The educational work of Sir Bernhard Samuelson (1820-1905) with special reference to technical education

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THE EDUCATIONAL WORK OF SIR BERNHARD SAMUELSON (1820-1905), WITH SPECIAL REFERENCE TO TECHNICAL EDUCATION

by

A. POTTS, M.A.

Thesis submitted for the degree of Master of Education in the University of Durham, May 1969

ABSTRACT

Sir Bernhard Samuelson is generally accepted as being among the leading figures in the technical education movement of the late nineteenth century, but he has never been the subject of an individual study in either a biography or a thesis. Yet his career certainly justifies such attention. He was Chairman of the Select Committee on Scientific Instruction (1868) and the Royal Commission on Technical Instruction (1881-84), he served on the Devonshire and Cross Commissions, he was a founder-member of the Iron and Steel Institute, and a generous patron of education in Banbury and Middlesbrough. This thesis is an attempt to remedy this deficiency by chronicling and evaluating the educational work of Sir Bernhard Samuelson, paying special attention to his work in furthering the growth of technical education. Use has been made of the Samuelson Papers in the writing of the thesis. These papers were deposited in the Oxfordshire County Records Office in 1965 by the firm of solicitors which handled Samuelson's legal affairs, and the writer of the thesis has been the first to make use of this new source.

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CONTENTS

ABBREVIATIONS

The following abbreviations are used in the footnotes:-

D.C.C.R.O.	Durham County Council Records Office
K.P.R.L.	Kingston-upon-Hull Public Reference Library.
L.P.R.L.	Leeds Public Reference Library
M.P.R.L.	Middlesbrough Public Reference Library
P.C.	Potts Collection (Banbury Public Reference Library).
S.P.	Samuelson Papers (Oxfordshire County Records Office)

INTRODUCTION

Michael Argles has written that "in the nineteenth and early twentieth century the importance of technical and scientific instruction was divined only by a handful of prophets - Lyon Playfair, Thomas Henry Huxley, Bernhard Samuelson, Eustace Percy, and others, who campaigned ceaselessly against the tide of the times".(1) In his study of technical education and its advocates, covering the period 1867-1906, Jeremy Blanchet concerned himself with the work of Lyon Playfair, T.H. Huxley, A.J. Mundella, Bernhard Samuelson, H.E. Roscoe and John Lubbock, whom he regarded as the most influential advocates of technical education in this period.(2) While P.W. Musgrave concluded that "T.H. Huxley was immensely influential in changing the attitudes of the leaders in late nineteenth century Britain towards science, education and more particularly, technical education. Again Samuelson, Donnelly and Magnus had pronounced influence within their own relatively limited fields. Whilst Samuelson worked mainly through Parliament and Royal Commissions to change public opinion, Donnelly and Magnus were administrators, though both undertook missionary activity for their cause".(3)

The relative importance of these nine men is open to question, but few would deny that they were the outstanding figures in

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(1) Michael Argles South Kensington to Robbins (London 1964) p.136

(2) Jeremy Blanchet "Science, craft and the state: a study of English technical education and its advocates 1867-1906". Unpublished D. Phil. thesis, Oxford, 1953.

(3) P.W. Musgrave Technical Change, the Labour Force and Education, (Oxford 1967) p.268.

the technical education movement of the late nineteenth and early twentieth century. However, of these men probably less is known of the life and work of Bernhard Samuelson than any of the others. Unlike Huxley, Lubbock, Magnus, Percy, Playfair and Roscoe, he left no memoirs,[1] apart from a short article on his early life,[2] while Huxley, Lubbock, Mundella and Roscoe have merited full-length biographies and Donnelly and Magnus have been the subjects of articles.[3] Even less significant figures in the technical education movement, such as A.H.D. Acland, Swire Smith and John Tyndall, have

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(1) Hon. Mrs. Adrian Grant Duff (Ed.) The Life and Work of Lord Avebury 1834-1913 (London 1924), Leonard Huxley (Ed.) The Life and Letters of T.H. Huxley (London 1900), Sir Philip Magnus Educational Aims and Efforts 1880-1910 (London 1910), Lord Eustace Percy Some Memories (1958), Wemyss Reid (Ed.) Memoirs and Correspondence of Lyon Playfair (London 1900), The Life and Experiences of Sir Henry Enfield Roscoe by himself (London 1906).

(2) Sir Bernhard Samuelson, "My Start in Life", School August, 1904.

(3) W.H.G. Armytage A.J. Mundella 1825-1897:The Liberal Background to the Labour Movement (London 1951), Cyril Bibby T.H. Huxley (London 1959), H.G. Hutchins Life of Sir John Lubbock, Lord Avebury (London 1914), T.E. Thorpe The Rt. Hon. Sir H.E. Roscoe (London 1916) and D. Thompson, "Henry Enfield Roscoe" Vocational Aspect 38 Autumn 1965.
W.H.G. Armytage, "J.F.D. Donnelly: Pioneer of Vocational Education", Vocational Aspect 4 Spring 1950. F.E. Foden "Sir Philip Magnus and the City and Guilds of London Institute" Vocational Aspect 29 Autumn 1962.

been considered worthy of biographical studies.(1) But no comparable work has been written on Samuelson, and some educational historians have overlooked his contribution to English education. For example, he is not even mentioned in such standard works as H.C. Barnard's History of English Education from 1760 and S.J. Curtis's History of Education in Great Britain.

There are, I think, two reasons to account for this neglect by historians of Samuelson's work. First, Samuelson was by nature modest and self-effacing, and much of his work on behalf of education was carried out in committees, whose activities are not always given the attention they deserve. Hence many of his achievements are not obviously apparent. Secondly, the absence of memoirs or private papers made it difficult to write an adequate study of Samuelson's life and work.

This thesis is an attempt to remedy this deficiency by chronicling and evaluating the educational work of Sir Bernhard Samuelson paying special attention to his contribution to the growth of technical education in England.

Mention is made above of the absence of private papers. In 1965 Stockton, Fortescue and Sons, the firm of solicitors which handled Samuelson's legal affairs, deposited with the Oxford County Record Office, two hundred and eight bundles of Samuelson's papers, and I have been

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(1) K. Snowden The Master Spinner - A Life of Sir Swire Smith (London 1921).
G.M. Holmes "The Parliamentary and Ministerial Career of A.H.D. Acland 1886-97", Durham Research Review September, 1964.
D. Thompson "John Tyndall (1820-1893): A Study in Vocational Enterprise", Vocational Aspect 18 Spring 1957.

fortunate in being the first to have access to these papers for research purposes. The papers consist of sixty-one bundles of property documents, sixty bundles of personal papers, including marriage documents in English and Hebrew, wills, codicils, dowries and related correspondence, four bundles of political papers largely concerned with elections, thirteen bundles of educational papers, and seventy bundles of business documents and correspondence. The property documents proved to have little relevance to the subject of this thesis, but I have made use of the others. The personal papers throw new light upon Samuelson's ancestry, the political papers have provided some material for Chapter Four, and the papers on education provide new material on Samuelson's contribution to the development of education in Oxfordshire covered in Chapter Two, while the mass of business documents and correspondence has enabled me to trace the broad outline of his business career in as much detail as I thought relevant to the subject of the thesis.

My interest in Bernhard Samuelson began in 1961 when I took up a teaching post at the North Oxfordshire Technical College, Banbury. Interested in the origins of the college in which I worked, I found that it had grown out of a technical institute founded by Samuelson in the nineteenth century. I also discovered that the primary school at which my wife taught had been founded by Samuelson, and that several local schools owed much to his patronage. Indeed Samuelson's influence upon Banbury was everywhere in evidence. His old factory buildings, the Britannia Works, still dominated the industrial quarter of the town, just as his portrait dominated the reading rooms of the public library, which was

another of his gifts to the people of Banbury.

When I was studying for M. Ed. preliminary examinations, offering Educational Law and Administration and Technical Education as special subjects, I learned more of Samuelson's contribution to English education, including, among other things, that he was Chairman of both the Select Committee on Scientific Instruction (1868) and the Royal Commission on Technical Education (1881-84), and that he served on the Devonshire and Cross Commissions. By this time I was teaching in the North-East and a visit to the local history section of the Middlesbrough public library provided me with further details of his career as an iron-master. The choice of a M. Ed. thesis, therefore, was not difficult, particularly when I learned that a collection of Samuelson's papers had recently become available at Oxford.

My supervisor, Mr. R.F. Goodings, has described the aim of my thesis to be that of "filling a gap" in the history of English education. I am grateful for the guidance he has given me in the writing of this thesis and hope that I have succeeded in achieving this aim.

CHAPTER 1

THE EARLY YEARS 1820-48

Bernhard Samuelson had a very cosmopolitan background. His father, Samuel Henry Samuelson, was born in Petersburg, Virginia, U.S.A. in 1789,(1) and in 1815 he married Sarah Hertz in Hamburg.(2) S.H. Samuelson brought his bride to England and worked in Liverpool as a shipping and commission agent. Bernhard Samuelson was born on the 22nd November, 1820, at Hamburg, where his mother was on holiday. This accident of birth was used against him forty-five years later when he was elected to Parliament. But he was able to prove conclusively before a Commons Committee his full right to British citizenship on the grounds that his paternal grandfather, Chayim Levi, was born in the City of London in 1764 and that he (Bernhard Samuelson) had taken communion in a Protestant place of worship and sworn an oath of allegiance to the Crown in a Court of Record, thus meeting the requirements of Act 13 of George III c 21 which governed British citizens born in foreign countries.(3) Bernhard was the first-born of a family of six sons. His brothers were - Edward, Martin, Alexander, James and Newton, all of whom were to follow successful business careers of their own.

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(1) E. Walford, The County Families of the United Kingdom (London, 1868 Edition) p. 826

(2) Samuelson-Hertz Hebrew Marriage Documents (S.B.)

(3) House of Commons Journal 1865-66 p.263.

The Samuelsons moved to Hull shortly after the birth of Bernhard where S.H. Samuelson worked as a commission merchant and shipping agent.(1) Bernhard Samuelson described his father as "a merchant of limited means" (2) and although the Samuelsons were not a wealthy family they can safely be classified as middle class.

Bernhard Samuelson's ancestry was Jewish but, like an eminent contemporary also of Jewish ancestry - Benjamin Disraeli, he always regarded himself as every inch an Englishman. For although Bernhard Samuelson's father was foreign-born and had married according to the rites of the Jewish religion, the Samuelson sons were thoroughly Anglicised. None of them practiced the Jewish religion and most were educated at schools run by Anglican clergymen. Bernhard was a member of the Church of England throughout his life. He was married in Anglican churches and was buried according to the rites of the Church of England in a Torquay cemetery.(3) Samuelson's brothers appear to have followed the same course, and indeed his brother, James, married a clergyman's daughter.(4) Yet in spite of his membership of the Church of England, Samuelson was known to be sympathetic towards Unitarianism and his sons were baptised in a Unitarian church.(5) But however ambiguous his

(1) His firm is listed in the Hull Trade Directories 1831-63, (K.P.R.L.)

(2) Samuelson, "My Start in Life".

(3) Oxford Chronicle 19th May, 1905.

(4) Burkes Peerage, Barontage and Knightage (London 1967 Edition) p.2222.

(5) Baptism Records, Christchurch Chapel, Banbury.

religious position might have been, Samuelson's career shows him to have been a life-long advocate of religious tolerance and an opponent of "sectarianism"" in any shape or form, and throughout his life he was a consistent supporter of all attempts to open up Britain's universities, colleges and schools to people of all classes and creeds.

The choice of schools in Hull for a boy of Samuelson's social background lay between the long-established Hull Grammar School, offering a predominantly classical education, and a number of private academies. Until the eighteenth century the grammar school had virtually a monopoly of education above the most elementary kind in Hull, but with the growth of industry and commerce and the emergence of a middle class a new kind of secondary education came into existence in the form of the private academies, which offered a wider range of subjects than the Hull Grammar School. (1) At the age of seven Bernhard Samuelson was sent to one of these academies run by the Rev. John Blezard.

Very little is known of Blezard's school, but from what is known, it appears to conform to the general pattern of similar institutions in Hull at that time which have been described as follows:-

> "For the most part the proprietors seem to have been self-taught men, sometimes curates or ministers, but seldom university educated. Their schools were held in their houses or in rented premises nearby, often in the middle-class outgrowths, and they seem to have consisted of a score or two dozen boys taught single-handed or with one assistant, and sometimes with the help of visiting teachers. Whilst most of their pupils were day boys it was for boarders that competition was keenest, for boarders yielded most profit and the widest advertisement. From one school to another there was not much difference in the

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(1) John Lawson, A Town Grammar School Through Six Centuries: A History of Hull Grammar School against its Local Background (Oxford 1963) p.8.

advertised curriculum, but the encyclopaedic range of subjects offered by some establishments suggests a more than usual pretentiousness and superficiality." (1)

Blezard's school was opened in 1812 with the following announcement -

Education

J. Blezard, Mason Street, near Sculcoates, Hull, respectfully informs his Friends and the Public that his SCHOOL will be OPENED on Monday, the 27th inst., where he purposes to instruct a limited number of YOUNG GENTLEMEN, in English, Latin and Greek language, Writing, Arithmetic, Geography, Mathematics, etc., and flatters himself that his assiduous attention will merit their patronage. Terms per quarter £11 11s. 6d. Entrance 10s. 6d. (2)

By 1820 the advertisement included the additional words: "The Plan of Education which he has adopted, and which he intends to pursue in his Day School, equally and fully prepares his pupils for the Counting-house, the Professions, and for the course of study followed at the Universities".

The Rev. Blezard was the curate of the parish of Swine and Skirlaugh when Samuelson attended his school. This was a sinecure appointment which could not have taken up much of Blezard's time. Blezard had the degree of Bachelor of Divinity gained as a "ten years man" at Trinity College, Cambridge. This meant that he had availed himself of the privilege then allowed Anglican clergymen whereby they could enter their names on the books of a Cambridge college and after ten years take the exercises for the B.D. degree without residence or any previous degree. Blezard was an unsuccessful applicant for the headship of the Hull Grammar School in 1838, and was appointed chaplain of the borough gaol in 1842, although he

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(1) Ibid. p.188.

(2) Hull Advertiser 11th July, 1812.

continued to run his school until 1851.[1]

Samuelson did not have a high opinion of the education he received at Blezard's academy, describing the curriculum as "smatterings of geography, Latin and Greek grammar" with some geometry and algebra.[2] "We were taught Latin and Greek and very little else, and the Latin and Greek, I am sorry to say, was badly taught and I, for one, did not very much benefit by it."[3]

Not only was Samuelson critical of the teaching and curriculum, but he regretted that during his time at Blezard's school he lost his flair for mental arithmetic. Before the age of seven he could "multiply four figures by four mentally, more quickly than most adults could perform the operation on paper"; once he started school however, he recalled "this faculty deserted me".[4] Nevertheless, mathematics was his favourite subject at Blezard's academy "taking a special delight in algebraic problems and reaching the Second Book of Euclid in geometry". Samuelson particularly regretted the absence of science and technical subjects in his education, "in my schooldays when steam navigation and railways were in their infancy, the rudiments of mechnical, chemical and physical science were not taught in schools", and looking back upon his career he concluded that "what has limited my success has been my

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(1) A short biography of Blezard appears in J.A. Venn, Alumni Cantabrigienses V.1 (Cambridge 1940) p.297, and there is an obituary in the "Gentlemen's Magazine" for 1864.

(2) Samuelson, "My Start in Life".

(3) Speech made at the Jubilee Celebrations of the Banbury Mechanics' Institute reported in the Banbury Guardian, 3rd November, 1885.

(4) Samuelson, "My Start in Life".

defective early literacy and technical education".[1]

Samuelson also pursued his education out of school hours. He attended the Hull Mechanics' Institute[2] and valued highly the education he received there, "I have to thank that Institute for the taste for literature and science which I have been fortunate to acquire".[3] In addition to attending lectures he was a member of the Institute's lending library and was an avid reader, taking a special interest in books on scientific subjects.

The young Samuelson also showed an aptitude for languages which was to stand him in good stead later in life. He was fortunate in this respect in living in the North-Eastern seaport of Hull which brought him into contact with people from the Continent, for Hull during this period carried on a flourishing trade with Antwerp, Rotterdam, Hamburg and the Baltic ports.[4] When Samuelson was ten years old a number of Polish refugees came to Hull after the unsuccessful Polish insurrection of 1831. Samuelson's father was a fairly good 'cello player and some of these refugees attended musical eveningsat the Samuelson household. The conversation was in French which Samuelson tried to master, assisted by a polyglot phrasebook given to him by one of the Polish guests.[5] Two years later a young couple, refugees from Naples, arrived in Hull and from them Samuelson learned the rudiments of Italian, and he had ample

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(1) Ibid.

(2) For the early history of the Hull Mechanics' Institute. see J.J.Sheaham, History of Kingston-upon-Hull (Hull 1866) pp.643-7.

(3) Banbury Guardian 3rd November, 1885.

(4) Sheahan op. cit. p.365.

(5) Samuelson, "My Start in Life".

opportunity for improving his grasp of this language for Italian was then used extensively in Hull commercial circles in connection with the port's citrus fruit trade with Sicily and the Adriatic.(1)

Samuelson left school at the age of fourteen and worked for a year at his father's Hull office. He was then sent as an apprentice to the firm of Rudolph Zwilchenbart and Company, a large firm of Swiss merchants in Liverpool. Here he worked among men from almost every country in Europe and further developed his linquistic ability. His French was improved by his friendship with Monsieur Gregoire de Langlot, a veteran of Napoleon's grande armee, and his Italian by contact with a Signor Grimaldi, a political exile from Parma. There were also several Germans employed on the staff with whom Samuelson could converse in their own language.(2)

At the age of seventeen he was sent by his employers to negotiate the purchase of a number of locomotives from a firm at Warrington for export to Prussia. In the course of this transaction he realised two things. The first was that the export of machinery was likely to become an increasingly important part of the firm's business, and the second that none of Zwilchenbart's employees understood the specifications. He, therefore, set himself to gain at least sufficient scientific and technical knowledge for commercial purposes. Three nights a week he worked at the office until eleven o'clock, which did not allow him much leisure time, yet he persevered with his studies and managed to acquire a sound knowledge of mechanical engineering.

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(1) Lawson op. cit. p.189.

(2) Samuelson, "My Start in Life".

At the age of twenty-two he was put in charge of the export business of Sharp, Steward and Company, a Manchester engineering firm. This was in 1842 and for the next three years he worked on the Continent. While staying at Karlsruhe he struck up a friendship with Lowthian Bell, the industrial chemist and ironmaster then studying in Germany, which was to prove very useful to Samuelson when he entered the iron trade on his own account, and the two men were destined to work closely together in the formation of the Iron and Steel Institute. With the advent of the railway boom in England, Sharp, Steward and Company, wound up their export department to concentrate upon the more profitable home market. Samuelson stayed on in France and with the help of his younger brother, Alexander, who was a trained engineer,(1) he established his own railway works at Tours in the Department of Sudre-et-Loire. The capital for their venture was probably provided by their father. On the 20th July, 1844, Samuelson married Caroline Blundell, the daughter of a Hull merchant, and she took up residence with Samuelson at Tours. Their first child, Henry Bernhard, was born in the following year. Samuelson ran the works for two years and built them up into a profitable concern.

Samuelson was forced to sell his Tours factory upon the outbreak of revolution in 1848. He was in Paris when the revolution broke out in February, 1848, and recalled (2) that it was a good humoured affair until the 24th, when the troops fired upon a demonstration. The crowd's mood then turned ugly and the cry of "Vive la Republique" was taken up by them. Looting and house searches then began and Samuelson grew anxious for the fate of his family at Tours. He made his way over

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(1) See A. Potts, "Alexander Samuelson - A Victorian Engineer", Cake and Cockhorse No.11, January, 1965

(2) Samuelson, "My Start in Life".

the barricades to the Orleans Railway Station and caught a train to Tours. Upon arrival in Tours he informed the municipal authorities of the situation in Paris and made immediate arrangements for his family to return to England. Samuelson himself, remained behind to complete the sale of his factory and was in Paris on the 10th April when news arrived from England of massive Chartist demonstrations in London. Many Frenchmen believed that England stood on the brink of revolution and the value of sterling slumped on the Paris money exchanges. Samuelson's appreciation of the situation was more accurate, however, and he changed a large sum of francs into pounds at a very favourable rate of exchange.

