stern rebuke from Dönitz. It is hard to imagine any ordinary German citizen being quite so fortunate.

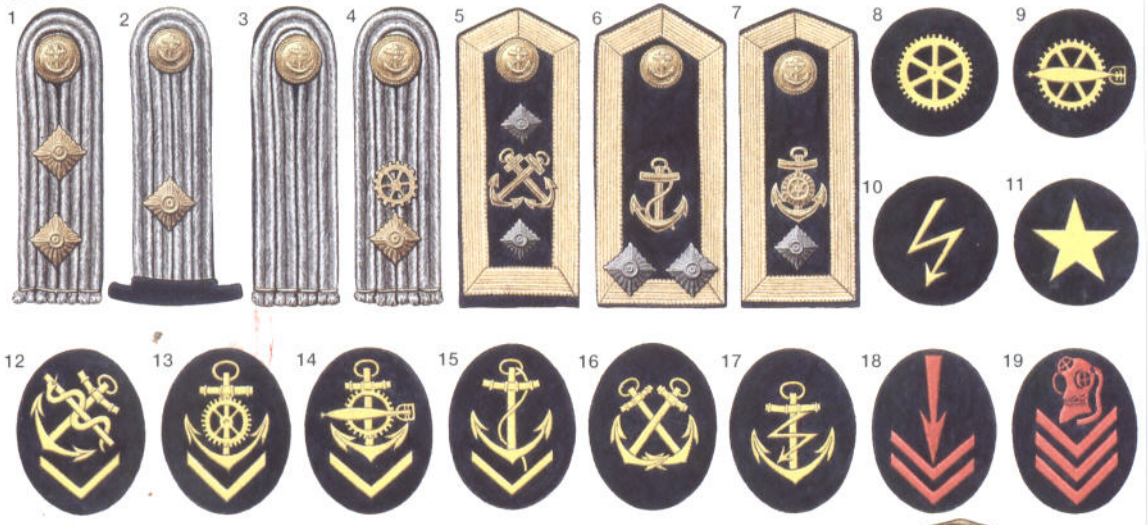
There are countless similar tales of U-boat men who were protected by their superiors after a

A: U-boat recruit and equipment
(see plate commentary for full details)

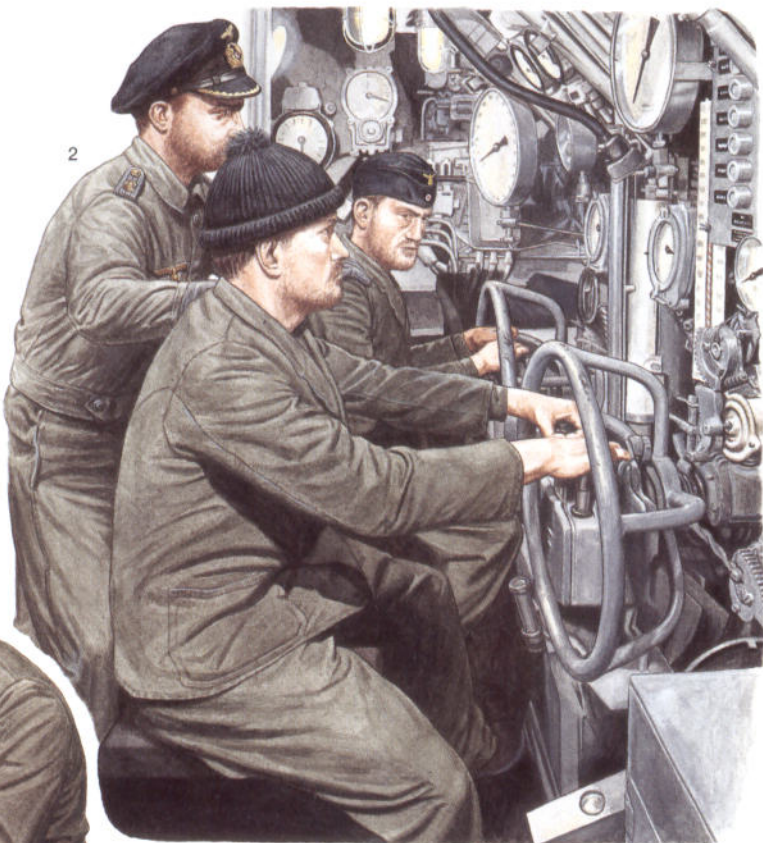


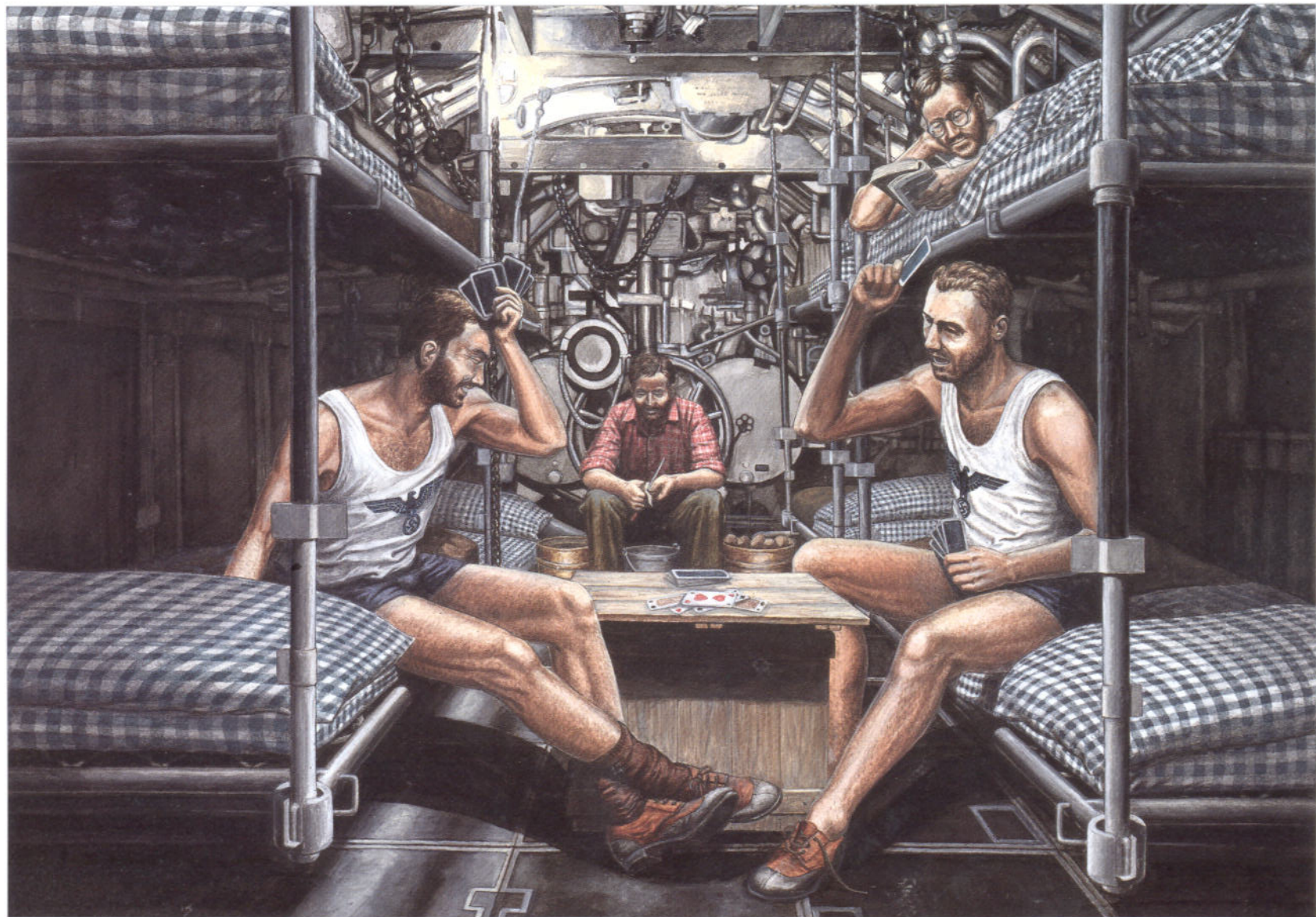


C: Trade and rank badges, clothing and other items
 (see plate commentary for full details)



D: Emergency dive!
(see plate commentary for full details)



