

THE MECHANICIAN

1905 — 1955

BY

COMMANDER R. H. P. ELVIN, R.N., A.M.I.MECH.E.

BIRTH OF THE MECHANICIAN

In this year, when so many great changes in the personnel structure of the Royal Navy are taking place, it is of interest that just fifty years ago the first five mechanics completed their training and joined the fleet. It is also interesting that Admiral Fisher, who had so much to do with re-organization of the Navy, instigated the Mechanician Scheme. The origin of the idea of a mechanic lay in the urgent need to improve the future prospects of the stoker as he was then. He had, in those days, no outlet to officer rank, nor was there any skilled training available to him. As a result of the Cawdor-Fisher report, Their Lordships decided, in 1903, to institute this new rate of Mechanician by an Order in Council, dated 28th March, which gave the following reasons for its creation :—

1. To give stoker ratings mechanical training adapted to the requirements of the Service and to render them more proficient to perform their duties.
2. To provide an ultimate channel of advancement for the Stoker Branch to warrant rank.

3. To relieve engine room artificers of a certain amount of watchkeeping duties, it being the intention that the future mechanics perform the engine-room and stokehold watchkeeping duties now being carried out by engine room artificers.'

Unfortunately, no records can be found to explain how the title 'Mechanician' was chosen for the new branch, but it seems to be an appropriate word since, although modern dictionaries state this word is rarely used and, in fact, a well-known one states that it is obsolete, they all give the definition, 'A mechanic or artisan, one skilled in the construction of machinery.'

DETAILS OF THE INITIAL SCHEME (1903)

Method of Selection

The method of selection of the early mechanics was laid down by the Admiralty as follows :—

'Candidates will be selected principally from young and promising leading stoker mechanics and stoker mechanics, but chief stoker mechanics will also be eligible.

'A candidate must have borne a V.G. character for two years previous to being selected and must be recommended by the Engineer Officer of the ship or reserve in which he is serving, and be approved by the Captain. He must re-engage to complete time for pension, if within five years of completing first engagement, and must not be over thirty years of age when starting the course. He must be able to read and write well, and understand the first four rules of arithmetic.'

The first candidates selected were all chief stoker mechanics.

(Readers may query the use of this title 'stoker mechanic', but in those days stokers, on becoming qualified, became known as stoker mechanics. Furthermore, leading stoker mechanics were petty officers, usually with at least five or six years' experience in the Service, all of which was invariably spent afloat. There was no such rating then as the present day leading mechanic (E) or petty officer mechanic (E).)

Method of Training

The original course consisted of two years in shore workshops set up in each port, ratings being trained in their own depots and not at a combined establishment. The two years' course comprised three to four months spent at fitting, turning, boilermaking, coppersmithing, moulding and enginesmithing, under the instruction of C.E.R.As. Lectures on marine engineering and school subjects were given for one hour daily by a chaplain and naval instructor.

A test job in each trade, and examinations in 'school' and engineering were given at the end of this two-year course. Successful candidates then underwent six-months steaming training in a small ship, usually a gunboat where, in the absence of E.R.As, they ran her entirely themselves, raising steam, tending auxiliaries and taking her to sea. At the end of this course, candidates were rated acting mechanics and sent to sea in a battleship or battlecruiser, never less than two mechanics to a ship, for a further period of one year's training. As is the way with so many new schemes, detailed instructions did not exist and on arrival in their first ships most mechanics discovered that the engineer officers had no knowledge of the scheme and certainly did not know what to do with the new ratings. Their immediate reaction was not very encouraging. The usual difficulties of accommodation arose and no details of their training were available. Study by these officers of the regulations available

indicated to them that the new rating of mechanician was primarily designed as a watchkeeper and they could not appreciate that, after two years' practical training, they were capable of carrying out maintenance work as well. However, like so many new schemes, the proof of the pudding was in the eating and the results achieved by the early mechanicians well warranted the continuation of the scheme. On completion of the one year's training at sea, mechanicians were given an examination for confirmation. This was carried out by the engineer captains of the fleets. The examination took three days and was both written and oral.

REORGANIZATION (1906)

Brief Details of the Reorganization

In 1906, as a result of much deliberation on the part of Their Lordships, the whole system of training and organization of the engine-room ratings of the fleet was changed with a view to increasing the general standard of knowledge of this important section of the personnel. At the same time Their Lordships decided to establish a new warrant rank for the Stoker Branch. In the Circular Letter which gave details of this scheme (Circular Letters were used before the introduction of the Admiralty General Message), it was stated that the course of training for the rating of mechanician would, in future, be arranged with a view to rendering specially selected men of the stoker class capable of undertaking the ordinary watchkeeping duties of the engine room and stokehold. It was at this time that the titles in the Stoker Branch were altered to come into line with those of the Seamen Branch and the new title of Leading Stoker was introduced to replace the existing Leading Stoker Second Class. The then *Leading Stoker First Class* was changed in title to that of *Stoker Petty Officer*.

Revised Method of Selection

With this reorganization came a new system of selection of mechanician candidates which is very much in line with that in force today. One important difference, however, should be noted at this stage --that, with the introduction of a Mechanical Training Course for leading stokers in 1906, men undergoing these courses were taught the elements of special trades, according to ability displayed at a preliminary examination. These trades were fitter and copper-smith, boilermaker-bricklayer, bricklayer and moulder.

On completion of this Mechanical Training Course a careful selection was made of the men who qualified and a proportion of the most promising and intelligent (usually from the fitter and coppersmith specialists), provided they attained the necessary standard, was noted as men who gave promise of being suitable for qualification as mechanician. These men, when selected, and provided they were not over 25½, were at once rated acting stoker petty officer and were sent to a seagoing ship in full commission as soon as possible, with the object of giving them further sea experience and of subjecting them to special observation as to their fitness. During this time at sea they formed part of the ship's complement of stoker petty officers and, if found competent at the end of twelve months from the date of their acting rate, and subject to satisfactory conduct, they were confirmed in the rating. After serving eighteen months from the date of being rated acting stoker petty officer, each of the men provisionally selected for the Mechanicians' Course were specially reported upon on a prescribed form by the Engineer Officer of the ship and these reports, approved by the Captain, were sent to the Commander-in-Chief of the Station, who in turn forwarded them to the Commander-in-Chief, Portsmouth, for the information of the Inspecting Captain of Mechanical Training Establishments. (This officer was an executive captain and this post existed until 1932.) The final selection for the Mechanicians' Course was made by the Inspecting Captain

from among the men favourably reported upon from seagoing ships and arrangements were made whereby the men who were finally selected, returned to England at the first opportunity after they had completed a total of two years' acting and confirmed service as stoker petty officer. No man, however, could be selected who would have been over 28 years of age at the time of the commencement of the Mechanics Course. Thus it can be seen that at this stage the average age of selected men tended to be fairly high in view of the qualifying time and service needed for selection.

Revised System of Training

Consequent upon this reorganization of the Stoker Branch, in order to ensure that mechanics were efficient for the watchkeeping duties that they would be called upon to undertake, it was laid down in the regulations that :—'They are in future to be trained primarily for this purpose and they are to be given thorough instruction in the construction and working of each part of the engines and boilers of a ship. Considerable training at the trade of fitter and turner is to be afforded to them and they will also be given instruction in general educational subjects.' Thus it can be seen that here was the beginning of the teaching of the trade of fitter and turner to the mechanic, though, of course, at this stage it was not regarded as a major portion of the syllabus. Another alteration in the training that took place at this time was in the method of final examination, which was altered so that the Admiralty became the examining authority, and examinations were carried out by a Board of officers appointed by them. At the same time the six months special steam training in the training ship was abolished and the ratings were sent straight from course to a seagoing ship in full commission as acting mechanics. Here they served twelve months in the acting rate before becoming eligible for confirmation as mechanic. The qualifying examination was no longer carried out and confirmation depended on the Engineer Officer's opinion of his acting mechanics.