Upon his return to England, Samuelson looked around for new business opportunities and discovered that a small firm in Banbury was for sale. This firm had been started some years previously by James Gardner, and it had enjoyed some success in the manufacture of agricultural implements, notably the "Banbury turnip cutter". The death of the proprietor had brought the business on to the market and Samuelson, realising that it offered considerable scope for development, bought it with money he had made in France.(1)

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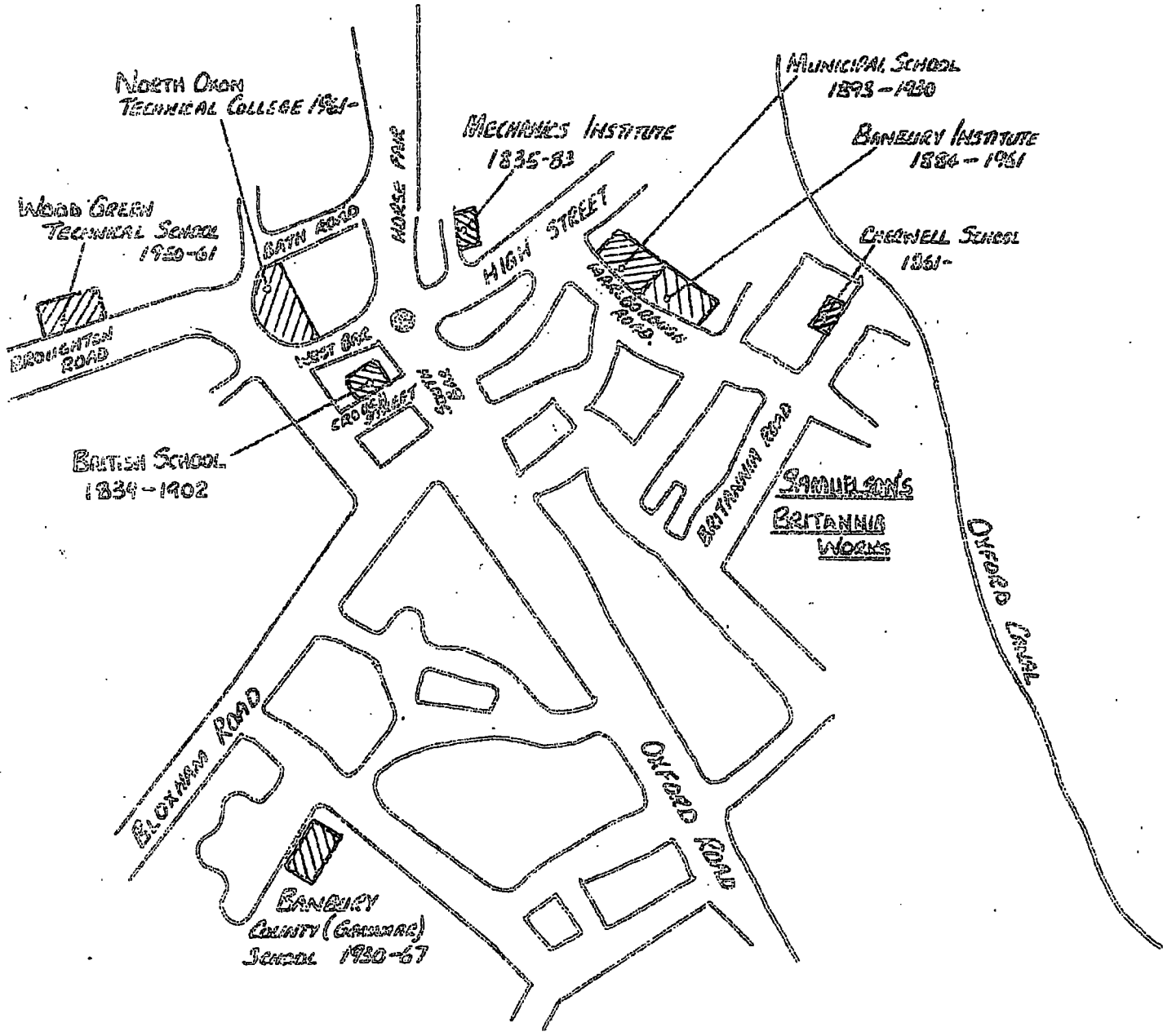
(1) William Potts, Sir Bernhard Samuelson, Bart, Ironmaster and Educationalist (Banbury 1905) Re-print, as pamphlet, of obituary notice published in Banbury Guardian, 11th May, 1905.



Banbury

showing Educational Institutions associated with Samuelson

CHAPTER II

SAMUELSON'S BUSINESS AND EDUCATIONAL ACTIVITIES IN OXFORDSHIRE

Banbury was a small market town when Samuelson took over James Gardner's foundry in 1849. The town's main trade was dependent upon the surrounding agricultural area. Weaving was still the chief industry in Banbury, although it was a declining one. Iron founding was also important, "with a very considerable manufacture of agricultural implements",(1) and at the Royal Agricultural Show in 1841 there was an impressive exhibition of the work of Banbury inventors. Thus small-scale industry was well established in Banbury when Samuelson set up in business in the town in 1849 and converted Gardner's small foundry into the Britannia Works which, according to one local historian, "transformed Banbury from a mere agricultural town to an industrial centre".(2)

Samuelson had the foresight to see that the demand for agricultural machinery was likely to increase and with the help of his younger brother, Alexander, he set about the mass-production of such machinery. Samuelson's wage-bill for the first week was £32 and he employed twenty-seven workmen, acting as his own manager, correspondent and traveller.(3)

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(1) Alfred Beesley, History of Banbury (Banbury 1841) p.569).

(2) Potts op. cit. p.7.

(3) Samuelson, "My Start in Life".

The expansion of the Britannia Works was rapid. A visitor to the works in 1859[1] observed that "great credit is due to the enterprising energy of the proprietor who has, in ten years, raised the works from the limited extent of a few small shops, employing two or three dozen men, up to its present eminent position of one of the most extensive and justly celebrated manufactures in England, employing nearly three hundred workpeople, many of whom, it must be remembered, are attending steam-worked machinery which does the work of many times their number".

The Britannia Works produced a wide range of agricultural implements including turnip-cutters, root-pulpers, horse-shoes, chaff-cutters, cake-breakers, lawn mowers, reapers, rollers and harrows. Of these the Banbury turnip-cutter was probably the most famous, being widely acknowledged to be the best of its kind on the market.[2] Samuelson's firm also held the licence to produce McCormick reapers in the United Kingdom. Samuelson's agricultural machinery was entered for many competitions and in 1879 his string-tying binder won a silver medal at the Royal Agricultural Show.[3] Samuelson established a French branch of his firm at Orleans in 1892,[4] and at the Paris Exhibition of 1900 its products won a Grand Prix award and gold and silver medals.[5]

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(1) W.P. Johnson, The Stranger's Guide through Banbury (Banbury 1859) p.22.

(2) J.C. Loudon, Encyclopaedia of Agriculture (London 1861 edition).

(3) G.E. Fussell, The Farmers' Tools 1500-1900 (London 1952) p.137.

(4) Business documents and correspondence relating to Orleans branch.(S.P.)

(5) Potts op. cit. p.8.

The supply of local labour proved insufficient to meet the needs of Samuelson's expanding works, and hundreds of workers and their families were drawn into the Banbury area. Houses had to be built for them and the meadows in the Cherwell area were soon covered with newly-built dwellings. This expansion is reflected in the town's census returns. In 1841 the population of the town was 7,241. In 1851 it had increased by 1,552 to 8,793; in 1861 by 1,445 to 10,238; and in 1871 by 1,488 to 11,726.(1)

The growth of the town made necessary the provision of additional schools. In 1838 there was only one public elementary school in Banbury - the National School in Southam Road, which had been opened in 1817 when it was merged with the Blue Coat School founded in 1705.(2) An infants' school was opened in Church Passage in 1835 supported by voluntary contributions to supplement the fees paid by the parents of the children, and it was managed by a ladies' committee. In 1840 there were two hundred and thirty-eight children in attendance.(3) In 1839 the British School in Crouch Street was opened by the British and Foreign Society and provided places for three hundred children. The Roman Catholic day school of St. John's was opened in 1846.

The growth of the urban area around Samuelson's Britannia Works made it particularly necessary to provide a school for the younger children who were unable to walk long distances, and in 1851 an infants'

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(1) William Potts, Banbury Through a Hundred Years (Banbury 1941) p.38.

(2) Beesley op. cit. p.510.

(3) Potts, Banbury Through a Hundred Years p.79.

school was established in the area. In 1861 Samuelson built and equipped the Cherwell British School, originally called the Britannia British School, and it absorbed the existing infants' school.(1) The school was run on interdenominational lines and had five hundred children in attendance in 1884. It was fully maintained by Samuelson until the coming into operation of the 1902 Education Act. He then transferred the buildings to the new borough education authority at a nominal rent, and saved the Banbury Town Council several hundreds of pounds which must otherwise have been spent on the purchase of a new site.(2) Samuelson was also a patron of the Crouch Street British School and was seldom absent from its annual meetings.

The year 1899 saw, what a local historian has described as as "educational crisis" in Banbury,(3) in which Samuelson was to play a leading part. The newly-formed Board of Education, when examining the provision of school places in Banbury, decided that the accommodation at the Crouch Street School was below the required standard. The managers of the school found themselves unable to comply with the Board's demands for extensive re-building and the school was consequently condemned to be closed on the 31st January, 1900. The result of this would have been to create a deficiency of school places in Banbury, and the Town Council was formally warned that if they could not provide five hundred and fifty additional places a school board would be formed for the borough. The managers of the voluntary schools met the Town Council to consider the

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(1) William Potts, History of Banbury (Banbury 1958) p.229

(2) Potts, Sir Bernhard Samuelson, Bart., Ironmaster and Educationalist p.43.

(3) Potts, Banbury Through a Hundred Years p.80.

situation. St. John's Roman Catholic School proposed to carry out extensions which would accommodate an extra one hundred and twenty children; the National Society's schools promised to provide facilities for another three hundred children; and the Wesleyans proposed to provide for another two hundred children, making a total of six hundred and twenty-one extra places. However, the Board of Education then ruled that Samuelson's Cherwell British School was over-crowded and had two hundred more children in attendance than it would recognise. A motion in the Town Council on the 2nd October, to request the Board of Education to form a school board for Banbury was defeated by fourteen votes to eight, instead it was decided to invite the school managers to meet them again. The meeting was held on the 10th October and it was attended by Sir Bernhard Samuelson representing the Cherwell School.

Samuelson's chief concern was that the closing of the Crouch Street School would leave his own school the only interdenominational school in the town, and it was unable to provide all the places demanded by parents who wished their children to attend an interdenominational school. His fears were put at rest by the Wesleyan representatives at the meeting, who announced that they proposed to build a new school to accommodate five hundred children to be run on interdenominational lines, and that all religious bodies in the town would be represented on its board of management. This proposal satisfied Sir Bernhard, who stated that he would make a contribution towards the building of the new school.(1) A report of the meeting was forwarded to the Board of Education which was

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(1) Ibid. p.81.

satisfied with the proposals and permission was granted to the Wesleyans to carry on the Crouch Street School as a temporary measure until the new school was built. Thus the voluntary system of education in Banbury was given an extended life.

The incident throws an interesting light on Samuelson's approach to educational matters. Samuelson believed that "the localities" should make every effort to meet their own educational needs. Only when they failed to do so, due to inertia or lack of resources, should the State intervene to provide the required school places under a school board. Therefore, the offer of the managers of Banbury's voluntary schools to provide over a thousand new school places naturally had his sympathy. In addition to this, local feeling obviously favoured the retention of the voluntary system of schooling and Samuelson was always sensitive to the views ot the townspeople. However, before he would commit himself to assist the efforts of the voluntary school supporters in Banbury he had to be sure that sufficient interdenominational places would be available for those who wanted them. For Samuelson was always opposed to sectarian religious instruction being forced upon those who did not want it. His own school in Banbury - the Cherwell School - had always been run on interdenominational lines, the religious instruction consisting largely of Bible reading and the inculcation of general Christian principles, and Samuelson was anxious to ensure that sufficient interdenominational school places would be available in the town for those who wanted them. Once this was guaranteed Samuelson was ready to support the Town Council and the voluntary school managers in their efforts to

preserve intact the existing voluntary system in Banbury.

Samuelson was a life-long supporter of the Mechanics' Institute Movement, going back to the time when he attended the Hull Mechanics' Institute as a boy, and his services to the development of further education in Banbury were considerable.

The Banbury Mechanics' Institute was founded in 1835 when seventeen people met and formed a provisional committee.(1) The declared object of the Institute was "to instruct the members in the principles of the Arts, and in the various branches of science and useful knowledge." Members met in the rooms of a private house in Parson's Lane, which also housed a small library of books and periodicals. In the following year the institute moved into its own premises in Church Passage. Samuelson took an interest in the work of the institute from the time that he set up in business in Banbury, and he contributed generously to its funds as well as presenting books to its library. The expansion of the library began to cause acute over-crowding in the institute, and in 1883 Samuelson offered to provide a new building entirely at his own expense. Samuelson intended that the new building should bring together the various branches of further education in existence in Banbury, including the work of the Mechanics' Institute, the various classes supported by the Science and Art Department, the lending library and the reading rooms.

The first evening classes in Banbury were organised under the auspices of the Science and Art Department in 1858 and were held in

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(1) "Report of the Banbury Mechanics' Institute Jubilee Celebrations", Banbury Guardian 3rd November, 1885.

Crouch Street School.[1] In 1860 the Science and Art Department proposed to aid the teaching of science in provincial centres. Liverpool was the first and Banbury, upon Samuelson's initiative, the second to take advantage of the grants offered by the Department. In the autumn of the same year, J.C. Buckmaster, a chemist and physicist with wide interests, who had been appointed science organiser for the Department in the previous year,[2] visited Banbury and delivered lectures at the Mechanics' Institute and at Samuelson's Britannia Works, in which he outlined the Department's science scheme and the methods by which classes could qualify for grants. Samuelson was then building his Cherwell School for the children of the Britannia Works area and he undertook to provide special classrooms in which science could be taught. As a result of Buckmaster's visit a committee was set up to help to form what was henceforth known as the Banbury Science School. The school was very succcessful[3] and during the session of 1883-4 there were one hundred and forty six students enrolled in art classes and two hundred and sixty students enrolled in science classes.

Within a year of Samuelson's offer to provide new premises the new building was ready for opening on the 2nd July, 1884.[4]

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(1) Memorandum prepared for the benefit of A.J. Mundella, then Vice-President of the Committee of Council on Education, when he officially opened the Banbury Institute in 1884. The memorandum is twenty-two pages in length and contains detailed information on the growth of further education in Banbury, and is obviously based upon records which have not survived. The author is not given, but the fine copper-plate writing suggests that it was specially copied for Mr. Mundella's benefit.(S.P.)

(2) John Lease, Personalities and Power in English Education(Leeds 1950)p.217.

(3) The memorandum prepared for Mundella contains details of examination successes together with the names of outstandingly successful students.

(4) Legal documents and architects' reports.(S.P.)

The new building was to be known as the Banbury Institute and, in its day, was considered to be a very fine piece of architecture. A reporter described it in the following terms:[1] Banbury Guardian July, 1884.

(1) "The new building is designed in the early Tudor period of Gothic architecture and is built with red brick with picked samples of blue stone dressings from the Hornton quarries. The building stands back from the pavement three or four yards, and is approached by a handsome Tudor doorway, surmounted by a pretty oriel window, delicately moulded, and rising above which, in the centre of the building, is an effective goblet bearing a shield and the words:
THE BANBURY INSTITUTE
ANNO DOMINI 1884"

The building contained circulating and reference libraries, and science and art classrooms. It was intended that a local museum should be added at a later date.

The building cost Samuelson £4,306 1s. 7d. plus an additional sum of £86 19s. -d. to cover the cost of a lavish opening ceremony.[1] The official opening was carried out by A.J. Mundella, Vice President of the Committee of Council on Education, on the 2nd July, 1884. The opening was originally arranged for the 25th June, 1884, but this was found to clash with the opening of the new technical schools of the City and Guilds of London Institute at which Mundella, Samuelson and several other guests were already due to attend, and a new date for the opening of the Banbury Institute had to be arranged.[2] Among the guests at the Institute's opening ceremony were Samuelson's friends, Sir Joseph Pease, Sir Henry Acland, Philip Magnus, Swire Smith and H.E. Roscoe. Samuelson presented the deeds to the Mayor of Banbury

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(1) Bills and accounts of the Banbury Institute 1884-9. (S.P.)

(2) Circular "The Banbury Institute" 19th June, 1884.(S.P.)

who accepted them on behalf of the town.

Mr. Mundella then officially opened the institute and in his speech he announced that the Queen had conferred a baronetcy on Bernhard Samuelson for his services to education.

It had long been an ambition of Samuelson to help to provide Banbury with a new secondary school, and he was prompt to see that the Technical Instruction Act of 1889 and the Local Taxation (Customs and Excise) Act of 1890 could assist him to achieve this aim. The creation of the new County Councils in 1888 made possible the Technical Instruction Act of the following year by which local authorities were empowered to raise a penny rate in support of technical instruction, the curricula of the classes and colleges so established to be subject to the approval of the Science and Art Department.(1) The aim of the 1890 Act was to recompense publicans for the loss of their licences in areas in which there was an excess of public houses. Many members of the House of Commons, however, opposed the granting of money to publicans and the Chancellor of the Exchequer decided to hand it over to the county and county borough councils, and one purpose for which the money could be used was the encouragement of technical instruction. The fund was administered by the Science and Art Department, and was popularly known as "whisky money".

Even before the 1890 Act was on the statute book (it had passed the Commons and was on its way through the Lords) Samuelson was in touch with Lord Jersey, Chairman of the Oxfordshire County Council.

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(1) Argles, op. cit. p.35.

On the 4th August, 1890, while holidaying on board his yacht "Brilliant" at Cowes he wrote:-

(1)

"Dear Lord Jersey,

I hope the County Council will not consider that I am premature if I put in a claim on behalf of Banbury for a grant in aid of technical, agricultural and commercial education out of the funds which will be at your disposal out of the licence duties on spirits and beer. For the last twenty years or more we have been endeavouring to start a secondary school of this kind, and I have been prepared to contribute liberally towards its creation. The difficulties which stood in the way of carrying out our plan can now be removed by the co-operation of the County Council on terms which will, I am sure, be of advantage as much to the Northern Division of the County as to the Borough of Banbury.

The trustees of the Banbury Institute are the owners of an adjoining plot, which, with a further piece of land contiguous to it, of which a small number of our citizens secured the pre-emption not long ago in contemplation of some work of this kind, will be an excellent site for the school, and give to it the advantage of the classrooms of the Institute, which, as you are no doubt aware, are admirably adapted and furnished for several important departments of technical instruction.

I am, dear Lord Jersey,
Yours faithfully,
B. Samuelson."

Lord Jersey replied on the 6th August expressing his agreement with Samuelson that Banbury would be a good centre for the building of such a school.(2)

In answer to a further letter from Samuelson, Lord Jersey agreed that his letter of the 6th August could be made public (3) and it

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(1) Correspondence concerning the Banbury School 1890-94. (S.P.)

(2) Ibid.

(3) Ibid.

duly appeared in the local press.

The next step was when the Banbury Town Council agreed to the setting up of a committee to examine the possibilities of creating a new secondary school in the town, supported by money provided under the Acts of 1889 and 1890, and supplemented by donations which would include a generous contribution promised by Sir Bernhard Samuelson.(1)

The committee duly reported to the Council on the 29th January, 1891, and on the motion of Coun. Whitehorn, seconded by Coun. Walford, it was unanimously agreed:

> "That it is desirable to adopt the provisions of the Technical Instruction Act 1889, in so far as may be necessary to enable the Council to aid the present School of Science and Art in the supply of technical instruction within the meaning of the Act, namely: instruction in the principles of Science and Art applicable to industries and in the application of special branches of Science and Art to specific industries and employments, and also to be in a position to aid any enlarged school which may be established by means of individual effort for the supply of similar technical instruction, including instruction in the principles of Science applicable to Agriculture.
>
> " This will involve at the utmost the raising of a rate of a penny in the pound, and any sum so raised will be available after the current year towards the current expenses of technical teaching, as the cost of additional school buildings may be raised by voluntary subscription, if a due effort be made in the direction of the Town and neighbours.
>
> " That application be made by the Town Council to the County Council for a grant of part of the money reserved for aid to technical education by the County Council out of the money at their disposal under the Local Taxation Act of 1890." (2)

The Mayor, Coun. John Mawle, moved that a meeting be arranged to launch a fund for the provision of additional buildings and

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(1) Minutes of the Banbury Town Council, November, 1890.

(2) Minutes of the Banbury Town Council, January, 1890.

that Sir Bernhard Samuelson and other gentlemen conversant with the subject of technical instruction be invited to the meeting.

The meeting was held at the Banbury Town Hall on the 17th June, 1891 with the Mayor, Coun. John Mawle, in the chair.[1] The Mayor explained the objects of the meeting and called upon Sir Bernhard Samuelson to propose and the Rt. Hon. Sir William Hart Dyke, Vice-President of the Committee of Council on Education, to second the first resolution:

> "That this meeting heartily approves the movement in favour of the establishment of a thoroughly efficient technical, including a commerical and agricultural, school at Banbury, and hopes that by the united co-operation of the public authorities of the county and borough and of private subscribers it will be completed and carried on to the great advantage of the town and the adjoining agricultural district."

A second resolution praised the Government for its efforts in promoting technical education, and thanked Sir William Hart Dyke for his attendance.

A third resolution approved the opening of a subscription list to help finance the new school. Mr. James Stockton, Samuelson's solicitor, was elected treasurer.

It was estimated that the new school would cost £6,500[2] and Samuelson headed the list of original subscribers with a donation of £3,000, and his firm, Samuelson and Company, Limited, was second with a donation of £250. The cost of the school actually exceeded the original estimate, the final amount being £7,588 16s. 4d.

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(1) Minutes of the meeting (S.P.)

(2) Circular, "Proposed Technical School for Banbury and Neighbourhood", March, 1892. (P.C.)

