CHAPTER FOUR

THE ERA OF SAMUEL CHARLES LAWS, 1924-1947

Samuel Laws appointed

After the much respected, long established, positive leadership of Mulleineux Walsley, the second period in the history of the college that was to evolve into The City University might have been characterised by changes inspired either by the Governing Body feeling that further development or change was overdue, or by the second Principal seeking to make his mark. In the event the wisdom of both parties was such that nothing changed drastically in character. There was, instead, consolidation and gradual evolution. There was, too, increasing control by the L.C.C. and the Board of Education at this time under pressure from economic forces resulting from the Great War. Despite this very real control, however, there was the potent element of independence, of autonomy in the last resort. Thus wisdom was needed to determine those issues that were worth contesting with central authorities from among many others that could with benefit be left to their control. In this the College was well served.

Samuel Charles Laws, M.A., M.Sc., was appointed Principal of the Northampton Polytechnic Institute on the 21st July, 1924. Educated at University College, Nottingham, graduating B.Sc. (London) in 1900, from 1901-1904 he was Research Student in Physics at St. John’s College, Cambridge, having been elected 1851 Exhibition Science Research Scholar in 1901. In 1904-06, he was Lecturer in Physics at King’s College, London, and, from 1906-09, Head of the Physics, Mathematics and Engineering section at Blackburn Technical College. From 1909-15 he was Principal of Loughborough Technical College, doubling, from 1911-15, as Organiser of Evening and Technical Schools, Leicestershire County Council. The years 1916-24 he spent as Principal, Wigan and District Mining and Technical College. When he died in March 1963, at the age of 84, he had served the Polytechnic not only for 23 years as Principal, 1924-1947, but also as a Member of the Governing Body, 1947-1963, having been also a member of the first Burnham Committee on Technical Teachers’ Salaries and of the Departmental Committee on Higher Technological Education, (The Percy Committee). He was awarded the O.B.E. in 1948.

Samuel Laws took over at a time when the flood of ex-service candidates was ending, for there was in fact only one such student in 1924-25, whereas there had been 30 in the previous session. Of the 177
full-time grant-aided ex-service students attending between 1918 and 1925, 26 gained the B.Sc (Eng) and 80 the College Diploma in Engineering and 16 the College Diploma in Optics. In spite of a decline in student numbers, it was a thriving Engineering College, having the two streams engineering and ophthalmic optics, that Laws headed in 1924. The engineering stream comprised four-year courses leading to the B.Sc. degree of London University and the optics students attended for two years and were prepared for the examinations qualifying for Fellowships of the Spectacle Makers’ Company and the British Optical Association.

The University of London

In December 1924, when Laws made his unsuccessful bid for the Engineering Day College to become a full school of London University, there were 14 “recognised teachers” and 80 registered university students, 58 attending day courses and 22 evening courses. In 1923-24, twenty-five registered students of the Northampton had graduated (ten with honours!). The 1927 draft Statutes of London University under the 1926 University of London Act drastically limited appointed teacher representation on Boards of Studies, but, after protest these draft statutes were amended satisfactorily.

The C.P.F. and the “Scheme”

The continuing importance of the Foundation to the Northampton and the other polytechnics is illustrated by the fact that between 1891 and 1936 it expended £1,781,112 on grants to them. This was by far the larger part of the monies allocated, for the other categories, that is to say open spaces and miscellaneous grants together totalled £497,589 in the same period. That this emphasis was not a foregone conclusion was shown in the recorded comment of James (afterwards Lord) Bryce in 1889, on the proposed Central Scheme. He preferred spending the money not on grants to the polytechnics but on provision of “small recreation grounds in crowded neighbourhoods, gratuitous swimming baths and institutes for working girls.” He continued: “Generally I would remark that the applications proposed in the Scheme seem to be perhaps too predominantly of an educational character, and not quite sufficiently directed to the needs of the very poorest classes, classes which are at present largely below the level which technical schools can reach.” There follows his very perceptive, much quoted, observation: “Everyone who has examined the history of charitable endowments knows how constant is
the tendency for benefactions intended for the very poor to fall into the hands of a somewhat higher class. It appears specially important to guard against this tendency where the very poor form an extremely large and to some extent hereditary class." 

Although Bryce’s views did not gain acceptance and the 1891 Scheme was put into operation as conceived, nevertheless subsequently there was emphasis on recreation ground and other social rather than educational funding, for a variety of reasons. Firstly, the Education (London) Act, 1903 made the London County Council the Education Authority for London. "This new Education Authority, invested with large powers, duties and funds, exerted an increasing measure of control over the Polytechnics, and the authority and influence of the Central Governing Body which had been of a parental description gradually waned." Secondly, "as the L.C.C. had to confine its expenditure to education, it seemed indicated that the Trustees should devote themselves more especially to the social and recreative activities, and in pursuance of this policy they acquired or assisted in the acquisition of playing fields for the Polytechnic members." Thirdly, it was observed that when space became short there was a tendency for polytechnics to convert social space to teaching purposes. Fourthly, Bryce was correct — the needs of the poor were not met as the educational sights were raised.

