



SIR STEWART MACTIER, C.B.E., B.A.

SIR STEWART MACTIER, C.B.E., B.A.

Sir Stewart was educated at Magdalene College, Cambridge, where he read Mechanical Sciences. He served ten years of his early business career in the Far East—mostly in Singapore with Mansfield and Co., agents for the Blue Funnel Line and managers of the Straits Steamship Co. During the Second World War he was deputy director and subsequently director of the Port and Transit Control of the Ministry of War Transport. He spent the last year of the war in France as representative of the Minister in N.W. Europe at 21st Army Group and subsequently at S.H.A.E.F.

Sir Stewart was created a Commander of the British Empire in 1946. He is also a Commander of the Order of Maritime Merit (France) and holds the Medal of Victory with Silver Palm (U.S.A.).

He received the honour of Knighthood in 1961 following his year of office as Chairman of the General Council of British Shipping and of the Liverpool Steam Ship Owners' Association.

He is a director of the Ocean Steam Ship Co. Ltd., Liner Holdings, Ltd., and Glen Line Ltd., and his activities in the shipping world include Membership of the Council of the Chamber of British Shipping of the United Kingdom, the Merchant Navy Training Board, the General and Technical Committees of Lloyd's Register of Shipping, the Council of the British Ship Research Association and of the Royal Institution of Naval Architects, the Shipbuilding Advisory Committee of the Board of Trade, and the Shipping Defence Advisory Committee of the Ministry of Defence. He is Chairman of the Engineer Officers' Training Committee of the Shipping Federation.

PRESIDENTIAL ADDRESS

of

SIR STEWART MACTIER, C.B.E., B.A. (Companion)

I should like to preface what I have to say this evening—which tradition has dignified with the rather formidable title of “an address”—by making two points:

Firstly, may I repeat what I said at the Annual General Meeting, namely how much I appreciate the honour you have done me in electing me as your President.

And secondly, I should perhaps give a title to this address. I am a ship-operator by profession and for a good many years I have been closely associated with the training of engineer officers for the Merchant Navy and so this evening I shall be thinking particularly of the future of the profession of sea going engineering in relation both to the economics of ship-operation and to the activities of this Institute. Obviously, nothing I say this evening should be taken as applying to engineering in warships, of which I know nothing.

Now, ship-operators constantly study current and future developments in the economics of sea-borne trade in all its various forms, as also they study the potential of sea-borne trade’s chief competitor, namely the economics of the carriage of passengers and goods by air.

Obviously the future of the marine engineering industries afloat and ashore is bound up with the success or failure of sea-borne trade, and the question which I think we should consider this evening is, firstly, what is the impact of marine engineering in its widest sense on the economics of ship-operation? And, secondly, how can the training and the qualifications of marine engineers, particularly seagoing engineers, contribute to the success or failure of the marine industries?

Perhaps the following statistics, which deal very broadly with the relative importance of various items of a ship-operator’s costs, may give us some guidance in trying to answer the first question:

	Conventional Motor Cargo Liner 21 knots	Tanker 65 000 tons Motor Ship 16 knots	Bulk Carrier 27 000 tons Motor Ship 15 knots
Port Charges and Dues	12·8%	5·1%	13·8%
Fuel	13·4%	25·0%	18·5%
Repairs, Stores, Water	11·4%	6·6%	13·7%
Crew Wages, Expenses and Provisions	20·9%	17·5%	19·3%
Insurance, Administration and Sundries	14·2%	12·6%	9·5%
Depreciation	27·3%	33·2%	25·2%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

NOTE: All ships written off over twenty years. Suez Canal dues where applicable are excluded from the foregoing figures.

On these figures, the following comments may seem appropriate:

- 1) Depreciation is directly related to capital cost, and so to the competence or otherwise of marine engineering in its widest sense. Incidentally “engineering items” in the traditional sense as contrasted with pure “shipbuilding” costs can represent over fifty per cent of the shipowner’s total investment in the case of a fast conventional cargo-liner.
- 2) Fuel and repairs are obviously directly related to engineering, and “stores” in the case of the motor-ship include a formidable figure for lubricating oil.
- 3) Crew costs are also directly related to engineering in so far that they can be reduced in terms of relative importance by increased capital expenditure on what is normally termed “automation”.
- 4) I have excluded cargo expenses from these figures because they distort the figures in any comparison where cargo liners, tankers and bulk carriers are set out together. However, it is worthy of comment that in the case of the conventional cargo-liner, such expenses often amount to over thirty per cent of total disbursements and present a real challenge to engineering skills both in conventional ships in the form of labour-saving devices such as power-operated hatch covers and modern cargo gear, and even more so in the development of the various forms of unit loaders.