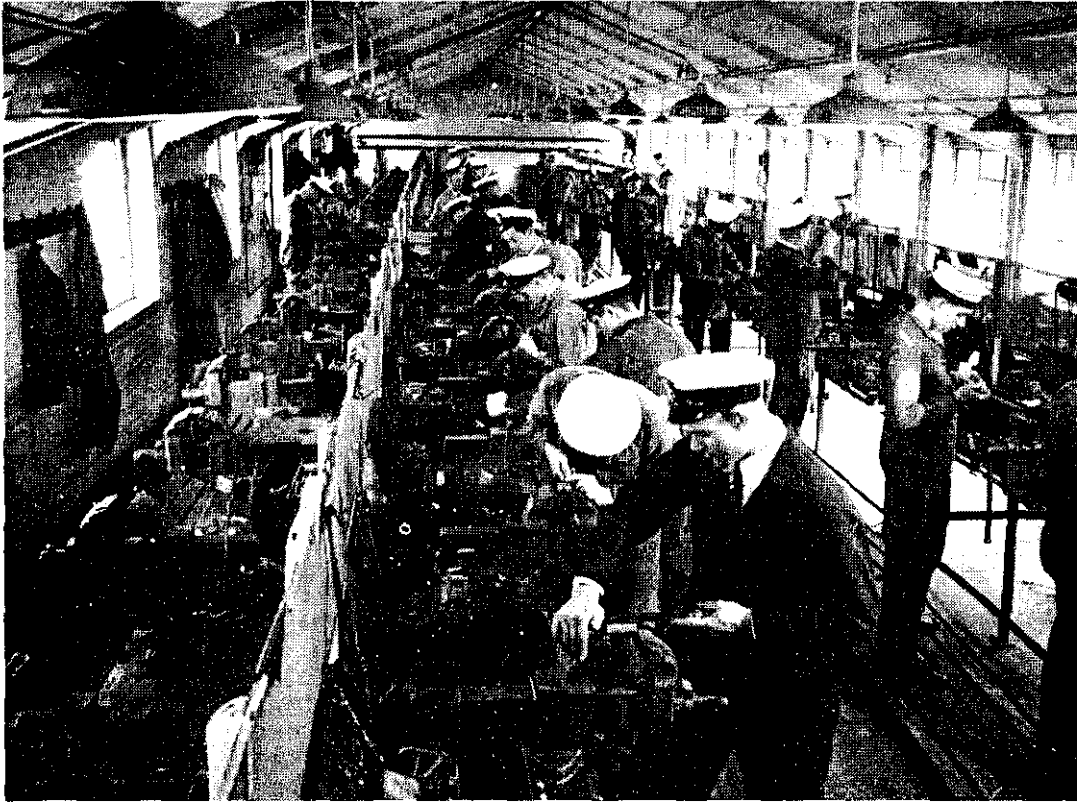
Status of the Mechanician

It was in 1906 also that some clarification was at last given to the status of the mechanic, since it was laid down in a Circular Letter that the rating of confirmed mechanic would be a chief petty officer and would carry with it seniority over all chief stokers.

Numbers Trained and Complement Allowed in Ships during the Period 1905-1910

The original intention, so far as numbers of mechanics in the fleet was concerned, was to train sixty candidates each year until a peak figure of 800 was reached. In 1905, however, it was decided to increase this number to 1,350 on the basis that there should be one mechanic in each engine room of every large ship, with a proportionately lesser number in smaller vessels. The actual numbers allowed by complement in ships was laid down in Circular Letter of June, 1905, and was as follows :—

<i>Ship</i>	<i>Number Allowed</i>
First Class Battleships	2
First and Second Class Cruisers of and above 10,000 i.h.p.	2
First and Second Class Cruisers under 10,000 i.h.p.	1
Scouts	2
Third Class Cruisers	1
Repair Ships	1
Destroyers of, and above, 30 knots	1
<i>Victoria and Albert</i> (the then Royal Yacht)	1



A FITTING SHOP

When the number of mechanics was increased in 1904, the complement allowed, for ships carrying mechanics, was increased to six for battleships, battlecruisers and cruisers.

First Combined Tri-Port Training

For reasons that can well be understood, efforts were constantly being made to centralize the training of mechanics in one establishment. Towards the end of 1906, this was achieved when H.M.S. *Indus*, a hulk at Devonport which had been used for the training of boy artificers since the inauguration of that scheme, which, like the mechanics, had started in 1903, was taken over. The training syllabus was also slightly amended at this time so that much of the final year could be devoted to refitting the boilers and machinery of H.M.S. *Indus*, and those ships attached to her for instructional purposes, and also of ships of the Home Fleet. Practical experience in the operation of machinery was given in the ships attached to *Indus*.

Their Lordships in this year instructed that a 'passing out' certificate should be issued to all acting mechanics and engine room artificers fifth class who successfully passed their trade test and examinations. It was known as Form T.S.160 and briefly stated that the rating had successfully carried out a course of training in engineering subjects and workshops at the Mechanical Training Establishment. Training continued in H.M.S. *Indus* until the outbreak of the first World War, when the training of mechanics stopped until the end of that war.

CHANGES FROM 1910 --1914

Introduction of Warrant Mechanics

As originally laid down by Admiralty policy of 1903, the regulations governing the eligibility of mechanics to sit the examination for warrant mechanician

were that they should have five years' seniority as mechanics and be recommended by their Engineer Officer and Commanding Officer. Thus, by 1910, the first class of mechanics to pass out from the Reserve Fleet Workshops in October, 1905, became eligible to sit the examination.

The mechanics affected tended to regard the whole system with a certain amount of suspicion but, despite this, most of them felt that it was worth an attempt. Accounts by some of those sixteen mechanics who attended the first examination, recall the scepticism expressed by the scores of artificers who had arrived at the examination centre, fully equipped with cases of drawing instruments, etc., when they observed these mechanics completely unequipped and apparently unprepared. However, the results of the examination once again proved the soundness of the mechanic for, despite the necessity for adapting pennies and rulers to complete the papers, which were the same as those being taken by E.R.As., eleven of the sixteen candidates passed the examination and qualified for selection. The first five of these were promoted in November, 1910, and the remaining six at a later date. This was a great landmark in the history of the Stoker Branch and an equally great achievement for those five promoted to warrant mechanics since they were the first stokers ever to reach officer rank in the history of their Branch.

Transfer from H.M.S. 'Indus'

In July, 1910, the training of mechanics was transferred from H.M.S. *Indus* to the Mechanical Training Establishment, Chatham, and the boy artificers from this establishment were transferred back to *Indus*. No reason for this move is apparent. The training of mechanics continued at this new establishment with little or no alteration until the outbreak of World War I in 1914, when training stopped until the end of that war. During World War I, however, 72 mechanics were promoted to warrant mechanic and gave good accounts of themselves.

Introduction of the Branch into the Royal Australian Navy

In 1911 Their Lordships decided to introduce the Mechanician Branch into the Royal Australian Navy, despite opposition from the Amalgamated Society of Engineers in that country, who stated that it was unfair to youths who had served their apprenticeship in a 'Trade'. It was suggested by the society that the mechanic should be called 'Engine Room Operative' or 'Engineer Artificer's Mate'. This proposal was not accepted by Their Lordships and the mechanic remained so called in the Australian Navy.

THE RESULTS OF THE SCHEME UP TO THE CESSATION OF TRAINING IN 1914

Reactions to the Mechanician Scheme

In Britain, as well as in Australia, there was considerable resistance to the mechanic scheme at first, and to a lesser extent it has continued since. This reflects the historical attitude of the Craft Guilds, and of their successors the Craft Trades Unions. Throughout the ages these have resisted anything which they feared might lower their standards of skill, partly because of the natural pride of a craftsman in his skill, and partly to defend the status and privileges earned by them by the recognition of that skill. The Admiralty has always appreciated the importance of these standards, and has naturally raised the mechanic to the fully skilled standard, and does not accept anything less.

The unions' fears of the lowering of standards if men are given a shortened 'apprenticeship' time is shown by their opposition to the 'dilutee', and here

again the Admiralty has recognized the unions' insistence that 5 years is the shortest period in which a man can reach the fully skilled standard which depends on a balance of skill-of-hand, of schooling, and of experience.

The resistance to the mechanician scheme by the Trade Unions has come from fear that it is a form of dilution, a short-cut to craft status ; but the principle of ' 5 years ' is universally recognised. In industry apprenticeship may last for three, four or five years, part of which is full-time instruction, and part may be working in junior capacity on production work, under the control of a skilled man. Craft status is not given, however, until the man has completed five years' training and employment in his trade.

