CIBSE IN IRELAND

Was there No before CIBSE?? The possibility may seem unlikely to some of our Graduate Members. Yet there is evidence in the day-to-day inspection of some of our older buildings to offer proof: gas lighting pipework under old floor boards; lead lined water storage tanks inside water mains in lead pipe, with all the aridity of welded joints; leaded and galvanized socketed and soldered cast iron joints. Sometimes one can find traces of Perkins systems, its heavy bore wrought iron piping being all that is left, the boiler having been long since replaced by another more up-to-date model.

The life that was there was carried out by a myriad of practitioners, some of whom have left their enameled name plates behind in evidence. In Ireland there was a thriving expertise, built around the construction, shipbuilding and town-gas industries. Thus there was much activity in the practical aspects of heating and ventilation.

Considerable thought went into the theory behind the installations. Perkins patented his invention of high pressure high temperature heating as early as 1835. In the same year James Argall of Dublin produced the first psychrometric tables, complete with values of wet bulb temperatures, to be acknowledged by Willis Carrier in his patent for wet-bulb temperature control in 1911. Robertson investigated natural ventilation, and his patented cowls are still to be seen in some of our older industrial buildings.

In the 1880s an American, Paul, took out a patent on a vacuum system to remove air from steam heating installations, thereby ensuring the distribution of steam to the radiators, with condensate returning to the boiler by gravity. An improvement on this was Webster's vacuum system, which removed both air and condensate. This method was used for heating a large printing house at St. James's Gate Brewery in Dublin in the late 1890s, the designer being Mr. Professor A.H. Shaw.

Such was the climate of enterprise and inventiveness in the late 1880s in which the Institution of Heating and Ventilating Engineers was founded. One of the earliest members of the IHE was W.R. Macguire, co-founder of Maguire & O'Sullivan, whose imposing premises were prominent in Dublin's Dawson Street until the mid-1950s. Macguire formulated the eponymous equation for flow in ducts, and published a book on the subject. He was interested in other aspects of mechanical services, also, for in 1899 he delivered a paper on Heating by Steam. A
and below Atmospheric Pressure to the
Institution of Civil Engineers in Ireland, of
which he was an Associate. In 1950, Maguire
became the President of the IHE, and was
responsible for the Institution's third annual
conference being held in the International
Hall in Bray, Co. Wicklow, in the summer of
the following year. A photo record of the
conference shows a gathering of approximately
65 members and wives, not insubstantial for
a fledgling organisation. The annual conference
was not held in Ireland again until 1956, during the presidency of
D.K.E. Benham.

There is scant information on Irish membership
of the IHVE between 1900 and the
1930s. In the 1920s an interesting profession
alism entered the HILV industry. The first
member of the IHVE to be remembered
in Ireland was David Glasgow, a
personable Scot who came to Ireland to manage
Hodson's contracting firm. Glasgow married
the musically talented
Terr O'Connor and was instrumental in
encouraging his protégé to study the science
of heating and ventilating engineering.

There were only three consulting firms of note
spreading in building services in Ireland
prior to 1940. Desmond McAleer, J.A. Kenny
& Partners and Nicholas Maltby and Co. A
member of the larger architectural offices
designed their own building services. One or
two even had a tame engineer on the staff.

J.V. Tinnery went to work in his uncle's
consulting engineering practice, J.A. Kenny &
Partners, in the early 1930s and joined the
Institution shortly afterwards. The consulting
practice later founded by J.V. Tinnery is one
of the most prominent in the country. J.V.
Tinnery became a member in 1937, while
working for Hadens, then at 199 Parnell
Street, Dublin, making him now the longest
serving living member of IHVE in Ireland.
Others to become IHVE members in the early
40s were L.G. Leonard, Freddie Phelan
and Vincent McAuley. Hugh Maguire sat the
IHVE exam in Bolton Street in 1947, the
invitators being Noel Tinnery & Freddie
Phelan, his erstwhile colleagues in
Hodson's.

