

INSTITUTE OF MARINE ENGINEERS
INCORPORATED.

SESSION



1895-6.

President :—A. J. DURSTON, Esq., C.B.

Volume VII.
(OF TRANSACTIONS).

REPORT
OF
THE PROCEEDINGS
AT THE
ANNUAL MEETING
HELD AT
58, Romford Road, Stratford,
ON
FRIDAY, MARCH 13TH, 1896.

INSTITUTE OF MARINE ENGINEERS

INCORPORATED.

SESSION



1895-6.

PROGRAMME

OF THE

SEVENTH ANNUAL MEETING,

FRIDAY, MARCH 13th, 1896.

Chairman—A. J. DURSTON, Esq., R.N., C.B.

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| <p>6.45 The CHAIRMAN.</p> <p>6.50 Resolution as to Increase of Membership.
Proposer, Mr. J. T. SMITH.
Seconder, Mr. J. R. RUTHVEN.</p> <p>7.0 The CHAIRMAN.</p> <p>7.5 Appointment of Scrutineers.
Proposer, Mr. W. J. N. BRETT.
Seconder, Mr. J. B. JOHNSTON.</p> <p>7.10 The Annual Reports.
Mr. JAS. ADAMSON (<i>Hon. Secretary</i>).
Mr. GEO. SLOGGETT
(<i>Hon. Sec., Bristol Channel Centre</i>).
Mr. JNO. GRIFFITHS
(<i>Hon. Sec. Southampton Centre</i>).</p> <p>7.25 Financial Statement.
Mr. ROBT. LESLIE (<i>Hon. Treasurer</i>).</p> <p>7.30 Resolution as to New Grade.
Proposer, Mr. S. C. SAGE.
Seconder, Mr. R. LESLIE.</p> <p>7.40 Adoption of Reports.
Proposer, Mr. J. BLAKE.
Seconder, Mr. F. W. SHOREY.</p> <p>7.50 INTERVAL.</p> <p>8.15 Vote of Thanks to the Retiring President.
Proposer, Mr. A. W. ROBERTSON.
Seconder, Mr. Alderman KIDD.
Response, The PRESIDENT.</p> | <p>8.30 Vote of Thanks to the Office Bearers and Council.
Proposer, Mr. J. ELMSLIE.
Seconder, Mr. H. C. WILSON.
Response, Mr. JAS. ADAMSON.</p> <p>8.50 Vote of Thanks to the Auditors.
Messrs. Redman and Baker.
Proposer, Mr. J. W. SIMPSON.
Seconder, Mr. J. MURPHY.
Response, Mr. J. F. REDMAN.</p> <p>8.55 Vote of Thanks to Hon. Solicitor.
Proposer, Mr. JAS. ADAMSON.
Seconder, Mr. J. D. CHURCHILL.</p> <p>9.0 Technical Education.
Resolution by Mr. Alderman KIDD.
Seconded by Mr. R. LESLIE.</p> <p>9.10 Suggestion.
Mr. H. C. WILSON.</p> <p>9.15 Report of Scrutineers.
Messrs. COOPER and STEWART.</p> <p>9.20 Vote of Thanks to Scrutineers.
Proposer, Mr. S. C. SAGE
Seconder, Mr. J. R. RUTHVEN.</p> <p>9.25 Appointment of Auditors.
Proposer, Mr. J. W. RICHARDSON
Seconder, Mr. J. KIRKWOOD.</p> <p>9.35 Vote of Thanks to the Chairman.
Proposer, Mr. T. F. AUKLAND.
Seconder, Mr. W. C. ROBERTS.
Response, The CHAIRMAN.</p> |
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INSTITUTE OF MARINE ENGINEERS

INCORPORATED.

SESSION



1895-6.

President—A. J. DURSTON, Esq. C.B.

PROCEEDINGS

AT THE

ANNUAL BUSINESS MEETING

HELD AT

58, ROMFORD ROAD, STRATFORD,

On Friday, March 13th, 1896.

CHAIRMAN :

A. J. DURSTON, Esq., C.B. (*President*).

The CHAIRMAN : I am glad to have the opportunity of making a visit to the Institute Premises on such an occasion, when the records of the work of the Session will be laid before you in the course of the evening. It is a very encouraging feature, in connection with the progress which has been made, to note the increasing membership, an increase which has led to the meeting already held, to formally submit a Resolution for the purpose of obtaining the necessary powers to extend the number of members from 1,000 to 1,500. As the programme before me is a long one, I will call upon Mr. Brett to make a proposition relative to the appointment of Scrutineers.

Mr. W. J. N. BRETT (Member) proposed that Messrs. F. Cooper and J. Stewart should be appointed scrutineers to examine the voting papers, and declare the result to the meeting.

Mr. J. B. JOHNSTON (Member) seconded the nomination.

The CHAIRMAN : It has been proposed and seconded that these two members retire to examine the voting papers, and report the result. If such is approved, I will call upon Messrs. Cooper and Stewart to undertake the duty. By show of hands the proposal is agreed to by the meeting, and we now proceed to the next business, which is the reading of the Annual Report by the Secretary, and I call upon Mr. Jas. Adamson to read his Report.

SEVENTH ANNUAL REPORT.

The 1st February, 1889, saw the Institute of Marine Engineers officially started by the opening of a Reading Room in the Langthorne Rooms, Stratford. On the 12th February a Special Meeting was held, when the arrangements for the systematising of the work was further considered, and on the 5th of April the first paper was read.

By the first anniversary of its birthday, the Institute had been incorporated and was recognised as a factor in the State, while its progress, unity and work, were reviewed and favourably criticised in the technical press. The total membership at the end of its first year ending January 31st, 1890, was 253, consisting of 206 members, 12 associate members, 15 associates, 5 graduates, and 15 hon. members.

The seven years which have elapsed since its foundation have not been uneventful in the history of engineering science and of trade and commerce.

The development of the higher pressures has been a feature in the former, while the depression of trade

and unhappy strikes have marred the pages of the history of the latter.