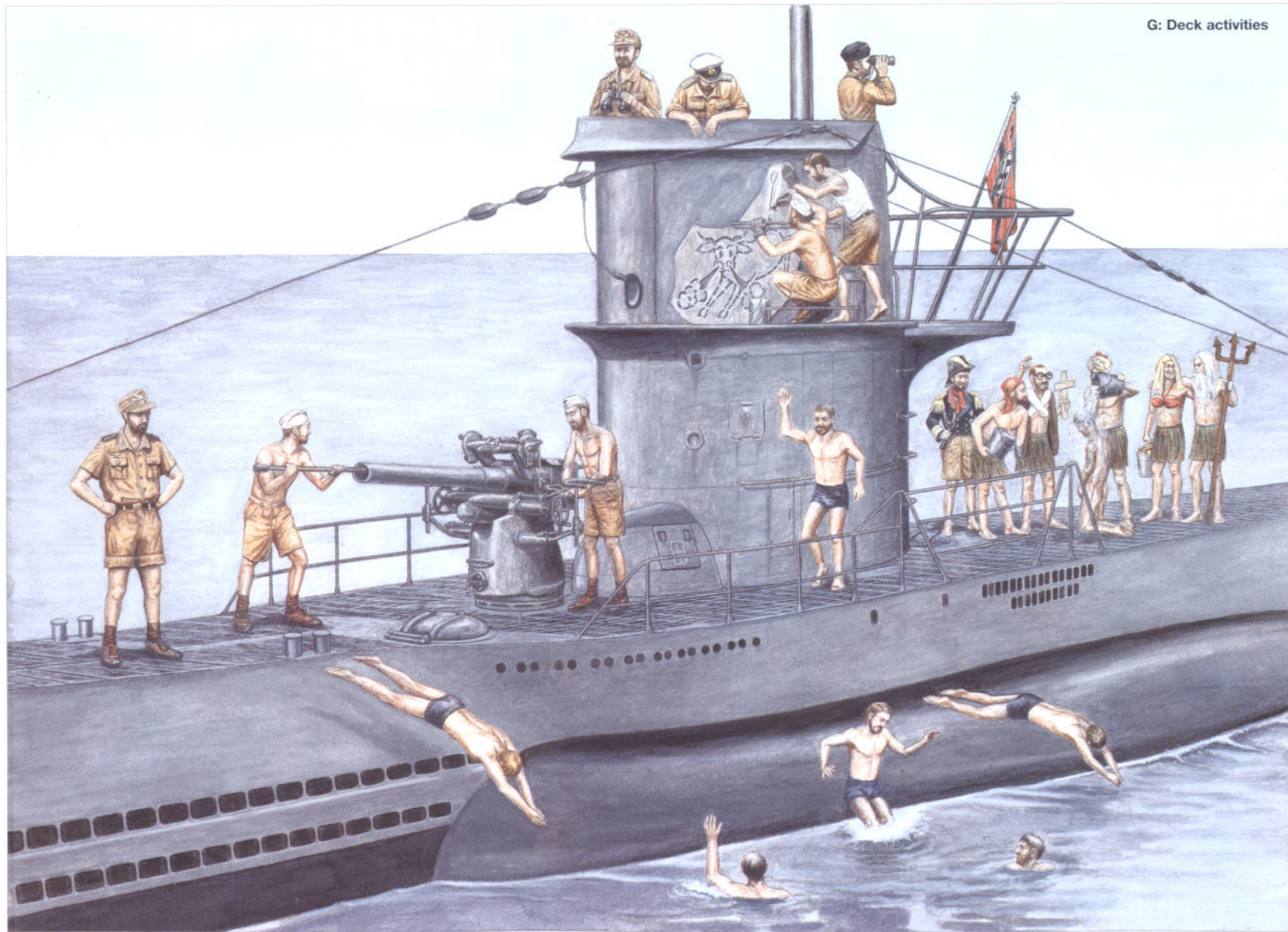


E: Off-duty occupations

F: Attacking a night convoy

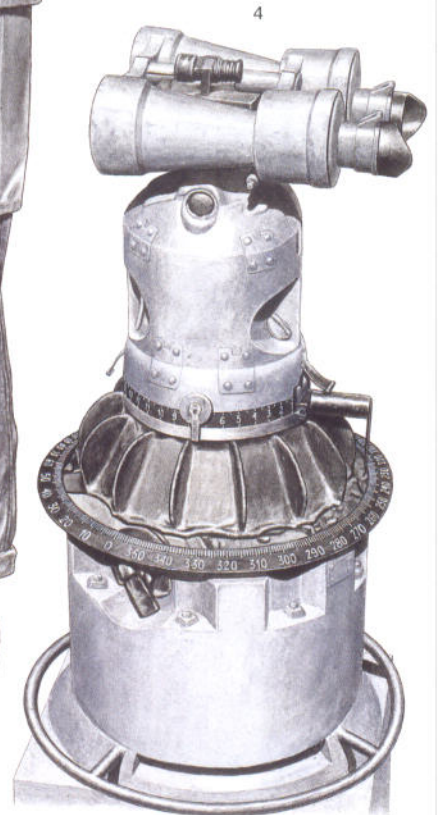
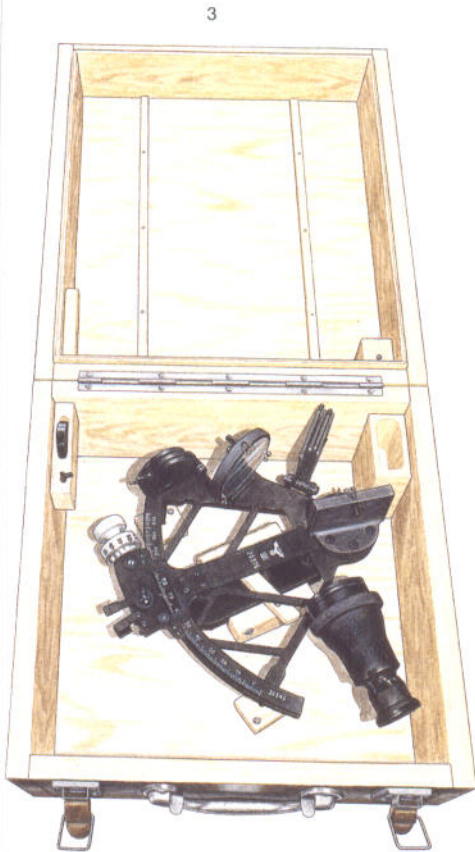


G: Deck activities



H: On watch

(see plate commentary for full details)





run-in with the authorities. A punishment may have been ordered 'on paper', but the actual retribution meted out was derisory. When drawing up orders for the punishment of persistent 'grumblers' (in the Third Reich, pessimistic statements could often be declared 'defeatist' and bring the severest of punishments on those guilty of speaking their mind), even Dönitz, himself made clear provision for front line combatants 'harmlessly letting off steam'.

There were limits, however, to the amount of indiscipline that would be accepted. When the commander of a U-boat himself was the one who made seditious remarks, and did so in front of the crew, the risk to the morale and efficiency of the crew made punishment inevitable. Oberleutnant zur See Oskar-Heinz Kusch was reported for sedition by his own IWO (first watch officer) in just these circumstances. It was the very fact that his indiscretions were in front of his crew that led to his conviction and execution by firing squad. Even in captivity, those who broke the unwritten code of honour of the U-boat men would be harshly dealt with. One leading seaman who turned informer for his US captors at a POW camp in Arizona was discovered and killed by his fellow prisoners. His killers were promoted by Dönitz when news of the incident emerged, but were tried and hanged for murder by the US authorities in August 1945 once the war had ended and there was no danger of German execution of Allied prisoners in retaliation.

U-boat commanders, though proud and patriotic Germans, were quite notorious in their disrespect for the Nazi regime. On one famous

The Kriegsmarine acknowledged the immense efforts made by the shipyards in producing new U-boats to strengthen the fleet and make up combat losses. Here, U-boat ace Kapitänleutnant Reinhard 'Teddy' Suhren visits the Deschimag yard in Bremen. Sharing a beer with his civilian comrades, he regales them with stories of combat actions.

occasion, U-boat ace Teddy Suhren of *U-564* was approaching port to tie up alongside after a long war cruise when he leaned over the edge of the conning tower and yelled 'Are the Nazis still in charge?' When the reply 'Yes' came back, Suhren immediately put his engines into reverse and backed away from the quayside, much to the amusement of those watching. U-boat men were effectively a breed apart, with higher pay, better rations, and more relaxed discipline; but equally, they endured a much greater risk of being killed in action.

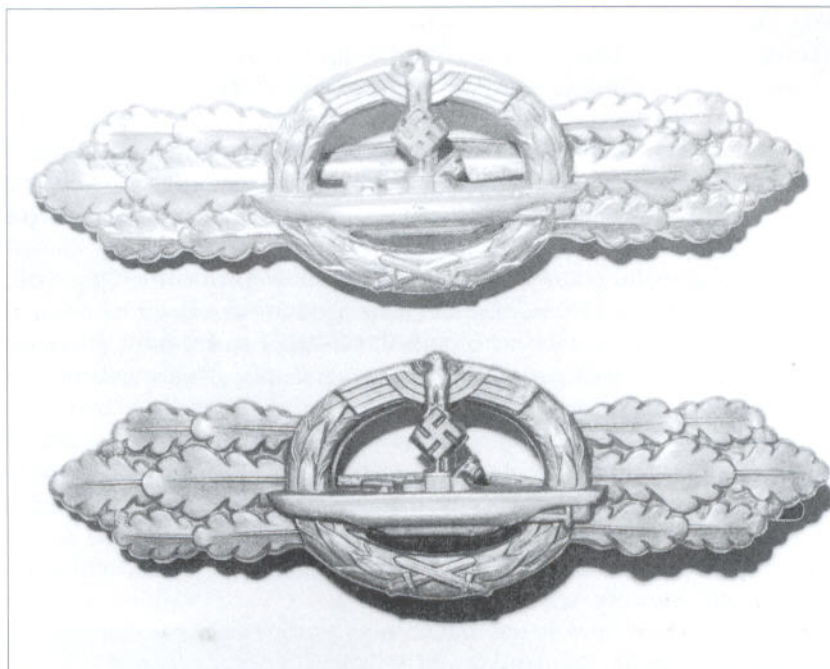
Typically, U-boat men loved jazz (which was much frowned upon in the Third Reich), French women, and thoroughly good beer – in quantity. They hated the military police, ignored political issues and generally treated the enemy, whom Nazi propaganda sought to have them hate, with respect and chivalry. Like most elites, they worked very hard, and many of them liked to play hard, too.

The sense of belonging to a small elite team was actively fostered by most good commanders in a variety of ways. Insignia was chosen by most boats and worn as a small badge on the left-hand side of the sailor's headgear. It could be the coat of arms of a city, which had sponsored the building of the boat by fund-raising efforts, or perhaps a direct reference to the commander (Adalbert Schnee's boat bore the representation of a snowman – *Schneemann* – as a pun on his name) or any one of myriad cartoon-like animals or mythical figures – sharks and devils being very popular. The badges ranged from crude designs fashioned from scrap metal to die-struck, finely enamelled

Crewmen stencil the boat's emblem, 'Bull of Scapa Flow', on the side of the conning tower of *U-567*. First chosen by Gunther Prien after his sinking of the *Royal Oak*, it was subsequently adopted by 7th U-Boot Flotilla. Many boats sported two emblems, one of the boat itself and another to indicate the parent flotilla.



The *U-Boots Frontspange* or U-boat Front Clasp. This rare award was first introduced in May 1944. Unfortunately, by this late stage, few U-boat men survived long enough to qualify



manufactured items. They all helped to foster team spirit and the all-important sense of belonging.

On completion of his second operational war cruise, a U-boat crewman would qualify for the *U-Bootskriegsabzeichen* or U-boat War Badge. This small gilt metal oval badge, showing a submarine lying across a wreath of laurel leaves with a national emblem at the top, was worn with great pride as the mark of a seasoned combat veteran. The badge was worn on the left breast of the uniform tunic, and even on some of the special U-boat clothing, though not the leather garments. The award of this badge would be logged in the crewman's *Soldbuch* and his military records and the badge itself was accompanied by an impressive award document.