Lorenzo Leonard became manager of
McGanis Ltd., mechanical contractors,
whose premises were at 1920 Ellis Quay,
Dublin, and subsequently formed his own
consulting practice. Vincent McAuley was a
Captain in the Irish army and was an engineer
with McAuley's consulting practice before
starting out on his own. Freddie Phelan
was Senior Designer in Hodens until their
office closed in the late 1950s.
The pattern of employment in Building Services in Ireland changed in the late 1950s. Consulting and contracting firms began to reorganize and looked to the U.K. for their role models. The post-war confidence there had built a building boom. There was a proliferation of larger-sized contracts in Britain, incorporating new technology. The English South-East prospered particularly, but the English Midlands and North-West also became active, with many prestigious building services installations reported in the IHVE Journal. Poor pay and opportunities at home, however, together with the prospect of percentage night classes in Bolton Street led many of the younger Irish students to leave for the U.K. Some of those who were prominent practitioners today followed courses in Birmingham, others went to study in the National College, then South Bank Polytechnic in London. Fewer still arrived at South Bank via an engineering degree course in UCD.

These young engineers arrived back in Ireland in the 60's to participate in Ireland's new found industrial expansion. They brought with them the experience of designing and installing major projects. There began a renaissance in building services throughout the whole country.

The high point of 1958 for Irish members of the Institution was the Annual Conference held in Dublin, in July of that year. The conference centre was the Gresham Hotel, and among the papers was one by Tom Bingworth of the OPW and Eoin O'Donina on Irish Heating Practice and Fuel Usage. Another interesting paper was entitled 'The Economics of Heat Pumps'. The Members visited Guinness's Brewery, the Breda Midland locomotives in Navan Bridge, Unibridge's factory, the Dublin Fever Hospital and Bus Areas. Social events included a fashion show, a trip to Glenree and the 'Sphinx and the Sunset' in the Abbey, golf in Milltown G.C. and a Banquet.

In the early 1960s two of those engineers returned from the U.K. Seamus Homan and Eamon O'Brien, sought to establish a proper course for aspiring IHVE members in the Dublin area. Together with others, such as Tony Fortune and Tony Knott, they provided lectures to those students attempting to study for the IHVE exams, without having to emigrate. The breakthrough came in 1965, with the accreditation of the Bachelor degree degree in Building Services Engineering by Dublin University.

A most significant step for Irish IHVE Engineers was taken on 20th September 1968, with the inauguration of the Republic of Ireland Branch of the Institution. The first Chairman of the Republic of Ireland Branch was Sean Mulcahy, Other members of the IHVE Committee were Tom Twomey, Tony Knott, Seamus Homan, Eamon O'Brien, Paddy Cloran and Michael McDonagh. Also present at the inaugural meeting, held in the I.E.I. Clyde Road, were Professor Michael Hogan, Dean of the Faculty of Engineering, UCD; Ian Duff, President of the Institution, Bernard Hodges, IHVE Secretary, Eoin O'Donina; Tom Bingworth, Vincent McCarron, Joe Tiernan, Robert Jacob and Noel Trayanor.

At the time, there was a total of 49 members in the Republic, comprising 6 Members, 21 Associate Members and 22 Student and Graduate Members. Forty seven of this number lived in the Dublin area, the other two residing in Cork. The Branch has flourished since its inauguration and has produced innovative technical programmes each year, including half-day and full-day seminars, four or five technical evening and an associated site visits, together with sponsored student awards, an annual Dinner and well-supported golf competitions.

The Institution obtained its Charter in early 1976. Eoin O'Donina was Chairman of the Branch at the time and automatically became the first Chairman of the Republic of Ireland Branch of CIBSE. Eoin subsequently became President of the Institution in 1978, the first Irishman to hold the post since W.R. Maguire.

One of the features of the Republic of Ireland Branch of CIBSE is the involvement of membership in other Institutions and Committees. Eoin O'Donina has been President of the Institution of Engineers in Ireland; Michael O'Doherty, Brian Reddy and John Purnell held the office of President of the Association of Consulting Engineers; Joe Lambkin sits on the ETCD Wiring Rules Committee. Among other members to have received recognition is Paddy Cloran, who received the Institution's Bronze Medal for his role in the setting up of the Australian Branch of the Institution. Another Irishman to be acknowledged by the Institution is Sean Mulcahy, who was made an Honorary Fellow of CIBSE for his contribution to the Building Services profession.