Additional C.P.F. funding was made available to the Institute as follows: — From the beginning until 1931 some examination fees were met. In 1902 provision was made for endowment insurance for the Principal and this was extended to the Secretary in 1905 and to the teaching staff in 1906. There is some evidence that this scheme inspired F.S.S.U., but it was ended in 1929 when the L.C.C. set up a full superannuation scheme. Money was found for a Compassionate fund in 1903. The provision of loans for purposes of which they approved was a great benefit stemming from the Trustees. In 1906 six acres of land in Oakthorpe Lane, Palmers Green, North London, already laid out for cricket and lawn tennis, was purchased for £3,000 to replace the temporarily rented sports ground at East Finchley. The money was borrowed from the C.P.F. at 3%. Annually, thereafter, the Foundation covered the interest repayments from its own income! Thus by April 1935 the property was in fact a freehold gift from the foundation. The £3,000 purchase price included the freehold, the solicitor’s fees, three pavilions and a horse. The horse, by the way, was sold for £15 shortly afterwards, an increase of £5 over the beast’s purchase price; the second horse, however, was stolen! In 1925, the C.P.F. agreed to assist in the purchase of a further 7.83 acres nearby, provision of a new pavilion,
fencing, and furniture at a cost of £9,337, of which the Foundation loaned £8,000.

From 1898 a supplementary (i.e. not mandatory) annual grant of £1,000 per annum had been made. It is interesting to note that by 1920 the total C.P.F. grants to London Polytechnics was £22,250 per annum but, with the addition of supplementary grants, the figure was £40,806 per annum. The Trustees then helpfully undertook not to cease any supplementary grant without twelve months’s notice.

There was, over the years, much questioning as to how closely the requirement of the Scheme, to benefit the poor, was being met. One such major enquiry was that of 1932 when a very searching questionnaire was sent to each Polytechnic. William Garnett writing in May 1932 of his memory of discussions of “about 35 years ago” expressed the view that all that was required to meet the needs of “the poorer classes” was to ensure that “fees were set at sufficiently low a level so as not to deter entry of those low in income.” A private and confidential C.P.F. report of 1935 recommended that the Foundation “continue to refrain from subsidising Schemes which can be financed out of the rates and/or the Exchequer.” This refers to the supplementary grants and “Report on Policy Relating to Grants”; 1937, lists the Northampton Polytechnic as having its supplementary £1,000 grant withdrawn by the end of 1948, by equal reductions over the ten years.

The London County Council

The growing power of the L.C.C., to which reference has been made, was at this period assuming its greatest proportions. Much of it was beneficial and battles that Laws had with the L.C.C. tended to be much more in concert with the Principals of other London Colleges and did not resemble the epic single-handed struggles of Mullineux Walmsley to retain the Artistic Crafts Department or to found an Opto-technical Institute.

As Parliamentary enactments came to provide the money for all the educational side of the work of the Polytechnic, the City Parochial Foundation saw its role in financing the social and recreational side of the work. In 1918, however, the rate limitation had been removed, and, that Act and the 1921 Education Act, together enabled provision by the L.C.C. of social and physical facilities at the Northampton. Thus the role of the Foundation diminished as that of the L.C.C. grew.

By July 1924, just after Mullineux Walmsley’s tragic death, the Northampton began complying with all the L.C.C.’s requirements. These included consultation on the appointment of a new Principal, contracts for
teachers, approval of teaching service for superannuation purposes, fees, etc. The 1922 Teachers’ Superannuation Act was wholly beneficial, but not without unsettling problems for individuals. Firstly, it involved a 5% deduction of salary for the purposes of the fund that had not been a feature of the “grace and favour” C.P.F. inspired scheme inaugurated in 1906. Secondly, teachers had to meet certain requirements in order to be eligible. They had, for example, to be full-time and permanent staff. In an institution with much part-time and evening work, the teaching was specifically geared to these purposes.

The requirement was not less than 20 hours of actual teaching per 30 weekly hours — “save in exceptional circumstances.” So the administration had to set about proving exceptional circumstances. New Burnham scales, too, involved assessing qualifications held by teachers, as to their equivalence to a good honours degree. An increase of pay was awarded whilst these matters were being resolved and in some cases teachers later found themselves obliged to refund excess salary to the L.C.C. From 1929 the superannuation scheme was also effective for non-teaching staff and the C.P.F. scheme was phased out.

Fees were firmly controlled by the County Council. In 1921 the concept of “out-county students” was introduced and the Education Authorities of the areas from which students came (if outside the L.C.C. area) had to contribute towards the costs. Uniformity of fees in London was enforced and this meant a 45% increase in evening class fees in 1921, resulting in a 17% decrease in numbers of students enrolling. By 1923, a further decrease of 12% had followed, caused both by the fee increase and by the “out-county” arrangements.

Many of the regulations stemmed from the Board of Education. In 1926, financial stringency enabled the L.C.C. to lay down more rigorous conditions attaching to the award of equipment grant. These conditions included expenditure only on agreed items, lapse of funds not spent in the financial year, and a formal undertaking to use such equipment for educational purposes in perpetuity or to surrender it to the Council, and, finally a detailed inventory was to be kept.