The Armed Services all agree with this principle. The Royal Naval artificer gets 4 years' shore training plus a year at sea, before he becomes a tradesman at a standard far above the average in industry. The Army and Royal Air Force give a 3-year training, but require two more years' working experience before their men are fully skilled. The mechanician scheme is for 2 years shore training plus 3 years experience before a mechanician is considered fully skilled.

At first, before the mechanician scheme was fully understood, or had had time to prove its worth, the opposition was violent and there were many exchanges in newspapers and even in Parliament. The Admiralty consistently recognised the need to support the high standards of the craftsman, and trained the mechanician to this end.

Indications of Success

Despite opposition, the scheme went on and the following extracts from official reports show the success achieved up to this time :—

- 1908. Report from the Inspecting Captain of Mechanical Training Establishments. 'Total number of mechanicians under training 179. 35 out of 39 qualified for mechanician in the last examination. 3 of those retained for three months passed satisfactorily, 1 failed. During the half-year, 77 acting leading stokers completed the full course of three months' instruction in classes averaging 26 in number. Of these, 13 qualified for mechanician candidate, 63 for stoker petty officer, 13 failed.'
- 1908. From Sea. Good reports were received from all ships at sea in which mechanicians were borne and no record can be found of any complaints or adverse criticism.
- 1910. An analysis of reports on mechanicians, received from sea in 1910, gave the following figures :—Of 184 reports received, 177 were ' Very Good ' or ' Very Good Indeed ', 7 were ' Good ' and 92 of the men were so good that they were recommended for warrant officer although not half of these had the necessary minimum period of 5 years' qualifying service. These reports were made by the Engineer Officers of the ships under whom the men were serving and despite the usual ' failure stories ' which grow out of any new system, investigation revealed that, not only were they untrue, but that in the space of the first five years of mechanicians being sent to ships, only one mishap of any importance in any way due to them, was known to happen. Experience of other ratings was certainly not more favourable.

POST WORLD WAR I 1918-1939

Training Restarts (1918)

In 1918 training was restarted at Chatham on the pre-war syllabus, but initially, a one-year course was arranged to enable those whose training had been cut short at the outbreak of war to complete their training. In 1919 the full two-years course was resumed, but the six-weeks steaming experience was eliminated.

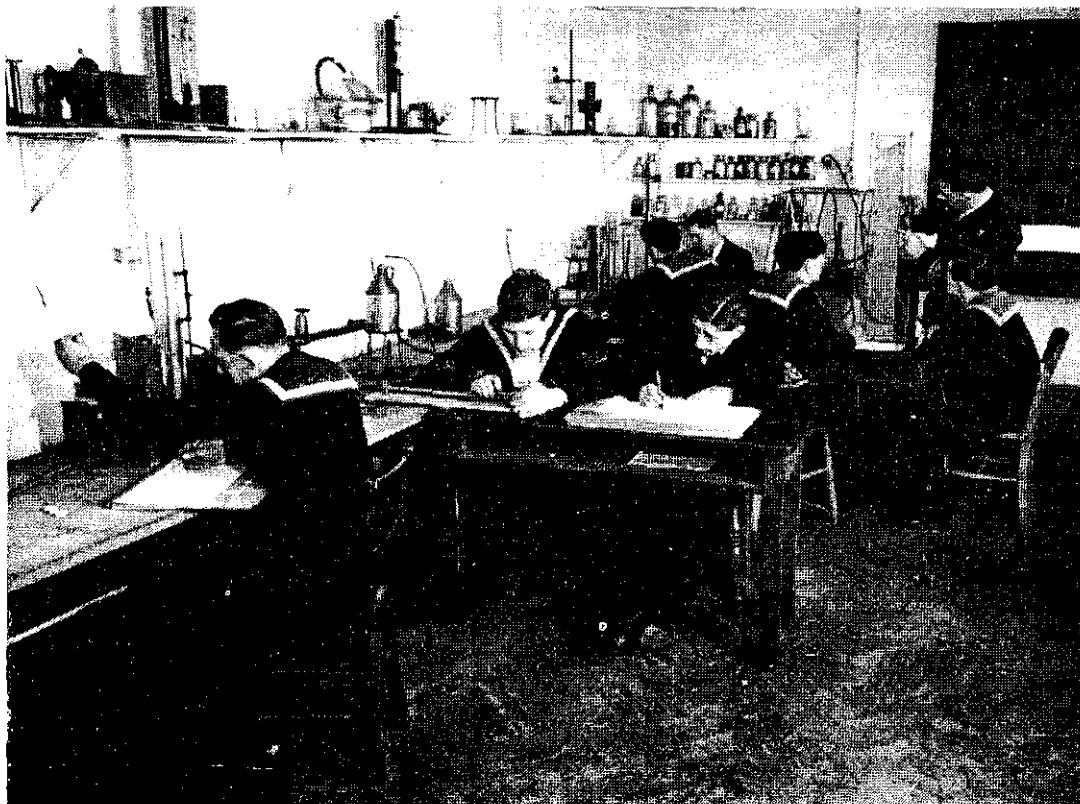
Because the training of mechanics was stopped during World War I, it became necessary in the post-war years to train large numbers of 'sea candidates' to bring the complement of mechanics borne in the fleet up to the allowed strength of 1,350. By 1924, this leeway had been made up and the majority of candidates were then selected from the Leading Stokers Course, as formerly.

Creation of Rate of Chief Mechanician

Early in 1918, a paper was started by the then Engineer Captain for Personnel Duties on the Staff of the Second Sea Lord to create a new rate of 'chief mechanic'. The argument put forward was that the avenue for advancement for stoker ratings to warrant and commissioned rank was through the rate of mechanic and since these mechanics who had not been promoted were rapidly increasing their seniority, it seemed only fair that some form of senior rate of mechanic should be introduced. This would provide a link between the existing rating of mechanic and warrant rank similar to that in the case of artificers. It would also provide a means of advancement and reward to senior mechanics not selected for warrant rank. Two rates of chief mechanic were suggested, 'first class' to be after six years service in the lower rating of chief mechanic 'second class'. The rate of pay suggested was 7/6d. and 7/- a day respectively, and it was proposed to limit the number of chief mechanics to 100. The Civil Branch of the Admiralty dealing with this matter did not react very favourably at first, as they could not see any real reason for the creation of a new rate and it was not considered that the case was strong enough to submit to the Treasury. It appeared to them that the argument put forward that it would be designed to bring the mechanic class into line with engine room artificers was fallacious, as it was observed that service in two classes was given under different conditions. The matter was, therefore, referred back to the Engineer Captain Personnel Duties. This officer returned to the attack with the very sound argument that not only had the value of the mechanic far exceeded the expectation when the rating was first introduced but, by Admiralty Weekly Order No. 172 of 1918, mechanics were called upon to obtain a Charge of Machinery Certificate in the same way as Chief and E.R.As., before promotion to warrant rank. Thus, if the new rating was introduced, mechanics could be drafted to large ships or to small vessels for charge of the machinery, in place of C.E.R.As. The result of this minute was a completely different reaction from the Civil Branches, who stated that on these grounds the argument was a just one and approval was given by an Order in Council in July, 1918, and the information passed to the Fleet at the same time. The total numbers to be borne was to be 33 for each Port Division and the order stated that chief mechanics would rank and take seniority with chief engine room artificers and would be drafted to ships in lieu of them. This was indeed a big step forward for the branch.

