PRESIDENTIAL ADDRESS

of

VICE-ADMIRAL SIR FRANK MASON, K.C.B.

I suppose it is a glimpse of the obvious to say that the difference between this age and former ages lies in the production and application of power but this difference needs emphasizing from time to time because of the human propensity of taking things for granted. One of these things is the service rendered by the engineer. From the earliest times, man has sought to apply power to reduce his labours; on land by animals, on water by wind and oar. Only in very recent times has power, as we understand the term, been applied to the labour involved in moving from place to place. It has been recognized, also from very remote times, that water enabled goods and people to be transported more readily in quantity than any other form of movement until the coming of the railways.

Looking back, there is a number of epoch making applications of power, most of which have taken place in the last century and a half. Sailing, of course, was a very early art, but the revolutionary sailing against the wind is relatively recent. The first real revolution with which we are concerned, was the change from sail to steam. This produced the marine steam engine which had a profound effect on the art of shipbuilding. Indeed, it is not too much to say that the early ships were built round the machinery and to some extent this is still true. This revolution was closely followed by another. Wooden construction was displaced, first by iron and then by steel. An early example is the famous *Great Eastern,* associated as it was with Brunel.

The next big change was from coal to oil. This had another profound effect, not only on ship operation but on shipbuilding. Oil is so much easier to handle and stow than coal, as well as having a much higher calorific value. Its greater steam raising qualities were exploited by the change from the reciprocating engine to the steam turbine, and the benefits of this were later to be enhanced by the introduction of reduction gearing between the turbine and the ship's propeller.

The heavy oil engine, a product of the early years of this century, is extensively used for moderate and more recently for quite high powers but, having reciprocating motion, is to that extent a retrograde step from the turbine. The obvious step of a gas turbine has long been recognized as logical and desirable, but it has been a difficult one to take because our metallurgical knowledge was insufficient to enable us to handle the very high temperatures. This situation is now tending to change.

When some new technique is introduced, at first progress is rapid because its advantages open up new fields previously unthought of or at least unattainable, but there comes a time, certainly in engineering, when progress becomes slower and harder to make until the effort required is such that the results are not worthwhile. At such a time, some new revelation is needed and indeed seems to have been forthcoming. I think we are in some such position now. Although we are by no means at the end of the usefulness of the orthodox steam installation, we can already see that even small advances demand great development effort, while the heavy oil engine would seem to be approaching its zenith; so maybe we need to be able to start afresh with some new means of obtaining heat energy.

Nuclear fission provides such a means. The advantages it can offer require very good engineering if they are to be realized but so in their day have the other revolutionary inventions. Paradoxically, each new advance means a step backwards because at its inception the newcomer has to compete with a highly developed rival, in this case the marine watertube boiler and the heavy oil engine. So it is not to be expected that the early nuclear ships will compare at all favourably with orthodox steamers or motor ships. Nevertheless, this seems to me to be a vital step for us to take as a maritime nation if we are to acquire first hand experience of operation and maintenance and we need therefore to build and operate a nuclear ship in order to gain this experience. In my view, we have been slow to take this step which, initially, can only be taken by Government; this means in effect, the Royal Navy, not as part of its operational fleet, for it already has nuclear submarines, but as one of its supply ships. This vessel could be operated under something approaching commercial conditions, while its ability to steam for long periods without refuelling, would increase its availability to the fleet. It is understandable that shipowners do not feel able to embark on such a large enterprise in the face of world competition, as it is today.

For at the moment, all we can do, is to replace the oil-fired boiler by a steam raising reactor and, although this will give us in effect a boiler which will enable the ship to steam for a couple of years or so without refuelling, at present the economics are not comparable; for us however, who depend upon the sea for the transport of most of our vital supplies, this new source of power would seem to be a necessity within the not too distant future, both technically and politically. Technically, because it opens up the prospect eventually of more economical operation and, politically because it will free us from dependence upon imported oil; uranium being more easily stockpiled than oil. Of course, the hope is that the gas turbine will come into its own by using direct the hot gases produced by the reactor.

So far I have only mentioned material things, but what of the people who create, operate and maintain them? This Institute was formed to serve the needs of those technical people who follow the sea and this requirement remains the same today as it did when the Institute was formed. The needs however, are greater and more complicated than they were in those early days.

Throughout the period when this country led the world in ships and shipping, the traditional sources from which marine engineers were recruited and the methods by which they were trained sufficed to meet the needs of the time. This

period, however, came to an end with the Second World War, since when there has been a great increase in the complexity of ships and their machinery, a fact which emphasized a need that had been manifesting itself slowly for some time. This was the need to examine the methods of training of marine engineers then in force and revise them to meet the situation which faced us in the second half of the Twentieth Century.

Some six years ago on the initiative of the then Chairman of Council, the late Mr. W. R. Harvey, the Institute started a series of discussions and perhaps I could outline briefly the course they took.

Mr. Harvey was a man of vision, imagination and courage; he was also well beloved and when he spoke, one listened. He had suggested that the Institute should establish an academy for the education and training of marine engineers and, with this in mind, he and the Secretary visited the United States Merchant Marine Academy at King's Point and a little later the Royal Naval Engineering College, Manadon.