The money was raised as follows:-

	£	s.	d.
Grants from the Science and Art Department	609	1	3
Banbury Town Council, from rates	429	16	-
Grants from Oxfordshire County Council under the Local Taxation Act of 1890	1,250	-	-
Subscriptions	5,299	19	-
Total	£7,588	16	4

Of the total amount raised by public subscription, Samuelson's final contribution amounted to £4,305, excluding the £250 donated by his firm.(1)

Samuelson took a keen interest in the school at each stage of its development. His interest extended to the lay-out of the school, its curriculum and the appointment of staff.(2)

The school was described a week before its opening in the following terms :

> "The building now to be opened has been erected adjoining to to the Institute and the entire structure as now completed comprises a frontage of 137-feet with a handsome elevation worthy of any town and of a size and style seldom found in a small market town like ours. Part of the rooms heretofore used for the Art and Science Schools have been annexed to and

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(1) The Banbury Municipal Technical and Secondary School Treasurer's Accounts. 17th December, 1894.(P.C.)

(2) There are a number of letters addressed to James Stockton, Samuelson's solicitor and treasurer of the school funds, among the Samuelson Papers, covering the above points. Some of them written by Samuelson from addresses in France, Italy and Switzerland, and some from on board his yacht "Brilliant" at Cowes.

form part of the new school.

The school accommodation will comprise:

In the old building:

Antique Drawing Room.
Mechanical Drawing Room.
Ladies' Lavatory.

In the new building:

Top floor:

Classrooms 8, 9, 10 for elementary drawing, modelling and wood carving,
Art Master's Room.
Chemical Laboratory.
Chemical Lecture Room with dark room and balance room.

First floor:

Classrooms 3, 4, 5, 6, and 7.
Custodian's Room.

Ground floor:

Head Master's Room.
Committee Room.
Store.
Classrooms 1 and 2.
Large Lecture Room.

Basement:

Smiths' and Moulders' Shop.
Carpenters' and Pattern Makers' Shop.
Lavatory and Cloak Room.
Boiler Room.
Store.
Photographic Dark Room.

The term 'technical school' by no means adequately expresses the importance of the proposed scheme of instruction. The school is intended to supply not only 'technical instruction' within the meaning of the Technical Instruction Act 1889 but a thoroughly good secondary education, including modern languages and the various subjects of a sound commercial and agricultural education.

It is intended by keeping the fees at a very moderate level and by a system of scholarships for pupils of public elementary schools to bring the benefits of the school within the reach of all classes in the town and district.

Banbury is well supplied with public elementary schools and with middle class schools of the usual character. The proposed school will supply a want much felt for many years."(1)

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(1) Unpublished manuscript dated the 29th June, 1893. "Sketch of the history and position of the proposed Municipal Secondary and Technical Day School for Banbury."(S.P.)

School fees were 30s. -d. a term for pupils under fifteen and £2 a term for pupils over fifteen, and the curriculum [1] was to include the following subjects: -

> English Literature, History, Commercial Geography, Modern Languages, Mathematics, Drawing Shorthand and Typing, Chemistry, Botany, Physiology, (the last three to be taught with special reference to agriculture), building Construction, Physics, Practical Mechanics, Carving and Modelling, and the use of tools for working in wood, iron and other metals.

Special arrangements could be made for the teaching of "classics" if there was sufficient demand for it.

Mr. E.W. Symons, M.A., of Huddersfield College was appointed Head Master and the new school was officially opened by the Rt. Hon. Herbert C. Gardner, M.P., President of the Board of Agriculture, on the 4th July, 1893.

The short history of the school concludes:-[2]

> "It has been impossible in making this sketch to keep out of sight the great generosity of Sir Bernhard Samuelson to whom the town is so greatly indebted not only in the present instance but for the gift of the Institute and many of the other educational advantages it enjoys and from whose liberality and great forethought the town and district are likely to benefit more and more as the years roll on and the new school falls into working order and becomes appreciated. It would, however, be distasteful to Sir Bernhard to have much made of all this, although a part of the story must needs be glanced at."

There is no doubt that the school's curriculum was shaped by Samuelson and that the school was to provide the sort of education

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(1) Summary of Scheme of Instruction, May, 1893, issued by the school governors. (P.C.)

(2) Sketch and history of the school op. cit.

personally favoured by its patron. Hence among the "arts" subjects we find Samuelson's boyhood favourites: English Literature, Modern Languages and Mathematics. As might be expected science and technical instruction were to form an important part of the curriculum, and commercial and agricultural subjects were not neglected. The declared intention of keeping fees low and providing scholarships for children from poor families "to bring the benefits of the school within the reach of all classes in the town and district" was in line with Samuelson's often stated belief that lack of money should not handicap those able to benefit by education. The school was also organised on secular lines, which meant that the holding of a particular religious belief or even lack of belief would not prevent the admission of any child who attained the required entrance standard.

The formation of the Banbury Municipal School, therefore, gave Samuelson the opportunity of implementing some of his educational principles. These included a belief in the value of science and technical subjects, the choice of "modern" subjects in preference to "classics", and the desire to make education available to all who might benefit from it regardless of their "class or creed". Although Samuelson's main interest in life lay in encouraging the growth of scientific and technical education in Britain, he never believed that these subjects would be sufficient in themselves to provide a sound education. What he sought was to bring about a balanced curriculum which would include "arts" and "sciences". Long before C.P. Snow voiced his disquiet, Samuelson saw the dangers and disadvantages involved in the creation of "two cultures". As he observed "wherever literary has been separated

from scientific instruction the scientific instruction as well as the literary had been a failure", and he protested "against training any young man simply in science without a literary foundation for his education".(1) In creating the Banbury Municipal Secondary and Technical School, Samuelson did not form a trade school or a narrowly-based science school, what he did was to create something very much along the lines of the secondary technical schools which were so much in vogue in the 1950's whose aims have been described as:

> "to provide a sound secondary education by means of a broadly-based general course combined with certain specialised studies which have a vocational significance and which are used to capture the imagination of pupils in order to maintain their scholastic interest and so to prolong and further their general education".(2)

To regard Samuelson simply as an advocate of more scientific and technical education, therefore, is to oversimplify his position. He certainly wanted to see more science and technical subjects taught in schools, largely because he believed it necessary to enable Britain to maintain her position as a leading industrial power, but also to bring about a broadening of the traditional school curriculum. To Samuelson a classical education was not the best means of educating a child to take its place in the new and exciting world created by the Industrial Revolution. He knew from personal experience that it could provide a very narrow type of education, and never forgot the cramping effects of devoting long hours of study to the classics which he had experienced in his own schooldays at Blezard's academy.

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(1) Hansard, 15th March, 1869. CXCIV. Col. 1402.

(2) Reese Edwards, The Secondary Technical School (London 1960) p.20.

From the time he opened his Banbury factory in 1848 Samuelson took an active interest in many aspects of the town's affairs. He served on the local board of health for several years and acted as manager of the Banbury Savings Bank. When the Horton Infirmary was opened in 1872 Samuelson was made a governor and devoted much time to the administration of the hospital in its early years.(1) He was an active member of the Banbury District Chamber of Agriculture and gave generous support to the Banbury Agricultural Association, presenting many prizes at its annual shows. He was President of the Banbury District Education Prize Scheme and was responsible for instituting many prizes to encourage regular school attendance and good conduct.(2) He made a handsome donation towards the building of the Cadbury Memorial Hall. Samuelson was a great music lover and a competent musician in his own right, and he gave generous financial support to the Banbury Philharmonic Society of which he was President. He was also a supporter of the Volunteer movement, formed in 1859 when relations between Britain and France became strained and fears were aroused of an invasion by Louis Napoleon, and he allowed his workers to attend drills during work hours. He also periodically entertained the officers and men to special luncheons at his Banbury home, Bodicote Grange.

But if Samuelson had an extremely important influence upon industrial growth and educational development in Banbury, it is equally clear that his move to Banbury in 1849 was a major turning point in his own

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(1) Potts, Sir Bernhard Samuelson, Bart., Ironmaster and Educationalist p.42

(2) School circulars. (P.C.)

career, and Samuelson himself, recognised this fact.[1] For the successful development of the Britannia Works was the foundation of his fortune. The money he made from the manufacture of agricultural implements enabled him to branch out into the iron trade - and his contribution to the iron and steel industry is far better known than his work as a maker of agricultural implements. Furthermore, the profits from the Britannia Works made it possible for him to enter Parliament, in the days when a private income was almost indispensable to those who followed a political career. Finally, Banbury was to provide Samuelson with the secure home-base needed by every successful politician, and his influence in the district was to prove of great importance in his winning and holding the Banbury constituency for thirty years.

Samuelson also played an important part in the formulation and implementation of the Oxfordshire County Council's technical education programme. The Oxfordshire County Council met for the first time on the 24th January, 1889, following the passing of the Local Government Act of the previous year, and at this meeting Samuelson was elected an alderman and appointed a member of the Finance Committee.[2] At the November meeting of the council Samuelson moved "that a committee be appointed to consider the principles on which the council may most effectively apply the fund at its disposal for the promotion of Technical (including Commercial and Agricultural) Education within the County.[3] The motion was approved

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(1) Samuelson, "My Start in Life".

(2) Minutes of the Oxfordshire County Council, January, 1889.

(3) Ibid November, 1889.

and the committee - known as the Oxfordshire County Council Technical Instruction Committee - met for the first time on the 18th February, 1891 and elected Samuelson its chairman.(1)

Samuelson's hope was that Oxfordshire might lead the way in devising a model scheme of technical education for a predominantly rural county,(2) and his first step was to carry out a survey of existing educational facilities in Oxfordshire. He was assisted in his task by a group of young Oxford science graduates which included Peter Chalmers Mitchell and Frank Pullinger. Mitchell was to become an eminent biologist and Pullinger was to enter the service of the Education Department, where he was responsible for the preparation of a number of outstanding reports on the organisation of technical education in Britain(3) and rose to be the Department's chief inspector of technical education. It is interesting that Pullinger's first experience of report writing should have been under Samuelson.

Mitchell recalls that "for some happy, sunny weeks we surveyed the county, seeing such existing technical institutions as there were, inspecting the few rather badly equipped labs. in secondary schools and taking note of local institutions"; and says of Samuelson that "no chief could have been more considerate or helpful".(4)

The report (5) consisted of a survey of the technical instruction being given in Oxfordshire and a number of proposals concerning

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(1) Minutes of the Oxfordshire County Council Technical Instruction Committee, 18th February, 1891.

(2) Sir Peter Chalmers Mitchell, My Fill of Days (London 1936) p.89

(3) Leese op. cit. p.309

(4) Mitchell loc. cit.

(5) Report on Technical Education, 13th May, 1891. Oxfordshire County Council Official File of Committee Reports 1889-92 pp. 82 - 87.

the need to aid technical schools, Science and Art Department classes and University Extension lectures, and the desirability of introducing more technical subjects into endowed and grammar schools. Special attention was given to the needs of local agriculture, and suggestions were put forward designed to further the teaching of technical and scientific subjects relevant to agriculture, including grants for dairy work. The report also suggested that the council should co-opt on to the Technical Instruction Committee certain specialists who were not members of the county council.

Samuelson presented the report to the Technical Instruction Committee on the 1st May, 1891[1] where it was discussed and approved. Samuelson was very active in implementing the proposals contained in the report, and in addition to his chairmanship of the Technical Instruction Committee was chairman of a number of sub-committees, including the important special management sub-committee which was responsible for appointing technical teachers, approving grants and awarding scholarships. He represented the Oxfordshire County Council at a number of conferences on technical education, and led the council's deputation to discuss the possibilities of expanding agricultural education at Oxford University with the Vice Chancellor.[2] When the Technical Instruction Committee met for the final time on the 20th July, 1903, its last act was to pass a vote of thanks to Sir Bernhard Samuelson "for his able services as Chairman of the Committee from its first constitution until the close of its duties".[3]

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(1) Minutes of the Oxfordshire County Council Technical Instruction Committee, 1st May, 1891.

(2) Ibid 1st December, 1892.

(3) Ibid 20th July, 1903.

CHAPTER III

SAMUELSON'S BUSINESS AND EDUCATIONAL ACTIVITIES IN THE NORTH OF ENGLAND

In the autumn of 1853, Samuelson attended the Cleveland Agricultural Society's Show, held that year at Stokesley, in order to exhibit a newly-patented digging machine. He knew little of the district except that it was a likely market for the sale of agricultural machinery.(1) While in the district, he visited the expanding Eston ironworks and was introduced to John Vaughan. Vaughan was already a national figure and Samuelson was aware of his achievements in the Middlesbrough area. The idea of entering the iron trade had occurred to Samuelson before his visit to the North-East(2) and his conversation with John Vaughan convinced him that Middlesbrough had a great future as a centre of iron production. Hence, before he left Cleveland, Samuelson had concluded arrangements for the purchase of a site at South Bank for the erection of blast furnaces. This purchase was to prove another turning point in Samuelson's career, and in the succeeding years he was to play an important part in the industrial growth of Middlesbrough and in the development of education in the area.

Within the reign of Queen Victoria, Middlesbrough grew from a tiny rural community to a very large town of over one hundred thousand

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(1) J.S. Jeans, Pioneers of the Cleveland Iron Trade (Middlesbrough 1875) p.218.

(2) Samuelson, "My Start in Life".

people. It contained only four houses and twenty-five inhabitants in 1801, and only forty inhabitants in 1829. At the census of 1831 the number had risen to 154 and in 1841 to 5,463.(1) The decade from 1831-41 saw Middlesbrough developed as a port for the export of coal at the terminus of the Stockton and Darlington Railway. Joseph Pease and his Quaker associates, who sponsored the building of the line, were anxious to export local supplies of coal from the River Tees to London and other markets. Stockton proved inadequate to handle the fast-increasing coal shipments which poured in from South West Durham, so the Stockton and Darlington Railway was extended to Middlesbrough which at this time consisted of five hundred acres of black salt marshes.(2)

The development of Middlesbrough as a port proved even more successful than the astute Joseph Pease imagined it would be. In 1826 Pease estimated that two thousand tons of coal could be exported each year from Tees-side, by 1840 the total of coal exports had risen to over 1½ million tons. The completion of a national railway system, however, brought about a decline of the Middlesbrough coal trade, for it became more economical to move coal by rail than by sea. By 1850 new railways had been opened to Sunderland and West Hartlepool, providing a more direct route for coal from South West Durham, and these lines attracted the coal which had previously gone to Middlesbrough. Yet far from suffering a decline, Middlesbrough entered upon a new period of expansion stimulated

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(1) Asa Briggs, Victorian Cities (London 1963) p.247

(2) Helen G. Bowling, Land of the Three Rivers (London 1958) p.210.

(3) Briggs op. cit. p.248.

by the growth of the local iron industry.

The growth of the Middlesbrough iron industry owed most to the work of Henry Bolkow and John Vaughan. Bolkow was a German from Mecklenburg who arrived in Newcastle in 1827 at the age of twenty-one. He worked for a time as an accountant, foreign correspondent and commission agent, finally settling in Middlesbrough with an accumulated capital of £50,000.(1) His partner, John Vaughan, was born at Worcester in 1799, worked at the famous Dowlais ironworks in Wales, and held management posts in Carlisle and Newcastle before moving to Middlesbrough.(2) From 1841 to 1850 Bolkow and Vaughan ran a small iron foundry in Middlesbrough, obtaining their ironstone from Scotland and the Blast furnaces of Witton Park. Vaughan eventually discovered a large supply of workable ironstone in the nearby Cleveland Hills at Eston. Tees-side now had immense advantages in iron production. For Durham coke was only a few miles away from the newly-found ore, and limestone as flux for the furnaces was near at hand at Weardale. The new port was also available for exports.

The site purchased by Samuelson was within a mile of the Eston ironworks of Bolkow and Vaughan, and it was agreed that the latter should supply Samuelson's South Bank furnaces with ironstone from their Eston mines. At this time the whole of the intervening space between Eston and the Middlesbrough Docks was almost a complete waste. South Bank consisted of two small, tumbledown farmsteads.(3) Samuelson decided on the erection of three furnaces, each 50-feet in height, by 14-feet in

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(1) Jeans op. cit. pp.49-51.

(2) Ibid pp.68-70.

(3) Ibid p.220

diameter at their widest part, with a cubic capacity of 5,050-feet. After the completion of his furnaces, Samuelson leased a ten acre field at a rent of £5 an acre and set about building houses for his workers.

Samuelson carried on the South Bank works until 1863, when he sold them to Major Elwon who subsequently sold them to Thomas Vaughan. On the same day of the sale, Samuelson commenced negotiations for the purchase of a site at Newport, on the outskirts of Middlesbrough, where he erected four new furnaces. In 1868 he added another furnace to his Newport ironworks, and in 1870 built another three, making eight in all. These furnaces were capable of producing a total of 2,500-3,000 tons of pig iron per week and were fitted with the most up-to-date equipment.(1)

In May, 1871, Samuelson read a paper to a meeting of Civil Engineers in which he described the achievements of his Newport Ironworks.(2) In the course of his paper Samuelson pointed out that whereas in the three furnaces erected by him in 1854 for smelting the same ore, the quantity of fuel required to produce a single ton of pig iron varied from 30 to 40-cwts. and in the five furnaces erected in 1863-68 from 23 to 24-cwts. He demonstrated that this great economy of fuel was due, first to greater capacity, augmented from 5,000-cubic feet in the earlier furnaces to 16,000 in those next erected, and to 30,000-cubic feet in the two furnaces built in 1870, and to increased temperature at the tuyeres - the blast

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(1) A detailed description of Samuelson's Newport ironworks can be found in J.S. Jeans, Notes on Northern Industries (London 1877) pp.158-161.

(2) "Description of Two Blast Furnaces erected in 1870 at Newport Ironworks, Middlesbrough", Proceedings of the Institution of Civil Engineers, 1871 p.329.

furnace having been increased from 680-degrees in the earlier to 1,100 degrees in the latter. Finally, he attributed the economy gained to increased regularity in working, the result of constructional improvements, all aiming at the greatest solidity and simplicity. The entire cost of erecting these two latter furnaces, with accessory appliances, was stated by Samuelson to have amounted to £53,331 4s. 4d, exclusive of the cost of land. Samuelson's paper was well received, and the Institution of Civil Engineers awarded him a Telford Medal for his contribution to scientific and technical knowledge.

In 1887 the Newport Ironworks together with Samuelson's Hedley Hope Colliery in Co. Durham and his ironstone mines near Guisborough were formed into a limited liability company called Sir Bernhard Samuelson and Company, Limited. Samuelson was the largest shareholder in the new company and became chairman of its board of directors, the other directors were his son, Francis, William Hanson - a Middlesbrough ironmaster who acted as managing director - and James Stockton, Samuelson's solicitor.(1)

The last, and most important, enterprise which Samuelson embarked on at Middlesbrough was the construction of the Britannia Ironworks, which were commenced in July, 1870. The site selected for these works was a marsh which had to be covered with slag. When completed this plant was believed to be the largest of its kind in existence at that time.(2) Standing upon twenty acres of land, the Britannia Works comprised two departments technically known as the forge and the mill. The forge contained

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(1) Memorandum and Articles of Association of Sir Bernhard Samuelson and Company, Limited. (S.P.)

(2) Jeans, Notes on Northern Industries, p.223.

one hundred and twenty puddling furnaces, and in the mill there were twelve of Siemens' gas heating furnaces, with the necessary apparatus for generating the gas. The machinery was of the very latest design and included a blooming mill on White's patent, and one of Brown's patent rail mills. The forge was capable of producing 1,200 to 1,400 tons of puddled bars a week. In 1878 Samuelson was the first ironmaster in Britain to instal a "universal mill" incorporating vertical as well as horizontal rollers, which could roll 60-foot long plates of up to 50-inches wide and 2½-inches thick.(1)

Samuelson converted the Britannia Works into a limited company in 1873 and the new company's prospectus(2) stated that "the works are disposed of in consequence of the desire of the principal proprietor - Mr. Samuelson - to retire as opportunity offers from all business engagements requiring his personal attention". Although he remained a large shareholder, Samuelson's second son, Francis, became chairman of the company. The Britannia Works were leased to Dorman Long and Company in 1879,(3) and they were bought outright by Dorman Long and Company in 1891.(4)

Samuelson's only failure as an ironmaster was his unsuccessful attempt to manufacture steel from Cleveland ore. In the course of his travels on the Continent, Samuelson witnessed the operation of the Siemens-

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(1) J.C. Carr and W. Taplin, History of the British Steel Industry (Oxford 1962) p.160.

(2) Prospectus of the Britannia Ironworks Company, Limited. (S.P.)

(3) Terms of arrangement between Samuelson and Dorman Long and Company, 1879 (S.P.)

(4) Conveyance - Sir Bernhard Samuelson and Dorman and Long to Dorman Long & Co. of freehold works and heridits known as the Britannia Iron and Steel Works, Middlesbrough, 1891. (S.P.)

Martin method of making steel, and was impressed by its simplicity and effectiveness.[1] He could not see why the native ore of Cleveland, which had a high phosphorous content, should not be made into steel, and he initiated a number of experiments in order to achieve this. These experiments involved sending a quantity of iron made at the Newport Works to France for special testing. The results were promising and Samuelson decided to embark on a series of large-scale experiments. Early in 1869, he leased the North Yorkshire Iron Works at South Stockton and adapted them for the manufacture of steel rails , angles, plates and sheets on the Siemens-Martin principle. At the same time he made arrangements for producing steel ingots at the Newport Works, where earlier experiments had also shown positive results. The final result of these experiments was a failure, due to an inability to produce steel of a consistent quality, and after a few months Samuelson abandoned the attempt. The special furnaces erected at Newport were removed and work at the North Yorkshire Iron Works was suspended. The venture has been described as "one of the most dismal failures that ever took place in connection with metallurgy in Cleveland"[2], and it has been estimated that Samuelson lost between £25,000 to £30,000 in his unsuccessful attempt to make steel from Cleveland ore.