The outcome of the advances made in engineering has led to a demand for greater vigilance and closer attention to details, with a corresponding higher training and efficiency on the part of those entrusted with the care and responsibility of machinery, both ashore and afloat.

The outcome of the trade disputes has led to many grey hairs and bare patches, to want of confidence and general worry, leading to bickering and strife of tongues, all of which have tended to drift apart those who ought by all means to combine their efforts for the general good of the nation.

Happily we appear to be recovering from the period of depression and entering upon a brighter road, so that we may look forward to the new session being ushered in under these more fortunate auspices, with some assurance of happier prospects and pleasanter associations, due to the advancing tide of prosperity.

The Seventh Annual Report of the Institute shows progress and advancement notwithstanding the general depression, and to our President this is largely due, owing to the personal interest he has manifested, his presence at so many meetings, and to the introduction of new features in our discussions.

The membership at the close of the official year, ending January 31st, 1896, stood at 952, as follows:—

Members ..	722	Associates ..	65
Associate Members	78	Graduates ..	33
Hon. Members	..		54

The additions during the year have been 124, as follows:—

Members	72	Associates ..	28
Associate Members	11		Graduates ..	9
Hon. Members	..			4

We have to record, with great regret, the removal of the following names from our membership roll by death :—

G. ANGUS (Member), who was attached to the Southampton Centre, died at sea, July, 1895.

W. BOAZ (Member), who has been well-known in the East of London for many years, died July, 1895.

THOS. DAVIES (Member), who was specially connected with the Bristol Channel Centre, died May, 1895.

PETER DENNY (Past President), who has been in the front rank of those who have helped to make our present position as a nation possible, closed a long and honourable career, leaving an honoured memory behind him in August, 1895. By his munificent gift of £250, the Denny Medal was founded in connection with the Institute.

PHILIP DEVLIN (Member), who was Chief Engineer of the *Ealing*, wrecked off the coast of Newfoundland, the officers and crew suffering many privations, January, 1896.

ANDREW DINNING (Member), who was connected with the Southampton Centre, Chief Engineer s.s. *Goth*, in the service of the Union S.S. Co., died June, 1895.

JOHN LAW (Member), who was Chief Engineer in service of the B. & P.S.N.Co., Bombay, died January, 1895.

T. G. MARTIN (Member), who was much respected and is missed by a large circle of members and friends, Mr. Martin was joint auditor in Session 1893-4, died January, 1896.

J. W. PRATTEN (Member), who was a retired Chief Engineer of the P. & O. Co., died at Reading, November, 1895.

J. H. PRICE (Member), who was connected with the Southampton Centre, Chief Engineer s.s. *Trent*, died at sea, March, 1895.

H. J. SEABROOK (Member), who was Chief Engineer of the *Hornby Grange*, died at sea, May, 1895.

THOS. SCOTT (Member), who was a well-known Chief Engineer in the service of the Orient Line of steamers, died at Gravesend, February, 1895.

J. C. SOULSBY (Member), who was associated with the Bristol Channel Centre at Cardiff, died January, 1896.

W. TAPLEY (Member), also associated with the Bristol Channel Centre, died at Cape Town, January, 1896.

G. TIMMIS (Member), who was attached to the Southampton Centre, died November, 1894.

E. F. WAILES (Member), who was well-known on the North-East Coast especially, died at Newcastle, December, 1895.

ROBERT WHITE (Member), who retired from business (Tidal Basin Engine Works and Royal Albert Docks, London), some years ago to West Hartlepool, whence he removed to Barnard Castle, died February, 1896.

In addition to these removals by death, the Council has been reluctantly compelled to delete the names of members from whom no intimation has been received for a considerable time, and whose notices and papers have been returned as not known at the address given. Members are requested to communicate their new addresses to the Institute in writing at once, when any change is made, to prevent disappointment in respect to notices and papers.

VOLUME V. OF TRANSACTIONS is now being issued in bound form to the order of the members; the cost for

binding papers returned for this purpose is 3s. 6d.; missing papers being replaced at nett cost. Volume VI. is also nearly complete and ready for binding. Previous volumes may be obtained on application to the Convener, Transactions Committee. Volume I. and II. are incomplete on account of a few papers being out of print.

Mr. J. T. SMITH has served as Convener of Committee in charge of this department during the Session.

The PAPERS which have been read and discussed in the course of the year are five in number, and comprise the following subjects: "Induced Draught," "Structural Weakness, or, Elasticity of Steamers," "Combustion of Fuel," "Internal Friction in Steam Engines" and "Ballast Tanks for Steamers and Sailing Vessels." The three last are in course of publication along with the discussions on them.

Mr. J. R. RUTHVEN has served as Convener of Committee in this department.

A Lecture and demonstration was kindly given by special request, on the "Thornycroft Water Tube Boiler for Torpedo Boats" by Mr. J. E. Thornycroft, when a working model was also exhibited and explained. The large and appreciative audience testified to the interest manifested in the subject. Mr. Thornycroft very kindly consented to repeat the lecture to the Bristol Channel Centre at Cardiff.

A visit of inspection was made to the Boiler Works of Messrs. Fraser, Millwall, when the "Peterson Water Tube Boiler" was examined and seen in action. Messrs. Fraser kindly made the necessary arrangements on Saturday, November 23rd, and were accorded a vote of thanks for their invitation and the privilege extended to the Institute.

By kind permission of Messrs. Maudsley, Son and Field, a "Belle-Ville Water Tube Boiler" was inspected under steam at their Works, at Lambeth, and for the kindness and courtesy of the firm in making special arrangements on Saturday afternoon, December 14th, when the members of the Institute were privileged to visit their Works, the thanks of the Institute were heartily tendered.

An excellent lecture on "Nelson, and the lessons derived from his life," was given by Mr. T. F. Aukland (Hon. Member), specially for the junior members. The lecture was highly appreciated and much enjoyed by those who heard it.