Extension of the Mate (E) Scheme to the Stoker Branch

The announcement the following month, of the extension of the mate (E)



THE PHYSICS LABORATORY

scheme to the Stoker Branch gave even greater encouragement. Under this arrangement, the promotion of selected warrant mechanics and mechanics to the rank of mate (E), and subsequently to higher rank, could be made under the same conditions as applied already to artificer engineers, chief engine room artificers and engine room artificers. However, the upper age limit of promotion to mate (E) was 30, and it was practically impossible for a stoker to become a mate (E) because of the time it was taking, then, to become a mechanic. In the remaining months of World War I, that is to say with the introduction of this scheme, the upper age limit was extended and one warrant mechanic was, in fact, specially promoted to acting mate (E) although over 33 years of age at the time. It soon became evident that this newly opened avenue of advancement was unlikely to produce results unless the regulations concerning the age limit were modified. This was proposed by the Engineer Captain (Personnel) and finally accepted by Their Lordships, and the new regulations made it possible for a young and exceptionally intelligent stoker to attain the rate of acting mechanic at about the age of 24 years 6 months. He thus became eligible for recommendation for mate (E) at 26 years and 6 months. This year of 1918 also marked a further encouragement to the Branch by instituting equal pay for warrant mechanics and warrant engineers. Their daily rate of pay, therefore, became 8/6d. There was a storm of protest at the Admiralty decision to introduce the mate (E) Scheme into the Stoker Mechanic Branch. The usual letters from members of Parliament to the First Lord were dealt with firmly but politely by his statement that 'since mechanics had to compete on equal terms with engine room artificers for any vacancies which existed for mate (E), the latter could not reasonably deny to the former the right to rise in their profession'.

Pay

From the time of its inception, the Mechanician Branch had a special rate of pay, which was less than that of the Artificer Branch. The daily rate of pay of a mechanician on confirmation was 4/6d., as opposed to a chief stoker, who was paid 3/6d. ; and after twelve years 6/6d. compared with a chief stoker's 5/6d. This state of affairs continued until 1919 when the Jerram Committee was set up to enquire into and consider improvements for the lower deck, amongst which of course, was pay. There were many requests and suggestions from the Mechanician Branch that mechanicians should be paid a similar allowance of 1/- a day for watchkeeping duties as was granted to E.R.As. This, however, was not approved on the grounds that, whereas the watchkeeping duties of the artificer constituted work additional to the normal duties of the Branch, the mechanician was specially trained in the Service for watchkeeping duties and, therefore, the performance of these could not be regarded as being additional to their ordinary employment. A further attempt was made by the mechanicians, through a committee known as 'Members of the Dockyard and Naval Parliamentary Committee.' This was a request for a shilling a day for their trade qualification and a further shilling a day when in possession of a charge certificate. In support of this claim it was pointed out that the mechanicians were doing practically the same work as E.R.As., but receiving less pay, and that mechanicians served two years as a stoker petty officer at sea under training and then two years at a trade course before being allowed to sit the examination for mechanician. In the case of the E.R.A. the reverse applied. A further point which was mentioned was that the Amalgamated Society of Engineers considered that watchkeeping was one of the primary duties of a marine engineer. However, these requests bore no fruit and were turned down for much the same reasons as those given at the previous attempt of the Jerram Committee. No alterations to the pay or status of the mechanician took place again until 1927. One request which was made to the Jerram Committee was granted and this was for the issue of a trade certificate to mechanicians to assist them in finding suitable employment on leaving the Service. This certificate, however, did not carry any allowance.

1926 -Another Move

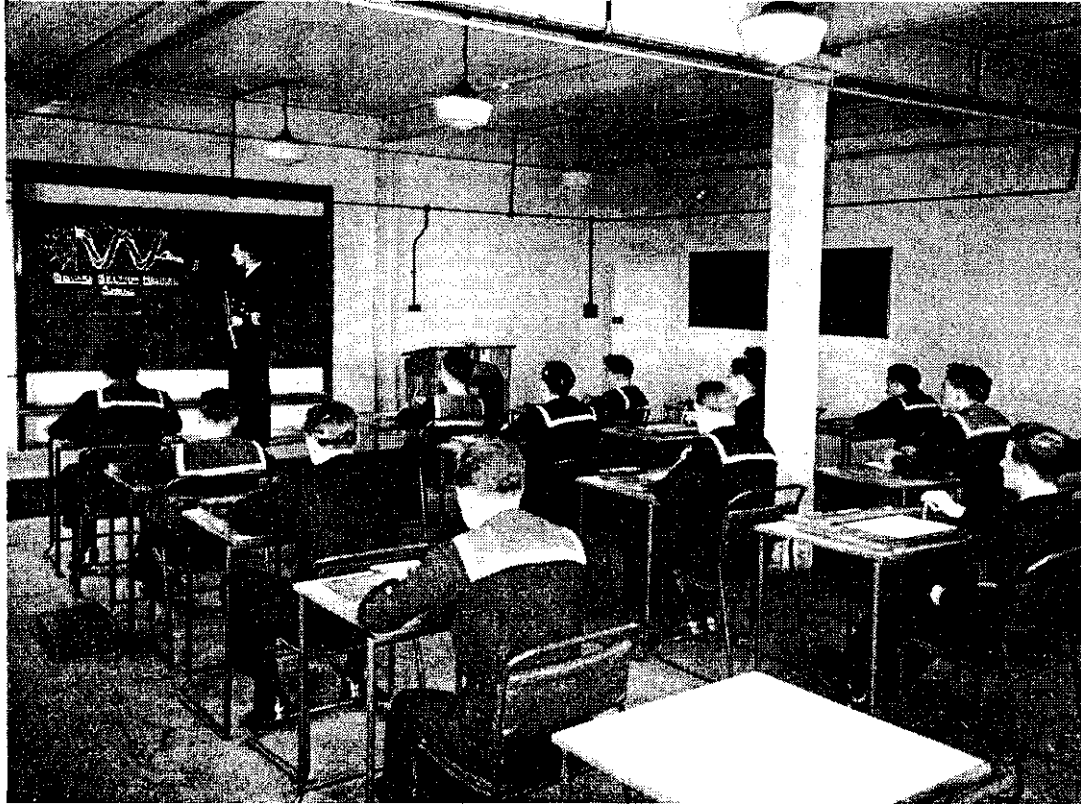
In June, 1926, the Training Establishment for Mechanicians was once more moved back to Devonport.

Reorganization and Change of Status of the Mechanician Branch—1927

There was another big move forward in the Mechanician Branch in 1927. By an Order in Council dated November of that year, the rank of mechanician was abolished, those in existence at the time becoming known as mechanician (O.S.), and the ratings mechanician first class and mechanician second class introduced, the status of mechanician second class being that of petty officer and of mechanician first class, chief petty officer. The object of this change in status was to bring the Mechanician Branch into line with the Artificer Branch. The rate of chief mechanician remained as it was.

Difficulty in Obtaining Candidates for Warrant Rank

From 1926 until the early 'thirties, considerable difficulties were experienced in finding candidates to sit the examination for warrant rank and in fact no promotions were made between 1926 and 1933. It is impossible to discover the reason for this lack of interest, though it may well be possible that the larger number of sea candidates trained between 1919 and 1924, was an important



MECHANICAL DRAWING INSTRUCTION

contributory factor, since many of these candidates were over 30 years of age when starting the mechanics course. Several articles appeared in the early 'thirties in the Press criticizing, not only the alleged failure of the mechanician scheme in reaching its objective of providing the stoker with a reasonable outlet for his ambitions in the shape of promotion to warrant rank, but the mechanician scheme as a whole. One of the arguments put forward by these writers in supporting their claim for its failure was the fact that the strongest arguments in favour of the scheme originally had been that these men could be trained to perform watchkeeping duties in seagoing ships, thus releasing the artificers for repair work, and that the mechanicians would become eligible to enter for warrant rank, opening an avenue for the stoker to rise from the lower deck. Experience had shown that these arguments were not well founded and that at the time of writing it was understood by these authors that the watchkeeping duty was still usually carried out by artificers and, in many instances, the mechanicians were employed on boiler-room watchkeeping in place of a chief stoker. Like so many stories that appeared in newspapers and periodicals, there was a grain of truth in the facts stated, since, even today, there is a tendency at sea to misuse mechanicians. This is due in the main to lack of knowledge of their method of training, their qualifications and still, to a certain extent, prejudice. Another argument used by these writers of the early 'thirties to indicate the failure of the scheme was that, between 1926 and the time that they were writing, there had been no mechanicians qualifying for warrant rank. All writers were agreed that an avenue of promotion to officer rank was needed in the Stoker Branch, and one writer concluded that official enthusiasm for the mechanician scheme had gradually waned, perhaps accounting for the continued limited numbers, and the duties on which they were most usually employed.