The L.C.C.'s inspections were an important influence over the years. In 1914 they remarked on inadequate hygienic conditions and suggested additional precautions against fire. In 1931 they complimented the Polytechnic on its “uniformly high standard of work throughout”, noting that the substantial amount of university work was being accomplished without adverse effect on lower level work. “One of the most important centres for Engineering instruction in London” they reported.
Finance

The nineteen twenties and early thirties was a period of recurring and deepening financial crises, one consequence of which was inability to build on the Connaught site. There were many other consequences of international economic depression that directly affected the College. A proposed triennium budget for 1926-29 was postponed and annual funding was instituted and persisted for many years. Cuts were agreed. These things have a very modern ring about them. The L.C.C. also committed to writing the opinion that expenditure at the Northampton was unduly high. This was a topic that they returned to later when they stated that the Board of Education considered that expenditure on Mechanical and Civil Engineering, Chemistry and Optics was heavy and requested details of proposed further economies. Of course, the sandwich courses were responsible for some extra costs. The Governing Body, with an eye to unit costs, sought more students by advertising on Underground stations at a total cost of £30. They also used profits from the Great War munitions work of the College to pay for the re-equipment of the social rooms.

At this time the post of Clerk to the Governors was advertised and attracted 1,500 enquiries and 888 applications! Of these 66 persons had suitable educational and administrative experience and it was decided that those aged under thirty or over forty would be excluded. There were also 369 applicants for the post of Works Superintendent. It was not only those seeking work, however, who were forced to be aware of the economic crisis for the "Geddes axe" of 1931 cut 10% off teachers' salaries from 1st October 1931 until 30th June 1934, then reducing to a five per cent cut for a further year. There was a graded scale reduction in non-teaching salaries reaching 10% over £750 per annum.

Civil and Mechanical Engineering

When Laws was appointed Principal in 1924, one of the other nine applicants interviewed was Charles E. Larard, AMICE, AMIME, Head of the Department of Civil and Mechanical Engineering. But he was then aged 56 and did not have a university degree. The first head of the Mechanical Engineering and Metal Trades Department, J. Ashford, was in post from 1896-1901 and Larard had been appointed in 1902. The department was first named Civil and Mechanical Engineering in 1918. Larard's earlier experience had been as head of a similar department at Huddersfield Technical College and as a lecturer in engineering at Battersea Polytechnic. He had served an apprenticeship in the Vulcan Iron Works, Hull, and later had secured a
Whitworth Exhibition and a Royal Exhibition. His studies subsequently included chemistry at the Royal Institution College, Hull, metallurgy at Glasgow and West of Scotland Technical College, mechanics and graphic statics at the Royal College of Science and finally engineering at Owen's College, Manchester! He retired in 1933, soon after he had been awarded a D.Sc. (Eng.) for research in engineering materials.

Larard's long period of control of engineering education at the Northampton was vital and was followed by relatively rapid changes of control in the succeeding five years. These changes take us finally into the university period at the end of J.C. Oakden's headship. These heads of the Civil and Mechanical Engineering Department were W. Abbott, 1933-34 and J.G. Docherty, 1934-38. J.C. Oakden, M.A., M.Sc. Tech., AMIME, formerly lecturer at the College of Technology Manchester, was appointed in 1938.

The 1920's was the period of the growth of the National Certificate schemes of engineering education. These certificates were awarded jointly by the appropriate professional bodies and the Board of Education. Thus, in 1925, application was made for approval of the Northampton courses in engineering, mechanical and electrical and in 1926 for chemistry, and in that year the Polytechnic first participated in the National Certificate scheme.

In 1928 Advisory Committees of experts were set up to guide instruction in aeronautical engineering, electrical instrument making, electrical installations and cable jointing and electro-deposition. In the same year a Report on engineering education in London suggested that the Northampton Polytechnic Institute was not fulfilling the obligation, explicit in its scheme of government, to serve the needs of the working classes of London. The objection of this Board of Education report was that engineering courses at the Northampton were directed to the passing of London University examinations. This report was harmful in that it influenced opinion at the City Parochial Foundation, but it was helpful in that appropriate intermediate classes were rapidly commenced. Evening classes for the preliminary examinations of the Institution of Civil Engineers, the Studentship of the Institution of Mechanical Engineers, the Preliminary examination of the British Optical Association and for University matriculation were all started. The London County Council Education Committee then supported the Northampton and the other polytechnics in their interpretation of "fulfilling the duty imposed upon them . . . to provide educational facilities for the poorer classes, (of London) and emphasises that even at Battersea, where they are relatively
more numerous than elsewhere, students attending Day courses from overseas are in the minority.” So — local needs were served!

This period saw a more systematic effort to provide specialist courses of lectures on such topics as: “Technical acoustics”, “X-rays: their history, generation and engineering applications”, and “Dielectrics”. The National Physical Laboratory was a fruitful source of lecturers at five guineas per lecture. Staff development was fostered, although I doubt if it would have been referred to in those terms, for three months’ leave of absence with pay was arranged in the summer of 1928 to enable three members of staff to gain experience in industry. W.H. Brooks, a lecturer, gained a Ph.D. after four years part-time research on “Initial and maximum stresses in ties and struts under elastic or rigid end constraints”, and W.S. Patterson in the same year, 1928, was awarded a Ph.D. for research on “Causes of corrosion of zinc on exposure to the atmosphere”.

The College Diploma in Engineering became a graded award from session 1927-28, being either a Diploma or Diploma with honours.

The workshops were separated from the Civil and Mechanical Engineering Department to become a separate unit under J. Loxham in 1934. Production Engineering as a full course received approval in 1934-5. These changes represented very limited evolution from existing arrangements rather than major development.

Outstanding among the engineering graduates of this period are the Kereskky brothers (1927). Their father was the last Prime Minister of Czarist Russia before fleeing to England at the time of the Bolshevic Revolution. G. Kereskky became Senior Designer of Water Turbines at English Electric and worked on the Loch Sloy Hydro-Electric scheme. Oleg Kereskky became Principal bridge designer with Freeman Fox and Partners and was engaged on the design of the Severn Bridge. He is now a member of the University Council, and a Fellow of the Royal Society.