The DRAWING CLASSES have been conducted by Mr. W. J. N. Brett (Member), during the Session, on Tuesday and Thursday evenings. Mr. G. W. Newall (Member), who carried on the class in former years, found himself unable to devote the necessary time and attention to it for another session. The thanks of the Institute were voted to Mr. Newall on his retirement, for developing the Drawing Class, and good wishes were expressed towards Mr. Brett on his undertaking the work. It is satisfactory to note that these wishes have been fulfilled.

The Convener of Committee in charge of the Educational Department for the year just closed is Mr. John Adamson.

The President delivered his INAUGURAL ADDRESS in the Institute premises, on Monday, September 23rd. The attendance of members was large, and as the address contained matter of the highest interest and scientific value, it was very highly appreciated and will be read with a keen relish.

The ANNUAL DINNER was held on Friday, September 13th, this Session, in the London Tavern, and was presided over by the President. The proceedings are

fully reported under a separate cover along with the reports of the Dinners held in connection with the Bristol Channel and Southampton Centres.

The ANNUAL CONVERSAZIONE was held on Friday, December 6th, and was conducted on lines similar to its predecessors. It maintained its popularity, the attendance of members and friends being good, and the evening a pleasant and enjoyable one.

It was considered desirable to have a SUMMER OUTING for members and friends, especially to give an opportunity to those whom duty prevented being present at either of the other social functions. This was ultimately arranged for Saturday afternoon, July 20th, the destination being Epping Forest. The party assembled in the Royal Hotel, Chingford, and spent the evening very pleasantly after viewing the surrounding scenery. A SMOKING CONCERT was also held in the London Tavern, Fenchurch Street, on Friday, October 25th. The Recreation Committee carried out the arrangements in connection with these social events with Mr. C. L. E. Melsom, Convener.

The READING ROOM, as per published list, has been well supplied with Papers and Magazines weekly, partly by purchase and partly by the good offices of editors and friends of the Institute and its centres, to whom many thanks are due for their kindness. Mr. F. W. Shorey is convener of this department.

The LIBRARY has been added to by members and friends month by month, so much so that the necessity for an additional book case has arisen.

The "MALCOLM CAMPBELL LIBRARY," lent to the Institute by the Trustees is available for the use of members. Mr. JOHN CLARK (Member) was appointed

by the subscribers, co-Trustee with Messrs. *Adam Lawrie and James Adamson, in place of the late Mr. John Tait.

Mr. W. WHITE is convener of the Library Committee.

The SCRAP BOOKS for Press cuttings and notices of special interest are being filled up, but not to the extent they might be, and members are desired to forward such cuttings and notices as may seem of value to preserve, to Mr. A. Campbell, Convener.

The COAL TESTING APPARATUS has been used occasionally by special arrangement with the Convener.

The PROPERTY of the Institute is being enhanced in value, year by year, by contributions from members, and Mr. J. H. Thomson, Convener, Property Committee, has to record the addition of several drawings, plans, paintings and articles of interest.

The Institute exchanges transactions with the following kindred Societies:—

Institution of Mechanical Engineers.

Institution of Naval Architects.

Institution of Engineers and Shipbuilders (Scotland).

„ „ „ (Hull & District).

„ „ „ (North-East Coast).

American Society of Civil Engineers.

Cornell University (Ithaca).

*It is with much regret that intimation of the death of Mr. Adam Lawrie, since the above was put in type, has been received. It is proposed that Mr. A. H. Colquhoun should act in place of Mr. Lawrie.

Liverpool Engineering Society.

L'Ecole d'Application de genie Maritime.

Shipmasters' Society.

Junior Engineering Society.

Copies of the transactions are also forwarded to :—

The Patent Office Library.

Guildhall Library.

British Museum.

West Ham Library.

The Advocate's Library (Edinburgh).

The Bodleian Library (Oxford).

The University Library (Cambridge).

The Trinity College Library (Dublin).

The Bristol Channel and the Southampton Centres are flourishing, as will be seen from the detailed reports which follow.

The Meetings in connection with the former are held rent free by the kindness of the Senatus, in the University College, Cardiff.

The Meetings of the Southampton Centre are held in the Arts Society Hall, Above-bar, Southampton, and during the Session the Rooms have been open every evening for the accommodation of members.

No additional Centres have been established. It has not been found convenient as yet to carry on the

work of the Institute at Calcutta or Bombay as established Centres, but negotiations have been proceeding with a view to this end, which seems desirable in the interest of the members resident or sailing from these ports, the same applies to other ports where there are members in sufficient force to establish Centres.

The Council decided, after special conferences on the subject, to propose the establishment of a new class in the membership of the Institute, and in accordance with the by-laws and regulations in the matter of proposed alterations, notices were issued to members setting forth the particulars as to the new class which it is recommended to term "companion."

The time has now arisen for application to the Board of Trade to enable the membership to be increased to 1,500. At present the Institute is registered to the extent of 1,000 members only, hence a notice has been issued to effect the object.

The resolutions embodying these two alterations will be submitted for the approval of members.

On behalf of the Council,

JAS. ADAMSON.

Hon. Secretary.



MEETINGS HELD DUR

DATE.	NO. OF PAPER.	SUBJECT.
1895.		
February 11 ...	55	Induced Draught
Do. 25 ...	„	Discussion do.
March 8 ...	—	Annual Meeting
Do. 11 ...	55	Discussion—Induced Draught
Do. 25 ...	56	Structural Weakness of Steamers
April 8 ...	„	Discussion do.
May 13 ...	57	Combustion of Fuel
Do. 27 ...	„	Discussion do.
July 20 ...	—	Summer Outing
September 13 ...	—	Fifth Annual Dinner
Do. 23 ...	—	Inaugural Address.....
October 14 ...	58	Internal Friction in Steam Engines
Do. 25 ...	—	Smoking Concert
Do. 28 ...	58	Discussion—Internal Friction in Steam Engines...
November 11 ...	—	Do. do. do. ...
Do. 18 ...	—	The Life of Nelson (Lecture).....
Do. 23 ...	—	Visit to Works of Messrs. Fraser, Millwall
December 6 ...	—	Conversazione.....
Do. 9 ...	—	Lecture and Demonstration on Thornycroft Water Tube Boiler.....
Do. 14 ...	—	Visit to the Works of Messrs. Maudsley, Son and Field, Lambeth
Do. 16 ...	59	Water Ballast for Steamers and Sailing Vessels ...
1896.		
January 13 ...	„	Discussion do. do.
Do. 27 ...	„	Discussion do. do.