As to the second point, that is the training and qualifications of the marine engineer, obviously the first thing I have to do is to define what I mean by marine engineering. There is, of course, the seagoing marine engineer, but how do we define the marine engineer ashore? Traditionally he has been a builder of main propulsion units or an installer of machinery in a shipyard. In the modern world, I suggest that this is much too narrow a definition.

In the first place, shipbuilding as an industrial process is merely a specialized form of the science which in industry generally today is defined as “production engineering”.

Secondly, in the modern ship, there is a vast cost area of sub-contract items which may even include the main propulsion unit and which does not come within the traditional definition of marine engineering. That this should be so is, I think, inevitable. In the modern world the off-take of specialized marine machinery is relatively small and so the components required in ships’ engineering, if they are to be economic, must come off the production lines of general engineering. However, let there be no misunderstanding over this—conditions at sea call for special standards of design and construction and a real

Presidential Address

practical knowledge of seagoing conditions. I merely suggest that today marine engineering is not a narrow-based specialized science. It is a profession which covers everything from heavy structural and mechanical engineering to the pneumatic hydraulic and electronic equipment associated with what to-day is vaguely defined as "automation".

I realize that such a wide definition of marine engineering may seem to involve an improper disregard for time-honoured professional demarcation. This is certainly not my intention. But, as an outside observer, I am merely trying to define the scope of what I think should be described as the marine industries afloat and ashore, and incidentally, to indicate something of the prospects which exist for a young man who elects to make a career in the science which I have tried to define as marine engineering.

Now if you accept my definition of marine engineering, or indeed if you do not, the question must be answered as to what should be the basic education and training of the marine engineer of the future? And, as a point of departure, I believe that nothing is more important than seagoing experience coupled with a period of formal education.

In the modern world—that is anyway in the affluent society of the West—only a very limited number of men elect to make seagoing a lifelong career. In the British Merchant Navy, for instance, the average annual loss of engineer officers from the sea is about twenty per cent of all serving officers. This is a fact of modern life, and I suggest that British ship-operators would face such a drain of experience and knowledge from our industry with equanimity, and indeed could almost welcome it, if we felt that the experience and the knowledge acquired at sea was going back into what I have defined as marine engineering ashore. Unfortunately, this only happens to a very limited extent, and though I can quote no statistics from our industry, I am fairly confident in saying that a very high proportion of ex-seafaring engineer officers who come ashore are completely lost to the shore-based marine industries.

This situation is most unfortunate because I am sure that most of us, who in one capacity or another are responsible for ship and engine building and subsequent operation, are agreed that it would be infinitely to the advantage of all the marine industries in this country if more use could be made of the great wealth of practical seagoing experience now ashore in this country in every aspect of design and development of ships, their main engines and their innumerable and complex auxiliaries. What, then, is the reason for this lack of cross-fertilization between the marine industries ashore and afloat?

Firstly—in this country at least—I think that ship-operators and ship and engine builders have in the past failed to realize their interdependence. Ship-operators have failed to realize that if they did not feed back operating results to the marine industries ashore, they could hardly expect to get a better job next time. Many shipbuilders—and here I speak frankly—have tended to show a degree of disinterest in the operating results of a new ship safely delivered which could only be accounted for on the assumption that any data fed back could prejudice their position in relation to the guarantee clause of the shipbuilding contract.

That attitude of mind in this country is, I hope and believe, a thing of the past, in no small degree due to the activities of the re-constituted B.S.R.A. But the point is this—if the ship-operators and the marine industries ashore have had so little mutual interest at top level in the results of their mutual activities in service, is it surprising, that the shore-based marine industries have tended to take little interest in obtaining the services of the many first-class men available with practical seagoing experience who every year leave the sea?

Of course that is not the whole story—obviously for an engineering firm in the marine field to interpolate a 32 year old married man, even with his First Class Certificate, must involve difficult human and industrial problems, the more so because the traditionally trained engineer officer falls into the classification of a technician and not of a technologist. The Board of Trade's attitude to the basic qualifications necessary

to obtain Certificates of Competence is that the young officer must be a craftsman, his educational qualifications being secondary. Under the so-called Alternative Scheme of Engineer Officer entry into the British Merchant Navy, this situation is to some extent, at least potentially, improved, but the problem remains as to how the seagoing engineer can achieve graduate status, and so the status of a technologist, corporate membership of this Institute, and that of a Chartered Engineer.