Aeronautical Engineering

By 1927 a day course in aeronautical engineering instituted in 1920 had but one student. There had been fourteen to begin with and no doubt the ex-service grant aided source of students had dried up, but the longer term viability of aeronautical engineering at the Northampton, both day and evening courses, was not in doubt. Our records, unfortunately, do not separate aeronautical engineering from Civil and Mechanical engineering at this date so recorded facts are few. Larard, the Head of Civil and Mechanical Engineering until 1933, certainly collaborated with Handley Page in pioneering a wind tunnel installation in the College.
We know that Hendley Page continued his interest in the College, taking the chair, in March 1922, when R.H. Walmsley, the Principal's son, gave a paper on the slotted aerofoil or Hendley Page Wing, to the College Engineering Society. Among the noted aeronautical engineering students of this period, was R.S. Stafford (1922-26), the designer of the HP80 heavy bomber (the Victor). He became Chief Designer to Hendley Page, Ltd., succeeding G.R. Volkert another old N'Ion (the name by which past students of the Northampton Institute had come to be known). H.J. Penrose, an aeronautical engineering student of exactly the same period, became Chief Test Pilot and later Sales Manager of Westland Aircraft, Ltd.

The Governing Body from 1926 regularly delegated two of its members to inspect the work of the College. In 1937 they mentioned inter alia . . . "we visited . . . the Aeronautical Laboratory with its two wind tunnels, one of which has only recently been completed, and we were informed that its construction has occupied the spare time of members of the Polytechnic staff for upwards of two years." Obviously the old do-it-yourself spirit was still surviving in part!

**Electrical Engineering**

The Electrical Engineering and Applied Physics Department had, because of the immense competence of both Walmsley and Drysdale, always been the major department of the Institute, with the Principal as head and Drysdale in the nominal position first of Chief Assistant and then of Associate Head. There had, in the early twenties, been proposals to split the department up in order to achieve a separate Mathematics Department, but this had not happened. In March 1925, however, Electrical Engineering became a separate department with provision for a head on the highest scale. A.C. Jolley, who had commenced in 1897 as a Lecture Assistant, was appointed to succeed F.M. Denton who resigned on grounds of ill-health. The lump became a Physics and Mathematics Department under the headship of the Principal. Alfred Geary was appointed Responsible Lecturer in Mathematics in 1926 and Head of the new Department of Mathematics in 1931. Physics became a separate department with F.Y. Poynton as Head in 1937.

The Department, in 1925, conducted day and evening classes, the day classes being part of the four year course for the University of London degree in engineering, not a separate electrical engineering degree course. The evening classes were for professional qualifications and "armature winding, instrument making, telegraphy, telephony and radio telegraphy." The instrument making was separated from Electrical Engineering on
Jolley's retirement in 1936, becoming an Instrument Making Section under C. Bowden.

There were in 1925 eleven full-time teachers of electrical engineering and fifteen part-time, and of the full-time teachers five were "recognised" teachers of London University, so it was still a large department. The equipment then included a wide range of electrical machinery for the calibration of instruments and for electrical measurements. There was a generating station of 30 kilowatt capacity operated by a pair of six cylinder gas engines and producer plant; all the responsibility of the Head of Department of Electrical Engineering. L.G.A. Sims succeeded Jolley as Head of Department, 1936-1939. James Greig, M.Sc., Ph.D., C.Eng., F.I.E.E., F.R.S.E. was Head of Electrical Engineering from 1939 until 1945 and was responsible for devising radar instruction kits that were used in training service personnel throughout the United Kingdom. He left to become Professor of Electrical Engineering at King's College London. The status of the department remained high, being as measured by the Head of Department Burnham grades in 1946 level with the Civil and Mechanical Department with Mathematics immediately beneath, followed by Optics and Physics at the next level and Chemistry beneath; a crude measure but valid. Dr. J.R.I. Hepburn was Head of Chemistry from 1938 to March 1946, leaving to become Principal of Guildford Technical College, and he was succeeded by Dr. J.E. Garside.

Optics

In January 1926 H.H. Emsley was formally appointed Head of the Department of Applied Optics. He had been Associate Head, joining the Institute in 1921. He resigned in 1946 to devote himself to industrial and professional work. In 1926, also, Edgar F. Fincham was promoted to be Instructor. The following year a Bill to provide for the registration of optical practitioners was before Parliament. The Principal, H.H. Emsley and C.L. Redding attended a government departmental committee to give evidence supporting the memorandum the Principal had submitted advocating:-

a) A register of opticians as desirable in the public interest.

b) Admission to the register to be by examination only, after a transition period.

c) Courses of training to be approved by the Optical Board contemplated in the Bill, (i.e. the courses at the Northampton and elsewhere.)
The following year Emsley was directing research in the Polytechnic on behalf of the Institute of Ophthalmic Opticians. This was based on a new graduate appointment that would involve the researcher spending 2/5ths of his time on research and 3/5ths on teaching. This payment by the Institute of 2/5ths of the salary went on for seven years. The person appointed was J. Adamson, M.Sc.