In May 1944 a further award was introduced by Dönitz to recognise the bravery and commitment of U-boat crewmen, the *U-Boots Frontspange* (U-boat Front Clasp). This award was a clasp bearing a smaller version of the basic U-boat War badge, but had a pair of crossed swords at its base, and a spray of six oakleaves emerging horizontally from either side of the central motif. The clasp was in bronzed metal and worn above the left breast pocket. There were no set award criteria, but a number of factors would be taken into account such as length of combat service, number of missions or war cruises undertaken, any conduct worthy of special merit, and any specific acts of personal bravery. Recommendations for the award were made by individual U-boat commanders and each was approved by Dönitz. In November 1944, a further grade in silver was introduced to reward those who continued to distinguish themselves after the award of the bronze clasp.

Given the very high rate of attrition in the U-Boot Waffe in the second part of the war, it will be appreciated that few U-boat men survived sufficiently long to earn the U-boat Front Clasp. In fact, an increasing number did not survive long enough to earn the basic U-boat

War Badge as the number of boats lost on their first mission grew alarmingly. The U-boat War Badge and Front Clasp became a visible sign to others that its wearer had survived combat in the most difficult of conditions and had earned the right to consider himself truly part of this elite branch of the navy. Dönitz was well aware of the morale value of such decorations and made every effort to ensure that no red tape stood in the way of processing commanders' recommendations for awards to members of their crews.

Many successful commanders made courtesy visits to the shipyards, which had built their submarines, to foster good relations and a sense of bonding between the men who built the U-boats and those who sailed in them. Special merit badges (*Werfleistungsabzeichen*) were awarded to shipyard workers for quality and proficiency in their work.

Particularly successful commanders generally considered the awards bestowed upon them as being worn on behalf of the entire crew, every good U-boat commander realising that the boat's crew had to operate as a team, with everyone deserving a share of the plaudits. Due to the 'teamwork' nature of service on a submarine, it would often be difficult to identify specific individuals for reward, and it was often the case that U-boat command would allocate a number of Iron Crosses to a particular boat and leave it to the commander to decide who would be decorated. In several cases, commanders demanded additional awards if they felt that the efforts of their men had not been sufficiently recognised.

By the final days of the war, most U-boat men must have long since realised that military defeat was inevitable. No one could have failed to notice the number of boats which failed to return, and many must have felt that each time they put to sea, it may well be their last. Yet, the morale of the U-Boot Waffe remained remarkably stable even in these darkest days. The most important factors in maintaining this morale were pride in what they as U-boat men had achieved, an intense feeling of loyalty to their crew comrades, and the knowledge that they had fought their war as cleanly and as honourably as any. Even today, although the march of time means that fewer former submariners remain with us, the *Verband Deutscher U-Bootfahrer e.V.* thrives, producing a regular magazine for former U-boat crewmen.

A humorous illuminated scroll drawn up by the crew of U-595 showing the British lion, ridden by Roosevelt and Churchill, being pursued by a German torpedo. The periscope of U-595 is just visible in the background. The rhyme relates how the British and the 'Yankees' will be hunted and beaten and the lion will be sent off with a torpedo in its backside.



COMBAT ACTION

Once the vessel was cleared for sea, a U-boat would set off on its war cruise from its home port, usually escorted out into the open sea by a surface vessel (the *U-Bootsbegleitschiff* or U-boat escort ship). A typical Type VII U-boat would have a crew make-up along the following lines:

Commander	Kapitänleutnant, usually referred to as 'Herr Kaleu'. There were a few Korvettenkapitän-ranked commanders and a number of commanders with the rank of Oberleutnant zur See, particularly later in the war.
First Officer	Typically, an Oberleutnant zur See (or Leutnant zur See on boats where the commander was an Oberleutnant). The First Watch Officer was usually referred to as the IWO (pronounced 'eins vay oh').
Second Officer	Usually a Leutnant zur See and referred to as the 'Zweiter Wach Offizier'.
Engineering Officer	Generally a Leutnant or Oberleutnant zur See, his title was 'Leitender Ingenieur' or Leading Engineer and was normally referred to as the 'LI' (pronounced 'ell ee').
Third Watch Officer	This post was held by a warrant officer grade, typically the Obersteuermann or Navigator.
Fourth Watch Officer	This was a non-commissioned post often held by the Oberbootsmaat or bosun.

The remainder of the crew would be made up approximately as follows (total crew numbers could vary from boat to boat):

Stabsobermaschinist	Chief Warrant Officer	(1)	Engine Room
Obermaschinist	Senior Warrant Officer	(2)	Engine Room
Maschinenobermaat	Chief Petty Officer	(2)	Engine Room
Maschinenmaat	Petty Officer	(5)	Engine Room
Maschinenobergefreiter	Leading Seaman	(11)	Engine Room
Maschinengefreiter	Able Seaman	(5)	Engine Room
Funkobermaat	Chief Petty Officer	(3)	Radio Operator
Funkobergefreiter	Leading Seaman	(1)	Radio Operator
Funkgefreiter	Able Seaman	(2)	Radio Operator
Oberbootsmann	Senior Warrant Officer	(2)	
Bootsmann	Warrant Officer	(1)	
Matrosenobergefreiter	Leading Seaman	(7)	
Matrosengefreiter	Able Seaman	(3)	
Obermechaniker	Senior Warrant Officer	(1)	Torpedo Room
Mechanikermaat	Petty Officer	(2)	Torpedo Room
Mechanikerobergefreiter	Leading Seaman	(1)	Torpedo Room
Mechanikergefreiter	Able Seaman	(1)	Torpedo Room
Sanitätsmaat	Petty Officer	(1)	Medical Orderly

When at sea, most of the crew operated in a rotation of eight hours on duty, eight hours sleep, and eight hours of miscellaneous tasks, which



The watch officer and his four look-outs scan the horizon for signs of the enemy. Note the unusual use of the cumbersome tropical sun helmet and the minimal amounts of clothing worn in tropical waters. The interior of the U-boat would become unpleasantly hot.

might include a spell on look-out duty, general maintenance tasks, eating, and some off-duty relaxation time. Bridge watch duty lasted four hours.

On bridge watch, one of the watch officers would be present together with four look-outs. In heavy seas, special safety belts were worn which clipped onto mounts on the bridge, to prevent the look-outs being swept overboard.

Engine room personnel worked a different rota, with a simple six hours on and six hours off duty. This was a more exhausting schedule, but engine room crewmen were excused the sometimes arduous bridge watch.

The cook (known as '*Smutje*') was the only man on board not expected to serve a watch. His task was simply to ensure the crew was well fed. Due to the frequent changes of shifts, men needed some hot nourishment almost constantly, and the cook's task was certainly not a 'cushy' number. Good cooks were highly valued by their comrades.

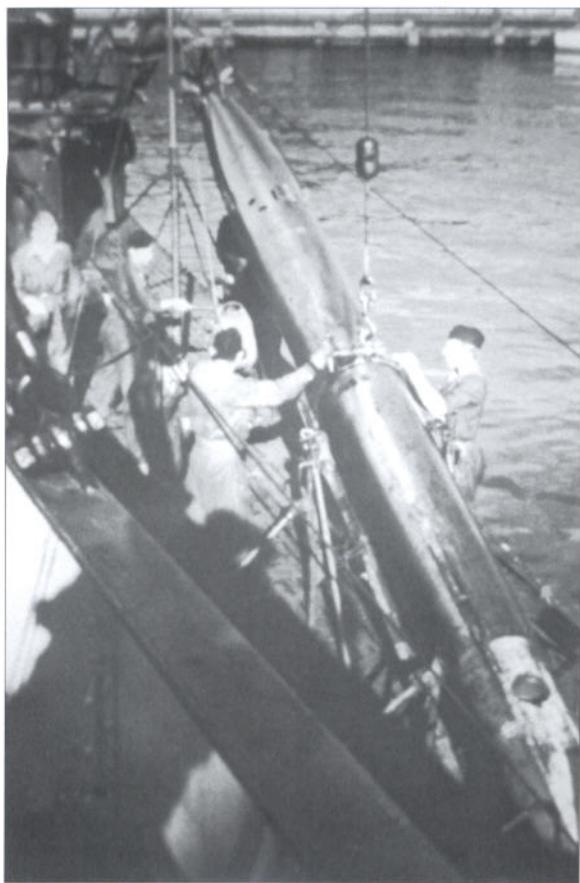
The boat would have orders to patrol a sector of ocean designated on a chart by an alpha-numeric grid reference. Reaching the area of operations might take several days and wherever possible, the boat would travel on the surface in waters that were considered relatively 'safe'. A typical Type VII U-boat could attain a top speed of some 17 knots on the surface, with an average cruising speed of 10 knots. Underwater, however, using its battery-powered electro-motors, a maximum speed of around 7 knots is all that might be expected, with an average speed nearer to 4 knots. In particularly heavy seas the boat might be tossed around so much that it would make little, if any, headway and so might dive to take advantage of the calmer waters deep under the surface. This would gradually drain the batteries, so the boat would have to return to the surface within about 24 hours to run its diesel engines in order to recharge the batteries. Only after the advent

of the *Schnorkel* breathing device could a U-boat charge its batteries by running its diesels without surfacing. Even this was not without danger, however. The *Schnorkel* tube featured a ball valve, which was raised by the swell of the sea, so that it would shut to prevent ingress of water, then lower and open again as the swell faded. If the valve shut whilst the diesels were running, the engines would then draw air from the vessel's interior causing a partial vacuum and intense pain and discomfort to the occupants. 'Schnorkelling', therefore, was only really suitable in calm waters. There was also the added danger that the exposed head of the *Schnorkel* tube, or the wake it left in the sea, would be spotted by an enemy vessel or aircraft.

Assuming no enemy activity, the journey to the operational area could often be one of extreme boredom, with little to occupy the off-watch sailors. When the vessel was on the surface, a full watch was mounted, with a watch officer and between four and six look-outs, each scanning a sector of the horizon and sky with powerful binoculars for any sign of danger, and of course any possible victims. This was potentially a very dangerous duty. Quite apart from having to suffer the rigours of whatever foul weather the Atlantic threw at them, the look-outs could very easily become drowsy after long periods of staring at an empty sky or horizon. A look-out who dozed off might be overlooked as the bridge watch dashed back into the boat once an alarm was called, his absence only noticed when it was too late.