In 1934, the Admiralty, in their efforts to encourage mechanicians to sit for warrant rank, instituted regulations which laid down that 10 per cent of the

vacancies for warrant rank in the Engineering Branch could be held for mechanic candidates. This well intended regulation, far from having the desired effect, caused much dissatisfaction particularly in the Mechanician Branch. The mechanic, quite naturally, felt that he wanted to become a warrant officer in fully open competition with an E.R.A. In the Engine Room Artificer Branch also there was quite naturally much resentment. It is of interest to note that this rule has very rarely been invoked in the twenty years of its existence.

First Official Sanction of Interchangeability of Engine Room Artificers and Mechanicians—1935

In 1935, an Admiralty Order was published permitting mechanics to be drafted to cruisers and above in lieu of engine room artificers. The order stated that this substitution was only to apply to E.R.As. not above third class and that the numbers should be limited to one in cruisers and two in battleships and battlecruisers.

WORLD WAR II

Method of Training

In November, 1939, the training of mechanics was once more moved back to Chatham and the training period was reduced during the period of the war to eighteen months, with a further move back to Devonport in 1940, where it remained until September, 1947.

Method of Selection—1940

In 1940 a big change was made in the method of selecting candidates for the course. It was decided to abolish the sea service qualification as acting petty officer stoker mechanic which had been in force since 1918 and in future to take candidates direct from the Leading Stokers Mechanical Training Course. This new scheme, announced by Admiralty Fleet Order 2179/1940, was stated to have the following advantages :---

- (a) Mechanician candidates would be younger and would benefit from their longer service in the mechanician rating.
- (b) The three months Leading Stokers Course gave a man confidence in the uses of his tools and familiarized him with scholastic work. If he proceeded direct to the Mechanicians Course, these attributes would be retained, whereas the interruption of sea service involved, to some extent, his starting again.
- (c) The pool of acting petty officer stoker mechanics who were provisionally selected candidates then existing, would cease to exist and would clear a choked roster and enable the advancement of the leading stoker to be more regular.
- (d) The younger age of mechanics would give them a better chance to become warrant mechanics.

It is of interest to note here that advantages (a), (b) and (d) are still relevant today, although, as will be seen further on, many of the 'Old School' still oppose the idea of an 'early start' on the Mechanicians Course.

Consequent upon the introduction of this new method of selection, the 'sea candidate' or 'sea recommend' was abolished.

THE MECHANICIAN OF POST WORLD WAR II

Policy

The mechanician had shown his value and ability throughout the war. Many chief mechanicians were 'Chiefs' of corvettes and other small ships and many were promoted to temporary warrant mechanicians and became the Engineer Officers of frigates and other craft of that size. Whatever the original fears that the mechanician scheme meant a lowering of standards, the mechanician had proved his worth in World War II. The early post World War II policy, therefore, of the Engineer-in-Chief was to increase the bearing of mechanicians, develop measures to ensure their early selection and entry to the course, improve their training, including lengthening the course to 2½ years, and generally render them able to be interchangeable with artificers in the complement of all ships. With this object in view, Their Lordships decided in 1948 that the number to be trained annually was to be 160. Unfortunately, considerable difficulty was met in the first few years after the introduction of this new regulation in finding sufficient suitable candidates. It was found impracticable to increase the length of the course because of manning difficulties. The numbers of mechanicians laid down by the planners since the inception of the scheme, has never been related to the annual intake in the Stoker Mechanic Branch. Thus there is no guarantee that any set annual number of candidates can be met by a given entry, since the minimum entry standard of mental and educational ability for engineering mechanic is well below that required for mechanician candidate. Analysis has shown, however, that over the past few years there has been a fairly steady maximum percentage of the annual intake possessing the necessary standard of mental and educational ability, in fact, a sufficiently high percentage to provide competition. However, numbers have steadily increased and the target figure of 80 per half year was reached in 1954, largely due to the Specially Selected (Stoker) Scheme introduced after the war. The present policy for numbers is to take a percentage of the annual intake, as is done in the Air Branch, and this will gradually reduce the annual intake to the Mechanicians Course to 90 candidates. A higher standard should be achieved, since there will be a wider range for selection. This is considered most important because the days of the mechanician being largely the operator and only partly the maintainer have passed into history. Today one finds, in a large ship, a proportion of the chief 'skilled rates' are chief mechanicians, and so on down the scale, and it is vital that in addition to giving the mechanician a first-class training the initial selections should be made only from those who are well fitted to stand the strain of the course and benefit by it.

Introduction of the Rate of Mechanician III—1948

As a result of the introduction of the new pay code and the unit certificate, which was a qualification for promotion of engine room artificer IV to engine room artificer III, a new rate of mechanician III was created in 1948. This kept the mechanician in line with the new regulations for advancement of artificers. On qualifying at the completion of the Mechanicians Course a candidate now became rated mechanician III instead of mechanician II and was thus on a par with an engine room artificer acting 4th class. The time qualification for rating to chief mechanician remained, but the obtaining of a unit certificate was necessary for advancement from mechanician II to mechanician I. These conditions remain in force today.

It is of interest to note also that with the introduction of these new regulations, the Mechanician Branch was recognized as being of similar status to that of Artificer in that the lowest rating to which a mechanician could be disrated was changed from stoker I to mechanician III.

Drafting and Accommodation of Mechanics

In 1948 several points were clarified about the drafting and accommodation of mechanics, which had for long been in doubt. Unfortunately, so many regulations need to be amended when policies affecting such matters are changed, that it does not always happen that every relevant regulation is brought into line at the same time.

The drafting policy for small ships was laid down in A.F.O. 2405/48, which stated that for destroyers and below, including submarines, with complements of four or more chief and engine room artificers, one engine room artificer was to be replaced by one mechanic ; with the following provisos :—

- (a) In all cases mechanics drafted to these ships were to be in possession of a Unit Watchkeeping Certificate (or Engine Room Watchkeeping Certificate under the old regulations).
- (b) Chief mechanics were not permitted to be drafted in lieu of Mechanics.

Ships' schemes of complement show separate numbers of E.R.As. and mechanics, in order to provide a planned total for each Branch to facilitate entry and training. It is not possible to match these planned figures, however, with day-to-day availability, and the drafting regulations allow for alternative drafting. The planned total for mechanics is a compromise between getting the fullest possible benefit out of the scheme and yet not taking too many good petty officers out of the Branch.

Admiralty guidance was also given at this time concerning the drafting of Mechanics III. They were to be considered as Engine Room Artificers V and whenever the manning situation permitted, they were to be drafted as supernumary for training.