Samuelson's business career shows him to have been a progressive-minded industrialist. Both his Banbury and Middlesbrough enterprises were organised on the most up-to-date lines, and he spared no

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(1) Jeans, Pioneers of the Cleveland Iron Trade, p.224

(2) Ibid p.228.

expense in obtaining the best equipment for his works. He was always ready to pioneer new methods of production, and his unsuccessful attempt to make steel from Cleveland ore was the only major failure of his business career.

Samuelson was also an enlightened employer. In both Banbury and Middlesbrough he built houses for his workers and took an active interest in the education of their children. During the agricultural depression of the 1870's, when the demand for Samuelson's farming machinery fell very sharply, Samuelson kept his Banbury employees on the pay-roll for as long as he could afford to do so, and when this eventually became too costly to the firm, Samuelson introduced a system of part-time working which spread the available work over as great a number of employees as possible. When dismissals had to be made, workers with outside sources of income were the first to be paid off and married men with families to support were the last.(1) Similarly, when the Middlesbrough iron industry was badly affected by the Durham coal dispute of 1892 which lasted from March to June and threw twenty-nine thousand men out of work, Samuelson paid his workers throughout the whole period of the dispute at considerable cost to the firm.(2)

Samuelson did not sympathise with strikes and believed that most industrial disputes could, and should, be settled by means of negotiation or arbitration. He acted as a mediator during the North Eastern engineering strike of 1871, when he travelled to Newcastle to meet employers and

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(1) Audrey M. Taylor, Gilletts, Bankers at Banbury and Oxford (Oxford 1964) p.165.

(2) The Times 18th April, 1892.

and representatives of the Nine Hours League.[1] At the first meeting of the British Iron Trades' Association held on the 24th February, 1876, Samuelson read a paper on the success of the Boards of Arbitration and Conciliation operating in the Northern iron trades and he advocated the setting up of similar boards throughout the industry.[2] He believed that the prosperity of the country rested on co-operation between employers and employees. In his Presidential address to the Iron and Steel Institute[3] he said: "I look on the excellent feeling which happily prevails between employers and workmen in our great industry, as another of the most important elements of its future prosperity", and he praised the growth within the industry of boards of conciliation and arbitration which helped to prevent "ruinous strikes". On these questions Samuelson's views were in harmony with many other business M.P.'s of Gladstone's Liberal Party, including his friends Sir Joseph Pease and A.J. Mundella - although Samuelson was much less sympathetic towards the growth of trade unionism than Mundella. They believed that there was a natural and obvious community of interests between employers and workers, and between the middle and working classes, and that the spread of education would help to make this clear to everyone.

Samuelson had considerable influence upon the development of secondary education in Middlesbrough, and he played an important part in the foundation of the Middlesbrough High School. The establishment of the High School was the outcome of a circular issued on the 3rd June, 1870

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(1) Newcastle Weekly Chronicle 9th September, 1871.

(2) Henry Crompton, Industrial Conciliation (London 1876) p.62.

(3) Proceedings of the Iron and Steel Institute 1883, p.25.

by Hugh Bell on behalf of a group of local industrialists.[1] A committee of eight members was formed five days later to launch the scheme for a new secondary school.[2] Samuelson's name was added to the committee on the 22nd June,[3] and he became one of the school's guarantors, promising the school an annual donation of £2 10s. -d. Samuelson's additional donation of £20 was the largest single donation out of a total of £82 raised by the school's trustees in the first year of its foundation,[4] and the same was true of the following year when he donated £20 out of total donations of £48.[5] His generosity, which exceeded that of all local businessmen with the exception of the Pease family, came only a year after he lost around £30,000 in his unsuccessful attempt to make steel from Cleveland ore.

The committee formed to promote the new school quickly completed its initial arrangements. Temporary premises were leased at 37, Grange Road, then on the southern edge of the town, and John Sewell, B.A., was appointed headmaster. A formal board of management was set up and Samuelson was one of its members. The school was opened on the 4th October, 1870, providing places for twenty-five boys in the six to fifteen years age group, the number of pupils being doubled in the second year. On the 12th February, 1872, Samuelson offered to provide an exhibition for a period of two years at the Newcastle College of Physical

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(1) Circular,"Proposed Middle Class School for Middlesbrough" 3rd June, 1870. (M.P.R.L.)

(2) Minutes of Trustees of Middlesbrough High School. 8th June, 1870(M.P.R.L.)

(3) Ibid 22nd June, 1870

(4) High School Statement of Accounts. 31st. December, 1970. (M.P.R.L.)

(5) Ibid. 31st March, 1871.

Science, and his offer was gratefully accepted by the Trustees who decided to award it to the most outstanding scholar of the year.(1)

The occupation of the Grange Road premises was regarded by the school's promoters as a temporary arrangement until such time as a new school building could be erected. In September, 1873, the Pease family announced that they would provide a site, and be responsible for the building of a new school costing £7,000. In order to furnish the building, a further sum of £15,000 needed to be raised by public subscription. The endowment fund, however, brought in only £3,000, £1,000 being subscribed respectively by the three ironmaster, Lowthian Bell, Henry Bolckow and Bernhard Samuelson. Samuelson's contribution to the fund was conditional upon the admission of girls to the new school, a condition accepted by the board of management. The creation of the Middlesbrough High School for Girls, therefore, can be traced to Samuelson's insistence upon the admission of girls to the newly-formed High School.(2) A girls' department consisting of sixteen pupils, under the charge of Miss Plant, was duly opened in August, 1874, and two years later a preparatory department, under Miss Jarvis, was added to it. On the 16th June, 1877, the three departments, then numbering one hundred and seventy-four pupils, were transferred to the new building in Albert Street.(3)

By 1882 the number of pupils had increased to two hundred and sixty-seven and the Trustees decided to add a new wing to the boys'

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(1) Minutes of Trustees of High School. 15th February, 1872.

(2) William Lillie, Middlesbrough 1853-1953: A Century of Municipal, Social and Industrial Progress (Middlesbrough 1953), p.35.

(3) "The Middlesbrough High School: its beginnings and its progress", North Eastern Daily Gazette, 11th September, 1906.

school.[1] An appeal for funds was made, but only £963 was raised, £600 of this being given by the Pease family.[2] The poor response was partly due to the timing of the appeal, which coincided with a local trade depression, but the main reason was that a group of ironmasters, led by Samuelson, believed that the town's most urgent requirement was a technical college, and they were accordingly reluctant to contribute towards the high school extensions.[3] The Trustees admitted that it was originally intended to include science subjects and technical instruction in the high school's curriculum:-

> "When the establishment of the High School was first contemplated the promoters intended at an early date to add to the curriculum such instruction in elementary science as was deemed suitable for the scholars, having especial regards for the wants of a district like Middlesbrough."[4]

But, as Samuelson pointed out, no such instruction had been given in the twelve years of the school's existence, and the Trustees recognised this deficiency:

> "The movement initiated by Mr. Samuelson, for the establishment of a Technical, or as he prefers to call it, a Metallurgical School, makes it incumbent on the Trustees to consider how far they are warranted in continuing to omit elementary science from the course of instruction; and they have, after due consideration, decided that the moment has now arrived for them to carry into effect the scheme they had laid down for themselves when the school was first projected".[5]

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(1) Minutes of Trustees of High School, 7th July, 1882.

(2) Ibid 25th July, 1882.

(3) Circular - "Proposed Technical School for Middlesbrough." November, 1882. (M.P.R.L.)

(4) Ibid.

(5) Ibid.

The Trustees, therefore, decided to appoint a science master to teach the senior boys, and to spend £6,000 on the building of a new science block which would also be available for evening classes.[1] They urged Samuelson to give this scheme a trial and pointed out that the creation of a technical college could lead to the duplication of educational facilities in the town. These compromise proposals were accepted by Samuelson and his group,[2] and were promptly implemented by the Trustees. The new science wing was opened on the 14th September, 1885,[3] and an extensive system of evening classes in science and technical subjects was instituted.[4] These evening classes proved extremely popular. For the first session two hundred and nine-three students were enrolled, and of these two hundred and thirty-seven were entered for examinations,[5] providing evidence that Samuelson's pressure for greater emphasis upon technical education had some popular support.

The transformation of the High School was carried a stage further in October, 1887 when the Trustees approved a scheme to re-organise the upper boys' school as an Organised Science School in accordance with the requirements of the Science and Art Department,[6] and in December of the same year they authorised the erection of additional buildings in connection with this scheme. These extensions were financed by

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(1) Minutes of High School Trustees, 20th December, 1882.

(2) Ibid. 29th June, 1883.

(3) Ibid. 15th July, 1886.

(4) Ibid. 10th June, 1885.

(5) Ibid. 5th December, 1887.

(6) Ibid. 19th October, 1887.

(7) Ibid. 5th December, 1887.

contributions from the following:-

	£
City and Guilds of London	500
Drapers' Company of London	550
Sir Bernhard Samuelson	1,000
Other local businessmen	1,300

The re-organisation was arranged to take place at the beginning of the summer terms,(1) but the buildings were not completed until 1892.

The development of the Science School and its evening classes was hampered by a shortage of money on the part of the Trustees, although their funds were supplemented by money from the Town Council under the Technical Instruction and Local Taxation Acts of 1889 and 1890. Finally, in September, 1900, the Trustees gave way to a new board of governors over which the Town Council, as the statutory authority under the 1890 Act, enjoyed control. The school then became the financial responsibility of the Town Council.

J.H. Drury concludes:-

> "Thus by 1900 the facilities for higher education in Middlesbrough were very poor. The Trustees had done as much as their financial position would allow, and there is no doubt that they, as much as anyone, realised that much had been left undone. The High School had been successfully organised as a Science School and the evening Technical classes were fairly successful from the point of view of numbers and examination results. But the whole system was severely hampered by lack of accommodation and equipment. It was reported in 1903 that there were no appliances for the teaching of practical iron and steel metallurgy, that there was no means of chemically analysing iron and steel on mechanically tested products, and that, in general, the metallurgical department of the High School was hopelessly inadequate from all points of view and the Building Construction and Engineering Departments were just as bad. In short it was reported that there was a complete lack of suitable premises for technical instruction."

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(1) Circular, "The Science School", 19th January, 1888 (M.P.R.L.)

(2) J.H. Drury, History of Education in Middlesbrough. Unpublished M.Ed. Thesis. Manchester University, 1935, pp.61-62.

It would appear, therefore, that the compromise, whereby the High School's curriculum was modified to include a large amount of technical instruction, was not successful; and that Samuelson's original proposal to build a new technical college was, in the long run, the right one. In the event, Middlesbrough had to wait forty years for the opening of its own technical college, when the Constantine Technical College was opened in 1929.(1) In the neighbouring town of Sunderland, plans for the building of a technical college were drawn up in 1894, and the new college buildings were formally opened in 1901.(2) By the time the Constantine Technical College was opened, the Sunderland Technical College was already well established, enjoying special links with the University of Durham, which included representation on its Senate and the Faculty of Applied Science, and arrangements for its students to take pass degrees in mechanical, civil, electrical and marine engineering.(3). Furthermore, the mining and marine engineering departments of the Sunderland Technical College were to prove extremely useful in supplying some of the skilled manpower and research needs of the local coal and shipbuilding industries. It was this kind of development which Samuelson obviously had in mind when he urged the creation of a School of Metallurgy in Middlesbrough in 1882.

Samuelson also played a prominent part in the foundation of additional scholarships to enable more children to attend the High School. The payment of school fees often made it difficult for children

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(1) Lillie op. cit. p.36.

(2) C.E. Whiting, The University of Durham 1832-1932 (London 1932) p.307.

(3) W.H.G. Armytage, Civic Universities (London 1955) p.273.

from poor families to accept the places awarded them. In 1877 the Middlesbrough School Board had decided to offer three scholarships to the value of £16, tenable for a period of three years,[1] and with the income from trust funds were able to extend the period of the scholarships to five years.[2] The heavy financial commitments of the Board made it difficult for them to do more at this time. However, in 1888, upon the initiative of the High School Trustees, fifteen additional scholarships were provided[3] tenable for periods of three years and valued at £9 for the first year, £12 for the second, and £15 for the third. At the top of the list of subscribers was the Earl of Zetland, Sir Bernhard Samuelson, Sir Lowthian Bell, and the Pease family, who each provided three scholarships.

Although his permanent residence was in Banbury, Samuelson spent a good deal of time in the Middlesbrough district, in connection with his business interests, and he played an active part in the public affairs of the area. He was a founder-member of the Cleveland Institution of Engineers, formed in 1864 "to provide social intercourse among engineers and for the furtherance of the science of engineering",[4] and he was an active member of the North of England Ironmasters' Association, the Cleveland Ironmasters' Association and the Middlesbrough Chamber of Commerce. He also supported the work of the Cleveland Literary and Philosophical Society founded in 1863 "for the purpose of promoting literature, science and art amongst its members",[5] served as its

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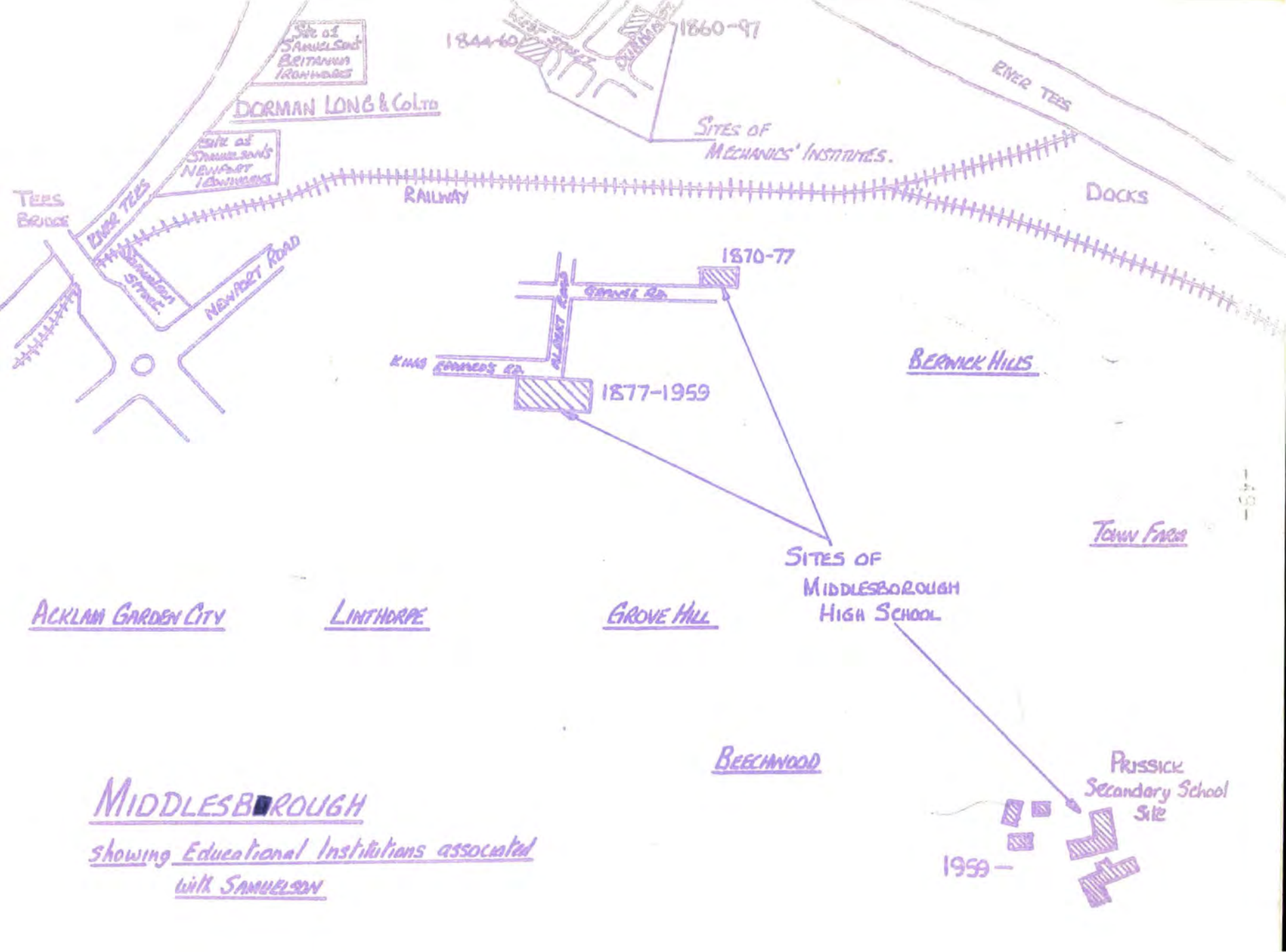
(1) Middlesbrough School Board Minutes, 7th May, 1877. (M.P.R.L.)

(2) Ibid. 4th March, 1878.

(3) Circular, "The Science School", 19th January, 1888 (M.P.R.L.)

(4) Middlesbrough Weekly News and Cleveland Advertiser. 28th October, 1864.

(5) W.H. Burnett, Middlesbrough and the District (Middlesbrough 1881) p.44.



MIDDLESBROUGH

showing Educational Institutions associated with SAMUELSON

President from 1871-73 and played a part in providing the Society with new buildings, being present when the new premises were opened by Sir Stafford Northcote, then Chancellor of the Exchequer, on the 7th October, 1875.(1) Samuelson was always sympathetic to the Mechanics' Institute Movement and he gave some financial support to the Middlesbrough Mechanics' Institute. The Middlesbrough Mechanics' Institute was founded in 1844 and housed at premises in West Street. In December, 1860 the Institute moved to new buildings in Durham Street, and Samuelson contributed ten guineas to the Institute's building fund.(2) The Middlesbrough Institute was often short of money, and in his annual report for 1866 the treasurer announced that the Institute was £154 in debt. Samuelson gave £5 out of a total of £35 raised by special appeal,(3) and in 1870 donated another £10 to the Institute's funds.(4)

Samuelson and his Middlesbrough business partner, William Hanson, were the joint owners of the Hedley Hope Colliery in County Durham, purchased in 1875 to provide Samuelson's Newport furnaces with coke,(5) and two years later they opened a school for the children of the district, the vast majority of whom were the sons and daughters of Samuelson's employees at the colliery.

The East Hedley Hope Colliery School was officially opened by Samuelson on the 25th June, 1877, as an interdenominational all-age school. The new school was built to accommodate three hundred children

(1) Middlesbrough Daily Gazette 8th October, 1875.

(2) Minutes of the Middlesbrough Mechanics' Institute 13th May, 1860.(M.P.R.L.)

(3) Ibid, 18th January, 1867.

(4) Ibid. 8th September, 1870.

(5) Supplemental Articles of Partnership, Samuelson and Hanson, on Hedley Hope Colliery being united as one business with the Newport furnaces 1875(S.P.)

and its first intake in August, 1877, consisted of fifty-eight boys and fifty-nine girls. (1)

The school was described on its opening as follows:-

> "The general schoolroom is 48-feet in length and 28-feet wide. There is a classroom attached 24-feet long and 18-feet wide. In addition to these rooms there is a separate infants' school 28-feet 6-inches in length and 24-feet in width. The schools, which are of brick with stone dressings are plain and substantial, and special attention has been paid to ventilation and warmth. They have been built to meet the requirements of the Committee of the Council of Education". (2)

At the school's opening ceremony, the chair was occupied by William Hanson who emphasised the inter-denominational nature of the school, and added that the school would also be available to all sects in the district for the holding of religious services and meetings.

In his speech, Samuelson stressed the need for continued co-operation between employer and worker, and went on to outline the importance of education for both employers and workers. According to Samuelson, education was necessary to enable British industry to face up to foreign competition, and for the workers' children education it was the means to promotion. In a passage, which has a prophetic ring to it when it is remembered that he was speaking in a Durham mining village almost a century ago, Samuelson claimed that education increased the mobility of the country's labour force, for an educated labour force could "turn its mind to other things" (3) more easily than an uneducated one. Samuelson gave as an example the depopulation of villages in Cornwall as the result of the decline of certain trades upon which the villagers had depended for

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(1) Log Book of the East Hedley Hope Colliery School 1877-93 Vol. 1 p.1. (D.C.C.R.O.)

(2) Durham Chronicle 29th June, 1877.

(3) Ibid.

their livelihood. Finally, he hoped that the franchise would be extended in the near future and when that happened Samuelson urged his audience to "tell their representatives to advocate the spread of education" and support the principle of compulsory education. In the only party political point in his speech Samuelson aimed a shaft at Disraeli's foreign and imperial policies by concluding that "if they were taxed let them take care that their taxes are not spent in going to war for ideas or nightmares, but that they are spent for the improvement of the social, moral and the intellectual condition of the people".