BELOW LEFT Loading a torpedo into a Type VII U-boat, a cumbersome and awkward process. Some of the boat's torpedoes were stored externally in the space between the pressure hull and outer decking, and would have to be brought into the boat's interior in just this way.

BELOW RIGHT U-boats operated well up into the Arctic Circle. As this crewman shows, bridge watch on an operational U-boat in these waters was an unpleasant duty. The whiskers on this man's beard have begun to freeze.



When preparing to attack the enemy, 'action stations' (*'auf Gefechtsstationen!'*) would be called. The crew would vacate the bridge and close all vents and hatches. The diesels would be shut down and the electro-motors would take over. The bow planes would be angled down and speed increased so that water flowed over them in the same way in which air flows over the elevator flaps on an aircraft, thus forcing the boat underwater faster. At the same time the dive tanks would be flooded to make the boat heavier; any crewmen not occupied on essential duties would rush to the bow compartment to increase the weight in the forward part of the boat.

If the boat was in a position of extreme danger, the cry *'Alaaaarm!'* would ring out, signifying a fast dive. In many cases the boat would start diving as the vents were being closed and even before the bridge was cleared. There was a real danger of flooding if the bridge crew were not quick enough in entering the boat and securing the main hatch. It has been estimated that the safety margin in time between a boat submerging and the arrival of the expected enemy aircraft could be as little as ten seconds, so it is no surprise that crews used every conceivable method of shaving a few seconds off the diving time.

Once at the required depth below the surface, the boat would level off and hydroplanes would be used to keep the boat stable and stop it from rising to the surface. U-boats normally had a slightly negative trim, so that

The IWO on this U-boat takes a reading for the ship's position using a traditional sextant. The shield on his left sleeve is a campaign award for service in the waters around the Crimean Peninsula on the Eastern Front.



if fully stopped they would slowly sink. In order to stay at the required depth, some forward movement was therefore needed and this, in conjunction with skilled use of the hydroplanes, kept the boat level. Although compressed air could shift water fore and aft between bow and stern trim tanks to adjust the balance of the vessel, the simple expedient of moving unoccupied crew members from one end of the boat to the other was often used instead.

In the tiny radio room, underwater sound detection equipment listened for the noise made by the propellers of enemy ships. Sound carries a long distance under water, but various conditions such as the salinity of the water could affect the efficiency of the equipment. The Germans had very highly developed acoustic detectors, and an experienced *Unterwasserhorcher* (sound detector operator) could differentiate between the sound of a slow moving merchantman, or the faster-revolving propellers of escorting warships.

Having found a likely target, the commander would bring the boat to periscope depth and, using the navigation periscope, would check that the area was safe, and also that the sky above was clear. The boat would then surface, venting the diesel exhausts into the dive tanks to help the boat to surface quickly and also save precious compressed air. If no escorting enemy warships were in the vicinity, the boat would carry out its attack on the surface, preferably in darkness, as it was extremely difficult to spot a surfaced U-boat at night. If attacking on the surface, the IWO would supervise checking the torpedo gear and setting up the UZO (binoculars), while the commander conned the ship into the best attack position.

The UZO, or *Überwasserzieloptik*, was a pair of sturdy and powerful binoculars which fitted to a special mount on the torpedo-aiming pedestal on the bridge, and was linked to the attack computer in the commander's control room. The computer would adjust the settings for any subsequent changes in the U-boat's course or speed. This data fed onto an indicator in the torpedo compartment so that the appropriate setting could be made for them. A panel with illuminated buttons indicated readiness to fire and the firing order. Although the fire order could be transmitted automatically, the order to fire was normally given verbally by the IWO, called down through the hatch into the central control room (the *Zentrale*) and to the seaman operating the firing



A view down into the bridge area of a Type IX U-boat. Note the extremely small open hatch through which the entire bridge watch would have to disappear in a matter of seconds in case of an alarm call from one of the look-outs. The object on which the left-hand crewman is resting his arm is the base of the UZO apparatus.

buttons in the torpedo compartment. In the central control room, the LI would be monitoring the trim and speed, whilst the Obersteuermann charted the boat's movement on the small map table.

A total of 14 torpedoes would be carried. Five were pre-loaded in the tubes (four bow and one stern), one was in between the two electro-motors, four on the decking of the torpedo compartment with two more under the decking, and finally two in the space between the pressure hull at the exterior skin, under the hull decking.

If a surface attack was considered too hazardous, the boat would be brought to periscope depth and a submerged attack planned. The commander would enter the so-called 'Commander's Control Room', which was simply the empty conning tower space through which everyone had to pass to reach the bridge. It housed the attack periscope, to which was affixed a small seat resembling a bicycle saddle. This space also contained the torpedo calculator, operated by the IWO who would feed in data given by the commander. Regulations required that the hatch down into the 'Zentrale' should be closed, but it was generally left open so that orders could be verbally called down into the boat, rather than transmitted by a voice tube. The helmsman would steer the boat on the direct orders of the commander.

Meanwhile, in the radio room, the signals personnel would keep a listening watch on the radio. To avoid detection, radio silence was generally observed until such point as the enemy had already become aware of the boat's presence. The sound detector operator would also be listening out for the sound of any approaching high-speed screws which might indicate the presence of an enemy escort vessel.

Once the order to shoot (in fact the term used was 'release' or 'los', as in '*Torpedo Los!*') had been given and a spread of torpedoes fired, tanks in the forward part of the hull would be flooded, taking on extra water to compensate for the lost weight of several tons of torpedoes. As the torpedoes sped towards their target, their running time, which would have been calculated with regard to their speed and the distance to the target, would be counted off using a stop-watch. A detonation at the appropriate time would indicate a hit, whilst one several seconds late could indicate a harmless detonation at the end of the torpedo's run. No detonation at all would indicate a faulty torpedo, an all too familiar occurrence. At this point, if any escorting warships were in the area, retribution would follow swiftly.

Should the sound detector operator detect the noise of a warship's high-speed propellers, the boat would turn from its course and dive



Freshly returned from a successful war cruise, this seaman, now clean-shaven and wearing fresh clothing, poses with his newly awarded Iron Cross Second Class. The Second Class Cross itself was worn only on the day of the award, the ribbon being worn thereafter.



At the end of a successful patrol, the flotilla commander (in blue greatcoat) welcomes back one of his boats. This Type IX vessel is actually U-178 and walking towards the camera is Korvettenkapitän Klaus Scholtz, an 'expert' who ended the war with a total of 123,990 tons of enemy shipping to his credit.

much deeper to avoid the inevitable salvo of depth charges. Depth charges were set to explode at a predetermined depth, so a cat-and-mouse game would follow as the enemy warship tried to second-guess the U-boat commander. ASDIC detection equipment bounced a 'ping' of sound through water at great speed and caused an echo to rebound from any object in its path, giving a fair indication of the object's approximate location, but not its depth. A depth charge dropped in the right spot, but too deep or too shallow in relation to the target, would merely shake the U-boat about, causing little real damage. Psychologically, however, being trapped within a damp steel tube deep underwater with no means of escape, the eerie ping of the ASDIC bouncing from the hull and the fast approaching swish from the propellers of an enemy warship laden with high explosive, could strain the nerves of even the most resolute U-boat man. As the depth charges exploded, the boat would be shaken about, throwing anything that was not fastened down onto the deck. Glass or plates would be smashed. Lights would fail. Any glass faces to gauges and dials would

shatter, and leaky valves would let in jets of water at high pressure. It was not unknown for up to 300 depth charges to be dropped over a 24-hour period.

From here on, the skill of one man, the U-boat commander, was what really mattered. The electro-motors would be run at greatly reduced speed, and even orders on the boat would be given in hushed voices, everything being done in as near total silence as possible in the hope that the enemy would lose track of its quarry. These cat-and-mouse games could go on for many hours, each hour that passed giving ever-greater cause for concern as the air began to go stale, and the batteries which drove the electro-motors slowly depleted. In order to recharge them, the boat had to surface. Warships would play the same game, and often hove-to on the surface, stopping the engines so that the U-boat would think it had departed. They really waited for the unsuspecting U-boat to increase its speed and give away its position, or surface under the guns of the warship.

If a U-boat was fatally damaged by a depth charge, escape was well nigh impossible. Even if the water was shallow enough that the hull was

not crushed by water pressure as the boat plummeted into the depths, very few successful escapes using the *Tauchretter* were ever recorded. In most cases, the crew would be trapped in their steel coffin facing an agonising wait as their air slowly gave out. Indeed, those whose boats were crushed by water pressure probably met a swifter, if not kinder death.

If struck while on the surface, those on the bridge would have a good chance of escaping the submarine, assuming they were not fired upon by their attackers. Even here, however, the water temperature might mitigate against survival, depending on the season of the year and the latitude at which the boat was sunk. Unless the boat was sinking very slowly, the engine room crew would have very little chance of survival. Unlike the naval tradition of the captain going down with his ship, the U-boat captain was usually in his position on the bridge if the boat was caught on the surface, and would stand a good chance of escape along with the rest of the bridge watch and many of those in the *Zentrale* just

below. Unless the boat was in imminent danger of sinking, efforts would be made to scuttle her before any enemy boarding crew could gain access. The famous 'Enigma' decoding machine would be disposed of, or at least its secret rotors dropped overboard, as well as any orders, charts or other information useful to the enemy. These attempts were not always successful and a small number of boats were captured intact (*U-110*, *U-570*, *U-505*, and *U-1024*) or at least did not sink until some or all of the priceless Enigma rotors were salvaged (*U-559*). If the enemy really had given up and left the scene, the U-boat would surface and open its hatches to vent the foul air in the boat and allow crewmen standing around the base of the ladder leading up into the conning tower to gasp a few breaths of fresh air.