The desire of other polytechnics to run courses for dispensing opticians was successfully opposed by the Governing Body and the L.C.C. agreed that the equipment at the Northampton was such that fuller use of it was both possible and of assistance to reducing unit costs, a matter they had been pressing; also, of course, the L.C.C. was firmly against the duplication of classes unnecessarily.

An Advisory Committee for Ophthalmic Optics was set up to give an opinion on: a) the organisation of the full-time courses in optics at the Institute, b) the setting up of a clinic in order that the courses might include more clinical work on living subjects. The Committee proposed modifications in the two year full-time day course in optics, the reduction of hours of work of such students and agreed to the proposal for a clinic for eye testing. Further, they put forward the idea of a shortened one year course which was accepted. The Report of H.M. Inspectors in March 1927 includes: “In respect of instruction in Applied Optics, the Polytechnic occupies an unique position. It is excellently equipped and staffed for this purpose and its work is of national importance.”

After protracted negotiations the British Optical Association decided to accept the Polytechnic examinations for exemption from their own examinations in 1929, and, when in 1931 they required candidates for the Fellowship of the B.O.A., to produce evidence of clinical experience and of a specified number of hours of “mechanical, technical and clinical training”, they granted recognition to the courses at the Northampton. From the same year the Worshipful Company of Spectacle Makers gave £36 per annum for scholarships.

An Optical Convention attended by 8,000 people and opened by the Prime Minister, Stanley Baldwin, in 1926, was followed three years later by the first exclusively ophthalmic optics congress and exhibition, both held in the Institute.

The prospectus for 1933-34 lists five full-time staff in the Department of Applied Optics, four visiting lecturers and staff of the Physics, Mathematics and Chemistry Departments involved in teaching these students. The permanent staff are listed as H.H. Emsley, B.Sc. (Head), C.L. Redding, F.S.M.C., F.B.O.A., (Lecturer and Chief Assistant) and there were three
lecturers W.H.A. Fincham, F.S.M.C., E.F. Fincham, F.Inst.P., F.S.M.C., F.B.O.A., and J. Adamson, M.Sc. The courses were for ophthalmic and dispensing opticians on one hand and for optical engineers, optical instrument makers and optical glass workers on the other. The Ophthalmic section courses were full-time day courses over two years with an alternative one year full-time course to which would be added part-time day and evening classes. Optical engineering courses were all evening classes. The courses were suitable for preparation for F.B.O.A. and F.S.M.C. and the Diploma of the Polytechnic was awarded on completion of the two year course to a suitable level. The fees were £20 per session (or £7 per term) for London students and £20 per term for out-county students, at that time.

An Optical Society was formed in the College in 1931, and it was modelled upon the Engineering Society in that students' papers were read as well as lectures given by experts.

In 1946 arrangements were made with the London Refraction Hospital for Northampton ophthalmic students, both full and part-time, to attend the hospital for sight-testing practice when approaching the end of their training. In the second year of the full-time course this was to extend to six hours a week for approximately four months and in the case of part-time evening students, one evening per week throughout the fourth year. A fee was paid to the hospital. Sight-testing practice had formerly been acquired by students working in pairs and testing each other's eyes by use of a simple ophthalmoscope and by the examination of 'cases' hired for the purpose. The medical profession had opposed the opening of a clinic at the college, in the manner of an out-patients department of a hospital. Thus co-operation with the London Refraction Hospital was the ideal solution.

The Head of Department, H.H. Emsley resigned at the end of May 1946 in order to devote himself to industrial and professional work. He became Director of Allied Instruments Manufacturers Ltd. and Technical Consultant to the United Kingdom Optical Company.

The Governing Body resolved in November 1946 that in future the Applied Optics Department be known as the Department of Ophthalmic Optics.

**Sandwich Courses**

The sandwich course system as pioneered by the first Principal did not remain unchanged. In certain areas there were benefits to be gained by change, benefits both to students and to the College. The engineering course occupied four years whilst the Intermediate Scholarships offered by
the London County Council were tenable for three years only. In
exceptional circumstances the L.C.C. would agree to remission of fees for
the fourth year but was not willing to extend the scholarships beyond the
third year. It was pointed out that the Northampton was handicapped in
attracting Intermediate scholars as students by reason of the fact that at
other Institutions in London the engineering course could be completed in
three years whereas, under conditions then existing, (1928), an Inter-
mediate scholar was required to pay the whole cost of his education for the
fourth year of the course. It was resolved that it be advertised that
remission of fees was possible and that the L.C.C. be further pressed to
extend the scholarships to four years.

In 1929 the Principal proposed, and it was agreed, that there should be
an alternative full-time day course in engineering of three years’ duration
instead of four. The four terms of the second and third years were
combined to form a single full third year of three terms, eliminating both
works periods and applicable to both engineering and optics.

In 1927-28 there was an interesting short term development in
conjunction with a local firm, Marryat and Place arranged for all their
apprentices to spend one month in three in full-time attendance at the
Polytechnic and two months in three in the factory in St. John Street. The
ordinary sandwich course system also continued, however, with place-
ments in industry ranging from 22 firms in 1924-25, to 62 firms in 1946. The
numbers of students involved in one year reached 98 in this period. There
was much work for the Principal in effecting the placements, and from
1931-32 to 1934-35 acute industrial depression made this extremely difficult
and new students were told at that time that an industrial placement could
not be guaranteed. Other problems followed:- in 1937 we read:- “a certain
amount of difficulty has been experienced in obtaining the necessary
facilities in the case of foreign students”, and in 1940 that the problem was
“somewhat reduced by the internment of a number of students of enemy
alien origin”.