The present membership of the Irish Branch is approximately 400, and it is encouraging to note the gradual increase in Membership each year. Attendances at Technical sessions vary, but have been recorded in the high 70's. The Branch Committee is pursuing an aggressive policy of producing high-quality papers and symposia, so that our members, looking back in another 100 years, will have an impressive archive of this very significant era in the development of Ireland.

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THE GROWTH OF ELECTRICAL ENGINEERING IN DUBLIN CORPORATION

An application dated 20th July 1881 from the Dublin Electric Light Co. to Dublin Corporation sought permission to lay the necessary wires in pipes beneath the footways in a manner similar to that in which the Post Office Telegraph wires are laid. This firm had been established in 1859 with a paid-up capital of £15,000 and included two well-known Dublin business men, Mr. William Martin Murphy and Mr. John Findlater, as directors. It had a small generating station in Sackville Lane which served 17 arc lamps in 1881 and 114 in 1882 on wooden poles and fed from overhead lines along Kildare St., Dawson St., and part of St. Stephen's Green. Parnell St. (between St. George's Street and Jacob's in Birds Street) were also supplied for lighting.

The Dublin Electric Light Co. had acquired a large central premises at Great Brunswick St., known as "Fenella's House Repository" and were anticipating commencing operations. The firm sought permission for a 12-month period to light certain principal streets such as Sackville St. and O’Connell Bridge. South Camden George’s St. provided the Corporation agreed to pay the same price for the lighting of the same streets by gas. They promised that the lighting to be provided would be as good as that in Nassau St.

Later in 1881 four applications were received by the Corporation offering to improve the lighting:

1. Messrs. Caldor and Barnett (London)
   To light Sackville St. with electric lighting and enquiring the cost would be considerable. The Corporation accepted the offer provided the lighting was carried out free of charge.

2. The Dublin Electric Light Co.
   Prepared to light certain streets free of charge with electric light. Dawson St. and Nassau St. and St. Stephen’s Green North were lit. However, on one night the lighting failed. The Police Commissioners pointed out the serious consequences which might ensue from the public being left in darkness and the firm said that their installation was of a temporary character. They needed to dismantle their installations as soon as the gas lighting on those streets could be re-lit.

3. The Alliance Gas Co.
   The Alliance Gas Co. received Corporation permission to install improved gas lamps on the streets for a period of 12 months without any additional cost to the Corporation and carried out this undertaking fully in
Westmoreland St. and Grafton St. and College Green.

4. Messrs. Maguire and Son

Messrs. Maguire & Son, agents for Bray and Co. of London, offered to light Dame St. with gas lamps for a period of three months without additional cost to the Corporation and this was accepted.

The Corporation asked the Dublin Electric Light Co. if the firm was prepared to light the South Bridge, O'Connell Bridge and South Great George's St. for 12 months at the price paid by the Corporation to the Alliance Gas Co. which was £488.15s.11d as established by the Inspector of Public Lighting. The firm was asked to give a guarantee of securing lighting to guard against any failure of light such as happened in Dawson St. etc. in the previous September (1881). But the Corporation eventually declined the firm's offer on the former lighting of the streets by the Corporation was not such as to warrant the Corporation displacing the present lighting.

The Company explained that in the case of Dawson St. etc. it had been a temporary installation of electric lighting intended for a few weeks only but due to existing circumstances it had to do for many months. Their 'engine' had gradually been at one end, the foundations for the steam engine being without masonry but the present offer would have the steam engine fixed on permanent foundations and the cables laid in underground pipes and all the appliances would be of the newest and most improved manufacture.

The arrangements would be similar to those employed in the lighting of Cheapside in London - one of the most important thoroughfares in the world, and one in which the danger arising in the event of sudden darkness would be almost insensible.

The Council of the Corporation proposed that before taking any action the services of experts in electric lighting be employed. In the meantime the Law Agent was to lodge objections to the Bill so as to ensure a 'favorable' at the Board of Trade enquiry. The experts employed were to be acquainted with both gas and electric lighting "but shall have no interest direct or indirect, in any electric or gas company".