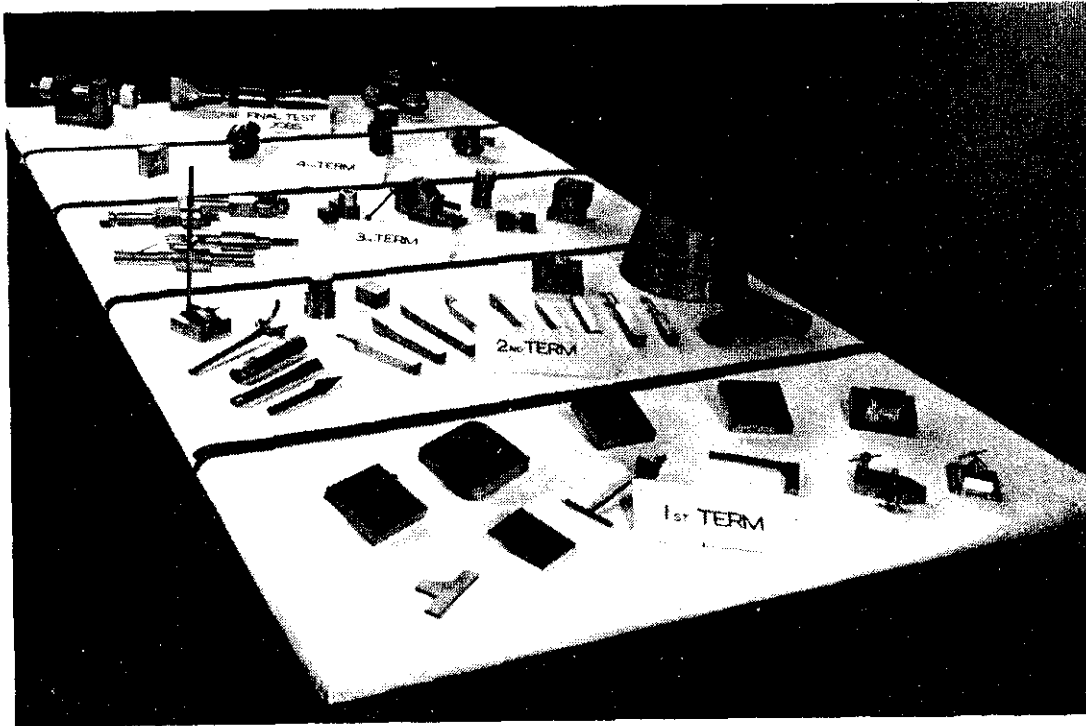
The accommodation of mechanics has always presented a considerable problem, for the Branch itself has grown steadily over fifty years but, basically, there has been no change in its accommodation. Being originally, primarily, watchkeepers it was laid down that they should be messed with the chief stokers, since the original ideas in 1903 included the possibility of cutting the numbers of chief stokers borne according to the number of mechanics carried. By 1948, however, the number of mechanics carried was out of all proportion to that of the chief stokers whose numbers had decreased little. A.F.O. 737/48 stated that, in view of this accommodation difficulty in large ships, mechanics who could not be accommodated were to be messed in the artificer's mess, and in small ships all mechanics were to be accommodated in the artificer's mess. It further stated that mechanics displaced from the chief stokers' messes in large ships should be the junior mechanics, since they would still be under training and therefore have much in common with the junior artificers, also under training. K.R. & A.J. was amended at that time, but the reference made to small ships was not inserted and is not included in the present Q.R. & A.J. article 1442. The reason for this cannot be discovered, but in any case it is the rule at sea today that mechanics in such ships, mess with the artificers.

Introduction of the Mechanician into Other Branches of the Service

In 1947 the mechanic was introduced into the Air Branch, and in 1952 into the Electrical Branch. Pay, trade pay, and advancement are similar in all three branches, although the methods of selection and training naturally differ.

Methods of Selection

The method of selection introduced in 1940 remained unaltered until 1950 when the 'sea recommend' was re-introduced. This action was taken because



A SELECTION OF PROGRESSIVE AND FINAL TEST JOBS

the average age of leading stoker mechanics undergoing the Mechanical Training Course tended to decrease and there was the possibility of a 'late developer' not having the chance of consideration for mechanician candidate. The qualifications laid down for a 'sea recommend' remain in force today, i.e. 2 years seagoing service after completing the Mechanical Training Course of which at least one year must have been seagoing service as petty officer (acting and confirmed). Petty officers so recommended must have obtained an aggregate of not less than 70 per cent at the Mechanical Training Course and be recommended by their Commanding Officers as being suitable candidates in all respects for the rating of mechanician.

Until the end of 1953 when it was rescinded, the 'specially selected' leading stoker mechanic, provisionally selected as a mechanician candidate, needed either two years as a leading stoker mechanic (acting and confirmed) or acting petty officer, before he could be finally selected.

In 1954, after considerable discussion, it was decided to lower the qualifying percentage for provisional selection by the Mechanical Training Establishment to about 70 per cent aggregate in the final Mechanical Training Course examination with not less than 60 per cent in any one subject. This was designed to enable a much wider range of candidates to be provisionally selected. Before this a provisional recommendation necessitated obtaining 80 per cent. This decision was based on the accepted fact that during the three months of the Mechanical Training Course men who possess the mental ability to compete with the Mechanicians Course become 'mentally in training' and it is preferable to get the mechanician candidates on to the two years' course as quickly as possible after the Mechanical Training Course. In other words the 'sea recommend' should be the exception rather than the rule. There are, of course, many who do not agree with this idea because the leading engineering mechanic today arrives at the Mechanical Training Course with very little operating experience. While this is true, experience has shown at the Mechanical Training and Repair Establishment that the best mechanician, on an overall

consideration, was invariably a candidate who passed quickly from course to course. With this new regulation, therefore, the 'sea recommend' became a rarity since all suitable men who achieve the qualifying percentage are provisionally selected, leaving only those who have not achieved 60 per cent in every subject. It is possible, however, owing to competition (and this competition varies considerably from time to time) that a suitable candidate may not be finally selected. Such a rating can, therefore, still be given a 'sea recommend' by the Engineer Officer of a ship if he considers that the man in question is outstanding. It should be realized however that, with the present system of provisional and final selection, this event is likely to be rare, though the door is still open. Briefly, the system consists of measuring, by examination and observation from the moment a man arrives for the Mechanical Training Course, his suitability for training in the trade of fitting and turning, in marine engineering, and in scholastic subjects. Those leading mechanics (E) who qualify for consideration as a result of examinations and observation are interviewed by a Board at the Mechanical Training Establishment where they are finally assessed, their suitability is checked, and an order of merit arrived at. About six weeks before the start of each Mechanics Course in July and January, Form B.37 is raised by the Officer-in-Charge of each Mechanical Training Establishment and sent to the ship or establishment where the rating concerned is serving. Provided the man's Commanding Officer has no reason for not recommending him, he is medically examined and asked to state on the form whether, should he be selected, he would be willing to re-engage either to complete 12 years if on a Special Service Engagement, or to complete time for pension if on a Continuous Service Engagement with less than four years to serve from the commencement of the Mechanics Course. These forms are then returned to the Mechanical Training Establishments who send a list of those recommended to the Admiralty where the final selection is made. Final 'signing on' does not take place until the class is assembled at the Mechanical Training and Repair Establishment, Portsmouth.

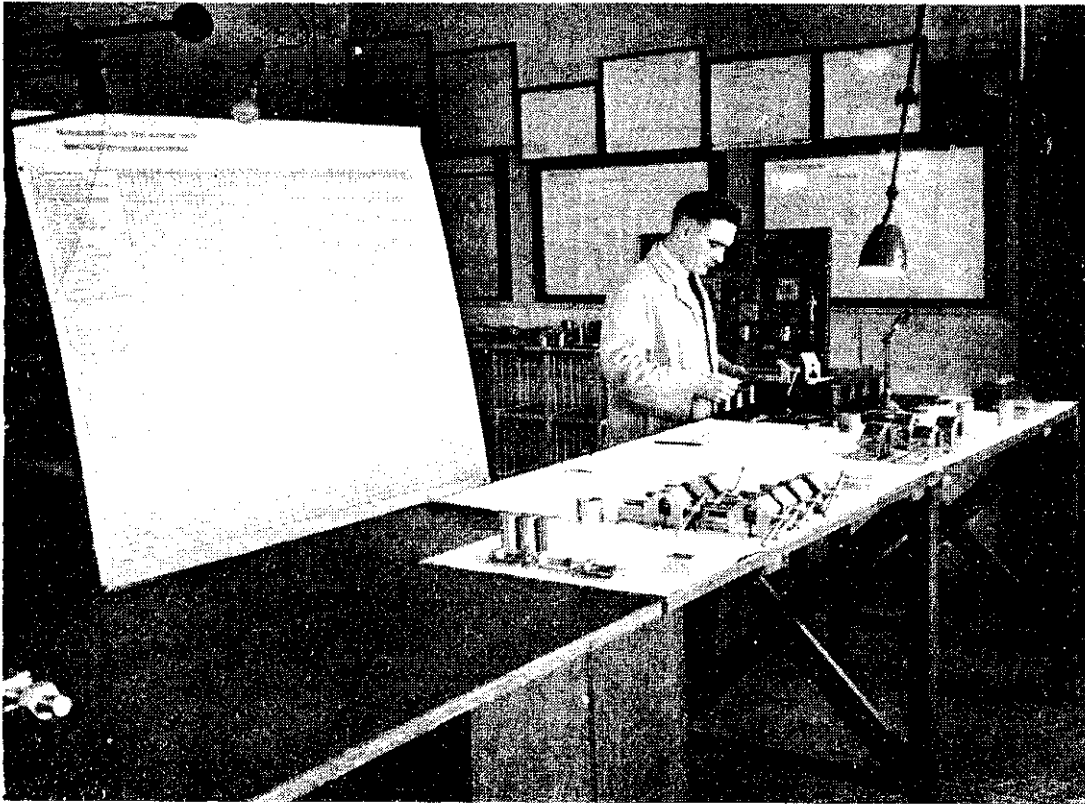
Move to Portsmouth—1947-48

In 1947 another move was made, this time to an entirely different port—Portsmouth—where training was accommodated in the new buildings of the Mechanical Training and Repair Establishment, and in January, 1949, the full training period of two years was re-introduced.