It must be admitted that the young engineer cadet may be at a disadvantage, so far as achieving chartered engineer status is concerned, because he has probably left school without any "A" levels, and it is important that some educational channel should be found to enable the bright young engineer to overcome this initial disadvantage. This is of vital concern to the Institute of Marine Engineers and I am pleased to see that the Institute's Education and Training Committee is studying the problem to determine whether an educational course can be provided which will enable the young man to take the examination of the Council of Engineering Institutions, and thus qualify as a chartered engineer, during his training and sea service.

By way of personal comment I suppose that the first question we must ask ourselves is can we expect the shipowner to encourage the bright young engineer officer or engineer cadet to achieve graduate status? I am afraid it is a fact that over the past twenty years the chronic shortage of seagoing engineer officers in the British Merchant Navy has caused many shipowners almost to favour lower technical ability at sea on the ground that any exceptionally bright young man would be bound to leave them as soon as he became a useful member of their sea staff. I think myself that of necessity this attitude will change. The trend in all forms of sea-transport towards large, fast, highly capitalized and highly automated ships with a very quick turn-round in port and much reduced manning, will call for more highly qualified engineer officers. There will be little maintenance at sea and machinery failures will tend to be dealt with by fitting spare parts rather than by carrying out a repair in the traditional sense. As I see it then the successful operation of ships in the future will call for a much reduced number of engineer officers with real knowledge of a wide range of sophisticated machinery rather than comparatively big engine room staffs with great skill as craftsmen.

If this assessment is correct, ship-operators will, to an increasing extent, try to recruit engineer officers from heavy industry with a minimum of a higher national certificate standard of education or young men trained under the Alternative Scheme—that is men of potential graduate standard. But will the ship-operator be any more willing than at present to encourage the promising young man to go ashore for three to four years to get his B.Sc., especially if he has spent over £2000 of his shareholders' money getting the young officer through his cadetship? Further, will it be any more likely than in the past that the newly-fledged graduate in marine engineering, if he leaves the sea, will join the marine industry ashore?

A possible solution—and may I stress that this is a purely personal thought—is the equivalent, as far as time at sea is concerned, of a Short Term Commission in the Forces. Individual shipping companies or the Shipping Federation would offer employment at sea up to the age of, say, thirty-five, including three to four years secondment to University, to suitable candidates. Thereafter, the individual would have the option of guaranteed employment in the marine engineering industry—in its widest sense—ashore. It seems unlikely that shore-based industry could not absorb such a steady stream of highly qualified men, but obviously firms on an individual or collective basis would have to guarantee a certain number of vacancies a year.

The obvious alternative scheme of training for what I have termed a Short Term Commission in the Merchant Navy as a means of recruiting the best brains for the marine engineering industry as a whole, would be for the shipping companies in association with the shore-based marine engineering industry to encourage suitable young men to remain at school to get

Presidential Address

the necessary "A" levels, followed by University. They would then join the Merchant Navy, say, at the age of twenty-two on the understanding that after ten to fifteen years at sea they would be guaranteed employment in the marine engineering industry ashore.

Personally I have some doubts as to whether this latter proposal would produce results. The sea will always have an appeal to young men and a seventeen year old engineer cadet by being brought in contact with ships and seamen right from the start of his training can be made to identify seafaring with his long-term ambitions as a professional marine engineer. A twenty-two year old graduate, on the other hand, no doubt already thinking of marriage, might well not be attracted by the prospect of some time at sea as a junior before he could sit even for his Second Class Certificate.

Be that as it may, I believe that in future men with the sort of background and qualifications I have described will, to an increasing extent, fill the key posts in management,

design, production and operation both in marine engineering and the shipping industries.

With this in mind, may I revert to the questions which we set ourselves to answer at the beginning of this address. Firstly—what is the impact of marine engineering in its widest sense on the economics of ship operation? The answer seems to be that marine engineering can and does have a very considerable effect on most aspects of ship operation. Secondly—how can the training and qualifications of marine engineers, particularly seagoing engineers, contribute to the success or failure of the marine industries? And the answer again is very considerably. If you accept these conclusions and the further conclusions as to the value of seagoing experience in all sections of marine engineering, you may well think that nothing is more important amongst the activities of the Institute than to encourage and promote a higher standard of education and training amongst potential marine engineers. May I leave that thought with you.

INSTITUTE ACTIVITIES

Minutes of Proceedings of the Ordinary Meeting Held at the Memorial Building on Tuesday, 11th October 1966

An Ordinary Meeting was held by the Institute on Tuesday, 11th October 1966, at 5.30 p.m. Mr. R. R. Strachan (Chairman of Council) was in the Chair, supported by Mr. J. McAfee (Vice-Chairman of Council), and Mr. J. Stuart Robinson, M.A. (Director and Secretary).