ING SESSION, 1895-6.

AUTHOR.	CHAIRMAN.	WHERE HELD.
Mr. W. J. TROWELL ... (Member)	Mr. J. H. Thomson ... (Chairman of Council)	Institute Premises, 58, Romford Road
... ..	Mr. J. R. Ruthven ... (Member of Council)	Do. do.
... ..	Mr. F. W. Wymer ... (Vice-President)	Do. do.
Mr. W. J. TROWELL ... (Member)	Mr. F. W. Shorey ... (Member of Council)	Do. do.
Mr. JNO. MCCALLUM ... (Member)	Mr. J. F. Flannery, J.P. ... (Member)	Do. do.
Do. do.	Do. do.	Do. do.
Mr. G. F. W. BAPTY ... (Member)	Mr. F. W. Shorey ... (Member of Council)	Do. do.
Do. do.	Do. do.	Do. do.
Mr. C. L. E. MELSOM ... (Convener Recreation Committee)	Mr. A. Thomson ... (Vice-President)	Chingford Hotel, Essex
Do. do.	A. J. Durston, Esq., C.B. ... (President)	London Tavern, Fenchurch Street
The PRESIDENT	Do. do.	Institute Premises, 58, Romford Road
Mr. W. W. HOUFE (Member)	Mr. T. F. Aukland ... (Hon. Member)	Do. do.
... ..	Mr. A. Thomson ... (Vice-President)	London Tavern, Fenchurch Street
Mr. W. W. HOUFE (Member)	Mr. T. F. Aukland ... (Hon. Member)	Institute Premises, 58, Romford Road
Do. do.	A. J. Durston, Esq., C.B. ... (President)	Do. do.
Mr. T. F. AUKLAND (Hon. Member)	Mr. Jas. Adamson ... (Hon. Secretary)	Do. do.
The Petersen Water Tube Boiler	Mr. J. H. Thomson ... (Chairman of Council)	Millwall Works
Mr. C. L. E. MELSOM ... (Convener Recreation Committee)	Town Hall, Stratford
Mr. J. E. THORNYCROFT ... (Hon. Member)	A. J. Durston, Esq., C.B. ... (President)	Institute Premises, 58, Romford Road
The Belle Ville Water Tube Boiler	Lambeth Works
Mr. M. W. AISEITT (Member)	Mr. S. C. Sage (Member of Council)	Institute Premises, 58, Romford Road
Do. do.	Do. do.	Do. do.
Do. do.	Mr. J. Murphy (Member)	Do. do.

The CHAIRMAN : In the absence of a representative from the Bristol Channel Centre, I will call upon Mr. Adamson to read the Report received from Mr. Geo. Sloggett, the Secretary of the Bristol Channel Centre :—

INSTITUTE OF MARINE ENGINEERS

INCORPORATED.

BRISTOL CHANNEL CENTRE.

ANNUAL REPORT.

SESSION 1895-6.

The progressive spirit that has hitherto prevailed has continued undiminished throughout the year just terminated. Steadily but surely the Bristol Channel Centre is gathering strength and increasing in popularity. This, of course, is as it should be ; still, it can only be attained by unanimous work and co-operation, such as exists amongst the Office Bearers and Committee of this Centre.

The record for 1895-6, as may be seen from the Table attached, compares favourably with former sessions. The meetings have been frequent and of a varied character, while the average attendance has been good.

INSTITUTE OF MARINE ENGINEERS. BRISTOL CHANNEL CENTRE.

MEETINGS HELD DURING THE SESSION 1895-6.

DATE.	SUBJECT.	AUTHOR.	CHAIRMAN.	PLACE OF MEETING.
1895.				
Feb. 13	" Structural Weakness of Steamers"	Mr. John McCallum (Member)	Prof. A. C. Elliott, D.Sc. (President)	University College, Cardiff
" 27	Discussion on ditto	" " " "	" " " "	" " " "
May 29	" Induced Draught"	Mr. W. J. Trowell (Member)	" " " "	" " " "
June 19	"Testing and Testing Machines," with a demonstration on the 100-ton Testing Machine at the University College, Cardiff	Prof. A. C. Elliott, D.Sc. (President)	Mr. T. W. Wailes (Member)	" " " "
" 29	Channel Cruise and Visit to Minehead and Dunster	Mr. J. McCallum (Convener)	Prof. A. C. Elliott, D.Sc. (President)	" " " "
Aug. 31	Visit to Raglan and Usk. Paper on "The Steam Engine and its association with Raglan Castle"	Mr. S. W. Allen (Member)	" " " "	" " " "
Oct. 19	Fifth Annual Dinner. Presentation of the Denny Gold Medal to Mr. T. W. Wailes (Member) by the President, A. J. Durston, Esq., C.B., R.N.	Mr. George Sloggett (Convener)	" " " "	Royal Hotel, Cardiff
Nov. 6	"Internal Friction in Steam Engines"	Mr. W. W. Houfe (Member)	" " " "	University College, Cardiff
" 20	Discussion on ditto	" " " "	" " " "	" " " "
Dec. 11	" Water Ballast for Steamers and Sailing Vessels"	Mr. M. W. Aisbitt (Member)	" " " "	" " " "
" 18	Discussion on ditto	" " " "	" " " "	" " " "
" 21	Smoking Concert. Presentation of a Testimonial to Mr. George Sloggett, Hon. Sec., B.C.C., by the President, Professor A. C. Elliott, D.Sc.	Mr. A. E. Smithson (Convener)	" " " "	Royal Hotel, Cardiff
1896.				
Jan. 22	" Water Tube Boilers"	Mr. J. E. Thornycroft (Hon. Member)	" " " "	University College, Cardiff

It is with regret we note the recent deaths of Mr. J. C. Soulsby, formerly a member of the B.C.C., Mr. Thos. Davies, and Mr. W. Tapley.

