Representatives Reports

City and Guilds of London Institute : Advisory Committee on Shipbuilding, Ship Joinery, Yacht and Boat Building
Representative : P. J. Howard, B.Sc., C.Eng.

Syllabuses have been drafted for No. 539 Shipbuilding Craft Studies Course, Part III, for approval by the Council for Technical Education. It is expected that, in addition to the written examination and the course work assessment, 20–25 per cent of the available time will be devoted to craft project work.

The possibility is being explored of extending the Part III of the No. 289 Shipbuilding Technicians' Certificate to all colleges on a college-devised basis. At present the Part III Certificate is confined to naval dockyard centres.

Committee on Regulations for the Electrical and Electronic Equipment of Ships
Representative : R. E. R. Crick, C.Eng.

Revision of the 4th edition of the Regulations had continued throughout the year and the new Regulations are expected to be published during the forthcoming year.

Court of the Cranfield Institute of Technology
Representative : Rear-Admiral H. G. H. Tracy, C.B., D.S.C., C.Eng.

The principal business before the Court was a proposed development plan for the years 1972–5. This envisaged a substantial increase in numbers, e.g. students for Masters degrees to rise from 390 in 70/71 to 667 in 74/75, for Ph.D. from 7 to 61 and on short courses from 2400 to 3015. In terms of subjects, a substantial expansion of management courses was planned, including the introduction of specialist M.Sc. courses and short courses for experienced executives. New courses dealing with manufacturing and production subjects would be offered to meet industrial needs. Of particular interest to marine engineers were an extended range of courses leading to Masters degrees to be offered by the Engineering Department. In addition to existing courses on gas turbine technology and combustion and heat transfer, subjects would include applied mechanics, applied dynamics and mechanical vibrations, machine design and tribology. Marine engineering and shipbuilding would be introduced as subjects for Ph.D. work.

Members of Court visited departments of the Institute and participated in group discussions dealing with particular fields of study, before the meeting. This enabled a number of conclusions and comments to be offered in the course of a fruitful discussion. Among these may be mentioned : the need to develop systems studies in engineering; for interdisciplinary studies linking engineering and management; for ties with similar institutes in Europe. It was resolved that the development plan be adopted as a basis, comments made to be taken into consideration.

Formal business had been dealt with before considering the development plan and after various matters had been reported, including the award of two Ph.D., 240 M.Sc. and 74 M.B.A. (Master of Business Administration) degrees, the meeting was closed by the Chancellor, Lord Kings Norton.

On December 10th, Cranfield celebrated the 25th anniversary of its foundation, the guest of honour being the Minister of Education, Mrs. Margaret Thatcher. The Institute of Marine Engineers' representative was among the members of Court invited to attend. The day's proceedings included visits to departments and a luncheon at which speeches, including one from the Pro-Chancellor, Mr. H. N. G. Allen, C.B.E., M.I.Mar.E., struck an encouraging note for Cranfield's future as a centre for post-graduate studies.

International Institute of Refrigeration : Standing Committee
Representative : K. C. Hales, M.A., C.Eng.

The Standing Committee met twice in 1971. The first meeting was held before the four-yearly Congress which took place in Washington, D.C. in August and was concerned with proposals to be made by the U.K. delegation. The second meeting discussed the re-organization of the Commissions of the International Institute that was put into effect at the Congress. The principle change is a widening of the scope of the Institute in the cryogenics field. Nomination of U.K. members to the various commissions was discussed and agreed.

Joint British Committee for Stress Analysis
Representative : B. Hildrew, M.Sc., C.Eng.

The major activities in the past year were related to joint meetings with a number of organizations and covered the practical applications of fracture mechanisms to pressure vessel technology, transducers their design and application, dynamic measurement, strain analysis in the fracture mechanism of ductile and brittle materials, data processing and display for inspection purposes, physical and mechanical properties of ceramics fibres and composites, and the effect of vibration on structures.

The proceedings of the 4th International Conference on Strain Analysis were published and distributed.

Sales of the *Journal of Strain Analysis* have fallen slightly over the year and in consequence it will be necessary to raise the subscription charge of this journal. The quality of papers coming forward for publication is being maintained and a concerted drive on sales will be mounted in the coming year.

Joint Committee for Ordinary National Certificates and Diplomas in Engineering
Representative : Dr. J. Cowley, C.Eng.