One hundred and four members and guests were present.

The CHAIRMAN, on behalf of Council, said he wished to extend a very warm welcome to the gathering there that evening, particularly to the ladies who were present and also to Sir Robert Wynne Edwards, Chairman of the Council of Engineering Institutions, whom he was very pleased to see present.

It had been the custom of this Institute to invite an eminent man from the shipping world to become its President, and this year he had very great pleasure in introducing Sir Stewart MacTier. Sir Stewart was well known to most of the members as a director of the Ocean Steam Ship Company, Limited, more popularly known as the Blue Funnel Line.

Sir Stewart was trained as an engineer at Cambridge and immediately went into management. He had served on various important Government bodies and was in great demand during the last war. He had been the chairman of the Council of British Shipping and of the Liverpool Shipowners' Association. What was of special interest was that he was at present Chairman of the Engineer Officers' Training Committee of the Shipping Federation and it was in this capacity that members looked forward to his address.

The PRESIDENT, Sir Stewart MacTier, C.B.E., B.A.(Companion), then delivered his Address.

The CHAIRMAN thanked the President for his most interesting Address, in which he had put the view as he saw it, of that of a ship operator, and from what he had said it was clear that he advocated a more highly-trained marine engineer for the future. That he had brought the whole of the shipping industry within his compass was gratifying to the Council, because it was in this sphere of training and education that our Committees had been so actively engaged and which, as a constituent member of the Council of Engineering Institutions, we must develop and encourage.

The difficulty in combating the very intense competition to which the shipbuilding industry had been subjected from overseas had been due in some measure to neglect in the past to recruit a greater number of properly trained engineers on to their staff, with the promise of further advancement. We must endeavour to remedy this by taking a greater interest in the young trainees. The Council had drawn up a schedule of training and had already given grants to those young men anxious to forge ahead and to take their place in time in the industry. He hoped the President would use his great influence among his colleagues in persuading them to take on these

young men and provide the avenues by which they could, like himself, reach the top.

He thanked him most sincerely for his Address and wished to propose a hearty vote of thanks. In doing so, he called upon Mr. McAfee to second the motion.

MR. J. MCAFEE (Vice-Chairman of Council) in seconding the vote of thanks said that in the afternoon he had been looking through the list of Past Presidents of the Institute which contained many illustrious names, and it had occurred to him that this was the first time that the Institute had had a President who had been educated as a mechanical engineer and become, to use his own modest phrase, "a ship operator". The Address which he had given that evening was a reflection of this unique background.

When the President had spoken at the Annual General Meeting after his election, he had referred to himself as a "failed marine engineer", which must surely go down as the understatement of the year. If failure was to be measured by what he had achieved, then most of us would like to fail in this way.

At the beginning of his Address, Sir Stewart had referred to the need for a title, which made Mr. McAfee think of one of his predecessors whom members held in affection and esteem and who always used titles with great proliferation, delighting sometimes to tease his audience with an obscure scriptural quotation or a Latin tag. If he had been asked to choose a title for this Address he was sure that he would have suggested "*multum in parvo*", for it raised so many points and opened so many windows that almost every paragraph could form the subject for a separate paper.

It had often been said that the measure of any Address or dissertation was the length of discussion which it aroused. There would, of course, be no discussion that night but if there were, he was sure they would all be there until midnight, which might have the advantage of convincing the ladies present that those late evenings in the City were not misspent.

He heartily seconded the vote of thanks proposed by the Chairman.

The vote of thanks was carried by acclamation.

The meeting terminated at 5.50 p.m.

Branch Meetings

Devon and Cornwall

General Meeting

A general meeting of the Branch was held on Tuesday, 4th October 1966, at Radiant House, Derry's Cross, Plymouth, at 7.00 p.m., when a paper entitled "Flexible Couplings for Marine Installations—Testing and Application" by C. Charatan, B.Sc. (Member) and D. J. White, was presented by the authors.

In the absence of the Chairman of the Branch, Mr. H. Vickerstaff, who was abroad, Mr. S. Walker (Vice-Chairman of the Branch) presided at the meeting and welcomed both the speakers, and the thirty-five members and guests present.

Institute Activities

The paper was very ably presented by the authors and was followed by a discussion. The keen interest of the members in the subject of couplings was shown in the questions asked, also by the fact that some members had travelled eighty miles to attend the meeting.