In the early part of the war when Allied air cover was sparse and vessels could often be found travelling unescorted, attempts were often made to sink the target with gunfire. Indeed the U-Boot Waffe initially kept fairly strictly to the accepted 'prize rules', which dictated that merchant ships had to be stopped and searched. If the vessel was an enemy ship or a neutral ship carrying cargo into an enemy port, the crew had to be evacuated safely before the vessel could be sunk. The U-boat obviously had to surface to carry out the search, and as the boat was on the surface anyway, it made sense to sink the target with gunfire rather than waste precious torpedoes. It was also common at this time



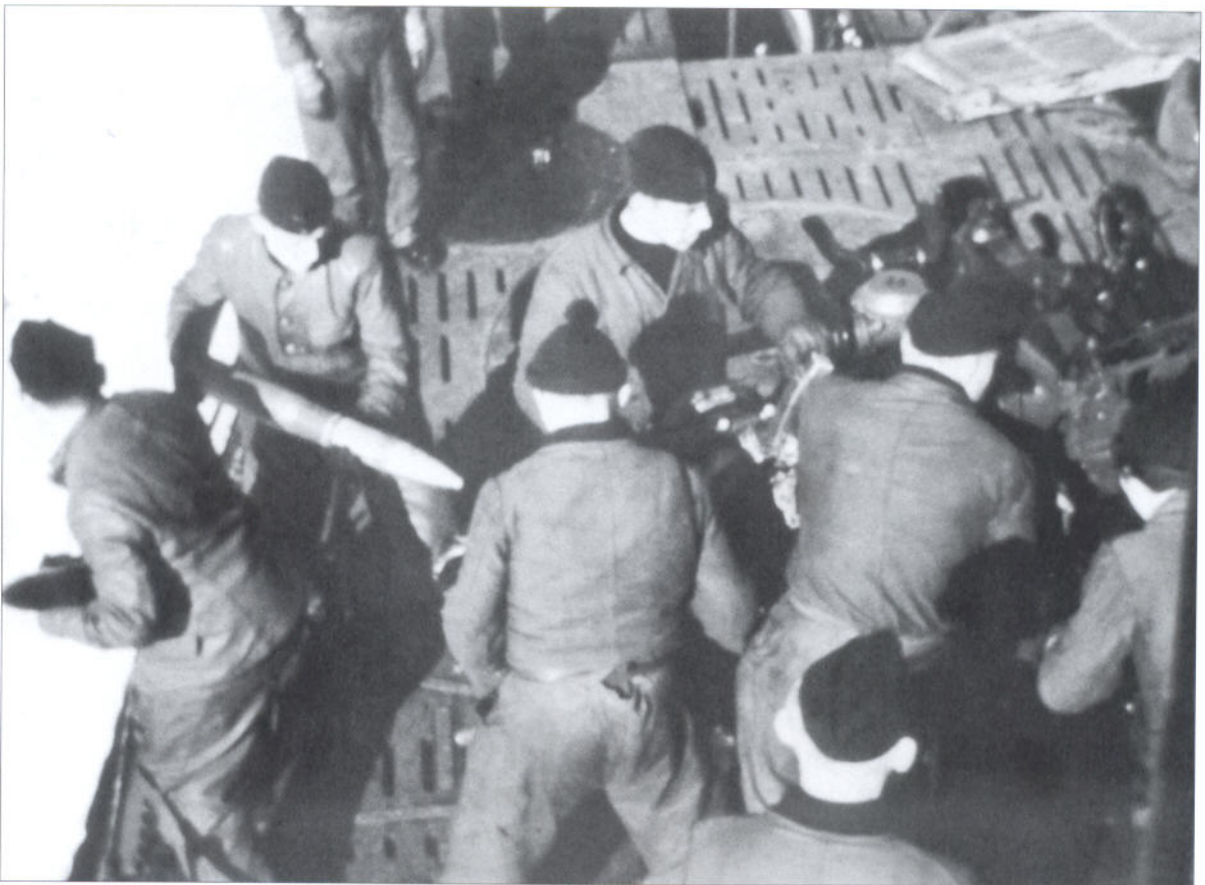
The LI of *U-595*, Leutnant Emmerich Freiherr von Mirbach, on the bridge of his boat in Gotenhafen harbour, 1941. In front of him is the mount for the UZO apparatus, and at his left elbow is the navigation or 'sky' periscope.

for a ship, which had been torpedoed, but had failed to sink, to be finished off with gunfire. A few well-placed hits along the waterline usually precipitated the sinking of the quarry.

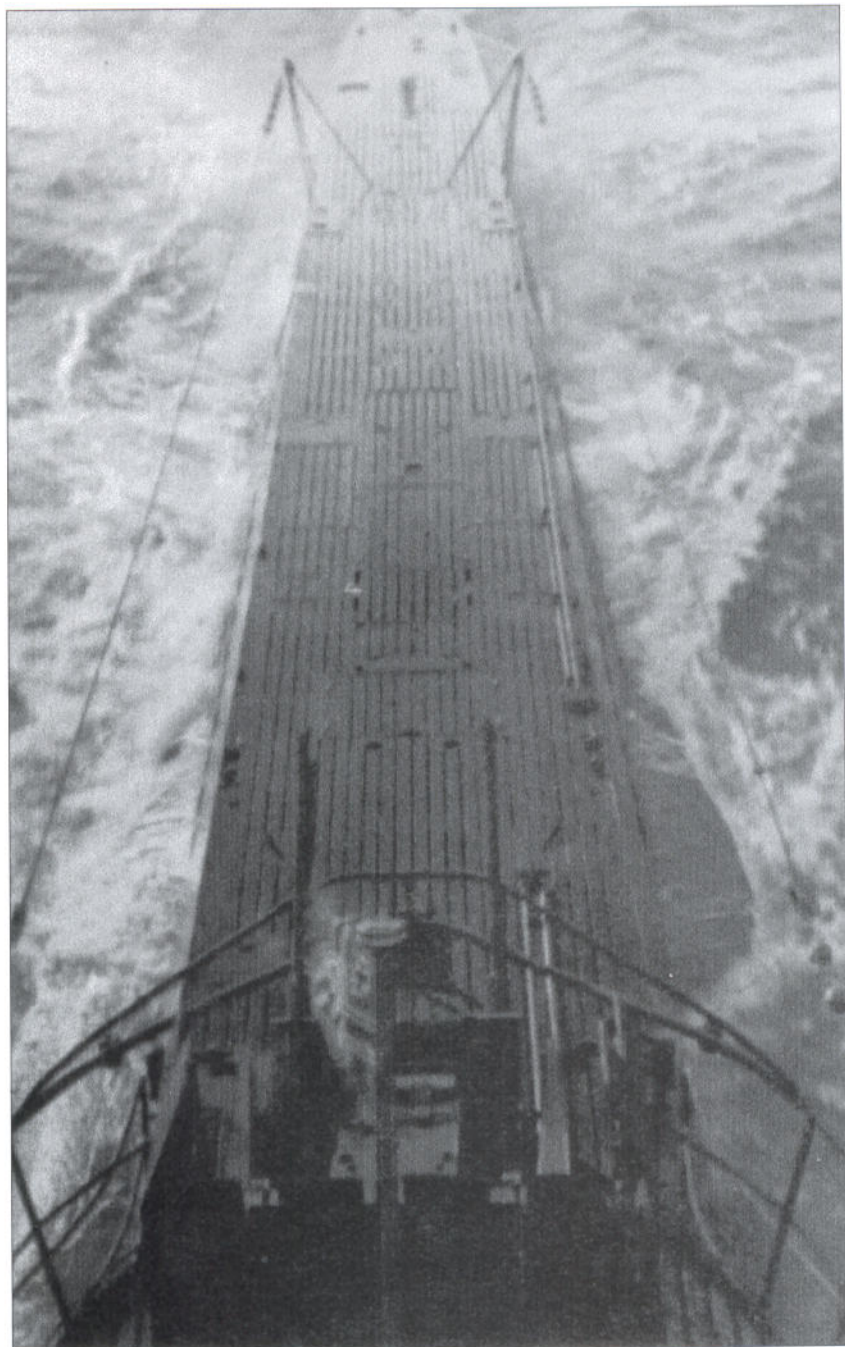
The Type VII, which formed the backbone of the U-Boot Waffe in the first part of the war, was fitted out with an 8.8 cm quick-firing naval gun mounted on the foredeck ahead of the conning tower. This gun was served by a crew of three, a gun layer, a gun aimer and a loader, supported by at least three men acting as ammunition carriers. The ammunition was stored in thick card containers under the decking of the radio room. These heavy shells had to be manhandled through the narrow confines of the U-boat's interior, up through the conning tower, across the bridge, down on to the after deck and along the slippery deck to the gun mount on the foredeck. The gun sights were also stored within the boat's interior and had to be carried out and attached to the gun by the gun crew each time the gun was used. Clearly, the main gun would only be used when in relatively safe situations where interruption from enemy aircraft or warships was considered unlikely.

With the changes in the prize rules, (some merchantmen would attempt to ram the U-boat if the chance arose, and would certainly send off a warning signal by radio which could bring swift attention from enemy ships or aircraft, so that a leisurely stop and search routine was hardly a viable option) U-boats would attack enemy vessels on sight. The deck gun became gradually less important and was eventually

The crew of the deck gun in action. This appears to be a training exercise with the boat still tied up in dock. (The gangplank onto the dockside can just be seen at top right.) Normally, three men would crew the gun, with further crew members acting as ammunition bearers. In action, however, life preservers would be worn, as would, in most cases, steel helmets.



Looking towards the stern on a late war Type VII U-boat. By the latter part of the war, the deck gun had been removed and the anti-aircraft defences improved. The original single 2 cm gun, actually intended for use against lighter surface targets, has been replaced here with a quadruple-barrel fast-firing 2 cm *Flakvierling* on the lower platform or 'Wintergarten'. Twin 2 cm guns were also mounted on the upper platform. This meant that the U-boat could only bring its full defensive armament to bear when attacked from behind or when in a position to turn quickly enough to present this part of the boat towards the enemy.



removed altogether from most U-boats. At the same time the significance of the U-boat's defensive armament took greater priority. At the start of the war most Type VIIs were armed with a 2 cm flak gun on a platform at the rear of the conning tower which was intended as an anti-shiping weapon, but took on more of a defensive role against enemy aircraft. Larger platforms were fitted which could take twin 2 cm flak guns, and eventually an entire second platform known as the 'Wintergarten' was fitted just below the upper platform, which could carry a 3.7 cm flak gun or a four-barrelled 2 cm *Flakvierling*.