The intention behind this suggestion was to train marine engineering technologists who, after service at sea, could move to responsible posts in the marine industries ashore.

Although the suggestion of an academy was recognized as an ideal solution and one not to be forgotten, it was eventually ruled out on the grounds of expense and for other reasons, such as the need to accept radical alterations in the staffing of engine rooms. A less ambitious but nonetheless adequate scheme was proposed in its place; this utilized the advantages of the sandwich system of training professional engineers in force at the Colleges of Advanced Technology, as they were then called. These courses led to the Diploma in Technology, which was comparable to a university degree.

After a great deal of thought and discussion, a suitable course was arranged with the Battersea College of Technology, now the University of Surrey, and later with the University of Newcastle upon Tyne. The first course started in October 1964.

The Institute arranged where necessary to assist students with a grant of £100 per annum while they were undergoing these courses. At the moment some fifteen undergraduates are receiving these grants.

The Council had recognized all along that the education and training of marine engineers was of great importance and the Institute had a responsibility for seeing that these met the needs of today.

An investigation was put in hand, therefore, to elicit information about the attractiveness of a career in marine engineering and the numbers of technologists which the industry would be likely to need in the immediate future. At the same time an enquiry was made to discover, if possible, what the Japanese did in these matters which enabled them to achieve the high level of success that was undoubtedly theirs.

Both enquiries produced valuable information and in particular the Japanese success seems to have been very largely due to a major investment in the education and training of high grade technologists.

It seems clear that in addition to the degree courses already in operation, there is a need for post-graduate training in marine engineering for those who have graduated as mechanical or electrical engineers. Although, there are relatively few ships which require engineers of graduate standard in any number for their operation and maintenance at sea, it seems to me essential, nevertheless, that those who are trained in the two ways to which I have referred should acquire the experience which comes from holding positions of responsibility in seagoing ships. If arrangements to enable them to do so are not made, those responsible for the development and design of ships and their machinery will not possess that first-hand knowledge of seagoing conditions which I would regard as being essential, that vital influence of the user, without which no product can be really satisfactory. Although I realize the difficulties are much greater than those which obtain in the Royal Navy, it seems to me imperative that the careers of Chartered Marine Engineers should be carefully planned so that they get a cross-section of all that experience which is to be derived from operation and maintenance afloat and repair ashore. One of the most valuable aspects of this is the knowledge to be gained of the men who perform these indispensable functions; this knowledge will prove invaluable when the Chartered Engineer is faced with the responsibility of design.

So it will be seen that the Institute has been very active in recognizing the training needs of the day. I should say that it is concerned, of course, only with quality; numbers are naturally the concern of the industry.

Before I leave this subject, I wonder if I might express the hope that one day the academy, which has been recognized as the ideal, may materialize in another form. Can means be found of training these young men alongside those being trained for the Royal Navy at the Royal Naval Engineering College? The facilities and conditions are there: could the extra places be made available? I would hope so, for this would be a splendid solution.

Perhaps I could go further and look forward to the skilled men in the Merchant Navy being trained at the Royal Naval Artificers Training Establishments.

In serving those who go down to the sea in ships, the Institute is faced with a complex task, more complex than that facing any other professional institution, because the marine engineering world, perhaps more than many other parts of engineering, requires for its well-being a variety of people ranging from the Chartered Engineer to what I think the Merchant Navy still calls a "greaser" and the Royal Navy, an "Engineering Mechanic". The number of university graduate engineers at sea is probably small because most ships can be operated and maintained by someone whose academic qualifications need not be as high. Let us be clear, however, that people with differing qualifications and skills are necessary for the successful operation of a ship, although they may not all be needed to serve afloat. As in other forms of engineering, each Chartered Engineer will need to be supported by several technician engineers, by a still larger number of craftsmen and an even larger number of semi-skilled men engaged in operation and maintenance. It seems to me, therefore, that the Institute must provide a forum to which can come not only the Chartered Engineers, but also those whose attainments are rather less comprehensive; they have so much to contribute, particularly on maintenance and operation afloat, that the Institute must cater for this requirement in its membership structure. In addition, if it is to keep in the forefront of today's fast moving technology, its higher standards must match those of other professional bodies, which means that it must be a constituent member of the Council of Engineering Institutions. One must face the fact that one has to know a lot more today than when I was young and the Institute must not be behind the professional standards of the day. Yesterday's standards will not suffice to meet the needs of today, let alone those of tomorrow, for in education and training, as in much else, it is vital to look ahead.

As I have tried to show, the Institute is facing up to this complex task with energy and determination, but let no-one underrate the difficulties with which it is confronted in serving the marine engineering fraternity.

The Institute is also faced with another problem. To the outsider, it would no doubt seem reasonable that all those professional and learned bodies who are interested in the engineering of ships should coalesce. By so doing, their influence would be immeasurably increased and, if used aright, could do nothing but good in furthering the technology of ships and their means of propulsion.