Captain J. G. Little, O.B.E., R.N. (Local Vice-President), proposed a vote of thanks to the speakers and this was well supported by the members and their guests.

The meeting closed at 8.35 p.m.

Cheese and Wine Party

The Branch held their first Cheese and Wine Party on Friday, 28th October 1966, in the Charter Room at the Guildhall, Plymouth.

Thirty-five members and their guests, making a total of one hundred and fourteen, attended this very pleasant and successful social occasion which provided an opportunity for members and friends to meet.

Vice-Chairman of the Branch, Mr. S. Walker, received the members and their guests, in the absence abroad of the Chairman of the Branch, Mr. H. Vickerstaff.

During the evening Mr. Walker gave a short address in which he welcomed those present. This was followed by a brief talk by Captain J. G. Little, O.B.E., R.N. (Local Vice-President), who explained that the Cheese and Wine Party was not intended as a profit making function, but purely as one of a social nature to bring members and their friends together. It was an experiment, by the Committee, to provide a social occasion in addition to the main function of the year namely, the Annual Dinner and Dance, which next year would be held in October, instead of February as formerly.

It was agreed that any profit made on the party this year should be shared equally by the Aberfan Disaster Fund and the Institute of Marine Engineers Guild of Benevolence.

The Honorary Secretary, Commander W. Farrell, M.B.E., R.N., felt that the Cheese and Wine Party was one good method of obtaining funds needed for the Guild of Benevolence.

Karachi

Cocktail Party

A cocktail party was held by the Karachi Branch on Saturday, 30th July 1966, in the Hotel Karachi Intercontinental, Karachi.

This was attended by members and their guests numbering fifty in all.

General Meeting

A general meeting of the Karachi Branch was held on Friday, 2nd September 1966, at the Merchant Navy Club, Karachi, when a lecture on "Production and Uses of Industrial Gases" was presented by Mr. Nasim Khan of the Pakistan Oxygen Company.

The meeting was attended by thirty members.

Kingston upon Hull and Humber Area

The Branch held a lecture meeting on Thursday, 20th October 1966, at the Hull College of Technology at 7.00 p.m., when a paper entitled "Some Aspects of Marine A.C. Installations" by R. L. Ames was presented by the author.

The lecturer first made a comparison with d.c. installations which included the cost and weight of motors, starters, generators etc., and other items such as maintenance, fault clearance, experience and comparison with land-based systems. He then discussed the choice of voltage and systems, motors and generators and control gear.

In conclusion, the author outlined future trends in this field and suggested that these would aim at eliminating all parts subject to wear, introducing static control and contactors and further developing automatic control of all drivers. He also asked for the use of higher and more economical voltages

and for an improved system of recording faults and electrical maintenance to be carried out on board ship.

The lecture, which was illustrated by slides, was followed by an interesting discussion period and in conclusion a vote of thanks was proposed by Mr. J. E. Bayram (Member of Committee) and seconded by Mr. G. D. Moore (Honorary Social Secretary).

North Midlands

A general meeting of the North Midlands Branch was held on Wednesday, 21st September 1966, in the lecture hall of the Sheffield Industries Exhibition Centre, Carver Street, Sheffield, at 7.30 p.m. when a paper entitled "Package Steam" by J. A. Green (Associate Member), was presented by the author.

In this paper a history of steam boiler plant from early times was dealt with as a preliminary to the main subject which covered most fully all aspects of the design, development and production of this type of plant.

A lively discussion on points raised during the lecture followed the presentation.

In thanking the speaker, Mr. Y. Arakie (Honorary Treasurer) said that the lecture had brought the members up to date with the latest developments in the rapidly expanding field of boiler engineering, and that it was much appreciated by those present, was shown by a round of applause.

North West England

A general meeting of the Branch was held on Monday, 3rd October 1966, at the Mersey Docks and Harbour Board, Dock Board Building, Pier Head, Liverpool, at 6.00 p.m., when Captain N. J. H. D'Arcy, R.N. (Member of Council), presented his 1966 Parsons Memorial Lecture, "The Prospect for Steam Propulsion".

Commander K. I. Short, O.B.E., D.S.C., R.N. (Chairman of the Branch), presided at the meeting which was attended by ninety-two members and visitors, and opened by welcoming the Vice-Chairman of the Branch, Mr. T. McLaren, B.Sc. (Honorary Vice-President), also Commander F. G. Righton, R.N., who had succeeded Mr. J. Watt as Honorary Secretary.

The formation of a Merseyside and North Wales Branch of the Council of Engineering Institutions and details of forthcoming lectures were discussed. An announcement was also made regarding a debating evening to be held early next year and details of this were formulated.