Although there are several recorded examples of U-boats successfully shooting down attacking enemy aircraft, it was a brave flak crew indeed which would take on an enemy bomber or fighter. The flak crews had very little protection and the odds were stacked heavily in favour of the aircraft. Although for a period in 1943, U-boats were ordered to fight it out on the surface, this order was soon rescinded and boats would dive to escape aircraft wherever possible.

If U-boat crewmen survived the sinking of their boat, their trials were not over. With a few notable exceptions, U-boat crewmen were usually rescued and treated reasonably well immediately after their capture. For some reason, however, the Allied perception seemed to be that U-boat crews were predominantly made up of hardened Nazis. This may have been because of their generally high morale, and their belief that the losses that they were inflicting on the Allies, in the early part of the war at least, would bring ultimate German victory. Many U-boat crewmen were badly treated and there are even records of some committing suicide after capture to avoid further torment. Even when the war was over, the perception that they were dangerous Nazis meant that many were held captive long after their counterparts from the surface fleet were released. Mostly, however, they were content that they had survived, unlike 29,000 of their comrades. The attrition rate of somewhere between 70 and 80 percent is the highest casualty rate of any of the armed services in any of the combatant nations of the Second World War.

Comrades! The intense bonds of comradeship formed between U-boat men such as the three veterans shown here helped them through the difficult days following Germany's defeat, and is still as strong today among surviving veterans.



MUSEUMS

Without doubt, the premier source of information on the U-Boot Waffe is the superb U-Boot Archiv founded by Horst Bredow. As well as containing a vast databank of information and several hundred thousand photographs, the archive also contains a small, but superb museum collection with personal memorabilia from many of the U-boat 'greats' from the First World War onwards. It is located at Bahnhofstrasse 57, 27478 Cuxhaven-Altenbruch in Germany. The nearest large cities are Bremen and Hamburg. Further information about the Archiv may be obtained by sending at least two International Postal Reply Coupons to the above address.

At Laboe, near Kiel, the Type VII U-boat *U-995* has been taken from the water and mounted on a concrete plinth on the beach just by the German naval memorial. *U-995* is open to the public and a trip on board is a real eye-opener as to just how cramped the conditions were on a typical U-boat. *U-995* was taken over by the Norwegian Navy after the war, but once her active service days were over, was returned to Germany and accepted as a memorial by the German Naval Association (Deutsche Marinebund). She was refurbished and repainted in her original wartime finish.

In Bremerhaven, the Type XXI U-boat *Wilhelm Bauer* (formerly *U-2540*) is also open to the public at the German Maritime Museum. This boat was salvaged after the war and used as a test bed for submarine equipment. Her original conning tower was heavily reworked, changing her appearance considerably. When her working life was over, she was converted back to wartime specification (though only externally) and her original conning tower configuration restored. A visit to this highly advanced late war U-boat makes an interesting contrast to *U-995*.

Also on public display, though it is not possible to board her, is the wreck of *U-534*, which was raised from Danish waters in 1993, and put on display at Birkenhead, Merseyside, in England. There is also a realistic mock-up of part of a U-boat at Bletchley Park, near Milton Keynes, England, which was used for the making of the film *Enigma*.

On the other side of the Atlantic, another Type VII, *U-505*, is on display at the Museum of Science and Industry in Chicago. She is open to the public, and like *U-995* offers the visitor a fascinating glimpse of what life was like on a combat U-boat.

COLLECTING

Unfortunately, as with most types of Third Reich memorabilia, almost anything connected to the U-boats has been widely reproduced, some of such high quality that even experienced collectors have been fooled. Most commonly faked are the U-boat War Badge and U-boat Front Clasp. There is little or no variation in the appearance of the originals manufactured by the prestigious Berlin firm of Schwerin, and pieces which do not match those illustrated in this book should be treated with caution.

Kriegsmarine headgear is also widely collected and original pieces fetch very high sums indeed. Care must be taken to avoid early post-war

U-boat crewmen using a standard electrical signalling lamp (the cable for which can just be seen passing between the user's legs). The casual poses and the pipe being smoked by the crewman at right suggests a training exercise in safe waters.



Bundesmarine caps, which have been retro-converted by the addition of wartime insignia, the basic headwear itself being almost identical. Look for the use of plastics or modern materials which look identical, but are of much later origin. The use of a blacklight (a small hand-held UV strip light used for detecting forged banknotes) may highlight modern threads which use artificial whiteners. Unfortunately, neither of these points is foolproof, as very early Bundesmarine peaked caps used leather peak binding and some original wartime material used dyes which do react to a blacklight. Kriegsmarine cap ribbons are also being remanufactured, but so far the author has not noted any U-boat ribbons.

The small traditional badges worn on the side of the cap by most U-boat men are highly sought-after collector's pieces. As the originals were often crudely hand-cut from scrap metals, they are equally easy to forge and artificially age. Treat everything with caution unless one is fully satisfied as to an item's provenance, and only buy from reputable sources, which offer a lifetime money-back guarantee of authenticity.

Large numbers of replica sets of the grey leather U-boat clothing have been manufactured for film use and their accuracy is remarkable. Only the lack of 50 years of natural ageing is likely to raise suspicions, and clever forgers will have no problem artificially ageing such garments.

It is in the field of medals and awards that the forger's 'art' has reached its peak. Modern laser die cutting methods make the manufacture of dies a much more feasible proposition for the forger. With U-boat awards, two particular pieces have been hit hard in this respect. The early quality U-boat War Badge, manufactured by the Schwerin firm in Berlin, has been heavily reproduced and the quality of many of the copies is quite astounding. Originals were finished in mercuric fire gilding, a practice no longer carried out in Europe for safety reasons. The lack of this finish was a useful indicator as to an item's provenance, but unscrupulous dealers now send copy badges to the Indian sub-continent where fire-gilding is still carried out.

The U-boat Front Clasp is also heavily reproduced. Originals were pressure die cast in zinc and given a bronze- or silver-plating as appropriate. Over time the plating reacts to the zinc base metal to give fine pinhead bubbling to the surface, a useful indicator of true ageing. In fact, the most recent copies of this award are better made than the originals, itself a possible indicator to their true age.

For those with access to the internet, there are a number of forums and newsgroups which deal with such militaria. Highly experienced collectors will happily give advice to those who are unsure of the originality of an item they have purchased, or are considering purchasing. One such resource, which is highly recommended, is the Wehrmacht Medals and Militaria Forum which may be found at <http://fl6.parsimony.net/forum28011>.

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COLOUR PLATES

PLATE A: U-BOAT RECRUIT AND EQUIPMENT

The newly trained U-boat crewman has joined his boat for his first war cruise and along with the rest of the crew is mustered on the quarterdeck to be addressed by the commander. He wears the warm and hard-wearing single-breasted light grey leather U-boat clothing, intended for *Maschinenpersonal* or engine room personnel. This style of garment was also made in other colours, most commonly black, and was also highly popular with Waffen-SS tank crews in the second half of the war.

The headgear is the ubiquitous *Bordmütze*, popular and far more appropriate for wear in the close confines of a submarine than the traditional sailor's cap with its long trailing ribbons. With no insignia of rank visible, there is little to distinguish him from his crewmates. Here, at the start of the cruise, he is clean-shaven and his hair is still neatly trimmed.

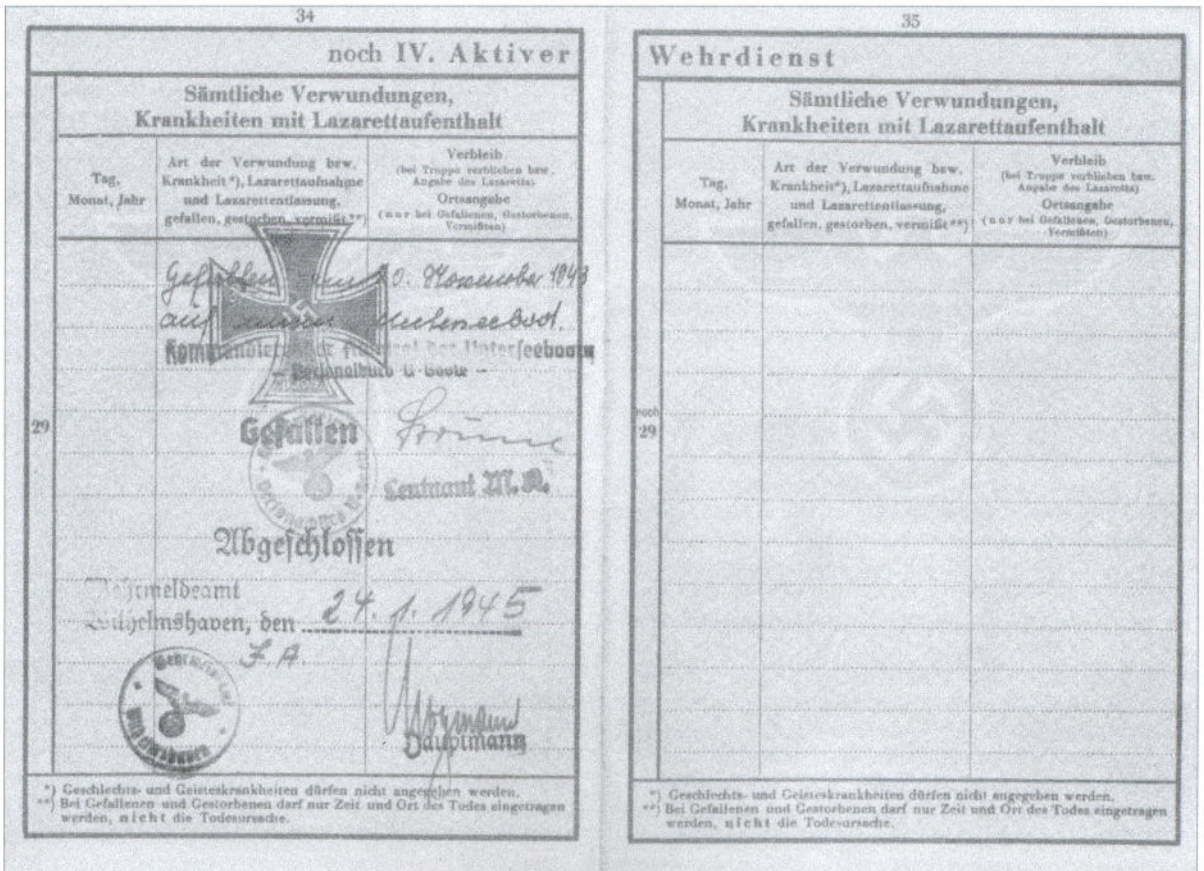
Also shown are some common items of equipment. The *Tauchretter* (1 and 2) was manufactured by the firm of Dräger and is also known as the 'Dräger Lung'. It could be fully inflated for use as a life preserver or escape apparatus, but was more commonly used for its carbon dioxide filter when the boat was obliged to stay submerged for extended periods in order to eke out the precious supply of oxygen in the boat. The *Kalipatronen* (4) air filter consisted of a simple

carbon dioxide filtering box with a breathing tube ending in a face-mask with elasticated straps. Several versions were in use and occasionally the *Tauchretter* filter box would be removed with its mouthpiece and used on its own without the rest of the set.