Although a founder of the East Hedley Hope Colliery School and one of its managers, Samuelson did not play an important part in the management of the school. This was probably due to its remoteness, Samuelson's many business and political commitments, and the fact that the management of his firm's collieries was in the hands of Hanson. John Hunter, the local colliery manager, was a frequent visitor to the school on behalf of the managers, and William Hanson travelled from Middlesbrough on a number of occasions to inspect the school's progress. The inspector's reports of the early years were not good, but they gradually improved as the school became established in the village.(1)

Samuelson played a part in the development of three institutions of higher education in the North of England: Owen's College, Manchester, the Yorkshire College of Science, Leeds, and the College of Physical Science, Newcastle upon Tyne.

Owen's College was opened in Manchester in 1851 enjoying the status of an affiliated college of London University. The college's

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(1) See Log Book of the East Hedley Hope Colliery School 1877-93 Vol. 1.

development, however, was hampered by shortage of money and appeals for government aid were rejected in 1852 and 1853.[1] In 1868 the executive committee of the college decided to try again and on the 13th January, 1868 Samuelson, who had recently submitted his report on European technical education to the Vice-President of the Committee of Council on Education, was invited to Manchester to meet the executive committee of Owen's College.[2] The committee explained to Samuelson the college's urgent need for money to finance new buildings and asked his advice on the best way to obtain a state grant. Samuelson emphasised that he held no official position with the government and had no inside knowledge of what the government intended to do in the field of technical education, nevertheless it was his opinion, he informed the committee, that the government was favourably disposed towards the expansion of higher scientific education in Britain. He advised the committee that their case for a grant would be strengthened if they could show three things. First, that the local community was prepared to make a financial contribution to the college. Secondly, that the expansion of college would not benefit Manchester alone, but would serve the needs of a widely extended manufacturing community; and, finally, that in return for government aid the college would be prepared to assist in the training of teachers.

The executive committee decided to apply for government assistance and on the 5th March, 1868, a deputation from the college met

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(1) Cardwell op. cit. p.71.

(2) Joseph Thompson Owen's College: its foundation and growth (Manchester 1886) p.324.

the Lord President and Vice-President of the Council.[1] The deputation consisted of members of the college, local mayors, clerics and headmasters, and thirty M.P.'s. including Samuelson. The application was received sympathetically, and Samuelson was included in a second deputation which put the college's case to Disraeli at Downing Street on the 24th March. Disraeli was also favourably disposed, but a general election intervened before a final decision was made by the Conservative Government and the college's application was finally rejected by the incoming Prime Minister, Mr. Gladstone.

Fortunately for the college, the money was eventually raised by public subscription and the extensions were carried out, including the building of new chemistry laboratories which were among the finest in Europe.[2] At the Society of Arts Conference on Technical Education held on the 23rd January, 1868, Samuelson praised the work being done at Owen's College [3] and proposed that the government should contribute towards the creation of a chair of engineering at Owen's College, and in the following March the college appointed its first professor of engineering, his salary being financed entirely by public subscription. The appointment proved important "making the college one of the first in the field of applied science". [4]

Samuelson had strong links with Yorkshire: he spent his boyhood in Hull, and had substantial business interests in Middlesbrough.

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(1) Ibid. p.325.

(2) Cardwell op. cit. p.107.

(3) Journal of the Society of Arts Vol. 16. p.190.

(4) Argles op. cit. p.50.

It is not surprising, therefore, that he should be involved in the foundation of the Yorkshire College of Science.

A small organisation known as the Conversation Club was formed in Leeds in 1849, which by 1867, had evolved into the Yorkshire Board of Education.(1) Samuelson was a member of the Board's Council, and in November, 1869, he supported the suggestion that the Board should establish a college of science in Leeds.(2) By 1872 plans for the new college were ready, the object being "to promote the education of persons of both sexes and, in particular, to provide instruction in such sciences and arts as are applicable to the manufacturing, mining, engineering and agricultural industries of the county of Yorkshire".(3) Samuelson spoke at meetings held to raise money for the new college, and by April, 1874, £25,000 had been raised by public subscription: Samuelson himself donating £250 to the fund.(4) He helped to draw up the college's constitution, took part in the college's inauguration ceremony in 1875, and was made a Life Governor of the college.(5)

The demand that Newcastle upon Tyne should have its own higher institution of science and technology was first made in 1852, by members of the North of England Institute of Mining and Mechanical Engineers;(6) but it was not until 1868 that serious discussions took place on the subject between the University of Durham and the Mining Institute. The outcome

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(1) A.N. Shimmin The University of Leeds: The First Half Century (Cambridge 1954) p.12.

(2) Yorkshire Post and Leeds Intelligencer 6th November, 1869.

(3) Shimmin op. cit. p.13.

(4) Bursar's Records, University of Leeds.

(5) Report of the Inauguration of the Yorkshire College of Science 1875. (L.P.R.L.)

(6) Whiting op. cit. p.187.

of these preliminary discussions was a conference held on the 2nd August, 1870, at which Dean Lake, the newly-appointed Warden of Durham University, warmly supported the idea and promised an annual grant of £1,250 from the university conditional upon a similar sum being raised by public subscription. The Newcastle Chronicle championed the scheme and £22,887 was raised by the public appeal for funds. The result was the opening of theCollege of Physical Science, Newcastle upon Tyne in October, 1871, with the object of providing "advanced scientific education for the four northern counties and the North Riding, and especially to teach science as applied to English mining, agriculture and manufacturers".(1) Samuelson took an interest in the college from its earliest days, and contributed £100 to the original endowment fund.(2) He heartily approved of the college's aim of providing advanced scientific education closely related to the needs of local industries and, as we have seen, in 1881 he took the lead in pressing for the creation of a similar institution at Middlesbrough.

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(1) Ibid. p.189.

(2) Circular - "Durham College of Science - Donations and contributions to the original endowment fund 1871-1884."(1895) (University of Newcastle Records.)

CHAPTER IV

POLITICS AND EDUCATION

Looking back upon his career a few months before his death, Samuelson recognised his entry into politics to have been one of the most important turning points in his life, and there is little doubt that Samuelson's thirty years in the House of Commons gave him opportunities to influence the course of English education which would otherwise have been denied him. For as a Member of Parliament he was able to participate in important debates on education, to put questions to ministers on educational matters, to serve on Select Committees of the House of Commons, and to come into close contact with those who had the responsibility for shaping English educational policy. It is also doubtful if Samuelson would have been chosen to serve on the Royal Commission on Technical Instruction and on the Devonshire and Cross Commissions if he had not first built up a reputation in the House of Commons as an expert on education. It is not too much to claim that if Samuelson had not entered the Commons he would be remembered chiefly as a successful ironmaster who had done much for education in the Middlesbrough and Banbury districts, and interest in his career would be largely confined to local historians.

Samuelson's decision to enter politics was taken during a visit to the House of Commons, where he appeared to give evidence before a Parliamentary Committee in connection with a drainage Bill. During a recess he strolled into the chamber and sat down on one of the green benches.

"Sitting there", he later recalled,[1] "it occurred to me that it might not be out of my power to persuade my Banbury neighbours to return me as their member". On the 3rd November, 1858, the sitting member, H.W. Tancred, a Whig barrister, announced that owing to illness he would have to resign. A by-election was called for February, 1859, and Samuelson was nominated as Liberal candidate to contest the seat. His opponents were John Hardy, a brother of Lord Cranbrook, who stood as Conservative candidate,[2] and Edward Miall, former M.P. for Rochdale and a well-known Liberationist, who was chosen by a group of Banbury Non-conformists to stand as an independent Liberal.[3]

Apart from Miall's emphasis upon the need for disestablishment, his programme was almost identical with that of Samuelson, which included the usual Radical demands for extension of the franchise and introduction of the ballot. In the course of the campaign Miall realised that Samuelson was better placed to win the seat and he tried to persuade his supporters to switch their votes to Samuelson to avoid splitting the Liberal vote.

Voting took place on the 9th February, and the result was:-

B. Samuelson	(Liberal)	177 votes
J. Hardy	(Conservative)	176 votes
E. Miall	(Independent Liberal)	118 votes [4]

Thus Samuelson won the seat by one vote, and the decisive vote was cast by Superintendent Thompson of the borough police force,

(1) Samuelson, "My Start in Life".

(2) F. Bourse, Modern English Biography 1851-1900 (London 1901).Vol.1.p.1332.

(3) B.S. Trinder, "The Radical Baptists", Cake and Cockhorse No.11, January, 1965.

whose right to vote was challenged by Hardy's supporters.(1) Hardy submitted the inevitable petition against the result, but allowed it to lapse when he was elected shortly afterwards as M.P. for Midhurst. Miall was elected M.P. for Bradford in 1869 and Samuelson subsequently became well-acquainted with him in the House of Commons, and observed that if he had known at the time of the 1859 by-election what manner of man Miall was he would not have opposed him.

The result of the Banbury by-election was the subject of a lengthy leader in The Times on the 11th February, 1859. The leader praised the retiring member, H.W. Tancred, and considered that either Miall, "a distinguished orator and preacher", or Hardy, "a man of talent with a brother at the Home Office", would have proved a worthy successor. But Samuelson was not considered in the same light and his victory was attributed to the votes of his employees, who had supported "the man who gave them bread and cheese in return for their labour", and it claimed that they had "sold their birthright for a mess of pottage". The leader writer was far from impressed by Samuelson's qualifications for the job of M.P.

> "It so happens that for a long time there has been established at Banbury a gentleman named Samuelson, whose particular vocation, to the best of our belief, has not been to make speeches, or to write pamphlets, or to devise schemes of Parliamentary Reform, but to invent and manufacture agricultural instruments and machines. We are not ourselves disposed to look down on an occupation of this sort. We cannot call it basely pandering to the agricultural interest, or strengthening the hands of a tyrant aristocracy. But, on the other hand, it cannot be considered so noble an employment as making constitutions and laws, and starting political or religious ideas, and predict that this gentleman will either give a silent vote, or speak the prose he has unconsciously spoken all his days."

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(1) Potts, Sir Bernhard Samuelson, Bart., Educationalist and Ironmaster p.14.

(2) Potts loc. cit.

The Times concluded that the result boded ill for the country with the prospect of further extensions of the franchise.

The Times leader grossly underestimated Samuelson, for this "mere maker of reapers and sithes" (sic) was to prove an extremely effective back-bencher and was to render considerable services to the state.

However, Samuelson's political career was to receive a temporary set-back. Two months after the by-election there was a general election and Samuelson faced another campaign. The Conservatives did not put forward a candidate, but the Nonconformist group which had induced Miall to stand against Samuelson, nominated Sir Charles Douglas as an Independent Liberal. Douglas was the illegitimate son of the Earl of Ripon and had been M.P. for Warwick from 1837-53.(1) Although a man of extreme Radical views he successfully concealed these during the campaign and won over a large number of Conservative voters as well as enjoying the support of Nonconformists.

The result was:(2)

Sir Charles Douglas (Independent Liberal)	235 votes
B. Samuelson (Liberal)	199 votes

Douglas's victory was unpopular with the general populace and rioting broke out in the town. Sir Charles had to flee his hotel by a back window when leaving to catch his train to London.(3)

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(1) Boarse op. cit. p.901.

(2) Williamson loc. cit.

(3) Trinder op. cit.

Douglas remained in possession of the seat until the general election of July, 1865, when he was again challenged by Samuelson, standing as the official Liberal candidate, with Charles Bell, a London merchant, as the Conservative nominee.

The result was:[1]

B. Samuelson	(Liberal)	206 votes
Charles Bell	(Conservative)	165 votes
Sir Charles Douglas	(Independent Liberal)	160 votes

Immediately after the declaration of the result, Charles Bell issued a statement alleging that Samuelson was not a natural-born subject, neither was his father a natural-born subject, and, therefore, Samuelson was not eligible to be a Member of Parliament.[2]

Samuelson promptly issued a statement of rebuttal:[3]

> "Mr. Bell having most unjustifiably protested against my return on the grounds that I am an alien, I deem it right to state that although born in Hamburg, I am legally a natural-born subject of the British Crown, and possessed of all rights and privileges, as well as liable to all obligations, of a British subject in virtue of my descent from my paternal grandfather who was born in the City of London.
>
> My position is entirely different from that of a foreigner who obtains an Act or Letter of Naturalisation. These do not confer the privilege of beimg a member of H.M. Privy Council or sitting in Parliament. In my case no naturalisation was required and none could have been granted, inasmuch as all the rights of a natural-born subject of the Crown without exception are conferred upon the grandchildren of British born subjects by the Act 13 of Geo. III c 21, on the conditions of their taking the Sacrament in a Protestant Place of Worship, and the Oath of Allegiance in one of H.M. Courts of Record. I complied with both these conditions in due form many years ago, and am, therefore, possessed of all rights and privileges of an Englishman."

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(1) Williams loc. cit.

(2) Circular 12th July, 1865. (P.C.)

(3) Circular 13th July, 1865. (P.C.)

Bell petitioned the House of Commons, although the local Tory magnate, Colonel J.S. North of Wroxton Abbey, refused to have anything to do with the appeal.(1) Samuelson was able to produce an old Hebrew Bible which contained the details of birth of his ancestors, including that of his paternal grandfather. His evidence satisfied the Committee of the House of Commons examining Bell's petition, and Samuelson's right to the Banbury seat was confirmed. The result delighted Samuelson's supporters, and on his return to Banbury he was led in triumph through the town in a coach drawn by blue and white ropes. Samuelson had regained the seat and was to hold it for the next thirty years.

At the general election of November, 1868, Samuelson was opposed by George Stratton of Husband's Bosworth, a barrister on the Oxford circuit. The result was:

B. Samuelson (Liberal)	772 votes
G. Stratton (Conservative)	397 votes(2)

However, before this election certain Radical and trade union elements in Banbury expressed their dissatisfaction with Samuelson's candidature in a letter to George Howell, Secretary of the Reform League, and Howell tried to assuage their doubts. He wrote:

> "Mr. Samuelson is not quite up to our mark but he is considered as a sound Liberal, even more so than the one you name. He is sound on Education, and advanced on the subject of capital and labour and generally votes right in the House. He has aided us in the agitation for reform, although not going in for our programme. If we advised any contest, the Liberal Party would say we were dividing the Liberal interest and we should lose friends."

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(1) Potts, Sir Bernhard Samuelson, Bart., Educationalist and Ironmaster, p.17.

(2) Williams, loc. cit.

(3) Quoted Royden Harrison, Before the Socialists: Studies in Labour and Politics 1861-1881. (London, 1965) p.171.

Howell got Robert Applegarth, Secretary of the Amalgamated Society of Carpenters and Joiners, to visit Banbury to settle matters in favour of Samuelson. Applegarth was successful in preventing a split among local Liberal supporters and managed to rally them behind Samuelson, but he also took the opportunity of censuring Samuelson for his opposition to trade unionism. At the same election Samuelson's son, Henry Bernhard, was elected M.P. for Cheltenham, his nomination as Liberal candidate also being arranged by George Howell of the Reform League at Samuelson's request. The next election took place in February, 1874, when Samuelson had for his opponent Lt. Col. J.J. Wilkinson, the oldest Volunteer officer in the United Kingdom, who proved an impressive candidate and came within eighty-four votes of Samuelson's total, the number being -

B. Samuelson (Liberal)	760 votes
J.J.Wilkinson (Conservative)	676 votes [2]

The result was also affected by the opposition of the Nonconformists to W.E. Forster's Education Act, which Samuelson supported. Many Nonconformists abstained and some even voted for the Conservative candidate.[3]

The next appeal to the electors of Banbury was in April, 1880, when T.G. Bowles fought the election for the Conservatives. Bowles concentrated largely upon foreign policy and the dangers of the Russian penetration of Central Asia. The result was -

B. Samuelson(Liberal)	1,018 votes
T.G. Bowles (Conservative)	583 votes [4]

(1) Ibid pp.148-9.

(2) Williams loc. cit.

(3) Potts, Sir Bernhard Samuelson, Bart., Educationalist and Ironmaster, p.18.

(4) Williams, loc. cit.

This was the last election fought in the old Banbury constituency, for at the dissolution in November, 1885, Banbury became part of the newly-created constituency of North Oxfordshire.

Samuelson's opponent in the next three elections was L.M. Wynne. In 1885 Samuelson won the seat by a majority of 1,492, the numbers being Samuelson 4,436 votes, Wynne 2,944 votes. In the following year Wynne reduced Samuelson's majority to 493, the result being: Samuelson 3,677 votes, Wynne 3,184 votes; and in July 1892 Samuelson's majority fell to 87, with Wynne polling 3,453 votes to Samuelson's 3,640 votes.(1) When Samuelson retired from Parliament three years later the seat passed to the Conservatives.

Bernhard Samuelson was a M.P. for thirty years and throughout this time he always enjoyed the respect of his fellow members; and although a Liberal his popularity extended to the Conservative ranks, for he had the reputation of being a man of sound and independent judgment. The esteem in which he was held by the House of Commons also owed something to the fact that he never wasted its time. He once poked fun at M.P's. who were "perhaps a little too voluable" describing himself as "a silent member".(2) Although Samuelson had "no grace of oratory", possessing a halting delivery in speech, he was always listened to with great attention for "his speeches were characterised by thorough knowledge of the subjects with which he dealt".(3) Scorning rhetorical tricks his method of persuasion was to pack his speeches with facts and figures in support of his case. He was known by the Commons to have expert knowledge on

(1) Williams loc. cit.

(2) Durham Chronicle 29th June, 1877.

(3) Potts, Sir Bernhard Samuelson, Bart., Educationalist and Ironmaster p.19

educational, commercial and technical subjects and he confined himself very largely to these topics. His long white hair and flowing beard gave him a venerable appearance which, according to a contemporary observer, gave added weight to his words.(1)

Within the ranks of the Liberal Party he formed part of the section which has been referred to as "the Radical industrialists".(2) By the standards of the time he was a Radical, although he always sat above the gangway in the House of Commons demonstrating his loyalty to Gladstone's leadership, as opposed to the more advanced Radicals, such as Sir Charles Dilke and later Joseph Chamberlain, who sat beneath the gangway.(3) Gladstone was an old friend of Samuelson's and always treated him with respect, and Samuelson's loyalty to the Liberal leader never wavered during his thirty years in the Commons. Among other things they shared a common interest in commercial questions and this was probably the origins of their friendship.

Samuelson was never a "lobbyist" and only attended the Commons when he felt it necessary to do so. This implies no neglect of his Parliamentary duties, but stemmed from his view of the Commons as a workshop rather than a club. His hobby was yachting and the story is told of how when his vote was needed "he would run his yacht into Southampton Water, and landing in yachting dress would walk into the lobby just at the right moment; the party whips overjoyed; and white-bearded in blue serge, this old man of the sea would record his vote for progress, and then drive home for the night - a man of wonderful vitality

(1) Ibid p.27

(2) John Vincent, The Formation of the Liberal Party 1857-68 (London 1960) p. 35

(3) Potts, Sir Bernhard Samuelson, Bart., Educationalist and Ironmaster p.22.

picturesque, interesting".[1] Samuelson also pleased the Liberal whips by his generous contributions to party funds.

Samuelson was a reserved man and had few close friends in the Commons. Perhaps the closest was Sir Joseph Pease, M.P., for Durham constituencies from 1865-85, who had extensive interests in coal, iron and railways, some of which were closely linked with Samuelson's firms.[2] Pease also shared Samuelson's interest in education. Samuelson's other friends were Peter Rylands, a manufacturer of ironware, a former activist in the Anti-Corn Law League, and M.P. for Warrington 1868-74 and for Burnley 1876-87[3]; and H.D. Pochin, briefly M.P. for Stafford from 1868-9, who was trained as a chemist and was the owner of a number of coal, iron and shipbuilding companies.[4] As in the case of Pease they were business associates of Samuelson, and both men took an interest in the development of technical education. Samuelson was also on close terms with W.H. Leatham, a banker who sat for West Riding constituencies[5], and in later Parliaments Samuelson was friendly with Henry Roscoe and A.H.D. Acland, who both shared his deep interest in technical education.

In addition to his back-bench friends Samuelson was on intimate terms with John Bright and A.J. Mundella.[6]

Mundella gave evidence before Samuelson's Select Committee on Scientific Instruction in 1868, and they subsequently became close friends

(1) Ibid p.24.

(2) Business correspondence and agreements between Samuelson and Pease.(S.P.)

(3) Boarse, op. cit. Vol.III pp.368-9.

(4) Ibid Vol.II p.1565.

(5) Boarse, op. cit. Vol.II p.344.

(6) Potts, Sir Bernhard Samuelson, Bart., Educationalist and Ironmaster p.26.

co-operating on a number of measures.[1] The two men had much in common. They were both self-made businessmen, enlightened employers, supporters of industrial conciliation and arbitration, and they were both of immigrant stock - Samuelson Jewish and Mundella Italian, which together with their direct knowledge of the Continent (Mundella owned hosiery works in Saxony) gave them a more cosmopolitan outlook than many Englishmen of their time, and they were both intensely interested in Educational and commercial matters. When Gladstone resigned the leadership of the Liberal Party in 1875, Samuelson agreed with Mundella that W.E. Forster was best qualified to succeed him, for Samuelson, like Mundella, admired the way Forster had handled the 1870 Education Act. Forster, however, rejected their promptings and Lord Hartington took over, temporarily as it turned out, from Gladstone. In the following year Mundella forwarded a Bill to curtail the employment of children in brick and tile works, and was supported by Samuelson among others. After the Bill had been read a second time, Lord Morley incorporated it in his own Factory and Workshop Act. The Act prohibited theemployment of girls under sixteen and boys under ten in brick and tileyards, thus giving a further 35,000 children the opportunity to attend school.[2] Mundella was Vice-President of the Committee of Council on Education when the Royal Commission on Technical Instruction was set up in 1881 under Samuelson's chairmanship, and it was Mundella who suggested to Lord Cranbrook, then Vice-President of the Council, that Samuelson should serve on the Cross Commission.[3]

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(1) Armytage, A.J. Mundella 1825-1897. (1897) p.52

(2) Ibid. p.97.