The difficulties of achieving this desirable object, stem from such facts as the long standing of the bodies concerned and their very proper pride in themselves and their traditions, added to which their membership structures differ considerably one from another. Steps have been taken already in this promising direction but we should be deluding ourselves if we thought that rapid results were likely to accrue. I would hope that patience and persistence will triumph in the end because, in my view, the prize of unity is a very worthwhile

one, but if we are to arrive at this destination and not merely continue to travel hopefully, it rests upon the individual members of the various bodies to take that wider view which is at once challenging and strangely difficult to embrace.

When we are considering the carrying of goods by sea, we are looking at a growth industry. This was confirmed by the report of Mr. Geddes and his Committee. As we are among the oldest carrying nations in the world, we should be in the van when it comes to building ships of advanced construction. At the moment, the shipbuilding industry is going through a very difficult period of reassessment and reorganization, following on the Geddes Report. In these circumstances, it would be improper for me to say much, but I would like to make two observations which might be helpful. Personally, I was disappointed that the Geddes Report made but little reference to the American Merchant Marine. This merchant fleet may not be large by world standards, but in quality its ships rank high indeed and I would have thought it of value to enquire into why this should be so, bearing in mind all the factors, such as high wages and high building costs, which militate against the United States having a merchant marine at all. I think it is doubtful if she would have one were it not for the existence of the Maritime Administration and the way in which it works by influencing shipbuilding through the shipowners. It is able to do this because it has two essential attributes; it has money and it has a highly qualified technical staff to which it means something to belong.

It is unlikely that the United States shipowners would progress technically at the rate they are now doing without the influence of the Maritime Administration linking, as it does, subsidies to technical progress.

The consequence of this policy is that American engineering companies are able to offer package machinery sets for sale to foreign countries and it seems to me that we are competing against heavy odds. If we are to avoid the possibility of technical eclipse, I venture to suggest that we need a body like the Maritime Administration of the United States.

Without it the Americans would not have a Mercantile Marine at all, and it is possible that ours may not survive as a British-built Mercantile Marine in the conditions of today unless we do something similar. We do not lack the necessary abilities and skills, nor do we lack facilities for research and development, containing as they do the resources of the British Ship Research Association and such Government facilities as the National Physical Laboratory and the National Engineering Laboratory. What we do lack is machinery for giving effective expression to them. There is no way under present conditions whereby our leading enginebuilders can offer package machinery sets in the same way as the Americans can, although they could certainly compete with the Americans on at least level terms if they were free to do so.

I realize that such a development could divert work from the engine shops of shipbuilding firms, but some such happening has been foreshadowed in the Geddes Report. If this development materialized, machinery construction would be concentrated in places best fitted to undertake it, leaving the shipyard freer to attend to the rather neglected art of installation, the successful application of which can make such a difference to the availability of ships.

Before leaving this topic, I would say that we are really faced with something of a nutcracker, one arm of which is Japanese productivity and the other American advanced technology. If we learn the right lessons from this, I have doubts about how long the Americans would remain supreme, if we in the United Kingdom matched our design and manipulating skills with a coherent policy for power plant selection, standardization and quantity production, coupled with adequate export sales promotion. We can do this if we have the will to do it, but we do need inspired Government help. I submit that it would be better to spend money in the way I have outlined than to give low interest loans which, once they have been expended, are finished as far as continuing influence is concerned. It might be argued that in view of the relatively small numbers of American ships, the matter is unimportant. I think this view would overlook at least one vital factor. The advanced machinery for American ships comes mostly from two great engineering firms which design and build both for the United States Navy and the United States Merchant Marine; a fact which puts them in a strong position to supply packaged machinery sets all over the world. This machinery need not be confined to steam but can embrace gas turbines and nuclear plant.

It is encouraging that the Ministry of Technology are placing investigation and development contracts with the same general objective as the Maritime Administration. So perhaps we have started to move in that direction.

It seems to me that we possess already elements which could be welded into such an instrument as I have described. Lloyd's Register of Shipping has a Research and Advisory Technical Service and the Royal Navy has that organization known as the Yarrow-Admiralty Research Department, whose services are now available to the Merchant Navy. An alliance of these two activities could be a powerful factor in furthering the technology of ships.