The major item dealt with during the year was the preparation of an Ordinary National Diploma in Technology (Engineering) which will eventually replace the present full time courses in engineering. The Ordinary National Diploma for Marine Cadets will not be affected by the new scheme or the eventual cessation of the full time OND courses in engineering.

The new scheme will operate from September 1972 but as the availability of full details of the Course gave minimal notice to colleges to prepare, a further one year extension for full time Ordinary National Diploma Courses in engineering will be given. All colleges will have to prepare schemes for the new Course for September 1973.

It has been said that the growing tendency for young people to remain in full time education beyond the statutory school leaving age has highlighted the need for a new full time course in the field of applied science and technology directed at those whose future career may be associated with one or more of the ever expanding range of technologies, particularly those based on engineering technology. The National Certificate and Diploma courses in Engineering are planned as educational courses, with a strong vocational bias. The intention of the new course is to cater especially for the type of student likely to be coming forward in increasing numbers from the schools, for whom some change in environment for full time study, together with access to staff, specialized acommodation and equipment not generally available within the schools themselves, is highly desirable. The course is for the college based student who has not committed himself to a particular firm or to a particular branch of engineering technology, and is intended specifically to avoid too early a commitment, not in a negative light, but as a positive preparation for the making of an informed decision. The Joint Committee sees it as a contribution by further education to the education of the 16 to 19-year-old age group, and the special expertise possessed by further education establishments has a major role to play in this situation.

It is hoped that the end standards of the course will satisfy the entry requirements for appropriate degree, H.N.D. and H.N.C. courses.

The syllabuses for the course are rather radical in nature; approximately one half of the total number of hours in the two-year course is spent on the Principles of Technology. This comprehensive subject includes basic science; electrical science; physical science; mechanical science and materials science during the first year of the course. Measurements, instrumentation and data transmission; power transmission and energy conversion and systems are dealt with in the second year under the same head. The remaining hours of the course are taken up by mathematics, complementary studies, communications, and project work.

No significant discussions on the implementation of the Haslegrave report were carried out during the year and work of direct interest to the marine field was limited to very minor details relating to the O.N.D. (Marine) scheme.

Lloyd's Register of Shipping : Technical Committee

Representatives : D. W. Kerr, C. Eng., and
Captain. W. S. C. Jenks, O.B.E., R.N., C.Eng.

1) The Society's scheme for the certification of batch and line produced machinery, in accordance with G 108, has now been in operation for three years. Without exception, manufacturers who have received approval have found the scheme to work smoothly and be beneficial in avoiding bottlenecks in production. Provisional requirements for the survey during construction of batch and line produced machinery were published in 1968 to provide a basis for the approval of firms. Experience gained over the next two years established that the fundamentals of the scheme were sound; however this experience was used to refine certain details and re-arrange the layout of the requirements and in January 1971 a revised edition was published under the title "The Certification of Batch and Line Produced Machinery (Revised Provisional Requirements)." In view of the success of the scheme these requirements have now become Section 2 of Chapter G.
2) In view of recent failures which had occurred in certain epicyclic gears, the requirements of Chapter H, Section 3 of the Rules, which are primarily intended for non-epicyclic parallel shaft gears, will also cover epicyclic gears. In addition, Section H 307 has been re-written to include the factors governing tooth loading for surface stress also contained in H 306.
3) The International Association of Classification Societies (Working Party on Engines) in discussion with Conseil International des Machines a Combustion (CIMAC) have reached a tentative agreement on unified requirements for oil engines and starting air compressors. These include the provision of relief valves on scavenge spaces, crankcase safety fittings and requirements for hydraulic testing of components. Chapter H, Section 6 of the Society's Rules have been amended to include the additional safeguards proposed by the unified requirements.
4) In certain cases of steam turbine driven ships it has been found that the capacity of the gravity tank for supplying emergency lubricating oil may not be adequate to protect the turbine bearings due to the trailing effect of the propeller. Means must now be provided to ensure that, in the event of steam to the ahead propulsion turbine being automatically shut off due to failure of the lubricating oil pressure, astern steam is still available for braking purposes. H 831 of Chapter H, Section 8, has therefore been reworded.
5) The International Association of Classification Societies Working Party on Tanker Safety/Fire Protection have reached agreement on several aspects of safety concerning oil tankers, including requirements for cargo pump room ventilation and slop tanks in combined oil/ore carriers. These unified requirements have been incorporated in Chapter E, Section 11, of the Society's Rules.
6) Since the circumferential wake irregularities and resulting ratio of unsteady to steady load are generally much lower for propellers of twin screw ships and for outboard propellers of triple screw ships, the design stress may be increased by 10 per cent. Also since the incidence of defects with manganese aluminium bronze propellers has been found to be significantly higher than that for nickel aluminium bronze propellers the allowable stress value is reduced for propellers of the former material. Chapter H, Section 6 was amended to include these changes.
7) Section 1 of Chapter M has been modified to permit the Society to accept standard solutions to electrical problems imposed by statutory regulations and also to enable electrical equipment and electrical propelling machinery complying with the International Electrotechnical Commission (Publication 92) or with an equivalent national standard to be accepted as equivalent to the Society's requirements. In addition, paragraph M 701 has been amended to bring the Society's requirements, in respect of hull return systems, allowable temperature rise and test requirements in both switchgear and control gear into agreement with accepted international practice.
8) Agreement has been reached by the Technical Committee Panel on Bronze Propellers concerning revised requirements for the chemical composition and mechanical properties of copper alloy propeller castings. These are now incorporated into Chapter Q, Section 9.
9) To reduce fire hazard in event of leakage of lubricating oil, the wording of Chapter E, Section 9 and Chapter M, Section 7 has been modified to include a requirement for remote stopping of independently driven pumps supplying main propulsion machinery with oil for lubrication of bearings and for piston cooling.
10) The requirements of the 1971 Rules of the Finnish Board of Navigation are now incorporated in the Society's Rules for Baltic Ice conditions.