(3) Ibid. p.232.

Samuelson once admitted that he was "never a strong partisan" in his politics[1], and it is true that he had an empirical approach to problems. Nevertheless, on the major issues of his time - Free Trade, the Irish Question and Parliamentary reform - he was loyal to the Liberal cause.

His belief in the beneficial results of free trade policies went back to his youth, when during his years in the export department of Zwilchenbarts of Liverpool he frequently found his work frustrated by outdated restrictions on the export of machinery.[2] As late as 1885 he wrote a defence of free trade principles in a pamphlet, Fair Trade and Free Trade, which was published by the Cobden Club.

Samuelson was also a loyal supporter of Gladstone's Irish policies, although he always emphasised the need to safeguard the rights of the Protestant minority in Ireland. In 1869, before the introduction of Gladstone's Irish Land Bill of the following year, Samuelson visited every county in Ireland and wrote a series of articles on the Irish land problem for the Daily News. At Gladstone's personal request[3] the articles were published as a pamphlet in 1870 under the title Studies of Land and Tenantry in Ireland. During the passage of the Irish Land Bill through its Committee stage in the House of Commons, Samuelson succeeded in introducing an amendment[4] legalising the Ulster custom of tenant right throughout the whole of Ireland. He supported Gladstone in the Liberal split over Home Rule in 1886, and in the following year unsuccessfully moved the rejection of Balfour's Coercion Bill. In his speech onthis important occasion he

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(1) Samuelson, "My Start in Life".

(2) Ibid.

(3) Potts, Sir Bernhard Samuelson, Bart., Ironmaster and Educationalist, p.26.

(4) Hansard Vol. CC Cols. 760-1. 28th March, 1870.

he pointed out that he had seldom spoken on Imperial matters, but had always voted on them as his duty demanded. However, he believed so strongly that coercion was not the answer to Ireland's problems that he felt impelled to speak. Samuelson went on to deplore the suspension of trial by jury in Ireland and re-stated the case for Home Rule.(1)

On the question of Parliamentary reform, Samuelson supported the extension of the franchise brought about by the Reform Acts of 1867 and 1884, and the Ballot Act of 1872. During the debates on the Reform Bill introduced by the Conservatives in 1867, Samuelson was a member of the fifty strong group of Liberals called the "tea-room party",(2) who believing in the extension of the franchise, wanted to assist rather than hinder the efforts of the Conservatives, and they persuaded Gladstone not to oppose the second reading but to devote his efforts to improving the Bill in committee. These tactics were successful and the final result went beyond the Government's intentions, the 1867 Act securing household suffrage in the boroughs and thereby adding 938,000 voters to the electorate. (3)

Samuelson's other Parliamentary work included chairmanship of the Select Committee on Letters Patent (1871-72), which was set up on his initiative,(4) and collected valuable evidence on the state of the Patent Laws.(5) Samuelson also had the satisfaction of helping to translate the recommendations of his committee into law with the passing of the Patents for Inventions Act of 1877.(6)

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(1) Hansard CCCXIII Cols. 512-16. 5th April, 1887.

(2) Potts, Sir Bernhard Samuelson, Bart., Ironmaster and Educationalist p.27.

(3) E.L. Woodward, The Age of Reform 1815-1870 (Oxford 1938) p.187

(4) Hansard CCIV Cols. 1512-5 7th March, 1871.

(5) Report from the Select Committee on Letters Patent for July, 1871 and May, 1872.

(6) Hansard CCXXXII Cols.229-31. 12th February, 1877.

and the Patents for Inventions Acts of 1883.[1] The problem of railway rates was another of his special commercial interests and he was chairman of the 1873 Parliamentary Committee on Railways. In 1883 he successfully moved[2] a new standing order giving Chambers of Commerce and Agriculture a locus standi to be heard on questions of rates and fares when railway Bills were under consideration. In 1872 he was chairman of a Select Committee set up to investigate the drainage and prevention of floods in the Thames Valley.

Samuelson's first intervention in a debate on education was during the second reading of the Agricultural Children's Education Bill. This Bill was introduced by H. Fawcett whose motive, he explained,[3] was to draw attention to a Bill introduced by Lord Shaftsbury in the House of Lords a fortnight before. Shaftsbury's Bill had passed a second reading and Fawcett, therefore, assumed that the principles embodied in the Bill had the Government's approval. Fawcett's own Bill differed fundamentally from Shaftsbury's, and although Fawcett admitted that he did not expect to get the Bill through the House during that session he invited Members to make their views known on the matter.

Shaftsbury's Bill provided that children employed in agriculture should attend school for four hundred hours in winter and two hundred hours in summer, while Fawcett's Bill wished their attendance to be on a half-time or alternate day basis. As Fawcett pointed out the latter system had been shown to work successfully and only the day before

(1)Hansard CCLXXXVII Cols. 369-71, 16th April, 1883.

(2) Hansard CCLXXVIII Cols. 1881-95 4th May, 1883.

(3) Hansard CLXXXIX Cols. 487-93. 31st July, 1867

the House had extended it to every branch of industry when it had approved a Factory Extension Bill.

Samuelson spoke in support of the Bill.[1] He thought that the same treatment should be given to children engaged in agriculture as was given to children in factories. Therefore, their education should be continuous because education merely imparted in winter, with long periods between the periods of instruction, would be comparatively worthless. One of the principles of the Bill was that where there were no schools in parishes they should be provided, and although Samuelson agreed with this, he thought there was scope for discussion on who was to provide the new schools. Samuelson did not make his own position clear on this point during the debate, but some of his later statements show that he favoured local efforts supplemented by Government grants, or, failing local initiative, direct state action. The other principle of importance which the Bill sought to establish, according to Samuelson, was that the religious education given to children should be in accord with their parents' beliefs. Samuelson said that no one wanted to see religion entirely eliminated from a child's education, but it was important to ensure that children should not compulsorily be instructed in religious principles opposed to those possessed by their parents. He agreed with the Bill's principles and gave it his backing.

Fawcett's Bill is interesting because its main principles foreshadow the Elementary Education Act of 1870, namely, efforts to "fill the gaps" in the voluntary system of education by means of central and local

(1) Ibid. col. 511.

government action and the introduction of a "conscience clause" to meet the problem of religious instruction. It is clear that Samuelson favoured this policy as early as 1867.

On the 24th June, 1868, Samuelson intervened on the Second Reading of H.A. Bruce's Elementary Education Bill. Bruce began the debate[1] by announcing that he was withdrawing the Bill because of "pressure of business" and that "a larger measure would hereafter be necessary", but he was anxious to use the occasion to make some observations on the subject of elementary education. The Bill proposed the appointment of a Minister of Education, whose duty it would be to initiate elementary education where it was defective, and to arrange an educational census with the object of finding where the deficiencies existed. His Bill aimed at the creation of a "universal system of secular education provided by the State, leaving it to the locality to decide what the religious character of the teaching should be". He did not wish to enforce a general system of education by means of secular schools alone and it should be left to the parents themselves to decide what the character of religious instruction should be, and this was the policy of the Bill with respect to the new schools created under its provisions. The money for these new schools should be raised by a local rate.

E. Greene in his speech[2] thought that it would be necessary to have a different system for the manufacturing districts to that which they had for agricultural districts. "In the country districts where education was attended to by the proprietors of the soil and by the

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(1) Hansard CXCII cols. 1983-89 24th June, 1868.

(2) Ibid. Cols. 1991-2.

clergy, it might require some supplementary aid but it did not need to be compulsory". The main part of his speech attempted to show that agricultural districts were ahead of the towns in the provision of educational facilities, and he concluded that "he would not admit that either a system of rating or compulsory education was required in the country districts where the landowners had done their duty in regard to education".

Samuelson spoke next[1] and said that he had not heard anyone complain of "the peculiar darkness of the agricultural districts" and he could not understand Green's protests on this point. Where due provision was made for the education of children in the agricultural districts it was not proposed to force upon them either a system of rating or compulsory education. Samuelson went on to say that he was glad that the Bill was being withdrawn because it did not go far enough. He thought it should be laid down that no locality should be called upon to make an educational rate without having the power to enforce the attendance of children at the schools; and that no children below a certain age - say ten or eleven - should be allowed to work in any factory unless it could provide proof of its having received some amount of elementary education.

The Bill was withdrawn after further debate, but Samuelson's speech shows that he was moving towards acceptance of the principle of compulsory education.

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(1) Ibid. Cols. 1992-3.

During the second reading of W.E. Forster's Elementary Education Bill Samuelson spoke against George Dixon's amendment that "this House is of the opinion that no measure for the elementary education of the people will afford a satisfactory or permanent settlement which leaves the question of religious instruction in schools supported by public funds and rates to be determined by local authorities".(1)

Samuelson in explaining why he intended voting against Dixon's amendment said that he approved of "almost all the principles advocated by the National Education League, but there was one thing for which he contended still more strongly and that was the cause of education itself." Samuelson took an empirical view of the situation. The need, as he saw it, was "that the elements of education should as speedily as possible be placed within the reach of every child in England". He thought, rightly, as it was to turn out, that Dixon and his National League supporters would have ample opportunity in Committee of amending the Bill, and he felt that their objections could be met. "Were they, then, to wait until they had settled their sectarian differences before they provided good education for people".(3) Samuelson "sincerely hoped that the Honourable Member for Birmingham would withdraw his amendment".(4) This is what Dixon did do and his objections were met by the Cowper-Temple clause.

During the Committee Stage of the Bill, Samuelson moved an amendment to the proposed Clause 12. This clause covered the formation

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(1) Verbatim report of the debate in Parliament during the progress of the Elementary Education Bill, 1870, together with a reprint of the Act. (National Education League 1870) p.42.

(2) Ibid. p.72.

(3) Ibid. p.74.

(4) Loc. cit.

of school boards: "where application is made to the Education Department with respect to any school district by the persons who, if there were a school board in that district would elect the school board, or with respect to any borough by the council".(1) Samuelson wished to alter this to read "not less than twenty inhabitant householders within such a district". He explained that there were several districts in which there was sufficient school accommodation, and in which children did not attend. In these circumstances it was hardly likely that a sufficient number of ratepayers would take the initiative in asking for a board to be formed, yet it was desirable that a board should be formed. He quoted his experience of the local boards of health, the formation of which had been resisted in some districts yet once formed their members had done good work. He thought that some measure of ensuring attendance at school might yet be included in the Bill "and without this amendment it might be objected at a further stage that there were districts in which school boards could not be formed through any machinery provided by the Bill".(2)

W.E. Forster opposed the amendment "which entirely departed from the principle of leaving the formation of a school board to the action of a majority of the ratepayers where there was no deficiency".(3)

Sir Charles Dilke suggested that "one-fourth" should be substituted for "twenty"(4), and Samuelson found this change acceptable. "I am most anxious for the passing of the Bill, but, at the same time, machinery should be adopted for the establishment of school boards throughout

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(1) Ibid. p.563.

(2) Ibid. p.332.

(3) Loc. cit.

(4) Ibid. p.333.

the country".(1) Samuelson's amendment was defeated by two hundred and forty-nine votes to sixty-three.

During a Supply Debate on the 15th June, 1874, Samuelson moved:

> "That it be one of the conditions of payment of a Parliamentary grant to public elementary schools, whether voluntary or supported by rates, that they should, if required to do so by a competent authority, receive free of charge a fair proportion of children whose parents, not being paupers, are too poor to pay the school fees".(2)

Samuelson said that his aim was to encourage more children to attend school.

Lord Sandon, for the Government, said that Samuelson's proposal would involve a breach of contract with the voluntary schools which was contained in Clause 97 of the 1870 Elementary Education Act. It would place the voluntary schools at a great disadvantage compared with the board schools, as the latter could fall back upon the rates while the former could not, and in the event of a school being fully attended were they to turn out paying children in order to make room for the non-paying? And who was to determine the proportion of non-paying pupils a school should receive? He appreciated Samuelson's proposal but regretted he could not adopt it.(3)

Samuelson also intervened during the debates on the Elementary Education Bill of 1891. During the Committee Stage of the Bill, Samuelson supported a motion by W. Summers(4) that the Committee of Council be given the power to raise standards for partial and total

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(1) Loc. cit.

(2) Hansard CCXIX Cols. 1625, 15th June, 1874.

(3) Ibid. Col. 1635.

(4) Hansard CCCLIV Col. 1870. 30th June, 1891.

exemption in schools receiving grants. As Summers explained, compulsion was first partially introduced in 1870, was extended in 1876, and was fully and universally established in 1880. Under the 1880 Act it was the duty of each local authority to pass bye-laws which established compulsory attendance, and if they failed to do so the Education Department had the power to make the necessary bye-laws. Bye-laws had been passed for the attendance of children at school and these had fixed the standards for partial and total exemption from the obligation to attend school. Unfortunately, these standards varied enormously throughout the country, and Summers believed that it was time to bring them into line.

Samuelson spoke in support,(1) pointing out that the change had been recommended by the Cross Commission. In return for free education, parents should be prepared to keep their children at school until they reached a certain standard. Samuelson thought that half-timers should reach the third standard and full-timers, the fifth standard.

The motion was defeated by one hundred and eighty-six votes to one hundred and thirty-three.

He spoke again during the Bill's Third Reading. Sub-section 1 of Clause 4 of the Bill gave power to the Department, if they were satisfied "that sufficient and suitable public school accommodation without payment of fees had been provided" for a school district to approve a charge or an increase in fees at a particular school. The Lords had deleted the words "and suitable" and A.J. Mundella led the attack on the Lords' amendment, arguing that "suitable" meant "suitable to parents", and

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(1) Ibid. Col. 1885.

that the inclusion of the words protected parents against their children being sent to schools not of their choice. The religious issue, of course, loomed large with many Members on this point and they wished to establish beyond doubt that parents would not be compelled to send their children to schools which offended their religious susceptibilities.

Samuelson supported Mundella[1] and said that he hoped the words would be included but reminded the House that the aim of the Bill was to establish free education and this aim should be uppermost in their minds. As ever, Samuelson had an eye for the essentials and was impatient with sectarian disputes which threatened to retard educational progress.

To summarise Samuelson's Parliamentary interest in elementary education: he was concerned to see all children in attendance at elementary schools, he desired compulsory attendance, he wished schooling to be free, and he spoke in favour of raising the school-leaving age (he believed that ideally it should be raised to fourteen as it was in Switzerland and he supported every attempt in Parliament to get it extended). Samuelson was also concerned with the quality of the education provided by elementary schools, and during one debate he challenged the view put forward by Lord George Hamilton,[2] that the lowest grade children should have the least competent teachers. "On the contrary", retorted Samuelson, "they ought to have the best".[3] Samuelson's concern with the quality

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(1) Hansard CCLVI Cols.805-5. 3rd July, 1891.

(2) Hansard CCCXI Col.2024. 2nd August, 1880.

(3) Ibid Col. 2031.

of elementary education can be discerned in his Parliamentary interest in two other aspects of elementary education: teacher training and the Code.

On the 18th July, 1872 during a Supply Debate, Samuelson moved:

> "That it is desirable to reconsider the grants for public elementary education, so as to encourage the establishment of Undenominational Normal Schools.".(1)

In a fact-packed speech, Samuelson showed that the training of teachers was not keeping pace with the opening of new schools, and he asked that the school boards should be aided in establishing day schools for the training of teachers and that trainee teachers should be received earlier, at seventeen or eighteen instead of nineteen, and undergo a longer period of training. He believed that this "would secure a much better class of teacher".

When challenged by Kay-Shuttleworth on a question of fact concerning the Prussian educational system (2) Samuelson replied that he had paid a special visit to Prussia the previous autumn to acquaint himself with the position there and he was certain of his facts. This incident illustrates the thoroughness with which he prepared a case.

W.E. Forster promised to consider the points raised by Samuelson, but obviously the matter would require close consideration, and he appealed to Samuelson not to press his amendment to a division. The amendment was then withdrawn.

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(1) Hansard CCXII Col. 1430 19th July, 1872.

(2) Ibid. Col. 1434.

Samuelson returned to the subject on the 27th February, 1877, when he moved:

> "That a Select Committee be appointed to inquire into a system of apprenticeship of Pupil Teachers in Elementary Schools, and into the constitution of Training Colleges for Elementary Teachers."(1)

In another speech, again heavily laded with statistics and quotations from reports, Samuelson argued that despite the large sums being spent on elementary education in Britain the results were far from satisfactory, and he quoted statistics to illustrate the number of children who failed to achieve certain grades. Samuelson did not believe that the principal cause was irregularity of attendance, as often, stated, but could be attributed to deficiencies in the teaching staff - namely the pupil-teachers. "They were from thirteen to eighteen years of age, generally educated in the elementary schools, superior, but not much so, to other children, and not necessarily possessing any special vocation for teaching".(2) Samuelson thought it obvious that they were of very little value in their early years and he quoted from more than twenty reports of Government inspectors to illustrate the ignorance of many pupil teachers. Not only were they ignorant, but so overworked that they had few opportunities for improving their knowledge. Samuelson thought that this state of affairs merited an inquiry. Turning to the instruction of candidates in training colleges, Samuelson pointed out that despite the shortage of certificated teachers there was a shortage of training college places. He could not see why day training colleges should not be introduced into England, pointing out that they were already well-established in Scotland. Efforts should also be made to

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(1) Hansard CCXXII Col. 1139,27th February, 1877.

(2) Ibid. Col.1140

recruit graduates into elementary schools, and he could not see why local efforts should not be encouraged in the opening of new training colleges. Samuelson emphasised that he was not attacking the efforts of elementary and pupil teachers but the system in which they worked. He concluded that "elementary education would never be satisfactory until children were placed under the care of a greatly increased number of thoroughly qualified elementary school teachers".(1)

Lord Sandon, Vice-President of the Council, defended the pupil-teacher system from Samuelson's criticism(2) and claimed that there were inspectors' reports which could be quoted in support of it. He feared that if Samuelson's proposals were implemented the already over-worked pupil-teacher would be burdened even more by additional studies. The replacement of pupil-teachers by certificated teachers would also be extremely costly. The teaching profession was "already open to persons over the age of twenty-one, if they had only shown teaching capacity by working for six months as assistants in an elementary school." (3) Sandon concluded that the English educational system needed time to digest its recent reforms before any more were considered.

On the 10th July, 1877, Samuelson returned to the subject of training colleges and moved:

> "That the English Education Code, by requiring that all students of training colleges receiving Government aid must reside within such colleges, a condition not imposed by the Scotch Code, and by withholding from graduates of universities the encouragement offered by the Scotch Code to enter the profession of Elementary Teachers, tends to increase the cost of erection and maintenance of these colleges, and to diminish the number of qualified teachers".(4)

(1) Ibid Col.1143.

(2) Ibid. 1143.

(3) Ibid. Col.1147.

(4) Hansard CCXXV Col.1053. 10th July, 1877.

In his speech, Samuelson compared the English and Scottish systems of teacher training, and gave evidence to show that Scotland was meeting the demand for trained teachers much more successfully than England, and he urged the adoption in England of the day training college. He also supported the Scottish Code which made it easier for graduates to become elementary school teachers. Samuelson's motion was seconded by D. McLaren who confirmed the success of the Scottish system.(1)

Lord Sandon, on behalf of the Government, opposed the motion on the grounds that what worked in Scotland would not necessarily prove successful in England, and he thought the system of boarding in at a training college was "abstractedly the best" and necessary for the "moral training of young men and women".(2) Sandon also pointed out that the supply of teachers was being steadily increased and he thought the shortage on the way to being solved.

Samuelson's motion was carried by one hundred and twenty-one votes to seventy-eight.(3)

In a Supply Debate on the 6th June, 1890, Samuelson re-stated his desire to see the creation of day training colleges and for universities to develop their own teacher training courses.(4)

Samuelson's most important contribution to the development of teacher training in England was, undoubtedly, in regard to the introduction of day training colleges. The institution of day training

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(1) Ibid Col. 1055.

(2) Ibid Col. 1057.

(3) Ibid. Col. 1060.

(4) Hansard CCCXLV Col.190. 6th June, 1890.

colleges has been described as "one of the most important points in the history of teachers' training in England",[1] and few people did more than Samuelson to bring them into existence. The idea of day training colleges was not new. Witnesses before the Select Committee of 1834, had suggested the creation of such colleges before the residential college became the norm in England "and there was considerable support for the day training college in the 1870's as the solution of two outstanding difficulties in the field of teacher training at this time, namely, the need for undenominational colleges and the need for increased facilities for training".[2] Samuelson was among those on the Cross Commission who supported the establishment of day training colleges and, as shown above, he championed their cause in the House of Commons. Finally in 1890 the Education Department drew up regulations for the administration of grants to day training colleges linked to universities and university colleges. The number of day students who were Queen's Scholars was first of all limited to two hundred, but that limit was removed in the following year and within four years there were sixteen day training colleges in existence in England.