The second observation concerns the importance of people, to which I have already made reference earlier in this address. The quality of people engaged in any enterprise is the most important factor in its eventual success, and this applies to ships and their machinery in a very special way because, even more than in most engineering enterprises, the art of compromise operates decisively. So here, as everywhere else, people are of overriding importance and the quality of shipbuilding and marine engineering staff needs to be very high indeed. This poses severe problems to management including such matters as career structures, remuneration, training and the planning of careers. I make no apology for asserting my belief that the Royal Navy has something to teach industry in this matter, although I recognize that the problem is vaster and more difficult in industry. Nevertheless, it seems to me that the future well-being of British Shipbuilding and Marine Engineering depends upon following a wise and farsighted personnel policy. In this context, the shipowners really hold the key because, after all, they are the customers and they are the people who must say what they want; if they are to say this effectively, they must have the best professional backing obtainable. As for the people themselves, ranging as they do from Chartered Engineers through the whole supporting cast, if I may borrow a theatrical phrase, it is quite vital that they should be good men in the fullest sense of the word. Engineering in any form provides indispensable service to the community in the Twentieth Century. Indeed, technology is everybody's business, because we depend for practically all our bodily essentials on power of one sort or another. One only has to consider the very ordinary domestic operation of pressing an electric switch to realize this. This simple action enables one to tap a vast activity provided by the engineering profession. A ship might be called a microcosm of the world in which we live because it is an extreme example of how useless anything is without power. A ship without power is not only useless, but a danger to herself and everybody else, so it behoves all those of whatever degree, who are responsible for providing this power, to remember the essential nature of their service. A ship, moreover, is a good example of the service rendered to the community by engineering because without it we should be unable to move the food and merchandise on which we literally depend for survival. So in the end it comes back to people, to men of courage and integrity, of imagination and good judgement, men of knowledge and experience in the many aspects of the art which they are using for the benefit of mankind. There was a film once, a well-known film called "The Fleet in Which We Serve", but it referred not only to those who actually served afloat in the fleet but to all those whose work brought the fleet into existence and kept it there. With the increase of complexity afloat, the number of people carried in ships may actually decrease, but the element of skill which they represent will increase correspondingly as the machinery becomes more highly rated and demands more than ever skilled people who can diagnose incipient faults and prevent them

from developing into failure and possible catastrophe. Here again the Institute has a leading part to play in setting the standards which the men of today and tomorrow require.

I concluded my Presidential Address to another Institution on a very personal note and I should like to end this one in like manner: people matter so much more than things, for the things reflect the sort of people who have brought them into being. It is on these things, creations as they are of our own brain and hand that we rely for the fulfilment of most of our essential needs. They demand, therefore, the most meticulous care, not only in design and manufacture but also in operation and maintenance, and a failure in any of these activities can have far reaching consequences to the people for whom the particular machine is providing some essential service. It is so often the trivial and apparently insignificant which let one down and that is almost invariably because these supposed trivialities do not receive the care which they require.

There is another factor too which is present to an increasing degree, as complexity grows and the number and variety of people required to perform an activity becomes greater. For anyone dealing with machinery, in whatever capacity, there must be a sense of personal accountability, but this tends to become diluted by the very number and variety. There is always the risk of feeling that if one makes a mistake, someone higher up will discover it in time. Although mistakes are inevitable in any human activity, a recognition of individual responsibility is vital to the well-being of any engineering enterprise. I said in the same Address that man is a trinity, body, mind and spirit and what I have just said is of the spirit. I know that spiritual things are often thought to be irrelevant to the restless world of today but I repeat my belief that in fact they are more necessary now than they have ever been, if man is to work with purpose and vision. There is such a thing as spiritual wear and tear which most of us disregard but which, as a Christian, I believe can be renewed from a Source which is available to everyone who cares to use it. In order to be able to do so, however, an act of faith is demanded of us, as indeed it is in every other activity in which we seek to engage and this means accepting the seeming paradox presented by the combination of strength and humility. I once remarked to the Master of a Cambridge College, who was himself in Holy Orders, that I thought everyone aspiring to become a priest should have experience of marine engineering. Not unnaturally, he expressed surprise. I was by no means being entirely flippant and explained that running machinery, particularly in a ship where failure was obvious to all and might be catastrophic, was the only thing I knew which tended to make man feel humble in the presence of his own creation. Moreover, as yet another inducement to be humble, we ought to remember what Sir Charles Parsons averred that, when we talk of man's creations, man in fact creates nothing but only rearranges what has been created already.

So let us see to it as far as in us lies, that we are not found wanting either as individuals or as an Institute, in meeting the essential needs of the community, in these closing decades of the Twentieth Century.

The Institute of Marine Engineers Guild of Benevolence

The Guild House Charity Ball 1967

The Guild House Charity Ball was held on Friday, 28th April 1967, at Grosvenor House, Park Lane, London, W.1. The Patron, Mrs. J. Calderwood, and Mr. J. Calderwood, M.Sc. (Honorary Vice-President), together with Miss H. U. Nelson and Mr. W. Lynn Nelson, O.B.E. (Honorary Vice-President), Chairman of the Guild, received the 290 guests.

The Sydney Jerome Ballroom Orchestra supplied the music for dancing and among those who appeared in the cabaret were Yuri and Tonya, the Royal Scottish Country Dance Society, and Ted Ray.

During the evening the winning tickets in a raffle for a transistor radio, case of wines and spirits, cut glass decanters, and a hamper from Fortnum and Mason were drawn and some 250 prizes were distributed from the tombola. It is estimated that a profit of approximately £1100 will be made. This will be used towards meeting the expenses of the Guild House.

The Chairman and Committee are extremely grateful to all those who supported the Ball, donated prizes for the tombola, and took advertising space in the brochure programme.