Captain D'Arcy then presented his lecture after which a discussion followed opened by Mr. F. G. Holmes, in which seven other speakers participated.

Scottish

The opening meeting of the session of the Scottish Branch was held on Wednesday, 12th October 1966, at the Institution of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, C.2, at 6.30 p.m.

Mr. T. W. Liddell (Chairman of the Branch), presided at the meeting and extended a welcome to the eighty-three members and visitors present.

The Chairman then gave his Address entitled "Clyde Shipbuilding Past and Present".

In his opening remarks, Mr. Liddell stressed that any opinions which he might express were his own and not necessarily those of the Board of Trade. Realizing that a review of shipbuilding must be largely based on statistics Mr. Liddell succeeded in presenting his subject in a most interesting manner. He invited his audience to go back sixty years and imagine that a Clydeside shipbuilder was asked what progress he thought might be made in the next sixty years, and then compare his forecast with what had actually happened. It was in-

Institute Activities

interesting to note that men worked a fifty-four hour week in forty-three yards on Clydeside which, in 1906, built 370 ships totalling 600 000 gross tons, not including naval vessels. In 1906 Fairfield launched the ill-fated *Empress of Ireland* and John Brown the equally ill-fated *Lusitania*; during the previous year Russell of Port Glasgow had the highest output in the world.

Mr. Liddell went on to analyse the development over the succeeding years under the headings of Production; Building Costs; Running Costs; Greater Safety at Sea; Increased Demand and Prestige. With well prepared and superimposed slides it was possible to show progress and compare it with developing countries.

The Address was most interesting, covering developments in shipbuilding design and in machinery installations. Mr. Liddell summed up by saying "Shipbuilding on Clydeside has fallen pretty low and it is to be earnestly hoped that the measures now being taken, chiefly those aimed at solving the eternal problem of labour, will be successful. I hope that anyone who has the task of recounting the events of the next sixty years will be able to show that from 1966 onwards a new and prosperous industry arose from the ashes of the old".

Mr. R. Beattie (Vice-President) ably proposed a vote of thanks to the Chairman for presenting such an interesting and, perhaps, controversial Address and this was carried with great enthusiasm.

The Meeting closed at 7.23 p.m.

West Midlands

A general meeting of the Branch was held on Thursday, 20th October 1966, at the Engineering and Building Centre, Broad Street, Birmingham, at 7.00 p.m., when a paper entitled "Gas Turbine Installation Design for Naval Ships" by M. G. Ogilvie was presented by the author.

Mr. G. H. Cornish, B.Eng., Chairman of the Branch, presided over the meeting which was attended by twenty-seven members and visitors.

With the aid of slides, Mr. Ogilvie outlined the parameters influencing the choice of machinery for naval and merchant service practice, pointing out the tremendous difference in the space occupied by the machinery. Reference was also made to the design and construction of the Yarrow frigate and the principal factors which influenced the design.

Although gas turbine and Diesel machinery had been accepted, it must be appreciated that the gas turbine was only required when maximum speed was necessary. Although the fuel consumption was high for gas turbines, it could be accepted for warship application, but it was this reason that made it rather uneconomical for merchant application.

Graphs were also shown indicating the various methods of propulsion which, depending on the particular service requirements of any project, would influence the choice of machinery.

A lively discussion then followed which unfortunately had to be brought to a close by the Chairman.

All questions were dealt with in a most competent manner by the speaker.

The Chairman thanked the speaker for presenting such an interesting paper and the meeting closed at approximately 9.00 p.m.

West of England

General Meeting

A General Meeting of the Branch was held on Tuesday, 11th October 1966, in the lecture theatre of the City of Bath Technical College, at 7.00 p.m., when a paper entitled "The Application and Use of Computers in Marine Engineering and Shipbuilding Problems" by Commander E. B. Good, R.N. (Member) and C. C. Herbert, B.Sc. was presented by the authors.

Mr. J. P. Vickery (Chairman of the Branch) was in the chair and the audience, which included Mr. F. C. Tottle, M.B.E. (Local Vice-President), numbered fifty-two.

The paper, which was given with the aid of slides, described various types of computer and their operation from the point of view of the user of computers rather than from that of the specialist computer programmers and gave a broad outline of the place that computers will take in our modern civilization. Indeed, the invention of computers had resulted in a "million to one gain" in the history of mankind equal to such advances as the first flight by a heavier than air machine and the release of energy from the atomic nucleus.