In June, 1859, Robert Lowe became Vice-President of the Council and one of his first acts was to arrange the minutes of the Education Department into a code of regulations. In April, 1860, the House of Commons directed that this document should be laid annually upon the table of the House for a month, during which time it was subject to

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(1) R.W. Rich The Training of Teachers in England and Wales during the Nineteenth Century (Cambridge 1933) p.227.

(2) Ibid. p.221.

(3) Ibid. p.226.

amendment. At the end of this time it had the force of statute law in the form it had assumed at the close of the month's probation.(1) In the following year Lowe decided to reduce expenditure in his Department by paying grants to schools in proportion to the attendance of individual pupils and the success of those pupils in an examination restricted to reading, writing and arithmetic. These alterations were embodied in a minute constituting a revision of the code of the previous year and the new document, the Revised Code, was published on the 29th July, 1861 at the close of the Parliamentary session.(2)

It has been said of the Revised Code that:

> "Its limited application impoverished the curriculum; and, since the teacher's reputation and very livelihood became dependent upon a high percentage of 'passes' in the three rudimentary studies, cram and even cruel concentration upon work done by the dullards, with a corresponding neglect of the more capable children, were commonly noted in schools under the New Code of 1862. The adverse critics of that Code were vindicated by the fact that for nearly thirty years thereafter, the English public elementary school was engaged in breaking the fetters or in mitigating the evils inherent in Lowe's work."(3)

Samuelson played his part inside Parliament in the process of liberalisation of the Code which went on for thirty years, until 1890 when payment by results was "abandoned as an administrative principle".(4)

On the 21st July, 1871, Sir John Lubbock moved that the New Code of Regulations issued by the Committee of Council should be revised "to give more encouragement to the teaching of history, geography and elementary social economy and the other so-called extra subjects in the

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(1) J.W. Adamson English Education 1789-1902 (Cambridge 1930) p.224.

(2) Ibid. p.226.

(3) Ibid. p.232.

(4) Loc. cit.

Elementary Schools of the Country."[1] The motion was seconded by A.J. Mundella and supported by Samuelson who believed that the narrowness of the elementary schools' curriculum could be traced to training schools "in which under the Revised Code everything except a small modicum of instruction has been discouraged".[2] Samuelson said that he wished Members could visit German and Swiss schools and see the excellent results possible under a liberal curriculum. He also wondered how many of the recently-appointed schools' inspectors had been selected with reference to their scientific knowledge.

Seven years later, he again supported Lubbock in an attempt to modify the Code, this time recommending the inclusion of natural science among its subjects.[3] In his speech Samuelson pointed out that although schools' inspectors did their work "thoroughly and well", their university training usually prevented them from having much knowledge of natural science and he urged that the appointment of competent inspectors was as important as the appointment of competent teachers.

In a speech made during a Supply Debate on the 2nd August, 1880, Samuelson again urged the Vice-President of the Council to keep the Code liberal arguing that "night schools of art and science now exist throughout the country, if pupils receive a sound elementary education in elementary schools they now have every opportunity of acquiring sound elementary instruction in science and art". [4]

Samuelson was also particularly keen to get drawing and

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(1) Hansard CCVII Col. 102. 21st July, 1871.

(2) Ibid Col. 131.

(3) Hansard CCXLI Col. 793 4th July, 1878.

(4) Hansard CCCXI Col. 2028. 2nd August, 1880.

craft subjects included in the Code. In a Supply Debate on the 6th June, 1890, he drew a distinction between trade training, of which he disapproved in schools, and "general instruction in the use of tools"[1] of which he did approve and which together with drawing he stated he would like to see included in the Code of subjects to be taught in elementary schools.

In addition to his participation in debates on elementary education, Samuelson was also active at Question Time in the House of Commons. He asked Parliamentary questions on the eligibility of schoolmasters to become inspectors, the number of pupil teachers employed in elementary education the conditions of admission to teacher training colleges, and over the years he asked several questions on the operation of the Code, the questions being designed to draw attention to anomalies or to find out why grants were not being paid to particular schools for the teaching of special subjects.

Samuelson showed less interest in secondary education than he did in elementary, and his only intervention in a debate on secondary education was during the reading of Forster's Endowed Schools Bill. In his speech Samuelson began by praising the unpaid efforts of the Endowed Schools Commission. He "rejoiced" that the headmasters of endowed schools would no longer be the monopoly of clergymen. His only disappointment with regard to the Bill was that it had no provision for the setting up of local boards. "No better influence can be exerted on the minds of parents than by giving them a share in the responsibilities of such schools."[2]

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(1) Hansard CCCXLV Cols. 187-191. 6th June, 1890.

(2) Hansard CXCIV Col.1401. 15th March, 1869.

He approved of the introduction of examinations into the schools but hoped that it would not lead to the establishment of special science schools for "they had not answered in France, Germany or Switzerland, or anywhere they had been tried".(1) Samuelson argued for a balanced curriculum combining literary and scientific subjects. He concluded by expressing regret that the Endowed Schools Bill had not been preceded by a Bill providing a national system of education because the difficulty of grading the schools was thereby increased, but, he warned, a scheme for elementary education would need to be drawn up in the near future.

As in the case of secondary education Samuelson's interventions in respect of higher education were relatively infrequent. However, in the debate on the University Tests Bill of 1871 Samuelson spoke in favour of "abolishing all religious distinctions whatever in reference to the degrees, honours and privileges of our Universities",(2) and he went some way to defining his own religious position when he reminded those who had labelled critics of the Anglican Church as "unbelievers" that "sincere and earnest belief might very well exist quite independently of belief in the theological dogmas of the Church of England" and that "the time had come to assert this principle".(3) Although nominally an Anglican, Samuelson obviously did not support its dogmas, for he disliked all dogmas on principle, mainly because they implied intolerance of other views and he freely attacked the narrow

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(1) Ibid. Col. 1402.

(2) Hansard CCIV Col. 507 20th February, 1871.

(3) Loc. cit.

sectarian views of some Anglicans. In his religion, therefore, Samuelson was a theist who found a satisfactory, if not ideal, spiritual home in the Church of England. Although he never referred to it, Samuelson's Jewish ancestry must have played its part in making him a staunch advocate of religious toleration.

Another of Samuelson's interventions in the field of university education was made during the Committee Stage of the University of Oxford and Cambridge Bill of 1877, when Samuelson seconded Lord Edmond Fitzmaurice's amendment that Dr. Hooker, President of the Royal Society, be added to the Cambridge Commission in order that biological science be represented on the Commission.(1) The amendment was defeated.

In a Supply Debate of the 20th March, 1890, during which it was being discussed the amounts to be awarded by the Charity Commissioners to four London polytechnics, Samuelson wondered if these institutions would prove successful. He admitted the success of the Regent Street Polytechnic under Quintin Hogg, but feared that the others might go the way of the moribund mechanics' institutes. He, therefore, favoured the setting up of a Select Committee to investigate the polytechnics to ascertain how far further spending on them was justified. Or, as an alternative course, that only one or two be supported as experiments until their worth had been proved.(2)

It is not surprising that Samuelson should take an interest in the work of the Royal Indian Engineering College at Coopers Hill, which

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(1) Hansard CCXXIII Col.1010 26th April, 1877.

(2) Hansard CCXLII Cols. 1281-82 20th March, 1890.

had been opened by the British Government in 1872 to train engineers for service in India,[1] and on the 22nd February, 1883, he asked a Parliamentary question pointing out that the college's constitution laid down that the Professor of Physics was required to be a Protestant and "to attend morning Chapel and Sunday Service with reasonable regularity".[2] J.K. Cross, Under Secretary of State for India, admitted this to be true, but said that he had taken steps to ensure that the appointment would not be subject "to any requirements in respect of religious tenets or observances".[3] Thus Samuelson was largely responsible for the removal of religious discrimination in an important educational appointment.

Most of Samuelson's Parliamentary efforts on behalf of scientific and technical education are covered in detail in other parts of the thesis, but there are a few not dealt with elsewhere which require attention here.

Samuelson took a keen interest in the schools of science sponsored by the Science and Art Department and he asked several Parliamentary questions on their progress. In a Supply Debate on the 19th July, 1869, he observed that the sum allocated to art education had "produced excellent results",[4] and this was widely recognised, but much less attention had been paid to the worth of the science courses. However, he was pleased to see that the amounts paid as grants to elementary science

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(1) J.G.P. Cameron A Short History of the Royal Indian Engineering College (Cooper's Hill 1960) p.60.

(2) Hansard CCLXXVI Col. 576 22nd February, 1883.

(3) Loc. cit.

(4) Hansard CXCVIII Col.158 19th July, 1869.

schools "intended for the industrial classes"[1] were doing excellent work but their development was being retarded by two things. First, the lack of basic literacy on the part of some who attended them; and second, the standard of science teaching was often poor. What was needed, in Samuelson's view, "was the institution of a Normal School for science teachers similar to that already in existence for art teachers".[2] He then went on to criticise the inadequate facilities of the Mining School in Jermyn Street, the College of Chemistry in Oxford Street, and the School of Naval Architecture at South Kensington; and suggested that all should be concentrated in new buildings at South Kensington. "The result would be great economy both in time and teaching power"[3] and he thought the Institution created by this merger would be the best place to train science teachers.

By 1887 Samuelson had become more critical of the science courses organised under the auspices of the Science and Art Department. He thought that the payments made by the department had become little more than a subsidy to elementary schoolmasters. They were never intended for that purpose and Samuelson did not think that the money was being used in the proper way.

> "Hitherto, in these discussions, the question has been whether the Science and Art Department should be altogether condemned, or whether it should receive unqualified praise. In my opinion, neither of these courses is the proper course. What we want to see is that we are getting money's worth for our money and I fear that, as far as the Science and Art Department are concerned, we are not getting the value of our money. I

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(1) Ibid. Col. 159.

(2) Loc. cit.

(3) Ibid. Col. 161.

should be glad, indeed, if we were: and I think that the administration of the Department requires investigation, so that we may ascertain whether the system of payments by results is altogether satisfactory, and whether it really secures the purpose for which the Department was originally founded - namely, the promotion of the industry of the country. I believe that this is not the case at the present moment, and I maintain that it is a subject which ought to be more fully considered (1)

Samuelson's interest in the organisation of the Science and Art Department went back at least to the 28th April, 1874, when he asked the Minister whether he intended any reorganisation of the Science and Art Department following the resignation of Henry Cole.

Samuelson rarely missed an opportunity in Parliament of pressing the cause of scientific and technical subjects, and this is well illustrated by his intervention in a Supply Debate on the Naval Estimates held on the 19th May, 1873 when he used the occasion to urge that more scientific instruction should be given to naval trainees at Greenwich College to enable them "to control the reports of their engineers".(2)

Samuelson also took an interest in the work of the South Kensington Museum. He asked a question on the arrangement of the natural history collection at the museum,(3) served on the Departmental Committee set up to consider the accommodation necessary for a new Museum of Applied Science, and spoke in favour of the purchase of land for this purpose.(4)

It is well known that it was upon the suggestion of Arthur Acland that "whisky money" came to be used to assist technical education. In his memoirs Sir Peter Chalmers Mitchell records that Samuelson had told him that he (Samuelson) "inspired" the move,(5) and it would be interesting if further evidence became available which would confirm that Samuelson was responsible for initiating the proposal.

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(1) Hansard CCCXI Cols.1425-26 7th March, 1887.

(2) Hansard CCXVI Col.127 19th May, 1873.

(3) Hansard CC Col.1363 7th March, 1870.

(4) Hansard CCCXLI Cols. 1187-88 25th February, 1890.

(5) Mitchell op. cit. p.88.

CHAPTER V

EDUCATION AND ORGANISATION

Samuelson was very much an "organisation man", and a large part of his work on behalf of education was done as a member of some commission, committee or society. He was not a particularly good public speaker and was by nature reserved, and this, perhaps, helps to explain why he was often at his most effective as a member of a small group. In these respects he can be compared with Sidney Webb, of whom it was said "he was not a great orator" but "an ideal committee man" with a mind of "extraordinary quickness and subtlety ..... when applied to administration or the day to day politics of bills, clauses and committees". Like Webb, Samuelson was also "a somewhat reserved and remote person" whose "personal modesty was remarkable, as was his zest for information".(1)

Samuelson certainly recognised his limitations as well as his strengths, and this can be illustrated by a quotation from a speech he made in reply to a motion of congratulation passed upon his election to the Presidency of the Iron and Steel Institute when he said -

> "although I cannot agree with the general estimate which you have so kindly formed as to my qualifications to occupy this chair, there is one which I can claim, and that is being an ordinarily efficient man of business, and in that spirit I shall endeavour to be very brief in my remarks, because I believe the Institute would be better occupied in discussing the interesting papers to be brought before it than listening to anything which I might have to say".(2)

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(1) Margaret Cole (ed.) The Webbs and their Work (London 1949) pp.23, 206, 217 and 259.

(2) Journal of the Iron and Steel Institute 1883 p.28.

The quotation also brings out another of Samuelson's qualities, already mentioned in connection with his Parliamentary work, and this is that he never said more than was necessary to make his point.

Without doubt his most important committee work was done as Chairman of the Royal Commission on Technical Instruction (1881-84) and the Select Committee on Scientific Instruction (1868), and as a member of the Devonshire and Cross commissions. His contributions to the work of these bodies is considered elsewhere, but he was a member of several other organisations and the part he played in their work, with particular reference to education, needs to be examined. These organisations consisted of professional societies, trade associations and organisations directly concerned with the promotion of educational aims.

During a period when state support for technical education was negligible, the professional societies of the nineteenth century played an important part in helping to fill the gap in the country's system of technical education. The societies made great efforts to improve the professional standards of their members, they helped to bring together scientists and technologists in specialised groups where they could discuss mattersof common interest; and the societies' meetings and journals were responsible for the dissemination of much valuable information. Bernhard Samuelson played his part in these developments. He was a founder-member of the Iron and Steel Institute and the Association of Agricultural Engineers, and was an active member of the longer-established Institutions of Civil and Mechanical Engineers.

The formation of the Iron and Steel Institute in 1869 was largely the outcome of the British iron and steel industry's poor

showing at the Paris Exhibition of 1867. At the earlier exhibitions of 1851 and 1862 Britain had stood supreme in the making of iron and steel. But in 1867, according to contemporary observers, British firms contented themselves with sending "pieces of rusty iron" for display alongside the finest products of Germany, France and the U.S.A.(1) There was considerable criticism of the industry in the press and one result was the setting up of the Select Committee on Scientific Instruction under the chairmanship of Bernhard Samuelson, the other was the formation of the Iron and Steel Institute. For although the backwardness of the British iron and steel industry was probably exaggerated in these reports, as Sir Lowthian Bell pointed out at the time, there was clearly a need for some national organisation which would be responsible for the dissemination of new ideas and methods within the industry.

On the 29th September, 1868, John Jones, read a paper to the North of England Ironmasters' Association, of which he was secretary, on "The Position of the Iron Trade in Relation to Technical Education".(2) In his paper Jones pointed out that much was being written on the iron trades but these articles were scattered through the journals of various societies. He went on to argue that there was a strong case for establishing a specialised society, which could meet to discuss developments and listen to papers. Lowthian Bell supported Jones' idea and formally proposed that a provisional committee be set up which would be responsible for initiating such an organisation. Although Samuelson was not at this

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(1) Carr and Taplin op. cit. p.45.

(2) Newcastle Daily Chronicle 30th September, 1868.

meeting his name was put forward by Lowthian Bell to sit on the provisional committee and he was duly elected. The committee contacted all people likely to be interested in the formation of such a society and by the beginning of 1869 potential membership was sufficient to justify the establishment of an Iron and Steel Institute. At a general meeting of the provisional members, held in London in February, 1869, the Institute was regularly constituted and the Duke of Devonshire was elected President for a two year period. The inaugural meeting followed in June when the objects of the Institute were set out as being:-

> "To afford a means of communication between members of the iron and steel trades upon matters bearing upon the respective manufactures, excluding all questions concerned with wages and trade regulations. To arrange periodical meetings for the purpose of discussing practical and scientific subjects bearing upon the manufacture and working of iron and steel." (1)

One of the founders of the Institute in 1869, Samuelson was among its most active members. He frequently took part in discussions at Institute meetings and read papers on the Terni Steelworks in Italy(2) and on the construction and cost of blast-furnaces in Cleveland.(3) He served on the Institute's Council from 1875-76, as Vice-President from 1877-82 and was elected President in 1883, following a line of distinguished presidents which included the Duke of Devonshire, Sir Henry Bessemer, Sir Lowthian Bell, William Menelaus and Sir William Siemens. In his presidential speech(4) he drew attention to how the

(1) Journal of the Iron and Steel Institute 1870 p.30.

(2) Ibid 1887 p.31.

(3) Ibid 1887 p.91.

(4) Ibid 1884 pp.8-27.

Institute's membership had grown from the original two hundred and fifty to one thousand two hundred and fifty members and emphasised the cosmopolitan nature of the organisation, pointing out that of the two hundred and fifty papers read before the Institute, fifty of these had been presented by foreign members. He dwelt on the increase in the world's production of pig iron and went on to discuss fuel economies achieved in various parts of the world. He thought the industry's prosperity would continue, particularly if good labour relations could be maintained.

Samuelson concluded his speech with a reference to technical education:

> "Lastly, I regard as one of the most hopeful signs of the future the increased estimate of the value of science entertained by our practical men. In this respect we may claim with pride that the Iron and Steel Institute has been the pioneer, at any rate, so far as this country is concerned. But the conviction that the elements of science should be placed within the reach of those who occupy a humbler position in the industrial hierarchy than we do who are assembled here, is rapidly spreading amongst us. The iron manufacturers of Westphalia have been the first to found an institution in which the intelligent and ambitious ironworker can qualify himself by study for a higher position, and I hope when this Institute visits Middlesbrough in the autumn some progress will have been made in that locality towards the establishment of a similar school. Other districts will doubtless follow, and the result will be to quote the words of Sir William Siemens on a late occasion 'that by the dissemination of science a high spirit will take possession of our artisans, that they will work with the object of attaining higher results, instead of only discussing wages!"

The Iron and Steel Institute's contribution to technical education was considerable. According to Carr and Taplin [1] "amongst ironmasters and their managers the educational work of the Iron and Steel

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(1) Carr and Taplin op. cit. p.49.

Institute, though inevitably gradual, brought about a remarkable and cumulative transformation of outlook". This was confirmed by Sir William Siemens in his evidence before the Royal Commission on Technical Instruction in 1884 when he said: "a taste for science has been awakened among employers. Twenty years ago I certainly found the greatest possible difficulty in getting ironmasters to look at a new idea, but since that time the Iron and Steel Institute has been founded, and men who formerly ridiculed the idea of chemical analysis now speak of fractional percentages of phosphorous and sulphur with great respect".(1)

After serving two years as President of the Institute from 1883-85, Samuelson enjoyed the status of Past-President and as such as ex officio a member of the Institute's Council and committees, and he continued to play an active part in the work of the Institute to the end of his life.

At the annual general meeting of the Iron and Steel Institute held on the 11th May, 1905 - the day following the announcement of Samuelson's death - the President, Andrew Carnegie, moved the following motion which was unanimously adopted by the meeting:

> "The Council have received with the deepest regret the intimation of the death of their esteemed colleague the Rt.Hon. Sir Bernhard Samuelson, Bart., P.C., F.R.S., Past-President, and one of the founders of the Institute, and they desire to convey to Lady Samuelson and his family an expression of sincere sympathy in their bereavement. The Council feel that it would be difficult to over-rate the services that Sir Bernhard Samuelson rendered to the Iron and Steel Institute in the promotion of the objects for which it was formed, and they will ever remember with gratitude his readiness to devote his time and energies to the advancement of these objects."(2)

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(1) Royal Commission on Technical Instruction. Second Report Vol.III.p.141.

(2) Journal of the Iron and Steel Institute 1905 p.1.

Samuelson was also a founder-member of the Agricultural Engineers' Association and was its first President from 1874-77, and its Vice-President in 1879. In his capacity as President he led a deputation to the foreign office to secure a reduction in the French on agricultural machinery,(1) and served on committees examining the reform of the Patent Laws.

The Institution of Mechanical Engineers was founded in 1846 after George Stephenson had been refused admission to the Institution of Civil Engineers (founded in 1818). Angered by this slight to their profession a group of mechanical engineers took the initiative in forming a new society specifically for mechanical engineers.(2) Samuelson became a member of the Institution in 1865(3) and served on the Institution's Council 1883-84.(4) Although a regular attender at the Institution's meetings, Samuelson's contributions to discussions were confined almost entirely to putting forward specialised knowledge on aspects of the iron and steel industry, and in August, 1893, he acted as host to members of the Institution when they inspected his Newport Ironworks.(5)

Samuelson was admitted to membership of the Institution of Civil Engineers in 1869 and read two important papers to the Institution's members. In May, 1871, he delivered a paper "Description of Two Blast Furnaces erected in 1870 at the Newport Ironworks, Middlesbrough" which won him the award of the Institution's Telford Medal.(6) The

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(1) The Engineer 26th January, 1877.

(2) R.H. Parsons, History of the Institution of Mechanical Engineers (London 1947) p.10.