Ultimately it was the University of London’s refusal to make special
examining provision for Northampton students that changed the timing of
the sandwich arrangements. Timetables were remodelled to comply with
new University B.Sc. Examination procedures involving postponement of
the beginning of the second works period from Easter to Mid-June and of
the third and fourth year course commencement dates to a fortnight after
the normal dates. The change in the University of London requirement was
that now three years minimum teaching was to follow the Intermediate
examination instead of two years as formerly. Another change was that to
gain entry to a final degree course students were now required to have passed the Intermediate examination, not in Engineering as heretofore, but in Science. Thus from the start of the session 1946-47 it was necessary to organise Intermediate examination courses that eliminated engineering drawing and concentrated on pure and applied mathematics, physics and chemistry.

"Two successive revisions of the University regulations (the first in 1938 when the Final examination was divided into two parts), however advantageous from other points of view, will thus have combined to deprive the Polytechnic full time course of the special feature which distinguished it from that of other colleges throughout the four decades of its operation in this form. In common with those at other institutions, students' collateral industrial experience will thus in future be limited to the two summer vacations of the post-intermediate period." This quotation from the 1945-46 Annual Report petulantly records Samuel Laws' concern at the loss of the valuable experience that five month spells in industry (Easter to September), gave Northampton students in the past.

The effect of the changes on part-time students was to extend study for the Final from three years to four.

The Junior Technical School — Technical Secondary School

A Junior Technical School for instrument making and horology opened on the 20th April 1936 in the Connaught Building. It was an integral part of the Northampton Polytechnic having an enrolment of 23 boys aged 13-14½ years drawn from elementary and central schools. The Headmaster was E.W. Birch, previously lecturer in the Mechanical Engineering Department and Head of the Horological Section. The course was technical and practical, of three years duration and the pupils, it was expected, would follow it up by apprenticeship in the trade. The Worshipful Company of Clockmakers provided £40 a year for scholarships. In the second year there were 58 boys in attendance and the full complement reached in the third year was 92 boys. At that point war-time evacuation to St. Albans followed. Then the 1944 Education Act had two effects, first it abolished fees for all students under 18 years old in full-time education. Secondly, it changed the status of the school into a Technical Secondary School. The school came back to London after the war to be housed in the then disused Chequer Street L.C.C. School in Bunhill Fields. It was taken over by the London County Council as from 1st September 1950 under the London Development Plan to be incorporated into a new comprehensive high school in due course. Such a school was to be built in the neighbourhood of
Coram's Fields, W.C.1 and was to include Owen's Boys' School. E.W. Birch was Headmaster, 1936-46, and J.L. Wilkinson 1946-50.

Sports and Games

Rudolf Oberholzer retired in 1928 and so his major contribution to the work of the Polytechnic was made in the time of Mullineux Walmsley. His successor J. Kucera neither made the like contribution nor carried out the required change in direction from full scale gymnastics to recreative physical training proposed by His Majesty's Inspectors in 1926. Kucera's was the only area of the work of the Polytechnic criticised in the L.C.C. Inspector's Report of 1931. His appointment was then terminated and the "Swedish" drill system taught with a much more limited concentration on the "German" system. Thus was the Northampton brought into line with other colleges and the teaching of gymnastics declined.

The decline was but gradual, for in the session 1930-31 the Men's Gymnastic Club took two shields, one cup and twenty-six medals in open competition at the Metropolitan and Southern Counties Amateur Gymnastic Association Championships. The Badminton Club had a pair who reached the semi-final of the South of England championship and in the team games the Football Club first team became Champions of the Nemean League. The gymnasium continued to be the venue for the championship competitions of the Amateur Gymnastic Association and the Metropolitan and Southern Counties A.G.A., as well as being heavily used by members; men on three evenings (100 members) and women on two evening (113 members), each week.

That times were changing was shown by the commencement of at least some sessions of mixed swimming in 1928 and by the authorisation of Sunday cricket in the following year, but most of all by a Governing Body minute to the effect that "the heavy horse roller was stolen from the Recreation Ground, Oakthorpe Road, Palmers Green, on the night of Wednesday October 29th, 1930, and the police have been unable to find any trace of the stolen property!" This was reported three months after the loss. From session 1932-33, Wednesday afternoons were not time-tabled for teaching or laboratory work throughout the year instead of for the summer term only.

The Social Side

The decline of the social side, already noted, led to some consideration of the better use of the considerable facilities provided. Early in 1925 a
device was found, probably not explicitly stated, to commence the gradual evolution of these social facilities from local public provision to fully College provision. It was noted that only 4½% of the students became members of the social side, so automatic membership of students was arranged from 1925-26 by allocating one shilling of their increased fee compulsorily to this purpose, (the Union of Day Students had wanted their subscription to go up from 12/6d to 20/- and so it went to 21/-). Shortly after, in 1928, the evening class students were also charged the shilling and enrolled. At the same time the cost of Membership only of the social side was reduced to five shillings. Then £600 was spent on converting the little used Reading Room to a games room. That the Reading Room was little used was not surprising both from paucity of provision and from lack of time on the part of the hard pressed students.

In 1924-25 there were 855 members of the Social side, of whom 316 were women, but there were 2135 students who were not members. Of the clubs listed nine appear to have been open to the membership of the Polytechnic at large and eleven are specifically listed as “Day Students’ clubs and societies; additionally there was a Staff club. After 1938 there is no listing of clubs and their membership numbers, nor is there any indication of specifically “social side” members. Thus this part of the polytechnic concept died out with the Second World War.