At the Guild House Charity Ball held at Grosvenor House, Park Lane, London, W.1, on Friday, 28th April 1967. From left to right: The Patron, Mrs. J. Calderwood, Mr. J. Calderwood, M.Sc. (Honorary Vice-President), Miss H. U. Nelson, and Mr. W. Lynn Nelson, O.B.E. (Honorary Vice-President), Chairman of the Guild

INSTITUTE ACTIVITIES

Minutes of Proceedings of the Ordinary Meeting Held at the Memorial Building on Tuesday, 8th November 1966

An Ordinary Meeting was held by the Institute on Tuesday, 8th November 1966, at 5.30 p.m., when a paper entitled "Design Aspects of Marine Propulsion Shafting Systems" by I. K. Mott, B.Mech.E. (Member) and R. Fleeting, B.Sc., A.F.I.M.A., was presented by Mr. Fleeting and Mr. R. W. Jakeman and discussed.

Mr. R. R. Strachan (Chairman of Council) was in the Chair and fifty-seven members and guests were present.

Eight speakers took part in the discussion which followed.

A vote of thanks to Mr. Fleeting and Mr. Jakeman was proposed by the Chairman and received warm acclaim.

The meeting ended at 7.35 p.m.

Minutes of Proceedings of the Ordinary Meeting Held at the Memorial Building on Tuesday, 25th April 1967

An Ordinary Meeting was held by the Institute on Tuesday, 25th April 1967, at 6.15 p.m. Mr. R. R. Strachan, C.B.E. (Chairman of Council) was in the Chair supported by Mr. J. McAfee (Vice-Chairman of Council), the Honorary Treasurer, Mr. R. Cook, M.Sc. (Vice-President) and Mr. J. Stuart Robinson, M.A. (Director and Secretary).

Approximately one hundred and twenty-five members and visitors were present.

The CHAIRMAN on behalf of the Council said that it gave him very great pleasure to welcome Vice-Admiral Sir Frank Mason, K.C.B., the new President, and to invite him to present his Presidential Address.

The PRESIDENT, Vice-Admiral Sir Frank Mason, K.C.B., before giving his Address, referred to the great loss, at a very critical moment, to the engineering profession through the death of Nelson Pemberton, whose wisdom and counsel would be very much missed.

The President then delivered his Address.

The CHAIRMAN said that the Address had been most interesting. He was glad that the President had mentioned humanities and people, for in this modern age there was a danger of the machine overwhelming the man. The weakness of the training scheme had also been shown, and he hoped the President would use his good offices in helping to overcome these difficulties.

It gave him very great pleasure to move this vote of thanks to the President.

VICE-CHAIRMAN OF COUNCIL, Mr. J. McAfee, in seconding the proposal, said that it was hardly necessary to remind the audience that Sir Frank had had a very distinguished career as Engineer-in-Chief of the Fleet, and, indeed, in this Institute as a member of Council, Chairman of Council, and now he was President. It was true that he had recently dallied elsewhere for a time but he hoped that tonight Sir Frank felt himself to be "back home". It was always a great pleasure to listen to him, no matter what his subject. He talked at times as if conveying some quite ordinary information, such as the state of the weather, but then on reflection the listener realized that something quite profound had been said. The Address that night had been an outstanding example of this, delivered in an easy, gentle manner, but with a great deal of thought and substance in it.

He had much pleasure in seconding the vote of thanks.

The vote of thanks was accorded by acclamation.

The PRESIDENT, in reply, said that he would do his best to serve the Institute in the coming year. It was a very short time and what one could achieve in a year was almost negligible. It was the continuing work of the committees and the permanent staff that really mattered. He was most grateful for the attention given to his Address and for the way in which the vote of thanks had been received.

Presentation of Awards for 1966

The PRESIDENT then presented the following Awards:

Denny Gold Medal to J. Neumann, B.Sc. (Associate Member) and J. Carr (Associate Member), for their paper entitled "The Use of Medium-speed Geared Diesel Engines for Ocean-going Merchant Ship Propulsion".

Institute Silver Medal to M. Langballe (Member) for his paper entitled "Investigations into the Stressing of Crankshafts for Large Diesel Engines".

Yorkshire Award to J. F. Alcock, O.B.E., B.A., for his paper entitled "Thermal Loading of Diesel Engines".

Extra First Class Certificate Examination Award to E. J. Bannister (Associate Member).

Extra First Class Certificate Course—Institute Essay Award to D. M. Fuller (Associate Member).

The PRESIDENT said how delighted he was to see the ladies present that evening. He wished they were all engineers!

The meeting ended at 7.05 p.m.

Branch Meetings

Cochin

Annual Report for 1966

During the year two meetings were held at which technical papers were presented, together with two other joint meetings at which the general activities of the Branch were reviewed. At the Fourth Annual Meeting of the Indian National Committee of the Institute held in Madras on Friday, 16th December 1966, the Branch was represented by Mr. P. L. D'Abreo (Corresponding Member, Cochin).

During the year the Honorary Secretary, Lieutenant P. M. Mathew, I.N., was transferred and Mr. V. V. James was elected in his place. The transfer of Lieutenant Mathew halfway through the year handicapped the activities of the Branch to some extent. Active co-operation and creative suggestions are requested from members. Every effort continues to be made to enrol and transfer more members to the Branch.

Annual General Meeting

The Annual General Meeting of the Branch was held on 12th March 1967, at the Woodlands Hotel, W. Island, Cochin, at 6.00 p.m. Lieutenant-Commander S. G. Vichare, I.N., was in the Chair and twelve members were present. The Annual Report was read and approved. The Minutes of the Fourth Annual Meeting of the Indian National Committee were read.