Two fields of human activity appertaining to scientific engineering were dealt with in the paper, namely marine engineering design research and shipbuilding, and the paper described the way that two types of computer, i.e. the digital and the analogue, were actually operated when solving problems on these subjects.

The authors gave three specific examples of problems involving each of these computers; those from the digital computer being: naval steam-pipe work design, analysis of journal bearing performance and thermodynamic performance estimates of main and auxiliary machinery. Those for the analogue computer were: stopping time and head reach for ships, boiler dynamics and safety and main propulsion machinery and ship dynamics simulation.

Mention was made of a hybrid digital/analogue computer which was extremely useful in dealing with such problems as torsional and axial vibrations.

The authors remarked that the specific examples described had shown a strong research and design bias and they hoped that the paper would be of help to marine engineers and shipbuilders. They also hoped that it would give a clearer insight into the operation of computers and the advantages to be gained by their use.

The paper was followed by a discussion in which ten members and guests took part and after proposing a vote of thanks to the authors the Chairman closed the meeting at 9.00 p.m.

Annual Dinner and Dance

The Seventh Annual Dinner and Dance of the Branch was held on Friday, 14th October 1966, at the Grand Hotel, Bristol, where one hundred and sixty-six members and their guests were received by the Chairman of the Branch, Mr. J. P. Vickery.

The principal guests were the Right Honourable, the Lord Mayor of Bristol, Alderman Cyril Hebblethwaite, and the Lady Mayoress, Rear-Admiral R. G. Raper (Honorary Vice-President for the Royal Navy) and Mrs. Raper. Dr. R. R. Jamison, B.Sc. (President of the Western Branch of the Royal Aeronautical Society) and Mr. S. J. Palmer, O.B.E., R.C.N.C. (Member of Council of the Royal Institution of Naval Architects), together with their ladies, were invited guests.

Following the Loyal Toast, the guests were warmly welcomed by Mr. Vickery, who said that it was indeed an honour for him to welcome once again the Lord Mayor and Lady Mayoress of Bristol and that it was a privilege to have amongst the members the chief citizen of such a great and ancient maritime city.

In referring to Bristol's new Portbury Dock Scheme, the Chairman remarked that the postponement of this major development was only a temporary setback and he assured the Lord Mayor that members of the Institute and marine engineers in the port were only too willing and eager to co-operate in doing whatever was required of them for the future prosperity of the port of Bristol.

The Chairman then proposed the toast "The City and County of Bristol". In reply, the Lord Mayor thanked the Branch for inviting him and the Lady Mayoress to the function and said how much they had enjoyed themselves. Speaking of the Portbury Dock Scheme, he said that one day Bristol would have its great new docks and he praised the increasing co-operation between the various branches of engineering which

Institute Activities



West of England Branch

At the Seventh Annual Dinner and Dance of then, B.Sc., President of the Western Branch of the Grand Hotel, Bristol. From left to right: Mr. M. Branch, held on Friday, 14th October 1966, at the Tottle, M.B.E (Local Vice-President), the Lady M R. Goodacre (Honorary Secretary), Mr. F. C. Cyril Hebblethwaite, Mr. J. P. Vickery (Chairman), and the Lord Mayor of Bristol, Alderman C. Tottle, Mrs. R. G. Raper, Rear-Admiral R. G.n of the Branch), Mrs. M. R. Goodacre, Mrs. F. Navy), Mrs. R. R. Jamison, and Dr. R. R. Jamiso Raper (Honorary Vice-President for the Royal Aeronautical Society

would make this project a reality. Gone were the days, he said, when engineering was contained in water-tight compartments and the country should not be divided by small issues when struggling for survival. At this point the toast "The Institute of Marine Engineers" was given.

Replying to the toast on behalf of the Institute and guests, Rear-admiral Raper thanked all who were concerned in organizing such a wonderful evening. He complimented the Branch on the progress made during the past eleven years and wished them every success in the future.

Dancing to the orchestra of Frank Trevy followed the Dinner and a number of novelty dances was included. The Dance ended at 2.00 a.m.

Kingston upon Hull and Humber Area and North Midlands

Inaugural Meeting of the Yorkshire Committee of the Council of Engineering Institutions

The Kingston upon Hull and Humber Area Branch and North Midlands Branch, founder members of the Yorkshire Committee of the Council of Engineering Institutions, together with other constituent branches in Yorkshire met for the inaugural meeting of the Committee at the Queen's Hotel, Leeds, on Monday, 17th October 1966.