North Western Regional Advisory Council for Further Education (Nautical Advisory Committee)

Representative : H. D. Makinson, C.Eng.

Various matters appertaining to the provision of sailing, rowing and canoeing facilities in further education establishments in the North Western Region were considered.

The Advisory Committee for Nautical Education had previously operated without any terms of reference. During the year terms of reference were submitted together with a revised membership, and were accepted, by the Standing Committee.

Regional provision of a seagoing craft was being considered further by Local Education Authorities in the area.

The new structure of nautical courses providing for an O.N.C./O.N.D. type of scheme for intending deck officers at the two centres in the region was reported upon.

Parliamentary and Scientific Committee

Representative : R. Cook, M.Sc., C.Eng.

There were seven meetings of the General Committee during 1971 at which discussions were held on the value of industrial research, the misuse of drugs and alcoholism, the work of the new Department of the Environment, the United Kingdom participation in ocean technology, research and development under the Department of Trade and Industry, the work of the Select Committee on Science and Technology, and the work of the Cabinet Central Policy Review Unit.

A number of visits were paid to scientific and industrial establishments.

Poplar Technical College Board of Governors

Representative : Dr. J. Cowley, C.Eng.

On 8 July Dr. J. Cowley replaced Mr. D. G. Alcock as the Institute's representative on the governing body. At the same meeting, the resignation of Mr. Stewart Hogg, O.B.E., was accepted. At a subsequent meeting, a farewell tribute was presented to Mr. Hogg (Vice-Chairman and a former Chairman), at an informal ceremony in recognition of his 18 years service on the governing body.

During the year enrolments for all levels of statutory certificate courses showed an increase. The pre-sea course of six weeks' duration also showed an increase as did the marine cadet entry which totalled 198 cadets. At present about 160 cadets are in hostel accommodation.

Members of the Institute will note with regret the death of Mr. Ivor Wilson, formerly Principal Lecturer in marine engineering, who retired during 1971. Mr. G. R. Hodge (Member of Council) has been appointed to this position.

Shipbuilding Industry Training Board : Technologist and Technician Sub-Committee

Representative : Cdr. A. J. Calvey, R.D., R.N.R.

A working party was set up by the Shipbuilding Industry Training Board Technologist and Technician Sub-Committee on the 27th July, 1970 and the terms of reference for the training of marine, mechanical and electrical engineers were to prepare recommendations for the training of marine, mechanical and electrical engineers and, in the process of so doing, to have regard to the Engineering Industry Training Board's recommendations for "The Training of Professional Engineers" and such other source material as may be considered relevant by the working party.

Three meetings were held in Newcastle and London and the Sub-Committee finalized the recommendations on the training of technologists which will be sent to all shipyards and all firms engaged in marine engineering in the United Kingdom for guidance on the training of graduate engineers. These recommended that the training should take the form of thick and thin sandwich courses.