Parliament had followed public interest in the period 1880-1885 following the Paris Exhibition and The Crystal Palace Exhibition in London and the forming of 14 companies in 1880, 31 companies in 1881 and 102 companies in 1882 all for electric lighting developments. Local authorities were to be given authority to experiment and claim by gas companies seeking monopoly powers for lighting were opposed in the Committee recommendations. The Board of Trade gave a preference to local authorities over private companies in the matter of electricity supply but at the same time in 1883 the Board of Trade expressed the view that local authorities were unfitted for enterprises involving scientific experiment and that private capital of 1888 extended the period of possible private enterprise operation to 42 years before purchase compulsorily by the local authority.

The number of applications for licences and provisional orders increased. The Act did not encourage standardisation of uniformity in technical developments or equipment ratings or designs in the British sphere. Technical confusion extended in relation to alternating and direct current, high or low voltage gener-
When condensing steam engines were added producing steam to yield one horse-power-hour per 21lbs of coal, the only remaining step appeared to be to instruct the Law Agent to advise whether the Corporation had legal power to light the streets by electricity, and could it acquire capital for the purpose.

The "pioneer station" in Fleet St. was designed to supply 10,000 lamps of 8 candle power each as used by private consumers, and 81 arc lamps of 2,000 candle power each as used in street lighting. The plant consisted of three sets of steam driven single phase alternators each of 100 kw at a voltage (pre-summer) of 2,000 volts which was led into underground distribution mains. A transformer mounted in each consumer's premises reduced the voltage from 2,000 volts to 100 volts. The street lighting was supplied from these sets of steam driven direct current dynamos feeding into the 61 arc lamps in three circuits at high voltage. Each arc lamp was in series with 26 other arc lamps and each light required 30/40 volts. The total cost of the generating plant was £27,000. It was commissioned in September 1892 under a Provisional Order of the Board of Trade. Additional plant had to be installed in 1893 to meet added customer applications, and steam year up to 1898 further plant to the ultimate total of 900 kw.

The initial system of individual transformers in each premises was replaced by 1895 in favour of five substations in which the 2,000 volts transmission voltage was transformed to 200 volts and distributed to consumers premises.

As Fleet St. generating station site was fully used up and as demand for supply from new customers increased a new site at Pigeonhouse Road, Ringsend was acquired by the Corporation from the War Office initially as the site for the main drainage of the city. It was known as Pigeon House Fort and was 3 miles from the centre city with a small harbour suitable for colliers to discharge coal near the proposed generating station.

Mr. Robert Hammond was employed by the Corporation as Consulting Engineer and he advocated the use of a three phase system of generation and distribution for the general lighting and power supply to private consumers. Dublin was the first city in the "Three Kingdoms" to adopt this system.

This new station was built in 1901-1903. The installed plant was 3,000 kw and the con-
samer designed load was 2,000 kW. Electricity was generated at 5,000 volts between phases and transmitted in three main feeders to the old generating station at Fleet St which was now a general distribution station for the old and the new mains systems. From Fleet St, twenty new substations disposed around the city, the transmission was at 5,000 volts, where transformers reduced to 200 volts for general lighting and 660 volts for three-phase motors.

Fleet St. distribution station also housed the transformers which supplied to the original lighting were derived by single phase generating plant there. The transformers stepped down voltage from 5,000 volts to 200 volts and transmission was at this latter voltage to the two old substations where voltage was reduced to 200 volts for lighting and power purposes.

Public lighting consisting of 490 lights was supplied from Fleet St. distribution station and the shared current supply came from meter generating 5,000 volts 3-phase supply from the switchboard and delivering 1,200 volts direct current for the 83 circuits radiating to different city street areas (i.e., 21 lamps per circuit on average).

The new generating station was commissioned in July 1900 and the changeover from Fleet St. to Piggenhouse Road was completed in September 1903. The maximum demand of 965 kW on 1st January 1900 at Fleet St. compared with 1,600 kW on 1st January 1904. Soon after, two further 5,000 volt 3-phase trunk feeders were laid between Piggenhouse Road and Fleet St. distribution station and additional substations were built including a number in Clontarf area where the Boundary Act required supply to be extended. The season at Clontarf was fitted with 30 floodlights and arc lamps using “mart” arc lamps which had small arcs in the carbon arc rods giving a characteristic yellow light and an increased length of life for the same voltage compared with carbon arc rods. The charges to consumers of electricity were reduced during the five year period 1903 to 1908 as production costs per unit generated remained and the output of electricity grew. The changes were from 5p to 3½p per unit for lighting and from 1½p to 1½p for power (old tariffs).