The theme of the evening was "North Sea Gas" and approximately eight hundred and fifty Chartered Engineers (out of 2400 who had applied) heard lectures by Sir Roger Stevens, G.C.M.G., Chairman of the Yorkshire and Humber-side Regional Economic Council; S. G. Deavin, O.B.E., F.C.A., Chairman of the North Eastern Gas Board and Dr. P. E. Kent, F.R.S., Chief Geologist of the British Petroleum Co. Ltd.

After an introduction by Mr. J. A. Fuller, Chairman of the Yorkshire Committee, Sir Roger Stevens outlined the

measures which he felt would be necessary before North Sea gas would have its effects on the Yorkshire, and in particular Humberside, region. Namely, in order to attract new industries to the area people must be housed and the gas must be attractively priced.

Dr. Kent then described the engineering problems involved in prospecting for gas and bringing it ashore, illustrating both these topics with coloured slides and a film.

Finally Mr. Deavin outlined how the Gas Council were constructing means of distributing the North Sea gas to all parts of the country and also what changes would be necessary in both domestic and industrial equipment to enable the gas to be burnt directly.

A summing up and vote of thanks to the speakers was then proposed by Mr. H. N. Pemberton, Vice-President of the Institute, and Chairman-Elect of the Council of Engineering Institutions.

So concluded a most successful and unique occasion which drew members from all parts of the area covered by the Branches.

Election of Members

Elected on 17th October, 1966.

MEMBERS

Anastassios Agouridis
George Will Barrie
Marko Brajnovic, Dipl. Ing.
Edward George Bruce
Arthur Henry Chancellor
David Talfryn Evans
Alan Thomas Hughes
William Henry Maughan
Keziappat Raman Kutty Menon

Institute Activities

William Richardson
Thomas Alfred William Ritchie, Lt.Cdr., R.N.
Alexander Suddick
David Walter Twining

TRANSFERRED TO MEMBER FROM ASSOCIATE MEMBER
Leonard Armstrong
John Richard Chambers
Richard Atkinson Lee, V.R.D.
Stanley Mason

TRANSFERRED TO MEMBER FROM ASSOCIATE
Arthur Newman Ayden
Ernesto P. Lucas
Peter Marshall

ASSOCIATE MEMBERS
George Bath
Allan Frederick Biederman
Brian Bowker
Pranab Kumar Datta
William Arthur Davidson
Anthony Edward Davies
Raymond John Davies, Inst. Lieut., R.N.
Arthur Irvine Donaldson
John Daniel Donnelly, Eng. Lieut., R.A.N.
Amnon Garbash
James Irving Howarth
John Isaacs
William Mackenzie Johnstone
William Carson Connell Kane
John Kyriakopoulos, Lt.Cdr., R.H.N.
Alexander Barras McLean, B.Sc.
Edward Frank James Miller
David John Mudiman
Terence Arthur Nessling
Akshay Kumar Puri
Triloki Nath Rai
William Frederick Rendle
Shu Wai-Tseng
Donald Edgar Stangroom
Robin Lionel Timcke
John Henry Williams
Wong Ming Ki, M.Sc.

TRANSFERRED TO ASSOCIATE MEMBERS FROM GRADUATE
John Garry Beaumont, B.Sc.
Graham Dicer Howard, Lieut., R.N.
Alan Irving
Kenneth Ellis Lea

Alan Malcolm Outhwaite
Brian Rimmer, M.Sc.
Narendra Singh

TRANSFERRED TO ASSOCIATE MEMBER FROM STUDENT
Ian Edward Cameron Gilg
Hamilton Woods

TRANSFERRED TO ASSOCIATE MEMBER FROM PROBATIONER
STUDENT
John D'Arcy
John Chapman Dunn

ASSOCIATES
Thomas Joseph Forde
William Gough
Desmond Arthur Jackson
Francis Henry Kane
Om Perakash Kapoor
Patrick Lydon
Robert Malabar
Ranjit Senani Seneviratne
Alexander Thomas Simpson
Sin Chun Man
Kenk van Vliet
Brian Wright

TRANSFERRED TO ASSOCIATE FROM GRADUATE
James Ruthven Gifford

GRADUATES
Conrad Colaco
Benoit Cote
Thomas Graham
Ian David Malcolmson
Biswanath Paul
Alan Scott Robinson

TRANSFERRED TO GRADUATE FROM STUDENT
Alan Prescott Ivens

STUDENTS
Tor Bergli
Cheong Fook Kuen
Nicholas Robert Harmer

TRANSFERRED TO STUDENT FROM PROBATIONER STUDENT
David Frank Burbidge
David Henry Burwell
Derek Carter
Richard Jameson Gidman