Mr. K. S. Mani was elected as Honorary Auditor to audit the accounts of 1966 which were then presented by the Honorary Treasurer, Mr. M. S. Sadasivan and passed unanimously.

For the one vacancy on the Committee, Mr. K. Lakshmanan was elected. The other officers were unanimously re-elected for 1967 as follows:

Corresponding Member: P. L. D'Abreo
Chairman: Cdr. M. S. Muthuswamy, I.N.
Committee: K. Lakshmanan
A. Mathew
N. J. Prasad
Lt. Cdr. S. G. Vichare, I.N.
Honorary Secretary: V. V. James
Honorary Treasurer: M. S. Sadasivan

It was agreed that four technical discussions should be held during the coming year, together with a visit to a place of technical interest and a social evening with ladies in December.

The meeting closed with a vote of thanks to the Chairman, at 7.30 p.m.

North West England

A general meeting of the Branch was held on Monday, 17th April 1967, in the Manchester Club, 81 King Street, Manchester, at 6.45 p.m. when a paper entitled "Design Methods and Development of Medium and High-speed Oil Engines" by A. G. Howe, M.B.E. (Member) and Dr. H. Watson, B.Sc., was presented by the authors.

Chairman of the Branch, Mr. K. J. O'Neill presided at the meeting at which sixty-seven members and visitors were present.

Opening the meeting, Mr. O'Neill drew the attention of the members residing in the Manchester area to the visit of the Director and Secretary, Mr. J. Stuart Robinson, M.A., to the North West England Branch on 3rd October 1967, when Mr. Robinson would speak on the latest activities of the Council of Engineering Institutions. Members would be advised further of the time and place of the meeting in due course.

Mr. Howe and Dr. Watson then presented their paper which was well illustrated by slides. Nine speakers took part in the discussion opened by Mr. Henshall. A variety of most critical and interesting questions was asked, which produced some lively exchanges of opinion. A vote of thanks to the authors was received with acclamation.

The meeting closed at approximately 8.45 p.m.

Election of Members

Elected on 23rd May 1967

MEMBERS

Elections

James William Ager
Harold Cecil Beckett
Arthur Charles Butler
Francesco Centrone
Gordon Clark
George Cleghorn
Herman Dekker, Cdr., R.Neth.N.
Robert Forbes
Ernest Gilbert
Harald Andreas Hjersing
William Edward Horsley
Mario Innamorati, Dott. Ing.
Bryan Anthony Nugent Kemp, Lt. Cdr., R.N.
Thomas Swinburne Leighton
Kenneth McKenzie
Neil Maclean
Thomas Robertson Miller
Theodossios Nomicos
Victor James Paflin
Jean-Pierre Paul Louis Pruvost
Frederick Ratcliffe
John Lawrence Savours, B.Sc.
Harry Hosgood Taylor
Edward F. Thieler
Leonard Edward Triggs, B.Mar.E.
Charles White

Transferred to Member from Associate Member

Roy Armstrong
Stanley John Bassett
John Bridge
Michael David Davies Constable
John Brown Craig
Peter Atkinson Dale
Alan Geoffrey Ford, Cdr., R.C.N., B.A.Sc.
Brian Loraine Greener
Rajindar Kumar Kapoor
Pothamsetti Prabuddha Kesava
Charles John McSwiney
John McCabe Mair
Benny Motha, Lt. Cdr., I.N. (ret.)
John Fraser Gordon Munro
William Porter
Forrest Thomson Randell
Thomas Jeffrey Stedman

Transferred to Member from Associate

Alexander Rolland

Transferred to Member from Graduate

Edwin H. Young, Jr.

ASSOCIATE MEMBERS

Elections

Kenneth Alan Baskett
Jose Rodrigues Cavaco, 1st Lieut. (E), Port.N.
Samir Chandra Chakraborty
John Christie
Harry Donker

Joseph Ennis
William John Farnworth
Ronald Ford
Chandra Mohan Goyel
William Alan Graham
Alexander Gunn
John Ellerington Hampton
John Charles Hodge
John Illingworth
James Jackson
James William Jackson
Ajit Singh Kalsy
John Francis Theodore Kelly
Thomas Michael Charles Kelly
John Phillips Lord
James Cassells Mackay
Wallace Newman Macpherson
Bidanda Bopaya Monapa, Lt. Cdr. (SD) (P), I.N.
Emmanouel Monioudis
Robert Charles Morgan
Gajanan Dinkar Oak
Henry Cecil Pearson
Vernon Edward Priddey
Donald Rigby
Darrell Rye
Aroonkumar Raghunath Samant, Lieut., I.N.
Reginald James Scanlon
Thomas Douglas Charlton Smith, Eng. Lieut., R.N.
Norman Johnston Stainton
Robert William Stobbs
Colin Lyon Tough
Thomas Jackson Walker
Ivan Falkland Watt
Robert Edward West, Eng. Lieut., R.N.
George Wilson
Hans Karl Wong
Phillip Thomas Zoller