The Second World War

At the end of the war in Europe, the Governing Body expressed its sense of relief, “that with so much devastation in the immediate neighbourhood the Polytechnic buildings should have suffered such a comparatively small amount of damage from enemy action.” The main building suffered broken glass and smashed window and door frames during the early bombing and then, on the night of Saturday 11th January 1941, a 500 pound high explosive bomb scored a direct hit penetrating through three floors to a basement engineering workshop. Fortunately the detonator and the cylinder containing the main high explosive charge (of ammonium nitrate with a small percentage of powdered aluminium), became detached at the point of entry to the building and failed to explode. Two milling machines were lost, due to impact, and part of the outer wall of a classroom was demolished, and there was much broken glass. The public air raid shelter adjacent to the workshop where the bomb landed was fully occupied at the time, but there were no casualties and no panic and the workshop was back in use by the following Tuesday morning.
On the 18th June 1944 a flying bomb landed on Spencer Street fifty yards to the north side of the main building causing casualties and damage and considerable blast to the gymnasium, the swimming bath and the hall roof as well as many windows and doors. On 5th July 1944 at a further distance on the west side a flying bomb landed, blowing out window and door frames, particularly in the Connaught building. Neither of these incidents caused casualties within the Polytechnic and emergency repairs were quickly put in hand in each case. Skinners' Hall was damaged at least three times and the Governing Body then met at the Polytechnic and on occasion at other livery halls.

Emergency use of the Polytechnic buildings and educational equipment commenced when Royal Air Force reservists were billeted and given training facilities in instrument repair. In January 1940 the R.A.F. trainees were withdrawn into R.A.F. training units. In June 1939 a basement room in the main building was set aside as an emergency police station and a large part of the basement was requisitioned on the eleventh of September 1939 as a public air raid shelter and remained requisitioned until 31st October 1945. The Junior Technical School was evacuated to St. Albans from 4th September 1939 until 25th June 1945 and further space became available by the ending of domestic economy classes and the social activities. The swimming bath was at first closed and used as an emergency fire water reservoir, but later it was reopened for use by naval trainees and others.

Government contracts for munitions production arranged via County Hall and direct contracts with industry were entered into. The work done was mainly on jigs and fixtures, gauges and tools, but also small parts were produced for aircraft factories as well as shell bases. The work force, made up of handicraft teachers and school keepers from evacuated and bombed out L.C.C. schools, was under F.H. Perkins, Head of the Production Department. The gymnasium was used for fitting benches, for the glass lantern, badly damaged by shrapnel and building debris, had been covered instead with boards from the floor, the space cement filled and benches put in. Gauge inspection and the preparation of demonstration radio equipment for use in universities and technical colleges in training service personnel were among the activities for which the gymnasium was used. £56,464 profit for the Polytechnic resulted from war-time contracts as well as the acquisition of surplus machine tools. The lens grinding workshop of the Ophthalmic Optics Department in Connaught building was leased successively to two different Clerkenwell Optical Manufacturers to assist in their completion of war contracts.
As part of a comprehensive scheme for utilising technical teaching
capacity in the national interest, the Polytechnic first took in the R.A.F.
trainees referred to above. Then in March 1940 army courses were started,
normally each of sixteen weeks duration, forty hours per week, running
continuously throughout the year. These courses trained wireless
mechanics, instrument mechanics, electricians and fitters for the army. The
men were billeted in nearby buildings such as the evacuated Owen’s Girls
School where unfortunately some were killed in an air raid. Courses for
naval ratings started in November, 1942 on radio location. At first the
Refectory supplied three meals a day for the army and R.A.F. trainees, later
midday meals only were supplied and a total of 807,000 meals were served
to service personnel in addition to those served on a seven day week basis
for there were Saturday and Sunday classes and breakfast for staff on fire
watching rotas.

There were also courses in machine shop operation for women and
Standard Telephone and Cable Company employees were trained as tool
room mechanics. In excess of 8,200 forces trainees followed courses at the
Northampton; with civilian trainees, the total exceeded 9,000 persons.
Income from fees amounted to £161,500. In all this instruction seconded
teachers were vital in attaining the results achieved. There were some
thirty-six men spending four to six years with the Northampton. They were
men with qualifications in science and they were transferred from public
elementary and central schools for as long as the need remained. There
were also constantly changing assistant instructors from the armed
services. The staff had, in addition to enduring the bombing, to carry out
the usual fire-watching rotas, for there was a governmental compulsory
fire-watching order in force. There were six members of staff in turn
sleeping on the premises. Conspicuous service was, it is recorded, given by
Captain Powell, Superintendent of the Social and Recreative Department,
Miss Muddock, the Lady Superintendent. Miss Mackintosh, Clerk and Mr.
Martingell, the Caretaker, in organising and patrolling the buildings and
assisting people in the public air raid shelter. H. Martingell was later
awarded the M.B.E. for his work for service charities. He was Resident
Caretaker for 23 years. Weekend day classes on Saturday afternoons and
Sundays were commenced during the session 1940-41 in place of evening
classes because of the difficulty of black-out travel.