Mr. M. W. Aisbitt (member, B.C.C.) read a paper on "Water Ballast," and there were three other local contributions, one by Dr. Elliott on "Testing and Testing Machines," one by Mr. John McCallum on "Structural Weakness of Ships," and the other by Mr. S. W. Allen (member) on "The Steam Engine and its association with Raglan Castle." Dr. Elliott also gave at the time of his paper a most interesting demonstration on the 100-ton Testing Machine, in the South Wales University.

In the summer, the members on one occasion went for a channel cruise to Minehead, in Somersetshire. At another time a visit was paid to the historical districts of Raglan and Usk. The ruins of Raglan Castle are the most picturesque in the county, and it was here that the above-mentioned paper by Mr. Allen was read. Extended reports of these gatherings will be provided.

The Fifth Annual Dinner of the Bristol Channel Centre was remarkably successful, and was noteworthy in two respects. The Centre was honoured for the first time on such an occasion by the presence of the President of the Institute. The President, A. J. Durston, Esq., C.B., R.N., journeyed to Cardiff for the express purpose of attending it, and it is to be hoped his example in the way of encouraging the Centres of the Institute will be followed by future Presidents. Mr. Jas. Adamson, Hon. Secretary, London, was also present, as usual. The other main feature of the evening was the presentation by the President of the Denny Gold Medal to Mr. T. W. Wailes (member, B.C.C.), to whom it had been awarded for his paper on "Raising Wrecks and Sunken Vessels."

A Smoking Concert, very ably organized by Mr. A. E. Smithson, was also held. Prof. A. C. Elliott, D.Sc.,

presided, and during the evening, on behalf of the members of the Centre, he made a presentation to Mr. George Sloggett, Hon. Secretary, B.C.C., of a handsome walnut cylinder writing desk, also a gold pendant. The desk bears a silver plate, inscribed as follows: "Presented to Mr. George Sloggett by the members of the Bristol Channel Centre of the Institute of Marine Engineers, as a mark of personal regard and appreciation of his services as Honorary Secretary. Cardiff, Christmas, 1895."

Mr. J. E. Thornycroft, of Messrs. Thornycroft & Co., Chiswick, most generously made a special visit to Cardiff, and gave to the Bristol Channel Centre an exceedingly interesting address on Water Tube Boilers. A crowded and enthusiastic audience showed its appreciation of Mr. Thornycroft's kindness.

Representations have been made by the B.C.C. to the Council in London at various times during the last two sessions as to the desirability of amending the Institute By-Laws, relating to Honorary Membership. The negotiations in connection with this matter have at last been brought to a satisfactory termination by the kind intervention of the President, A. J. Durston, Esq., C.B., R.N., and also by the advocacy of Dr. Elliott, President, B.C.C., both of whom attended a Special Council Meeting for dealing with the question. The result of the decision of the Council was hailed by the Bristol Channel Centre with general satisfaction.

The result of the Annual Election was as follows :

President : Professor Arch. C. Elliott, D.Sc.

Vice-President : Mr. David Gibson.

Hon. Treasurer : Mr. C. L. Ryder.

Representative to Council : Mr. David McCallum.

Members of Committee : Mr. R. Davison, Mr. Jas. Ferrier, Mr. R. J. Field, Mr. John McCallum, Mr. W. Simpson, and Mr. A. E. Smithson.

Honorary Secretary : Mr. George Sloggett.

The Council of the University College, Cardiff, still extends to the Centre the privilege of holding its meetings in the buildings of the Engineering Department. For this favour we are much indebted to the University College Committee.

On behalf of the Bristol Channel Centre,

GEORGE SLOGGETT,

Honorary Secretary.



The CHAIRMAN: As there is no one here officially representing the Southampton Centre, the Report received from Mr Jno. Griffiths, the Local Secretary, will also be read on his behalf:—

INSTITUTE OF MARINE ENGINEERS

INCORPORATED.

SOUTHAMPTON CENTRE.

President—C. S. DU SAUTOY, Esq., R.N.R.

ANNUAL REPORT, 1895-6.

Steady progress has been made during the Session 1895-6 by this Centre, and great interest has been taken in the meetings which have been held.

A good commencement has been made towards the establishment of a Scientific Library. The first instalment of Standard Scientific Works was purchased and placed in the Society's Rooms at the disposal of members on April 2nd last, and a further selection is now being made.

Since the beginning of December last, the Rooms have been kept open for the convenience of members each week day evening, except Saturday, and papers have been read and discussed therein on the dates given on attached statement. The paper read by Mr. William Trowell, on "Induced Draught" especially, gave rise to a spirited discussion on the two evenings the subject was brought forward. Some of the members present having had personal experience of both induced and forced draught, their statements were most attentively listened to by all present.

INSTITUTE OF MARINE ENGINEERS INCORPORATED.

SOUTHAMPTON CENTRE.

MEETINGS HELD DURING SESSION 1895-6.

DATE.	PLACE OF MEETING	SUBJECT.	AUTHOR.	CHAIRMAN.
1895				
Feb. 7	Art Society's Gallery	Pump Valves	Mr. W. E. Lilly .. (Associate Member)	C. S. Du Sautoy, Esq.
Mar. 13	„ „	Induced Draught	Mr. W. J. Trowell (Member)	L. Steele, Esq., R.N.
Aprl. 2	„ „	Discussion on ditto	„ „	C. S. Du Sautoy, Esq.
„ 17	„ „	Structural Weakness of Steamers	Mr. John McCallum (Member)	„
„ 23	„ „	Election of Local Officers ..	„ „	„
Nov. 6	„ „	Internal Friction of Steam Engines	Mr. W. W. Houfe (Member)	„
1896				
Jan. 29	„ „	Water Ballast for Steamers and Sailing Vessels	Mr. M. W. Aisbitt (Member)	„

The Annual Meeting to elect officers of the Local Centre was held on April 22nd 1895, the following members were appointed:—

President : C. S. DU SAUTOY, Esq., R.N.R.