Transferred to Associate Member from Associate
Bimal Kanti Gupta
Ahmad Nazir, Lieut. (E), P.N.
Kenneth Porter
William Robert Shorten
Michael John Webb

Transferred to Associate Member from Graduate
Dilip Kumar Choudhury
Peter George Cromby
Michael John Hines
Lawrence Reginald Frederick House
Syed Sayeed Husain Hyder
Noshirwan Sohrab Irani
Roger Lee
Tusharendoo Ramji Mistry, B.Sc.
Edmund Irwin Morgan
William John George Noble
Thomas Smith
Moti Lal Tandon

Transferred to Associate Member from Student
Francis Joseph George Cauley
Sreedhara Visvanadhan Krishnarathnam
Peter Radford Polson
John Howard Tuthill
Gordon Leslie Winfield

ASSOCIATES
Elections
Arie Bendersky
Leslie Coward
George Anthony Dick
Alexander Maurice East
Ian Insley
Archibald Desmond Kelly
Carlton Winston Mends
Dattatraya Rajaram Padalkar
David Rowson
Vishwa Mohan Sharma, Sub. Lieut. (SD) (ME), I.N.
James Leslie Smith
Garth Lincoln Stewart
Donald Kemp Walker

Transferred to Associate from Graduate
Hans Axel Holmberg
John Marshall Palmer
Bryan Punch

Transferred to Associate from Student
Ralph Edward Jenkins

Transferred to Associate from Probationer Student
David John Meadowcroft
Robert Horton Streather

GRADUATES
Elections
Michael Conway
Brian John Davies
Shamimuddin Ahmed Faridi
Fung Kwok-on
Barry Graham
Prakash Bhaskarrao Joshi
Riaz Ahmad Khan
Martin Lanfear
Peter Arthur McAlear, B.Eng.
Alistair MacPherson
Anthony James Marsden
Shankar Mukhopadhyay
Bhagwat Sinh Murdia
James Tempest Roy
Richard Malcolm Sabberton
Sudhir Chandra Sabharwal
James Gordon Salt
Wong Kok Choi

Transferred to Graduate from Student
Chan Chi-Ching
David Watling Freeman
David Barry Melhuish
Mel Eric Okafor
Anthony Christopher O'Toole
Roger Paveley
Trevor Allen Rouse
Suresh Pratap Singh
George Stuart Smith
Amarjit Singh Vijan

Transferred to Graduate from Probationer Student
Peter Chalker
Henry Peter Cooke

STUDENTS
Elections
Ian David Barnett
Chen Jeng Li
James William Crossley
Cottawagamage Lalith De Silva
Malcolm Christopher Downer
Robert Charles Dymond
Brian Fielding
Alistair Robertson Gray
Christopher Rodney Hobday
James Robert Ingram
David Andrew McGeorge
Terence McNerney
William Smith Munro
William Joseph Neale
Andrew Malcolm Pascoe

Peter Sandland
Andrew Edward Young

Transferred to Student from Probationer Student
Peter John Barber
George Frederick Blacker
John Campbell
Paul Arthur Efford
David John Halley
Norman William Hodgins
Laurence John McDonald
John Austin Saddington
Ramsey William Faragher Thomson
Stephen Hall Vayda

PROBATIONER STUDENTS
Roger Gerald Cornes
Nigel Alexander Draffin
Kenneth Drakeford
Stephen Paul Fitzgerald
John Buckley Jenkins
William Buchanan Lind
James Duncan McAlphine
Robert Macauley
William John Metcalfe
John James Moore
James F. O'Donnell
Anthony Stewart Prince

Institute Awards

Members are reminded that the following awards are now made:

The Denny Gold Medal for the best paper read by a member during the session.

The Institute Silver Medal for the best paper read by a non-member during the session.

The Junior Silver Medal and Premium of £5 for the best paper by a Graduate or Student read before the Junior Section during a session.

The W. W. Marriner Memorial Prize, value £5, given annually to the candidate who submits the Engineering Knowledge paper (Steam or Motor) of the highest merit in the Board of Trade examinations for the Second Class Certificate of Competency.

The Extra First Class Engineer's Certificate Examination—Institute Award of a Silver Medal for the candidate obtaining the highest marks in the Board of Trade examination.

The Herbert Akroyd Stuart Award, value £50, available biennially, open to members of all grades and non-members for the best paper read at the Institute on "The Origin and Development of Heavy Oil Engines".

The Yorkshire Award, value £40, available biennially for the writer of an essay or the author of a paper read before the Institute dealing with any development related to any aspect of marine engineering or a product applicable to marine engineering.

A cash prize of £25 awarded annually from the interest on the John I. Jacobs, W. Murdoch, D. F. Robertson and A. Girdwood funds for the best essay on the technical advantages to be gained by taking the Extra First Class Engineers' Certificate course—available to engineers taking such a course at a technical college.

Awards, value £4 4s., are given annually to students of technical colleges in marine centres for the best year's work in the study of heat engines.