There were numerous types of life preserver used by the navy. Some were simply bands of canvas packed with kapok filling and worn around the chest tied on with webbing straps (3). Others (5) were of traditional 'collar' type, fully inflatable, and fitted in the same way as the *Tauchretter*, with a strap down the wearer's back, in between his legs and fastening to the base of the collar at the front. They also had their own integral oxygen bottle and/or a mouthpiece for manual inflation.

Oilskins (6) in black rubberised fabric were worn on top of the leather clothing and were generously cut to allow for garments worn underneath. The large collar could be turned up to protect the back and sides of the head. Worn in conjunction with a woollen Balaclava-type toque and the sou'wester (8), very little actual flesh would be exposed. The interiors of the sleeves were also elasticated to prevent ingress of water.

A U-boat warrant officer's *Wehrpass*. The pages shown here indicate the owner of the book was killed in action: 'Gefallen am 10 November 1943 auf einem Unterseeboot'. The book was then passed to his next of kin as a memento. (Author's Collection)





Obermaschinenmeister Max Henschler, the owner of the *Wehrpass* on page 59. A highly experienced sailor, Henschler served on the battleships *Gneisenau* and *Scharnhorst* before transferring to U-boats. Progressing from a humble stoker to warrant officer, he died when *U-508* was sunk with all hands on 10 November 1943.

The *Pudelmütze* (7) or 'poodle hat', so called because of the pompon, was a warm and popular form of headwear. This unmilitary-looking piece of kit consisted of a simple 'tube' of knitted wool drawn closed at one end and fitted with a pompon. U-boat crewmen wore all sorts of civil clothing, but the *Pudelmütze* was very much an official issue item. The sou'wester (8) was a traditional large wide brimmed waterproof cap, instantly recognisable and widely worn.

PLATE B: ESCAPE TRAINING

One of the most important parts of a U-boat crewman's training was in escape techniques and these were practised at the U-boat school. In reality, escapes from sunken U-boats were rare. Most U-boats were either sunk with all hands in deep water with no chance of escape following a fatal hit by depth charges or bombs, or were fatally damaged on the surface so that some or all of the crew were able to abandon

ship. The chances of survival in the cold waters of the Atlantic were minimal unless rescued very quickly.

The number of occasions in which a relatively intact U-boat was trapped on the bottom in waters shallow enough for escape attempts to be feasible was very small. In 12 recorded cases, U-boat crews or at least part of the crew escaped using the *Tauchretter*. Crewmen from *U-767* in 1944 and *U-2199* in 1945 escaped, in both cases from depths in excess of 200 feet.

Watched by a number of his comrades, a U-boat crewman has just reached the surface of the 8-metre training tank wearing his inflated *Tauchretter*. The men are dressed for this training only in sports shorts and are being overseen by a warrant officer dressed in more formal regulation blues. The training itself was not without risk, and numerous trainees suffered injuries such as perforated ear-drums having made numerous escape attempts both with and without the *Dräger* apparatus.

PLATE C: TRADE AND RANK BADGES, CLOTHING AND OTHER ITEMS

Shown here are a selection of the trade and rank badges most appropriate to U-boat crewmen. From top left to right, shoulder straps for **1** Kapitänleutnant; **2** Oberleutnant; **3** Leutnant zur See; **4** Oberleutnant (Ing.); **5** Obersteuermann (helmsman); **6** Stabsbootsmann (senior bosun); and **7** Maschinist (engine room senior NCO).

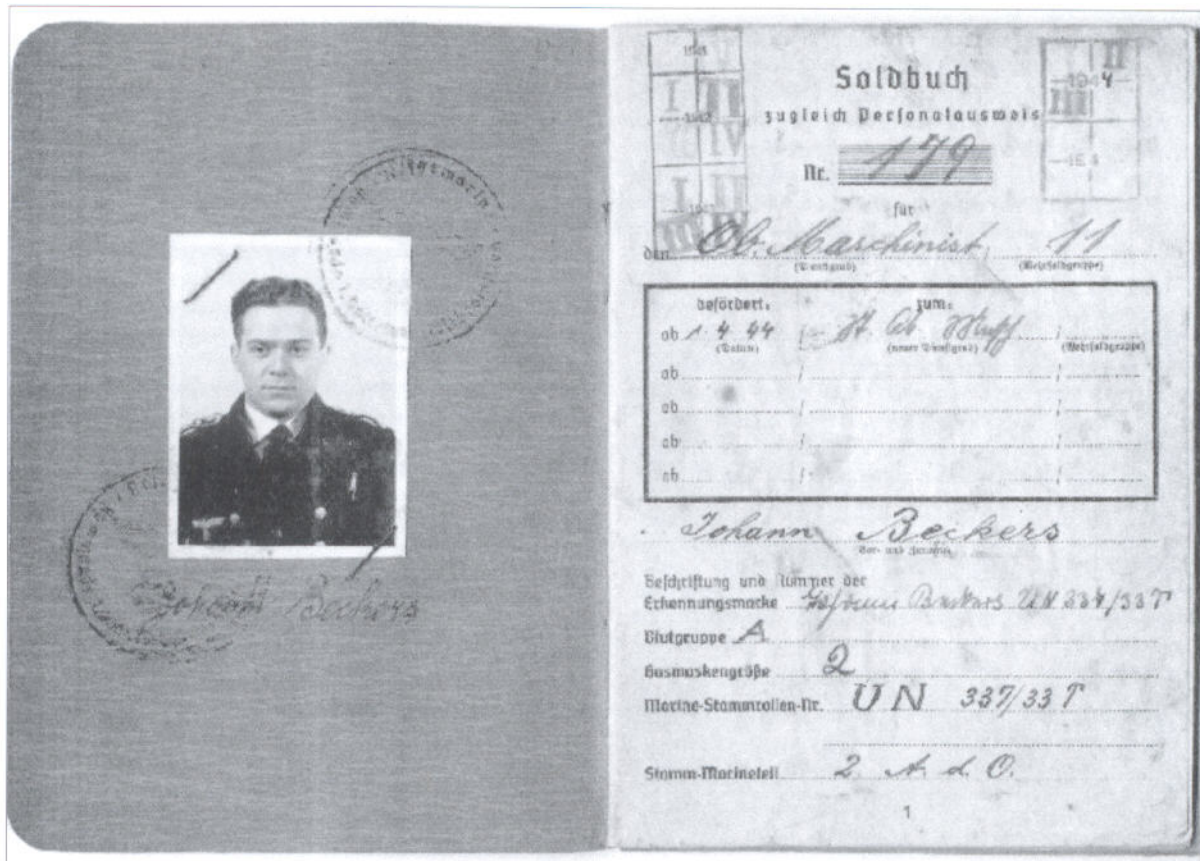
Seamen wore a simple circular patch with an appropriate device. Shown here are trades particularly relevant to the lower ranks of a U-boat crew. From top right: **8** Engine Room Personnel; **9** Torpedo Mechanic; **10** Radio Operator; and **11** Seaman.

On the next row are shown the sleeve rank/trade combined patches for petty officers; **12** Sanitatsobermaat (chief petty officer medic); **13** Mechanikerobermaat (engine room chief petty officer); **14** Torpedoobermaat (torpedo chief petty officer); **15** Oberbootsmann (bosun's mate); **16** Steuermannsmaat (helmsman's mate); **17** Funkmaat (PO Radio Operator); and specialist patches (worn on the left sleeve below the rank patch) for **18** Unterwasserhorcher (Underwater Sound Detector Operator) and **19** U-Bootstaucher (U-boat diver).

There was a huge range of such trade and specialist patches, always embroidered in red thread, which could be worn in conjunction with the rank patch.

The *Wehrpass* or military pass (20) was carried by each German from the point at which he was registered for military service. It was a form of ID and also recorded his compulsory Labour Corps Service. On reporting for duty, it was replaced by a *Soldbuch* (21) but was returned to him on his discharge on completion of military service or to his next of kin in case of death. The *Soldbuch* was a soldier's personal ID as well as a record of unit affiliation, medical history, decorations, kit issue, pay and leave.

Every member of the armed forces wore ID discs or 'dog tags' (22). Many variants in style are known, and large numbers of naval issue tags were in gold finish. The example shown records the sailor's blood group and *Wehrstammrollnummer*. The 'N' indicates *Nordsee* or North Sea Fleet (as opposed to 'O' for *Ostsee* or Baltic). If the sailor was killed in such circumstances where the ID tag was recoverable, it was snapped in half. One half was buried with



A U-boat warrant officer's *Soldbuch* belonging to Stabsobermaschinist Johann Becker. Unlike Max Henschler, this U-boat man survived his time on U-boats (with U-43), was transferred to a training post with 1 ULD; he was fortunate enough to survive the war. (Author's Collection)

the sailor and the other half returned to the graves registration office.

One of the most popular common forms of dress worn by all ranks on U-boats was the denim blouse (23). It closely resembled the British battledress blouse in its design. Various combinations of insignia could be worn. Shown here are officer shoulder straps and a pin-back metal breast eagle. All insignia and buttons were removable to facilitate cleaning.

Lightweight denim working jackets (24) were also widely used by U-boat crews. Petty officers' rank was often shown by small metal 'corners' sewn to the lapels of their jackets to replicate the gold braid worn around the collar of their pea jackets. These jackets were widely worn both with a sleeve rank patch as shown here, or without.