Vice-President : A. J. DAY, Esq.

Hon. Treasurer : Mr. R. MACKINTOSH.

Hon. Secretary : Mr. J. GRIFFITHS.

Committee :

Messrs. L. STEELE, R.N., C. W. MURRAY, A. BROWN,
H. DAYER, and R. W. COOMBER.

The Annual Dinner was held on November 15th, under the presidency of the President of the Institute A. J. DURSTON, Esq., C.B, and was a great success.

The Obituary List for a young Centre is large, four of our members Messrs. G. Angus, A. Dunning, J. H. Price, and G. Timmis having died since our last report.

On behalf of the Southampton Centre.

JNO. GRIFFITHS.

Hon. Local Secretary.

The CHAIRMAN : I now call upon the Treasurer, Mr. Leslie, to submit the Financial Statement and Balance Sheet.

Mr. R. LESLIE (Hon. Treasurer) : The Balance Sheet is in the hands of members to be examined. It has been prepared by the Chartered Accountant, and the details checked by the Auditors, who have found all in order.

REVENUE

Dr.

1st February, 1895 to

	£	s.	d.	£	s.	d.
To General Expenses—						
Bank Charges	0	9	4			
Postages	13	9	9½			
Telegraph Address	1	1	0			
Travelling Expenses	2	1	6			
Inscription on Medals	0	4	0			
Clerical Work	1	10	0			
Stationery and General Printing	23	11	10			
Assistant Secretary's Salary	100	0	0			
Chartered Accountant's Fee	10	10	0			
				152	17	5½
„ Rates, Taxes, Gas, &c.—						
Rates and Taxes	25	16	4			
Gas	17	2	0			
Water	4	2	0			
				47	0	4
„ House Account—						
Caretaker's Wages... ..	54	12	0			
Coals	6	14	0			
Sundries	3	0	11			
				64	6	11
„ Insurance					1	14 6
„ Advertisements					9	10 0
„ Depreciations—						
On Furniture	13	10	8			
On Additions to Building	28	5	5			
				41	16	1
„ Expenses Reading Room					13	12 8
„ Papers and Discussion—						
Printing and Lithography	146	17	8			
Reporting	12	13	6			
Postages	21	10	2½			
				181	1	4½
„ Drawing Class—						
Expenses	10	3	6			
LESS Fees received... ..	2	15	0			
				7	8	6
„ Recreation Section—						
Expenses—Dinner	49	11	0			
„ Conversazione	72	5	4			
„ Annual Meeting	1	11	6			
„ Opening Session	4	17	6			
„ Summer Meeting	19	5	5			
„ Smoking Concert	6	3	7			
				153	14	4
„ Interest—						
Denny Gold Medal... ..	10	0	0			
On Bank Advance	5	13	5			
				15	13	5
„ Bristol Channel Centre					2	10 3
„ Southampton Centre					39	1 0
„ Balance (excess of Income)					206	1 1½
				£936	7	11½

We have examined and compared the Cash Books and Vouchers kept by the Honorary Treasurer, and find them to agree with the cash balance.

ACCOUNT.

31st January, 1896.

Cr.

	£	s.	d.	£	s.	d.
By Entrance Fees —						
Members	73	10	0			
Associate Members...	11	10	0			
Associates	20	5	0			
Graduates	4	10	0			
				109	15	0
„ Subscriptions —						
Members	688	7	10			
Associate Members...	48	15	0			
Associates	19	11	4			
Graduates	5	13	4			
	762	7	6			
LESS Subscriptions in Advance —						
Members	£107	14	2			
Associate Members ...	3	8	9			
Associates	4	16	3			
Graduates	0	13	9			
	116	12	11			
				645	14	7
By General Revenue —						
Sale of Bye-Laws ...		0	7	0		
Receipts, Billiard Table	£5	15	0			
LESS Expenses	0	1	0			
		5	14	0		
				6	1	0
„ Donations —						
Honorary Members...	16	16	0			
Building Fund	6	5	0			
Library	0	10	0			
Educational (to Drawing Class)...	7	7	0			
				30	18	0
„ Transaction Section —						
Sale of Papers (Bound Volumes)...				2	13	6
„ Recreation Section —						
Sale—Dinner Tickets	43	10	0			
„ Conversazione	69	6	6			
„ Summer Meeting	21	12	4½			
„ Smoking Concert	2	15	0			
Donations—Dinner	2	0	0			
„ Conversazione	2	2	0			
				141	5	10½

£936 7 11½

J. FELL REDMAN, } Auditors.
W. H. BAKER, }
R. LESLIE, *Honorary Treasurer.*

THE INSTITUTE OF MARINE ENGINEERS. (SESSION 1895-6.)

BALANCE SHEET, 31st JANUARY, 1896.

Liabilities.			Assets.		
	£	s. d.		£	s. d.
To Sundry Creditors...	99	19 8	By Petty Cash in hand ...	0	5 9
„ Denny Gold Medal, and Interest to date ...	261	13 4	„ Sundry Debtors ...	14	15 2
„ Subscriptions in advance, for Session 1895-7	116	12 11	„ Freehold of Institute Buildings, 58, Romford Road, at cost, with Extension	1500	0 0
„ Bank Advance ...	0	6 5	„ Furniture, &c., at Institute—		
„ Revenue Account—Balance	£	s. d.	Balance 1st February, 1895	£63	12 4
1st February, 1895 ...	1375	10 9½	Additions ...	7	2 0
ADD Excess of Income, 1895-6	206	1 1½			
		1581 11 11	LESS Depreciation 5% ...	270	14 4
				13	10 8
				257	3 8
			ADD Recent Addition, Billiard Table ...	32	11 3
					289 14 11
			By Additions, Alterations, and Repairs to Institute—		
			Balance 1st February, 1895	731	5 0
			LESS Transfer to Freehold ...	450	0 0
				281	5 0
			Additions...	1	9 0
				282	14 0
			LESS Depreciation 10% ...	28	5 5
				254	8 7
			By Insurance unexpired ...	0	19 10
					£2060 4 3
	£2060	4 3			

We have examined the above Balance Sheet with the Books and Vouchers, and certify it to agree therewith. The Subscriptions in arrear have not been taken into credit in the above account. The deeds of the Premises in Romford Road, are in the possession of the Bank.