Prizes for students taking the Ordinary National Diploma Course under the alternative scheme for the training of seagoing engineers. Two prizes are given each year to each technical college operating the scheme, a prize of two guineas being awarded to the best first year student and a prize of six guineas to the best second year student.

The Frank Roberts Award of books or instruments to the value of £7 10s., given annually to the Student or Probationer Student member of the Institute gaining the highest aggregate marks in the courses and examinations in Phase III of the alternative scheme for the training of seagoing engineers.

Administered by the Institute

The William Theodore Barker Award—£100 annually to the candidate who gains the highest marks in the Board of Trade examinations for the First Class Certificate of Competency, provided that such candidate takes the course for the Extra First Class Engineers' Certificate at a technical college.

OBITUARY

HUGH MCASKILL BOYCE (Member 8384) died on 23rd February 1967 at the age of sixty-seven.

Mr. Boyce, who was apprenticed to Caird and Co. Ltd., spent several years at sea with the P. & O. Steam Navigation Co. Ltd. During his sea service he gained a First Class Steam Certificate with Motor Endorsement, for which he studied at the James Watt Memorial School at Greenock. After leaving P. & O., he was for a while with the Anglo-Persian Oil Co. Ltd., in Abadan, and later with the Imperial Oil Co. Ltd. in Vancouver. He also spent some time as an engineering draughtsman with J. G. Kincaid and Co. Ltd.

From 1934 to 1937, he was an engineering draughtsman with Scott's of Greenock and, in the latter year, joined Imperial Chemical Industries with whom he remained until he retired. At the time of his retirement he was in charge of the drawing office at the I.C.I. works at Heysham.

Mr. Boyce was elected a Member of the Institute in March 1937. He is survived by his wife.

WILLIAM ARTHUR CRAVEN (Member 14783) died on 26th August 1966. He was seventy years old.

Mr. Craven was apprenticed to the Great Northern Steamship Fishing Co. Ltd. and attended evening classes at Hull Municipal Technical College. He first went to sea in 1916 as a fourth engineer and, during the course of his many years at sea, rose to the rank of chief engineer. He gained a First Class Steam Certificate in 1921 and a Motor Endorsement in 1953.

Mr. Craven was elected a Member of the Institute in January 1954. He leaves a widow.

WILLIAM REDVERS GURNEY (Member 14908) died on 29th May 1966. He was fifty-seven years old.

Mr. Gurney was apprenticed to Grayson Rollo and Clover Docks Ltd. and also attended Liverpool Technical College for his engineering training. After his apprenticeship, he served for twelve years at sea with the British Tanker Co. Ltd., attaining the rank of second engineer, and, in 1934, gained a First Class Motor Certificate. After leaving the sea he returned to Grayson Rollo and Clover Docks Ltd. as ship manager. He remained with the company for four years following which he was appointed a director and manager with Evans and Martin Ltd. of Liverpool.

Mr. Gurney was elected a Member of the Institute in March 1954. His wife survives him.

DONALD MCLEOD (Member 20958) was born in 1920 at Cambusland, Scotland. He was educated at Gourock High School and served his apprenticeship in marine engineering with Rankin and Blackmore Ltd., and John Kincaid and Co. Ltd.

During the last war Mr. McLeod was at sea in ships of the Canadian Pacific Steamship Co. Ltd., Anglo-American Oil Co. Ltd. and Ellermans City Line Ltd. After the war, he served with the City Line until 1950.

After gaining his First Class Certificate of Competency, he obtained employment ashore as an engineer surveyor with Insurance Engineers Ltd. and rose, in this company, to the position of chief engineer and manager, which appointment he received in 1964. He was elected a Member of the Institute in February 1959.

Mr. McLeod's untimely death at the age of forty-six was due to a boating accident.

COMMANDER OTTO FRANCIS MCMAHON, R.A.N. (Member 21672) died on 15th December 1966, aged sixty-five years.

Commander McMahon entered the Royal Australian Naval College in 1914 and, six years later, went to sea as a Midshipman, R.A.N., in H.M.S. *Agincourt*. He subsequently transferred to the engineering branch and commenced training as a junior engineer officer. After being granted his Engine Room Watchkeeping Certificate, he was promoted to Lieutenant (E) and came to the United Kingdom to undergo courses at the Royal Naval Engineering College, Keyham, and the Royal Naval College, Greenwich. From May 1926 to August 1942, he served in vessels of the Royal Australian Navy and also in H.M.A. Dockyard on engineering duties, with the rank of Commander (E). In September 1942, he was appointed Deputy Engineer Manager, H.M.A. Dockyard, and, in 1946, became Superintendent, R.A.N. Torpedo Factory.

On his retirement from the Royal Australian Navy, he joined the Australian Aluminium Co. Ltd. as general manager and was appointed managing director in 1953. He retired from this company early in 1962 and, in April of the same year was appointed executive officer of the National Electrical Manufacturers' Association of Australia which was formed in that year. As the Association's guiding hand from its inception he was responsible for its growth and development to a high level of service to industry. During this period he also successfully organized and conducted three nation-wide conferences of electrical manufacturers. He retired on 31st March 1966 as the result of declining health.

Commander McMahon was elected a Member of the Institute in December 1959. He is survived by his wife.