One positive gain of this period was the setting up of a Students’ Aid
Fund that the Governing Body financed at first from the proceeds of R.A.F.
billeting and the profits on Refectory meals. Another was the setting up in
December 1942 of a Staff/Student Council of ten students and ten staff
representatives of academic departments. On the debit side the Skinners’ Company decided to suspend the Scheme grant of £1,000 per annum due to war damage to properties from which the income was gained. Fortunately the L.C.C. made up the amount lost to the budget.

War research work conducted by members of staff on behalf of governmental agencies included tests and analyses for tank design, optical investigations, testing materials and designing radio demonstration equipment. The years 1939-47, in addition to the specifically war-effort teaching, research and production already referred to, showed highly creditable academic results in spite of very difficult conditions for study and teaching and generally stress-filled living, often under aerial bombardment conditions. In this period 461 B.Sc. Engineering degrees were gained as well as four Ph.Ds. There were 567 B.Sc. Engineering Part I successes, 596 Intermediate B.Sc. Engineering, 52 Intermediate B.Sc., Science, some 740 National Certificates in Mechanical, Electrical and Production Engineering, 50 British Optical Association Fellowships and 91 Spectacle Makers’ Fellowships; additionally 238 Northampton Polytechnic Diplomas in Engineering and 33 Diplomas in Ophthalmic Optics were awarded. The full return to a peacetime academic programme was not completed until 1946-47.

Conclusion

When on the point of retirement, Samuel Laws felt able to write in *Nlon* of his more than twenty years of stewardship: “A first impression is how singularly superficial have been the changes that have taken place.” He noted a definitely higher academic standard at entry but he was somewhat over modest about achievements during his tenure of office. In fact in twenty three years the volume of teaching had nearly trebled. The courses for the University of London internal degrees in Engineering had been developed on Mullineux Walmsley’s firm foundation until, with the advent of the part-time day courses, they had become the major sector of the Northampton curriculum. It could well be said that links with industry had been fostered, for as many as 160 students were placed in 90 firms in 1946-47.

A major feature of the period 1924-1947 was the introduction of the National Certificate Scheme for part-time students. The first National Certificates were Mechanical Engineering, 1921, and Electrical Engineering, 1923, but Civil Engineering waited until 1943 and Applied Physics 1945. A vital development was the designing, erection and equipping of the
Connaught Building in 1932, (which added 30% to space), and the 1938
extension that added another 6% to teaching space. Developing needs for
technical education coupled with economic and war factors, however,
meant that Samuel Laws began and ended his term of office under
conditions of space constraint, but he was aware that the Northampton
was not alone in this.

The higher academic standard on entry to which Laws referred came
about partly by pressure on places from ex-servicemen coupled with
demands from school leavers. Opportunity was then taken to restrict entry
to the engineering courses to candidates who had matriculation exemption
and to the Ophthalnic Optics courses to those who had School Certificate
passes in physics and chemistry. Some lower standard classes (Domestic
Economy) ended at the beginning of the war as did the specifically
"polytechnic" social arrangements.

Perhaps the most obvious change over pre-war, was the growth of day
release classes. These part-time day classes coped with 301 students in
1938-39 and 1542 in 1946-47. There was a relative decline in evening class
entries that indicates that equivalent students gained their education at
evening classes before the war. The evening class numbers were:
1938-39
3704 students, 1946-47 2730 students, which matches the thousand plus
additional on day release courses!

Laws was, of course, correct in seeing no change in subject coverage,
for in 1946-47 there were full-time courses in engineering and in ophthalnic
optics, part-time courses in the daytime mostly in engineering and evening
classes in engineering, ophthalnic optics, chemistry, watch and clock
repairing, furriery. There was also the Junior Technical School for
Instrument Making and Horology.

In the session 1924-25 when Samuel Laws became Principal there were
1973 students (186 day and 1788 evening students, including 218 studying
domestic economy) and when he relinquished the principalship there was a
record total of 5299 students (548 full-time, including 102 Technical
Secondary schoolboys and 4751 part-time day or evening students). In the
former session the College income was £37,620 and in the latter £108,978.
In 1924-25, 17 B.Sc. Engineering degrees were gained (16 full-time
including 2 firsts and two evening students), and in 1946-47, 82 B.Sc.
Engineering degrees were gained (43 full-time including 3 firsts and 39
part-time, including 4 firsts).

Just before Samuel Laws' retirement the Northampton Polytechnic
celebrated fifty years of existence and to mark the jubilee, 1896 to 1946, a
dinner was held at Skinners' Hall on 12th December, 1946, there was a
dance at Finsbury Town Hall and there was an open day attended by 2,000 people. The dinner, with the orchestra of the Grenadier Guards in attendance, was honoured by the presence of the Lord Mayor of London and the Marquess of Northampton among others. Samuel Laws prepared a jubilee booklet that outlined the evolution of the institution and ended in praising the founders for their pioneering foresight, "They builded better than they knew." As Mr. T.H. Holmes, then Clerk to the Governing Body, has remarked, this might well stand as the epitaph to Samuel Laws himself.
References

1. BRYCE: James
   Letter to the Charity Commissioners, 28th November 1889. Quoted in private and confidential paper:- Report of the Sub-Committee to consider and report upon the policy to be adopted in the future allocation of grants. 1935. p.2.

2. ALLEN: D.R.

3. ALLEN: D.R.
   Ibid. p.54.

4. GARNETT: William
   Letter, May 1932.
   (The City University Archives).

5. C.P.F: Sub-Committee... on the future allocation of grants

6. Board of Education