20th February, 1896.

WALTER W. FEAST & Co.,
6 & 8, Eastcheap, London, E.C.

The arrears of subscriptions amount to a good deal, and it is to be hoped that those members who are behind with their payments will come forward and pay up.

You will notice that a certain amount of money is shown deducted from the cash received up till the end of January, this is deducted because the financial year ends in January, the month when subscriptions are due to be paid for the next year. If the financial year ended on the 31st December, this complication would be avoided.

The income is in excess of the expenditure by £206, and for the Extension of Premises and the outlay on these alterations, incurred last year, we are clear and free from debt.

I will be glad to answer any questions which may be asked on the subject of the Balance Sheet, if there is anything not quite clear.

The CHAIRMAN: I now call upon Mr. Sage to bring forward a subject in respect to a new grade of membership, which has been very carefully considered by the Council, on the recommendation of the Bristol Channel Centre, and it seems to me that the proposed change will be a great improvement. Many gentlemen occupied in professions intimately connected with Marine Engineering, and associated with you day by day, are desirous of becoming active members of the Institute. These are too numerous to be added to the list of honorary members, and wish, I understand, to support the Institute and join in its work in a more practical manner than they would have the opportunity of doing as honorary members. Perhaps I may shorten the discussion by explaining that the Council, after well discussing the matter, were induced to recommend that in place of bringing gentlemen, eligible for this new grade, into one of the existing grades, associates or associate members, a new grade should be created, and eventually the additional grade of "companion" was resolved on. This complied with a very wide spread

indirectly interested in matters relating to Marine Engineering, subject to such regulations as the Council shall from time to time decide. Such Candidates shall be elected under the same conditions as Members, Associate Members, Associates and Graduates, in respect to the application form and ballot.

3. The addition of the word "Companion," after the word "Associate," in Nos. 8, 14, and 15.
4. The addition of the words "and Companion," after the word "Member," in No. 16.
5. The addition of the word "Companions," after the word "Members," in lines 3 and 6, of No. 40, and in No. 55.
6. The addition of the word "Companion," after the word "Member," in lines 1 and 12 of No. 43, and in No. 50.

Mr. R. LESLIE : I have much pleasure in seconding the resolution.

The CHAIRMAN : The resolution has been proposed and seconded, and I will now put it to the meeting, if there is no amendment.

As there was no amendment the resolution was put to the meeting, and approved by show of hands. The resolution was declared carried, and without dissent.

Intimation was then made that at the meeting which was summoned for Monday, 30th March, at 7.30 p.m., the alteration and additions to the Articles of Association and By-Laws would be further considered and confirmed.

Mr. J. BLAKE (Member) : There is always a good deal of work in connection with a Society such as this, and it is well that there are some members who take sufficient interest in the Institute to devote so much time to its operations. The Reports we have heard read to-night serve to show to some extent the labour involved, while they also show some of the results of that labour, it is well that these Reports should be published for the information of members and friends of the Institute, and I now move that the Reports as read be adopted and printed in the Transactions.

Mr. F. W. SHOREY (Member of Council) : I beg to second the resolution on behalf of Mr. J. W. Richardson (Member), at his request, I consider the Reports are full and embrace all the work.

The CHAIRMAN then put the resolution, which was declared carried, without dissent, and the meeting adjourned.

On the meeting being resumed, after the interval, a vote of thanks to the PRESIDENT was proposed in the following terms :—

Mr. A. W. ROBERTSON, in proposing a hearty vote of thanks to Mr. Durston, the retiring President, said :— The vote of thanks to the retiring President that I am entrusted with is one so important that I much regret my inability to do justice to it. Mr. Durston has not only headed the Institute with his honoured name during the last twelve months, but has also spent much time presiding at our public functions, and at our deliberations in council. On all occasions he has shown depth of thought and sound reasoning, which have commanded our highest admiration. He has also given us a valuable contribution for our consideration in connection with water-tube boilers. Holding, as he does, a high position in the Admiralty, in conjunction with Sir William White, one of our highly respected Past Presidents, it is not too much for me to say that the bond which should unite this Institute to the Navy has been broadened, deepened, and lengthened by the association with this gentleman. Mr. Durston is an engineer of a very high calibre ; we, as an Institute of Engineers, are pleased to have been associated with him, and we trust that, although retiring from the presidentship, he will still abide with us, and lend us his valuable assistance in all important matters affecting the interests of this Institute. To make such a claim is a great demand upon one whose hands are ever full of work ; but may we not respond by saying, as individuals, and as an

Institute, that if the time should ever come when you, Mr. Durston, require to have your hands strengthened, we shall not be found wanting. There is no Institute in the universe from which you can draw such assistance, and there is no Institute that has the power to afford such assistance to the Navy and to our great Empire as the one over which you have so creditably and honourably presided during your year of office. Our gratitude goes with you for what you have done for us, and we trust you may be long spared to enjoy the very best health for your onerous and arduous duties.

Mr. Alderman KIDD seconded the resolution, which was carried with enthusiasm.