Method of Training

At the beginning of the course at the Mechanical Training and Repair Establishment, Portsmouth, the candidates are divided into alpha and beta groups, according to their scholastic ability. These groups are flexible and permit a man to be moved from either alpha to beta, or vice versa, during the two years on course. The two group system enables those who are able to assimilate knowledge more quickly to be given a somewhat more detailed training, and therefore acquire better qualifications for competing either as upper yardmen candidates or for promotion to commissioned mechanician.

In marine engineering the syllabus, like that of the artificer apprentice, covers the notes contained in B.R.2207(1952) and the scholastic syllabus is composed to bring the mechanician candidate as nearly as possible to the same standard as the artificer apprentice. Though the practical training in fitting and turning is shorter than the time spent on it by artificer apprentices, the trade tests are comparable and it is intended in the future that both shall take the same. At present, no direct comparison is possible. There has always been considerable discussion concerning the ability to teach the trade of fitting and turning in



MARKING PROGRESSIVE TEST JOBS

the two years spent by a mechanic at the Mechanical Training and Repair Establishment, on the grounds that a normal apprenticeship in industry takes five years and the artificer apprentice spends four years at his training establishment. Considerable research in the methods of training in industry reveals that it is commonly accepted that a year is sufficient to teach the basic art of a trade, while the remaining period of the five-years apprenticeship is spent applying the basic art to practice, the tendency being for a tradesman to specialize in one particular section of the art which he has learnt. Those firms who have realized in recent years that, with the present design of modern high-power machinery, it is necessary to have properly trained tradesmen employed on its construction, have developed systems of training based very much on Service lines, as we know them, a progressive scheme of practice jobs. However, in no case does this teaching period of the training appear to exceed one year. Experience afloat has indicated that there is a gap between the mastering of the art of fitting and turning and its application to the maintenance and repair of modern machinery. Once the basic art has been mastered it is practice and experience in the application of the art which produces the best craftsman. In order to bridge this gap the method of progressive craft training has been reviewed, in the light of the experience from industry referred to above, and is now being made more effective within the same overall time in order to fit in a 'Maintenance Training Course'. This is another way in which the Navy and Industry, each with their own needs, learn from each other and it demonstrates the necessity to keep in touch at all times. This course is designed to instruct the mechanic in the important fundamentals of the maintenance of modern turbine machinery and to enable him to apply the art that he has learnt on the bench and machine tool to the practice of maintenance. The syllabus for this course has been carefully worked out and guarantees that each mechanic carries out certain set maintenance tasks. As can be imagined the

major obstruction for the satisfactory working of any such scheme is the availability of suitable machinery which is not only sited in realistic positions but also requires refitting. The solution has been found in making use of the Reserve Fleet living ships which are able to produce such machinery and, furthermore, enable much of the machinery refitted to run trials on completion. Incorporated in this Maintenance Training Course are the principles of planned maintenance, together with accurate and careful recording of the state of machinery and other facts that need recording, if planned maintenance is to be developed to its logical conclusion. At present there is not sufficient time available for mechanic candidates to manufacture the spare parts needed when refitting machinery, but it is hoped to be able to incorporate this when more experience has been obtained with the course. The syllabus for this Maintenance Training Course is as follows :-

Machinery Dealt With

<i>Turbo Driven</i>	<i>Motor Driven</i>	<i>Miscellaneous</i>
F. and B. pumps	F. and B. pumps	Heat exchangers
Extraction pumps	Extraction pumps	F.F.O. heaters
Evaporator combined pumps	Feed water transfer pumps	Distiller condensers
Forced lub. pumps	L.P. air compressors	Drain coolers
Feed pumps	Snorer pumps	Feed heaters
Generators—combined pumps		Main condensers
		Reciprocating feed pumps

Each candidate is given maintenance training on two of the above machines and spends an average of 50 hours on each, the actual time being dependent upon the complexity of the machine and the amount of refitting work involved. This time also includes lectures on the approach to planned maintenance and methods of attack.

The two year course is divided into four terms known as A, B, C, and D classes. The Mechanical Training and Repair Establishment is, unfortunately, not a residential establishment and is therefore unable to offer the extra curriculum activities available at the other Engine Room Department Training Establishments. However, these limitations will be removed when the transfer to H.M.S. *Siskin*, which is dealt with later, takes place.

Nevertheless, a remarkable *esprit de corps* has developed. Many successes in sporting events have been achieved in recent years. Association football, cricket and water polo teams compete in their respective leagues independently of the Royal Naval Barrack's teams and fulfil many outside fixtures, while notable cross-country placings and times have been recorded. Sailing has proved particularly popular. Fortunately this latter activity has been much assisted by the fact that one of the few amenities that is possessed by the Mechanical Training and Repair Establishment is a well-built jetty and slip. Even weight lifting and competitive cycling have their followers. Great pride is taken in the frequent praise given by senior visiting Inspecting Officers to the high standard of parade work by the Mechanics' Divisions. On the social side their dances have become a feature of Portsmouth life. But it is important to realize that these men are responsible adults many of whom have re-engaged and are determined to make the most of the course and the opportunity it, and the two years' stable life it entails, afford. The fact that many are married and have family responsibilities constitutes an additional spur. However, many have been away from school for anything up to ten years and it is therefore necessary for them to spend up to four evenings a week in extra instruction,

either in the lecture room or in the factory. In addition, a large proportion of those not placed on the extra study list spend much of their spare time in private study, some, who nominally live in barracks, even going to the extent of hiring rooms ashore to be able to pursue their work in peace and quiet.

Nor is this evening work limited to the immediate goal of success in the Mechanics Course. A few take either Forces Correspondence Courses or classes at the Portsmouth College of Technology towards the ordinary National Certificates in mechanical engineering, but a most noteworthy feature has been the response to facilities for preparing for those Higher Educational Test subjects which are required for advancement. Before October, 1953, those wishing to take this examination were catered for in the Royal Naval Barracks. Since that date the M.T. and R.E. has become an independent examination centre with the results shown in the following table :—

**Analysis of Higher Educational Test Results since M.T. and R.E. was
Established as an Independent Examination Centre**

	<i>October</i> 1953	<i>March</i> 1954	<i>October</i> 1954	<i>March</i> 1955
Mechanicians on Course ..	240	250	246	247
Candidates	96	81	124	121
Papers Taken	247	231	328	287
Total Passes	157	153	199	217
Distinctions	41	56	42	62
H.E.T. Certificates Awarded (Minimum Qualification Pass in Four Subjects) ..	18	11	18	27
Qualified Educationally for Branch Rank	18	9	17	21

In such a concentrated course it is almost impossible to make time available during working hours for those parts of a complete training which, although no less highly desirable, are not immediately directed towards the overriding requirement of qualification. Nevertheless, one hour a week is devoted to some form of instruction in current affairs in the establishment, of which the mechanician candidates' share is provided by a lecturer from Southampton University on each alternate Saturday forenoon. Padre's Hour takes place once a fortnight, is conducted on an undenominational basis, and voluntary attendance is limited only by accommodation, the average number being in excess of 80.