The sub-Committee will be dealing, in due course, with technician training when the results of current investigations being carried out by the Engineering Industry Training Board have been made known.

Southampton College of Technology : Engineering Advisory Committee

Representative : D. S. Aris, B.Sc., C.Eng.

There have been two meetings of the above Committee, in April and December 1971, the April meeting taking place at the new Hall of Residence, Townhill Park House, Southampton, which establishment was mentioned in last year's report. The following principal points arise out of these two meetings.

1) As predicted in last year's report, the Townhill Park establishment became operational in April 1971 and a total of seventy-two first year students and cadets are accommodated, the final limit of accommodation being eighty. At the present level of course pupils, this still means that a considerable number of students are accommodated in external lodgings, an arrangement which is generally considered to be undesirable.
2) The College of Technology has set up a Management Advisory Centre via which professional advice on managerial and technical problems can be given by members of the staff, and small scale projects carried out by various college departments. This service is self-supporting and non-profit making.
3) *Examination results.* Out of a total of 408 Merchant Navy Officers who enrolled for First and Second Class, Part 'A' and Part 'B' D.O.T.I. examinations, 190 were successful. These figures include students enrolled under the British Shipping Federation Second Class course, where a higher pass rate is always experienced, this being due to better control of student activity.
4) The Phase 1 cadet course for the year had a 31 per cent failure rate and this is rather disappointing and a higher level than in previous years. The method of selection of cadets has not changed and it is difficult to see why there should be a more disappointing result.
5) The H.N.D. cadet scheme reported on last year has now reached full development and the first ten cadets to take the final year examinations were all successful.
6) *Short Course.* Of the several short courses of a full term nature specially designed for seafarers, it is significant that the most popular is the three-week course 'Instrumentation and Control Engineering'.
7) *Staff.* Last year it was reported there was difficulty in obtaining qualified staff for Lecturer Grade One positions and whilst it is understood that difficulties still exist, there are no vacancies on the staff of the School of Marine Engineering within the College of Technology.

Swansea College of Technology : Advisory Sub-Committee for Engineering

Representative : F. R. Dale, C.Eng.

At a meeting on 19 October 1971, the Principal reported the transfer of the first year marine engineering courses to the Llandaff College of Technology, but that the first years students from the 1970/71 session were completing their courses at the Swansea College of Technology. The first intake on the Marine Engineering Technicians' course, enrolled at the College in September 1970, would complete the course by taking the City and Guilds examination in June 1972.

The Principal presented his report detailing the enrolments and examination results of the marine engineering courses, the Summer Vacation Workshop Course, the shipping companies supporting the courses and the educational visits made during the season. In the discussion which followed it was pointed out by Mr. Bruck that the M.O.T. Part A examination results were better than usual. Mr. Bootle said that the shipping companies were extremely well satisfied with the Summer Vacation Workshop Course organized by Mr. Hoyland and that these courses, which had been pioneered by the College, were used as an example by other centres.

The Principal said that the College would undertake to make arrangements for re-examinations, if any were necessary, for the O.N.D. Course.

The Principal reported that with the 1972 Summer examinations, the marine courses held at the College for the past twenty years would come to an end at the Swansea College of Technology. There would be no Summer Vacation Workshop Course at the end of the session since there were no first year students in attendance at the College this year. It was agreed that there would be no need to hold the usual July meeting with the shipping companies which had been held mainly to consider the progress of the first year students.

Mr. Bruck reported that, for the first time, the Ordinary National Diploma Course included the subjects of marine engineering practice and instrumentation in the new scheme. The hours of the scheme had been reduced.

Mr. Bootle said that the examination fees for O.N.D., M.O.T. Part A, and the new City and Guilds examinations would be paid by the shipping companies on behalf of their students.

In a discussion on the new Marine Engineering Technicians' Certificate Course, Mr. Bruck stated that the progress of the students on the course appeared to be better than usual and that this reflected the better standard of the recruitment and the hard work which had gone into designing the course.

Mr. Bootle, from the Chair, closed the meeting, which would be the last, of the Advisory Sub-Committee for Marine Engineering. He said that he very much regretted the successful marine engineering courses being removed from the College and he hoped that the College would be able to develop some other courses to replace those lost.