The PRESIDENT (A. J. Durston, Esq., C.B.), in the course of his response, said :—Gentlemen, you conferred a very great honour upon me when, twelve months ago, you elected me as President of this Institute. I consider that it was a very great honour, and, as Mr. Robertson has pointed out, it tended to broaden a connection between the Institute and the Royal Navy. I do not wish to commit the Institute to any approval of what I have done or am doing—you know what I mean—but you conferred that honour upon me at a time when there was very considerable doubt as to the success of the new direction we were taking in regard to engineering practice, and I appreciate that honour very highly. Whether we shall be successful or not in this new direction time will prove. At present things look hopeful. To the very high mark of distinction that you conferred upon me when you elected me as your President you have to-night added a still further obligation by the resolution you have just passed, and by the very flattering remarks of Mr. Robertson. If at any time I have been able to be of any service to the Institute I am very glad. I am rather a busy man, as you know, and I have not been able to attend your meetings as often as I should have liked, but if in the future I can be of the slightest service to the Institute I shall be only too pleased to render that service. I am a full member of

the Institute, and as such I hope to do my duty by it. I must also thank you for your offer of assistance to the Navy. I have always had full confidence that when we wanted engineers for the Navy we should get them by hundreds if required. As an engineer, I feel that my brother engineers in the mercantile marine are ready to come forward and do their best, and no man can do more. In saying that, I am not saying that there is no necessity for the consideration of the very interesting paper by Mr. Cooper, to be brought forward for discussion at your next meeting. I think it would be a very good thing if facilities could be offered for the engineer officers of the mercantile marine to join the Navy for limited periods, with a view to becoming acquainted with the specialities of naval work. I offer you my sincere congratulations on the success of the Institution, and my very grateful thanks for the kind and hearty vote of thanks you have accorded me this evening.

Mr. J. ELMSLIE proposed a vote of thanks to the Office Bearers and Council for the services which they had rendered to the Institute during the Session, for their painstaking, and for the labour which they had expended on behalf of their fellow members.

Mr. W. C. WILSON said that having had personal experience of the courtesy and attention bestowed upon the work of the Institute by the Office Bearers, he had much pleasure in seconding the vote of thanks.

Mr. JAS. ADAMSON responded, and expressed thanks in the name of the Office Bearers and Council for the vote which had been accorded, as expressive of the confidence reposed in them, a confidence which it was their desire to justify by safeguarding the highest interests of the Institute and the members, by maintaining the Constitution and the By-Laws; and it lay with the members to give their views on that point, or any others which might suggest themselves in the direction of im-

provement. The Council would receive, with pleasure, any suggestion for consideration, and carry it into effect if found to be advisable.

The duty of the Office Bearers and Council lay in the direction of widening the interests of the Institute, maintaining at the same time the integrity of the Constitution on its original basis; of introducing subjects, the discussion or consideration of which would tend towards the general information and improvement of the members; of holding in view the fact that the Institute is recognised as one of the Institutions of the country, and therefore should take its part in the direction of improving the conditions ruling national life so far as these lay within the scope of its subjects for discussion.

It had been their desire to faithfully carry out the duties to which they had been appointed by the suffrages of the members, and in now retiring from their labours the vote of thanks satisfactorily closed the book of the Session, and gave hope to those who might succeed to the reins of office that their efforts might receive a similar reward for work accomplished and ends attained.

Mr. J. W. SIMPSON proposed a vote of thanks to the Auditors, Messrs. Redman and Baker, whose duties had called them to examine the books and vouchers periodically in connection with the Treasurer's Department in the interests of the members; during the Session they had devoted some time to attend to this duty.

Mr. J. MURPHY seconded the vote of thanks, which was carried with acclamation.

Mr. REDMAN, on behalf of Mr. Baker and himself, returned thanks for the vote, and said that their work had not been very arduous, but otherwise, as the Chartered Accountant had made plain the path before them.

The Hon. SECRETARY proposed a vote of thanks to Mr. Neely, the Hon. Solicitor, for the services he had kindly rendered to the Institute during the past Sessions.

Mr. J. D. CHURCHILL seconded, and the vote was duly agreed to and passed.

Mr. Alderman KIDD proposed, and Mr. R. LESLIE seconded a motion to the effect that, having in view the intention of the Corporation of West Ham to erect a Technical Institute in the neighbourhood of Romford Road, steps should be taken to ensure that the claims of Marine Engineering should not be lost sight of, but rather given a prominent place in connection with the Technical Institute, having regard to the large interest which the subject of Marine Engineering has within the Borough.

The proposal was remitted to the Council.

Mr. S. C. SAGE proposed, and Mr. J. D. CHURCHILL seconded, a resolution that the President (Chairman of this meeting) be elected a life member of the Institute, with all the privileges attached to the same, in order to mark the appreciation of the services he has rendered to the Institute during his year of office by his frequent personal attendance and interest.

The resolution was carried most heartily.

Mr. H C WILSON proposed that a more fitting record book should be provided for members and visitors to sign when meetings were held in connection with papers and discussions.

The proposal was remitted to the Council.

Mr. J. W. RICHARDSON proposed the appointment of Messrs. J. F. Redman and N. S. Hawks as Auditors for the current Session.

The proposal was seconded by Mr. J. KIRKWOOD and carried.

The SCRUTINEERS, Messrs. F. Cooper and J. Stewart,

were then called upon, and submitted the result of their examination of the voting papers, as follows:—

President—SIR EDWYN S. DAWES, K.C.M.G.

Hon. Treasurer—MR. R. LESLIE.

Hon. Secretary—MR. JAS. ADAMSON.

Members of Council (in Alphabetical Order):

MR. JNO. ADAMSON.	MR. J. R. RUTHVEN.
„ A. G. CRICHTON.	„ S. C. SAGE.
„ J. M. GRAY.	„ W. J. TAYLOR.
„ J. W. RICHARDSON.	„ J. H. THOMSON.

Along with those not retiring—

MR. J. BLELLOCH.	MR. J. T. SMITH.
„ A. CAMPBELL.	„ W. WHITE.
„ F. W. SHOREY.	

Hon. Minute Secretary—MR. C. G. NEWBY.

MR. S. C. SAGE proposed, and MR. J. R. RUTHVEN seconded, a vote of thanks to the Scrutineers, which was acknowledged by MR. FRANK COOPER, on behalf of MR. STEWART and himself.

MR. T. F. AUKLAND proposed, and MR. W. C. ROBERTS seconded, a vote of thanks to the Chairman, which closed the proceedings.

On behalf of the Council,

JAS. ADAMSON,

Hon. Secretary.