Frank Pigott C.Eng., B.E., B.Sc., FREE FIEE (retired Divisional Engineer, Dublin Corporation)

MR. LAVARD J. KETTE, M.I.E.E.
Mr. L.J. Kettle B.Sc. was born in Mullagh, Co. Dublin on 27th August 1928, son of Andrew Kettle M.P. and was educated at O'Connell School, Dublin and Clongowes Wood College. From February 1957 he served an apprenticeship and attended the practical and theoretical course of instruction in the Electrical Standards, Testing and Training Institution, Finglas House, Clarington Cross Road, W.D.C. It is an intention to practice the profession of an electrical engineer as soon as he is well qualified”. He began his training as a student of the E.I.E. in 1950. He gained the Maxwell Scholarship at Trinity College. His practical experience and training were obtained at the control room, O'Connell Street and the Firestone and O'Keefe Bros. Factory. He was President of the Institution of Civil Engineers in Ireland in 1952.

Mr. Mark Ruddie M.I.E.E.
Mark Ruddie became an associate of the Society of Telegraph Engineers in 1889, having attended the School of Instruction at the School of Submarine Telegraphy, London, and obtained a position as Electrician with the United Telegraph Company, London. He later became Chief Electrician to The Manchester Edison Steam Co. and was Electrician Engineer from 1915 to 1930 when he was appointed as a member of The Institution of Electrical Engineers in April 1882, having an address at 48 Londonbridge Road, Ringsend. He became an Associate member of the IEE in December 1878, when he was chief electrical engineer of Dublin Corporation Electric Undertaking. He was also a member of the Institution of Civil Engineers of Ireland. He represented the Corporation of Dublin, Switzerland and The General Electric Co.

He returned to Dublin in 1906 and joined Dublin Corporation as Works Superintending Engineer and in 1911 was appointed Deputy City Electrical Engineer and in 1916 he was appointed to succeed Mr. Mark Ruddie (who had retired) as Engineer and Manager. Mr. Kettle was elected an Associate of the I.E.E. in 1925, an Associate Member in 1926, and a Fellow Member in 1932. He was a member of the Institution of Civil Engineers in Ireland in 1924 and from 1925 to 1931, being Chairman in 1926, 1927, and 1930, and Honorary Treasurer in 1925 to 1934.

As a sponsor of the Society of Telegraph Engineers in Ireland, Mr. Kettle opposed the Shannon Scheme as "practical" stating that until industrial development got under way it was hazardous to risk £40 million pounds, and apparently extended the prospect for new challenge to the Corporation and to a utility hydro-electric scheme. Mr. Kettle together with 17 other Corporation staff were employed in 1928 by the newly established Electricity Supply Board on the occasion of the transfer of the Dublin Electricity Undertaking to the E.S.B., the City Commissioners decided to extend their high appreciation of the Dublin knowledge, sound judgement and business capacity which Mr. Kettle had exhibited during his 24 years service. He was President of the Institution of Civil Engineers in Ireland in 1932.

Interests when the first generating station was operated in Fleet St and Mr. E. Martin was the Consulting Engineer. The contractors were the Electrical Engineering Co. of Ireland incorporated with Hammond & Co. London. Mr. Ruddie was an associate engineer to the Corporation Electricity Undertaking on completion of the contract. Mr. Ruddie was the Corporation Engineer supervising the building of the first generating station, Piggenhouse Road. Following the taking over of the station from Mr. Robert Hammond, Consulting Engineer, when the output was 3,000 kW. Mr. Ruddie installed the additional plant (until his retirement in 1919) which brought the station capacity up to 12,000 kW. Mr. Ruddie served for two years as President of the Institution of Civil Engineers of Ireland and on the Committee of the Dublin Local Section of the I.E.E. for many years, being Chairman of the Section in 1904-5. In his inaugural Address he took the televising of electrical communication.

Mr. Ruddie was repeatedly commended by the Corporation for his zeal and efficiency in advancing the installation of electric lighting in Dublin. He was appointed in 1908 at a salary of £200 per annum with an increment of £50 per annum for his efficient and successful work in the undertaking. He recruited a staff of electricians and apprentices, and continued the maximum daily attendance of 14 hours including the inspection of lighting circuits.