At the end of each A, B and C terms local examinations are set in all subjects and a trade test is carried out. On completion of these examinations and tests a conference is held to discuss any candidates whose ability does not appear to be measuring up to the desired standard. The passing out standard of the mechanician has been maintained at a steady high figure ever since the inception of the scheme. Any candidate who, after being given a reasonable chance, is unable to compete with the course, is returned to the Fleet but retains his petty officer rate. In the final term the examinations are set by the Admiralty. The trade test for the final examination is supervised and marked by a special team which is appointed to the establishment for the period of the trade test. Mechanicians are awarded accelerated advancement up to as much as 26 weeks on the results of the trade tests and Admiralty examinations. Recently a prize-giving ceremony has been instituted which takes place after the Admiralty

examination results are published and each qualified mechanician is presented with his certificate and rated mechanician III, and the fortunate ones presented with their prizes. These prizes were instituted in 1949 and are given for Practical, Technical and School Work. In addition to the Admiralty prizes, Captain C. M. Morrell, who was recently in charge of the establishment, has presented a 'Morrell' Trophy which is awarded to the best all-round mechanician candidate. This trophy is a most generous donation and will continue to be presented during Captain Morrell's lifetime. On completion of the two years' course all mechanicians who have qualified are sent to the Petty Officers' School at Corsham and thence to their ships as mechanicians III.

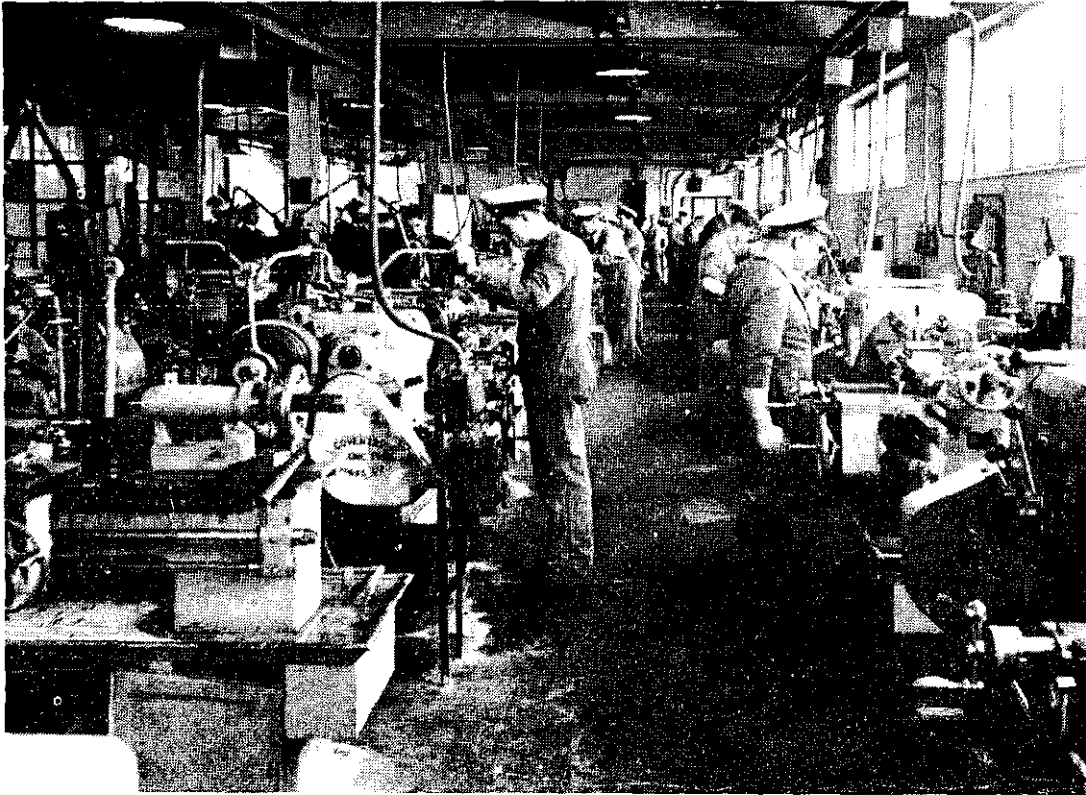
It is at this stage that slight confusion appears to exist concerning their sea training. Owing to the range in seniority of mechanician candidates starting the two-year course, some may already possess a boiler-room certificate. The present regulations specify that for advancement to mechanician 2nd Class, a mechanician III must be recommended by his Engineer Officer that he has proved himself an efficient workman and is deserving of advancement; and that he must pass an examination and obtain a boiler-room certificate. The syllabus for this examination is laid down in Chapter 14 of B.R.1066 (49) and is virtually that for a boiler-room certificate. There is at present, therefore, no clear syllabus of training laid down for the mechanician serving in his first ship after leaving his mechanicians' course, though this is in process of being produced.

Recognition by the Amalgamated Engineering Union

In 1947 the Admiralty made an agreement with the Amalgamated Engineering Union which enabled mechanicians with certain qualifications to join that union. To be qualified for membership he must be a mechanician 1st class with a total of five years' experience at his trade, including training experience, and he could be admitted, as a skilled man, in the following occupations:

- Engine fitter (highly skilled)
- Millwright
- Erector
- Turner (chuck, centre-lathe, faceplate)
- Machine tool fitter

At last it seemed that the final goal in the history of the Mechanician had been reached - his recognition as a skilled tradesman - but alas, in 1950, the Amalgamated Engineering Union, without prior consultation with the Admiralty, informed the Admiralty of its intention to withdraw the recognition previously granted. Strong representations to the union were made by the Admiralty and protracted negotiations took place. The Amalgamated Engineering Union Headquarters recognized that the Admiralty had made a strong case for continuance of recognition and offered to arrange for the matter to be brought up again for consideration by the National Committee of the union. Unfortunately, the decision was passed to the Admiralty: non-recognition to date from 6th June, 1951. In spite of strong pressure by the union that no public statement should be made, Their Lordships decided that there was no alternative but for the Fleet to be informed of the unilateral decision by the union and A.F.O. 2527/53 was in consequence issued. The Admiralty, since that date, have been continuing negotiations with the union, but so far to no avail. Fortunately, H.M. dockyards and many factories are still 'open shop' and welcome mechanicians on their merits. It is to be hoped, therefore, that once again time, and a greater knowledge by the executives of the union, will eventually restore this recognition.



ONE OF THE MACHINE SHOPS

Successes of Mechanics in Examinations for Engineering Officers

In recent years there have been very few attempts by mechanics to sit either the examination for commissioned mechanic or upper yardman (E), but it is of note that in the recent upper yardman (E) examination two out of the successful six candidates were mechanics and it is hoped that this may indicate a renewed interest. The introduction of the new regulation in 1955, which permits engineering personnel to sit a purely educational examination for upper yardman (E) will encourage a greater field of candidates since, as has been said earlier, many candidates in the Mechanics Course pursue higher studies. Several mechanics have in the past achieved their "brass hats", and others seem likely to do so in future years.

THE FUTURE

The requirement for the mechanic to have a self-contained training establishment of his own, under the independent command of his own Captain, has long been felt. Having, as he does at the moment, a somewhat divided loyalty to the establishment where he works and the barracks in which he lives, coupled with marching back and forth the mile and half each day in all weathers, the mechanic under training is not in an enviable position.

Early in 1954, it was announced that H.M.S. *Siskin*, the Naval Air Station at Gosport, was closing down and that this establishment was, therefore, in the "property market". It was fortunate that Captain Morrell, then in charge of the Mechanical Training and Repair Establishment, realized the immense possibilities of this air station as an engineering training establishment and wasted no time in forwarding proposals for taking over H.M.S. *Siskin* as a Mechanical Training Establishment.

Approval has recently been given to this scheme by Their Lordships and it is planned to move the Mechanicians Course and all other engineering training now carried out in Portsmouth, to Gosport in May, 1956. This air station should prove an ideal training establishment. The living accommodation was built to Royal Air Force standards between the two wars and the heated hangars will convert to excellent factory accommodation. For sporting activities there should be little cause for complaint as there are four football pitches, one rugby pitch, two hockey pitches, a concrete wicket and, in the season, two cricket pitches. There is also a gymnasium. In addition, since the airfield will remain only as an emergency landing area it may become the centre of very active model aeroplane flying!

A new ship name has not yet been decided but it would seem appropriate that it should be *Indus*, recalling the ship in which mechanician candidates from the three ports were first brought together for training.

Thus the mechanician of the future should be well provided for as far as a *training establishment is concerned and there remains only the thorny problem* ---when should he start his two years' training? So many factors have to be considered before making this decision that it is fortunate that this article is headed 'The Mechanician 1905 -1955 ', and therefore to the reader the question need only be posed, not answered.