Tropical issue kit was used in warmer South Atlantic waters or even further afield. Generally, shorts (25) would be worn on board rather than long trousers, together with the tropical shirt or tunic (26). These were all cut from golden tan -coloured cotton. Special shoulder straps were produced in tan with blue braid edging for the tropical tunic and shirt, but seem rarely to have been used. Most often, the standard

insignia from the blue uniform was utilised as shown here on the tropical tunic (27). A field cap (28) in the same material was issued, very similar to the field cap used by the Afrikakorps. Alternatively, a lightweight white cotton version of the side cap (29) was often used.

In really warm temperatures, the white naval sports vest (30) also saw frequent use, especially by engine room crews working in an extremely hot environment. The normal service navy buckle (31) was used on either a leather or webbing belt, and was steel with a dark blue-grey painted finish.

PLATE D: EMERGENCY DIVE!

This plate shows what would have happened when a U-boat dived to escape the enemy. Clockwise from top left: (1) the sound detector operator sits in the tiny radio room, its door open so that he can communicate easily with the adjacent control room. He wears headphones that allow him to hear the sound of approaching enemy propellers, and turns the handwheel which will rotate the sound detector head on the boat's foredeck. The sound detection gear is extremely sensitive and will pick up the slightest noise. The operator will be ready to snatch off his headphones at the sound of depth charges splashing into the water, as the explosions heard through his headphones would be deafening.

(2) Next, two diving planes operators sit in the control room guided by the engineering officer. The hand wheels at which they sit will alter the angle of the diving planes causing the boat to dive deeper or rise in the water.

(3) The commander sits at the periscope, hoping to get a chance to take a shot at the escort vessel which is tormenting them. It is interesting to note that the attack periscope was located in the tiny commander's compartment in the conning tower. It was fitted with a saddle seat, and once the commander was in position, there was little or no room left for anyone else. Thus, the many carefully posed and highly atmospheric wartime photos of the steely-eyed U-boat commander at his periscope, supposedly attacking the enemy, were actually filmed in the central control room where the navigation periscope was located and where there was sufficient space for the photographer.

(4) Finally, in *Zentrale*, the Obersteuermann (navigator) plots each change in course ordered by the commander. Accurate plotting was essential. With more time spent submerged as surface cruising became increasingly dangerous, opportunities to take a sextant reading were infrequent, and with the effect of underwater currents pulling the boat off course, the Obersteuermann's job was not an easy one.

PLATE E: OFF-DUTY OCCUPATIONS

One of the greatest problems on an operational U-boat was finding things to occupy the crew's minds when off duty. Boredom could be a serious problem. Many commanders would ensure that a good supply of records was taken on board so that music could be played over the boat's p.a. system. U-boat men were known for their love of 'inappropriate' music such as jazz and swing, which was regarded as 'degenerate' by the authorities. Radio broadcasts were also piped through the public address system and crews were occasionally given the chance to listen to foreign stations, which were strictly forbidden at home.

Reading was a widespread pastime with a good stock of novels being passed around. With more time spent underwater later in the war, and the consequent drain on the boat's batteries, lighting was kept to an absolute minimum to save power, so simple pleasures such as reading were very difficult. Card games such as 'Skat' were also a popular way of passing time, although dependent on the feelings of the commander, actual gambling might be frowned upon.

Some officers might take the chance to give mini-lectures to off-duty crew, more often on moral than political issues. Dönitz ensured that Nazi 'political education' officer appointees were not permitted on board operational U-boats.

Off-duty crew members were often given simple tasks such as basic maintenance and repairs to machinery, as much to keep them occupied as for any other reason. The plate shows one of the crew reading in his bunk, while two of his comrades play cards. Another is busy peeling potatoes for the cook.

PLATE F: ATTACKING A NIGHT CONVOY

The U-boat has taken part in a night attack on a convoy. Night attacks on the surface were used very successfully during the first half of the war, as the low profile of the U-boat in darkness made it very difficult to spot. An enemy merchant ship has been successfully torpedoed but has failed to sink.

Having survived the counter-attack by convoy escorts, the U-boat surfaces at first light to apply the *coup de grâce*. Such surface sinkings became less common as the war drew on, as the chances of the U-boat being detected on

the surface by enemy aircraft or surface vessels dramatically increased. In fact, deck guns were eventually withdrawn altogether; they were virtually worthless as an offensive weapon and simply produced excess drag, slowing down the boat's underwater speed. In this scene, the dull cloud-laden sky camouflages the boat from any enemy aircraft that might be patrolling. The boat's commander has therefore decided to surface and use his deck gun now that the convoy and its escorting warships have passed, saving precious torpedoes for future targets and also giving his gun crew an opportunity for much-needed practice.

The gun was also only likely to be used in moderately calm waters, stormy seas making accurate shooting from a relatively unstable gun platform even more difficult. The three-man gun crew are servicing the weapon while additional crew members bring up fresh 8.8 cm ('acht acht') ammunition all the way through the boat from its storage space under the decking of the radio room. All are wearing steel helmets, a rarely used piece of headgear on a U-boat, and have taken the sensible precaution of donning life preservers over their protective leather clothing.

The attack is being directed by the second watch officer, gunnery control being one of his allocated duties. He is directing the gun from his position in the conning tower, observing the fall of shot through his binoculars and giving instructions to the gun layer to adjust his aim.

The first shot, into the enemy's radio room to prevent the broadcast of a distress call, was successful, and the bridge area is ablaze. The second shot, aimed at the waterline to hole the vessel and speed her sinking, has just fallen short and having made adjustments to the aim, a third shot is about to be fired.

This action may well take some time, as a ship's buoyancy depended partly on the cargo carried. In some recorded cases, over 100 shells were fired to sink an enemy vessel by gunfire. This would only be attempted in areas where the commander was confident of remaining undisturbed by the enemy.

PLATE G: DECK ACTIVITIES

This shows some of the activities in which a U-boat crewman might become involved when his boat reached fairly safe waters out of the range of enemy air patrols and where there was little likelihood of being surprised by enemy surface vessels. This composite scene shows several activities; in reality it is unlikely that all went at the same time.

One of the crewmen is perched on the spray deflector half-way up the outside of the conning tower painting, with the use of a stencil carefully cut from a piece of board, the emblem that has been decided on for his vessel as the captain watches from above. In this case, the snorting bull emblem first used by Günther Prien after his successful attack on the *Royal Oak* at Scapa Flow is being applied. In Prien's honour, his personal emblem was eventually adopted by the 7th U-Boot Flotille. Meanwhile, on the quarterdeck, a group of crewmen are involved in an initiation ceremony for one of their number, who has crossed the equator for the first time. Time-honoured nautical traditions were not forgotten even in the midst of war and where it was safe to do so crewmen were encouraged to indulge in such morale boosting events.

Further forward, two crewmen are servicing the 8.8 cm deck gun. One is swabbing out the barrel, while his comrade

greases the bearings on the gun mount. Just forward of the gun, one crewman keeps a vigilant watch for sharks while his crew mates take a welcome swim.

All the while, crewmen with binoculars on the bridge keep a wary eye open for any signs of enemy activity.

PLATE H: ON WATCH

At the end of yet another war cruise, a grizzled warrant officer is on watch as the boat approaches its berth. He wears the double-breasted leather coat favoured by deck personnel, one that has seen much use and looks as tired as its wearer. Like most officers and senior NCOs, he wears his peaked visor cap at sea, though a few senior ranks occasionally wore the *Bordmütze*. On the side of his cap is the traditional emblem of his boat, in this case the prancing devil of U-732.

On a leather strap around his neck is a pair of powerful binoculars. Several weeks of life in the damp, oppressive interior of the U-boat has left him with red-rimmed eyes and a full growth of beard. Soon, he will avail himself of the luxury of a hot bath and a shave, put on his best blues, pack his kitbag (1) and set off home on the BdU Zug for a well-earned spell of home leave. By now, however, Allied bombing raids might not have left him much of a home to return to. A highly experienced combat veteran, he may well find he is about to be posted as an instructor to a U-boat school or one of the training flotillas.

U-boat personnel were issued with top-quality powerful binoculars (2). The safety of the boat and survival of its crew might well depend upon the early detection of enemy craft, allowing the boat to dive and escape. The standard issue binoculars were made by a number of firms, the best known being Carl Zeiss of Jena. Styles differed

between manufacturers, but were most typically of 8x50 magnification. This example is fitted with a leather neck-strap and protective caps for the eyepieces.

For a U-boat which had been tossed around for several days fighting strong currents and a North Atlantic gale, the chance to take an accurate fix on its location with a traditional old fashioned sextant (3) would be most welcome. The standard navy sextant had a black protective finish and was usually stored in a wooden box.

Close examination of any wartime photo of a U-boat bridge will probably reveal a pedestal mount with gradations marked around its circumference and a clamping device in the centre. This was the base for the *Überwasserzielloptik* or UZO (4), a large, heavy set of binoculars in an extremely thick, pressure-tested case. When a surface attack was about to be launched, the command, 'UZO zum Brücke' ('UZO to the Bridge') would be given. The IWO or Obersteuermann would fit the UZO to the clamp in the centre of the pedestal to form an aiming device, data being transmitted to the attack computer. If the U-boat was forced to perform an emergency crash dive in the course of an action, the UZO binoculars remained temporarily in place when the boat dived, hence the pressure-tested casing.

A group of crewmen on the bridge of an operational U-boat. Note the variety of forms of dress being worn. The crewman at right wears the sou'wester with a leather reefer jacket buttoned up to the neck, the centre man the side cap with leather reefer open at the collar, and the crewman at left the denim blouse with side cap. This diversity in appearance was common, if not universal.



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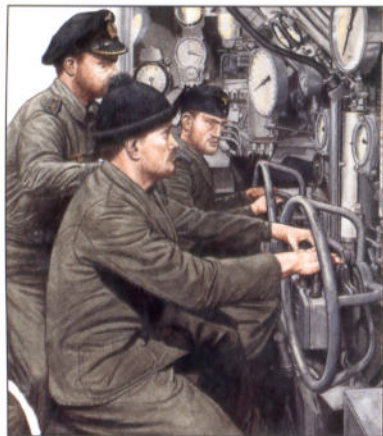
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