(3) Proceedings of the Institution of Mechanical Engineers 1865 p.XXI.
(4) Ibid 1883.p.53
(5) Ibid.1893.p.332.
(6) Proceedings of the Institution of Civil Engineers 1871 p.329.

second paper was delivered in 1887 on the subject of the Terni Steelworks in Italy which Samuelson had visited some months previously.(1)

Samuelson was a member of several trade associations, including the British Iron Trades' Assocation, the North of England Ironmasters' Association, and the Association of Chambers of Commerce. These trade associations had commerical rather than educational aims, yet educational topics were sometimes discussed and this was particularly true of the Association of Chambers of Commerce.

The first British Chamber of Commerce was formed in 1768 but it was not until 1860 that the various Chambers of commerce scattered throughout the United Kingdom were brought together to form the Association of British Chambers of Commerce.(2) Samuelson was a founder-member of the Association and was elected its President in 1886. In the same year he published the result of an investigation he had carried out for the Association on the question of railway freight rates,(3) and he played a leading part in the formulation of Association policy in regard to the Patent Laws. Education for commerce and industry was a subject which constantly engaged the attention of the Association after Britain's poor showing at the Paris Exhibition of 1867, and Samuelson played a leading part in these discussions. Most of the Association's 1886 conference was devoted to a lengthy debate on "the best means of educating our young men intended for a commercial career so as to fit them for

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(1) Ibid. 1887. p.31.

(2) A.R. Ilersic, Parliament of Commerce (London 1960) p.7.

(3) Economist 9th January, 1886.

competition with those of the Continent, and what legislative and other measures are required to provide such education",[1] and Samuelson carried a resolution urging the creation of a national system of secondary schools supported by local rates.

The 1887 conference was presided over by Samuelson and in his Presidential address[2] he began by expressing pleasure at the trade revival. He claimed he did not want to intervene in Fair Trade-Free Trade controversy but he warned against a British increase in tariffs which might make her position more difficult in neutral markets. Turning to the question of technical education, Samuelson said that great attention should be given to this subject by all those engaged in manufacture. He had recently visited the Bradford Technical School and was pleased to find a well-equipped weaving school which was receiving students from the Continent instead of our sending students to the Continent as we had previously done. This was an example which ought to be more widely followed. Samuelson also drew attention to the newly-formed National Association for the Promotion of Technical Education and felt it deserved the support of all traders and manufacturers. He thought that the promotion of commercial education was also a necessity, especially the teaching of foreign languages.

At the same conference a resolution was passed giving the Association's support to any legislation which would help to establish and maintain secondary, commercial, technical and agricultural

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(1) Ilersic op. cit. p.134.

(2) Newcastle Daily Chronicle 28th September, 1887.

schools and colleges. When during the debate one speaker, Mr. Brittan of Sheffield, urged that technical education should be for those of exceptional ability and not for "the masses", Samuelson intervened from the chair to suggest that "the brilliant lads will not be discovered unless they are taught primary technical education".(1) This point was often emphasised by Samuelson, for he believed that a successful system of technical education could only be built upon the foundations of a good system of elementary education, which would include technical instruction.

Samuelson was a member of three organisations with educational aims: the Society of Arts, the British Association for the Advancement of Science, and the National Association for the Promotion of Technical and Secondary Education.

He was elected a member of the Society of Arts in 1856 and was active in its ranks for the next forty-four years. (2) The Society of Arts was founded in 1754 "for the encouragement of arts, manufactures and commerce in Great Britain" (3) and it has been said that -

> "there are few, if any, organisations(4) in this country whose record of services freely given to social progress can rival that of this admirable Society. Agriculture, industry, applied art, education and pure and applied science have all benefited, and the rooms of the Society of Arts served as an incubator and clearing house for many of the most constructive ideas for the development of science, technology and social reform in the nineteenth century".

Samuelson contributed to its discussions and sometimes took the chair at its meetings. He made a particularly important speech at the Society's

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(1) Ibid

(2) Membership list of the Society of Arts.

(3) Derek Hudson and K.W. Luckhurst, The Royal Society of Arts 1754-1954 (London 1954) p.4.

(4) Cardwell op. cit. p.58.

Conference on Technical Education held in January, 1868.[1]

In his address Samuelson held that it was wrong to deprecate Britain's industrial achievements "but many of our successes have been achieved at unnecessary cost, and that we have arrived at many of our conclusions by a system of trial and error at which we might have arrived by a more direct means if we had been better instructed". He was glad that Britain's universities were devoting more attention to the teaching of science, praised the work of Owen's College, and urged the Government to endow a chair of engineering at the college quoting the precedent set by the endowment of such a chair at Edinburgh University. But perhaps the most interesting and far-sighted part of his speech was that which recommended the introduction of what are now known as "block release" or "sandwich" courses. "Evening classes are all very well, but it is not to be expected that a man who has been working underground for six or eight hours in a day, should come up, change his clothes, and work afresh at severe intellectual labour, in order to acquire the education which is necessary to constitute a good mining foreman. In Westphalia the ablest are given full-time schooling in science and technical subjects". Samuelson's final point was that Government action, important though it was, should not deter "the localities" from initiating schemes of their own, and Samuelson was of the opinion that Government grants should be largely used to supplement local efforts in promoting technical education.

The Conference elected a standing committee to prepare a report for the Society on the subject of technical education, and

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(1) Journal of the Society of Arts Volume 16 pp. 189-191.

Samuelson was among its distinguished members which included the Archbishop of York, Edwin Chadwick, T.H. Huxley, Fleeming Jenkin and Thorold Rogers. The Committee presented its report in July, 1868. The report did not favour the creation of polytechnics on the German pattern but preferred the foundation of colleges on the lines of Owen's College, supported by Government grants. The colleges should institute their own examinations and the Government and employers could help by accepting the awards of the new colleges as the basis for the recruitment and promotion of their staff. The secondary schools should introduce more science into their syllabuses, and it was imperative that the basic education of the country's workers and artisans should be improved. It is not possible to say what part Samuelson played in the deliberations of this committee but the report's recommendations were very much in line with his known views on these questions.

The British Association for the Advancement of Science was founded in 1831 "to encourage scientific education and to remove obstacles to the dissemination of scientific knowledge", and although Samuelson did not become a subscribing member of the Association until 1894[1] he was taking part in its activities as early as 1853 when he read a paper to the Association's annual meeting on "Recent improvements in machines for tilling land".[2] Membership of the Association was not compulsory for those who wished to attend its annual meetings and

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(1) Membership lists of the British Association.

(2) Annual Report of the British Association for 1853 pp.121-125.

Samuelson availed himself of the opportunity on a number of occasions. During his visit to Liverpool in September, 1870, to attend the annual meeting of the British Association, Samuelson toured the city's slums with T.H. Huxley.(1) It was on this visit to Liverpool that Huxley made one of his celebrated attacks upon religion, comparing its achievements unfavourably with those of commerce. The speech resulted in a number of attacks on Huxley by irate clergymen and Samuelson wrote to Huxley(2) expressing his anger at their criticism. This is an interesting incident because it shows that although Samuelson was a member of the established church he was angered by those Anglicans who were intolerant of other views. Samuelson hated intolerance in any shape or form.

The formation of the National Association for the Promotion of Technical Education grew out of a private meeting held at the Birmingham home of George Dixon, M.P., which was attended by Henry Roscoe and A.H.D. Acland, both, at that time, Members of Parliament. In the Spring of 1887 they called a preliminary meeting in one of the Committee Rooms of the House of Commons. This meeting was attended by Members of both Houses, including Samuelson, and, among others, by T,H. Huxley. It was then decided to form an association and the inaugural meeting was held on the 1st July, 1887, at which officers were elected and the objects of the Association defined.(3)

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(1) Life and Letters of T.H. Huxley (edited by Leonard Huxley) (London 1900) pp.334 - 5.

(2) Ibid. p.336.

(3) First Report of the N.A.P.T.E. July, 1888 p.3.

The Association did not lose any time in commencing its work. Meetings and conferences, for the purposes of establishing branches and of generally promoting the aims of the Association, were held throughout the country, and large numbers of circulars were distributed to interested individuals and organisations. Professor Armytage has written that Samuelson and Huxley were the "moving spirits" of the N.A.P.T.E.[1] and Samuelson certainly played his part in the work of the Association. He spoke at meetings throughout the country, served as Vice-President throughout the life of the Association, and was among the most generous of those who contributed to its funds, making a total contribution of £60.[2]

One of the recommendations of the Royal Commission on Technical Education had been that steps should be taken to accelerate the application of ancient endowments under amended schemes to secondary and technical education. Following this recommendation the Charity Commissioners did begin to insert provision for technical and scientific instruction in many of their schemes for secondary schools, and under the City Parochial Charities Act of 1883 they had appropriated certain funds of the City of London Parochial Charities and drawn up a scheme on how to use some of this money for the purposes of technical education. This matter interested Samuelson, and in February, 1890 he led a deputation from the N.A.P.T.E. to the Vice-President of the Committee of Council to seek information on the progress being made in the use of the money.[3]

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(1) Armytage Civic Universities, p.234.

(2) Subscription lists in the Annual Reports of the N.A.P.T.E.

(3) Third Annual Report of the N.A.P.T.S.E. p.38.

While considering Samuelson's membership of various organisations there was one organisation the membership of which he took particular pride, and this was his election to Fellow of the Royal Society which took place on the 2nd June, 1881 [1] in recognition of his contribution to the development of what was termed "practical science".

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(1) Record of the Royal Society (Fourth Edition London 1940) p.488.

CHAPTER VI

SAMUELSON AND THE SELECT COMMITTEE ON SCIENTIFIC INSTRUCTION OF 1868

The Samuelson Committee on Scientific Instruction was set up against a background of economic depression and business uncertainty. In May, 1866, the great financial house of Overend Gurney crashed, causing panic on the London Stock Exchange and a sharp fall in business confidence. For three months bank rate stood at ten per cent and there was widespread unemployment throughout the country. Winter brought no relief, for the harvest had been ruined by heavy rains and meat prices were high as a result of a rindpest epidemic.(1) These events were still fresh in people's minds when news came of Britain's poor showing at the 1867 Paris Exhibition.

The Exhibition opened in Paris on the 1st April and Lord Granville, the owner of a large ironworks, made a widely reported speech in May in which he argued that the lesson of both the Exhibition and the recent Prussian victory over Austria was the need for educational reform in England.(2) Among the British jurors at the Exhibition was Lyon Playfair, who on his return, sent a letter to Lord Taunton of the

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(1) Asa Briggs, The Age of Improvement (London 1959) p.504

(2) The Times 29th May, 1867.

Schools Inquiry Commission. In his letter he pointed out that of the ninety classes of exhibits Britain had been judged foremost in scarcely a dozen, and that most foreigners believed that we had made little progress since 1862. This was due, Playfair maintained, to deficiencies in our educational system and labour unrest in our industries. The Schools Inquiry Commission responded by circularising all British jurors at the Paris Exhibition, asking for their opinions, and without exception they agreed with Playfair.(1) Lord Stanley, Foreign Secretary, followed this up by circularising British representatives abroad for information on technical education in foreign countries,(2) and when there was delay in publishing this information it was Samuelson who speeded up its publication by asking in the House of Commons the reason for delay.(3) In November, 1867, the Association of Chambers of Commerce met to discuss the need for more technical education and sent a deputation to the Vice-President of the Council urging that action be taken on the matter.(4) The Vice-President responded by sending a questionnaire to the various chambers of commerce whose trade was being affected by foreign competition. The replies showed that many businessmen were concerned at this adverse trend, and the Chairman of the Association of Chambers of Commerce attributed it to "our deficiencies in artistic and scientific instruction".(5) In December, Mr. Gladstone, when opening a new mechanics' institute at

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(1) Cardwell op. cit. p.85.

(2) Hansard XXXVIII Col.1723 19th July, 1867.

(3) Ibid. CXC. Cols. 1812-13 17th March, 1868 and CXII Col.1560 15th June, 1868.

(4) The Times 7th January, 1868.

(5) Copies of letters from Chambers of Commerce to queries of the Vice-President of the Council as to Technical Education Parliamentary Papers 1867-68 Vol.54 p.37.

Oldham, also referred to the importance of technical education,[1] and in the following month the Society of Arts organised a special conference on technical education.

Samuelson played an important part in this upsurge of interest in technical education. As we have seen he was active in securing the publication of the foreign office reports on technical education and he made an important speech at the Society of Arts special conference on technical education held in January, 1868.[2] However, these were not the only contributions he made to the technical education movement of the period. In the Spring of 1867 Samuelson toured the Continent investigating the industrial progress and educational systems of France, Germany, Switzerland and Belgium. Upon his return to Britain he prepared a memorandum on the findings of his European tour and forwarded it to the Vice-President of the Committee of Council for Education in the form of a fifty-six page letter. The Vice-President of the Council, Lord Robert Montagu, was so impressed with its contents that he ordered it to be printed as a Parliamentary paper and this was done in November, 1867.

Two points need to be brought out concerning Samuelson's

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(1) The Times 19th December, 1867.

(2) See p. 102.

(3) Letter from B. Samuelson, Esq., M.P., to the Vice-President of the Committee of Council on Education concerning Technical Education in various countries abroad. Ordered by the House of Commons to be printed 26th November, 1867. Parliamentary Papers 1867-68 Vol.54 pp. 67-126. Hereafter referred to as Samuelson Letter.

letter. First, that its significance is sometimes overlooked by historians[1], yet Samuelson's contemporaries regarded it as a document of some importance. According to Mundella:

> "Samuelson was the very first of our manufacturers to appeal to the Government of the day for a commission to inquire into technical education. His letter besides being a monument of lucidity, took the high ground of national necessity for its standpoint. The letter was the first of its kind ever penned. It made a profound impression on public bodies and from that moment technical education became a plank in the Liberal platform."[2]

Samuelson's obituary-writer also claimed that the letter "remained for a long time the source of information on a subject upon which his fellow countrymen knew very little".[3] The fact that the letter was published as a Blue Book indicates that it was officially recognised as a document which deserved to be widely read.

The second point about the letter is that most historians trace the public interest in the condition of technical education in Britain to the country's poor showing at the Paris Exhibition of 1867. Yet Samuelson's survey of European education was begun before the Paris Exhibition, not after it, although his letter was not published until November, 1867. Lord Granville and Lyon Playfair are, rightly, given the credit for sparking off the furore concerning the poor state of British technical education which followed the Paris

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(1) E.g. It is not mentioned in Professor Armytage's "Some sources for the history of technical education in England", British Journal of Educational Studies Volumes V and VI 1956-57.

(2) Potts, Sir Bernhard Samuelson, Bart. Ironmaster and Educationalist p.40.

(3) Ibid. p.30.

Exhibition, yet Samuelson in his characteristically thorough and self-effacing way had already completed his survey before Granville made his speech in May and before Playfair addressed his famous letter to the Schools Inquiry Commission. Samuelson's concern, therefore, anticipated the Paris Exhibition of 1867. Lyon Playfair made an immense contribution to the development of technical education in this country, but to claim, as Sir Eric Ashby has done, that it was Playfair's letter "which goaded Parliament to inquire seriously into the need for some state support for technological education"[1] is an over-simplification. It is an interpretation which does less than justice to the part played by Berhard Samuelson in the events which led to the setting up of the Select Committee on Scientific Instruction in March, 1867. It is, therefore, necessary to examine Samuelson's contribution in some detail.

Before undertaking his Continental survey, Samuelson carried out a tour of the industrial centres of Yorkshire, Lancashire and Nottingham, so that he was in a position to compare English and Continental industrial progress.[2] He was, of course, already familiar with industrial development in North Eastern England and Oxfordshire.

Samuelson found that many orders were being lost to Continental firms, and he thought the main reason for this was the prevalence of strikes and restrictive practices. Orders once lost were rarely regained. He was pleasantly surprised at the success of the

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(1) Sir Eric Ashby, Technology and the Academics (London 1958) p.57.

(2) Samuelson Letter p.69. et seq.

co-operative spinning mills of Lancashire whose products were more than holding their own in world markets. Samuelson was also full of praise for the new workers' cottages under construction at Manchester and Oldham. However, he thought that the Yorkshire woollen industry was too conservative and he quoted cases in which Yorkshire firms had had to recruit skilled labour from France because they had no workers of their own capable of doing the work, and Samuelson attributed this to deficiencies in the industry's system of training. At Nottingham, Samuelson found the local lace industry also facing severe foreign competition, although the lace-curtain manufacturers were standing up to it very well, their success being largely due, in Samuelson's opinion, to the industry's designers who received excellent training at the local school of art.

After his survey of home industry, Samuelson felt ready to carry out a similar study of some of the major industrial centres of Western Europe. He commenced his tour by visiting the lace-works at St. Pierre, near Calais, and some of the larger lace-works in and around Paris. The Paris Exhibition was then in progress and Samuelson contacted a number of Continental industrialists attending the Exhibition and arranged visits to their works. He then toured Schneider's iron-works at Creuzot, the schools and factories of Lyons, several iron-works and ribbon factories at St. Etienne, the factories and technical colleges of Mulhouse, the Ecole d'Horlogerie and other schools of Geneva, the factories and schools of Winterhur, the Polytechnic and schools of Stuttgart, the Esslingen locomotive works, the Krupp and Bochum steelworks in Westphalia, the Cretfeld trade school, the cotton factories of Gladbach, and the woollen mills of Verviers. He then returned to France where he visited

a number of primary schools.

In France, Samuelson recorded, primary or elementary education might be either private or public. If private, instruction could be given by any person giving satisfactory proof of his capacity. Every commune, however, was compelled to provide one or more public primary schools. The teachers of these schools were appointed by the prefect of the department, the cost of the school being borne by the commune supplemented, where necessary, by grants from the department. Every commune with a population of more than five hundred had to provide separate schools for boys and girls. School fees varied from commune to commune but the poor were taught free. Samuelson pointed out that he had made a close study of primary education "because on its thoroughness, or the reverse, the possibility of imparting secondary (technical) instruction must entirely depend".

Samuelson went on to describe the public and private special schools which existed in France to prepare pupils for the higher technical institutions. There were also a number of technical schools founded and run by Government Ministries and chambers of commerce and industry, the most famous of these being the Ecole Polytechnique under the control of the Minister for War and the Brest Genie Maritime under the Minister of Marine. He also visited a number of French trade schools.

Samuelson was full of praise for the educational systems of Germany and Switzerland. In both these countries, Samuelson recorded, elementary education was universal and, except at Geneva, attendance was compulsory. Throughout Switzerland and in nearly every German State the

cost of primary education was borne by the commune. "Nowhere else is the art of developing and informing the minds of young children understood and practised in such perfection as in Germany" wrote Samuelson, and he thought German teachers to be "among the most competent that I had met with anywhere". Samuelson was less impressed by the German trade schools which he described as carrying on a "languid existence", although he thought the mining schools were doing good work.

His survey of Belgian industry and education he admitted, to be less thorough than that of the other countries he visited. He found evidence of a large amount of illiteracy in Belgium, and also signs that the problem was being tackled energetically.

Samuelson concluded "that the rapid progress of many trades abroad has been greatly facilitated by the superior technical knowledge of the directors of works everywhere, and by the comparatively advanced elementary instruction of the workers in some departments of industry, can admit of little doubt".

Samuelson had three recommendations to make with reference to the British educational system. The first concerned elementary education, the second technical education, and the third referred to the administration of education.

First, Samuelson thought that no child under the age of twelve should be allowed to work until it could read or write. It should be the duty of every parish to see that educational facilities were provided for its children. Elementary schools should be encouraged by special grants to provide advanced classes for pupils who had shown

"remarkable ability".

On the subject of technical education, Samuelson urged a revision of the Science Minutes "to secure the abolition to working class pupils of the capitation grants to science teachers", and that the teaching of the more difficult science subjects should receive higher remuneration. The Government should supplement local efforts to establish or improve science schools and Owen's College should be the first to receive state assistance.

Samuelson's final recommendation was simply: "Consolidate your Department of Education". This suggestion could be interpreted in several ways and is not very meaningful in itself. Samuelson's views on the need for the rationalisation of the work of the Department of Education were to be outlined in more detail during the hearings of the Devonshire Commission.(1)

On the 24th March, 1868, Samuelson moved the appointment of a Select Committee "to inquire into the provisions for giving instruction in theoretical and applied Science to the Industrial Classes".(2) Samuelson's speech in support of the motion was the longest he ever made in the House of Commons. He began by saying that he had been careful to avoid the use of the term "technical education" in his motion because technical education was of two kinds: "that of the school and that of the factory", and he believed the instruction given in British workshops was, if anything, superior to that of other countries. It was scientific instruction given in educational institutions which

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(1) See Chapter VII

(2) Hansard CXCI Col. 160. 24th March, 1868.

Samuelson considered defective and in need of examination, and it was in this same field that our Continental competitors were particularly advanced. Samuelson gave the Ecoles des arts et des metiers, the Ecole centrale and the German polytechnics as the outstanding examples of the advanced state of technical education on the Continent. Samuelson was pleased that scientific instruction was being expanded in Britain's universities. However, the nearest we had to the Continental institutions mentioned above were the School of Mines, the School of Chemistry and the School of Naval Architecture, but these were specialist institutions unlike the Continental polytechnics which embraced a wide range of scientific and technical subjects. The nearest thing to a polytechnic in the United Kingdom was the Dublin College of Science, but it was too early, as yet, to judge its success.

Turning to secondary education, Samuelson admitted that "some attempt was made to instruct the middle classes in the applied sciences" (1), but as the Schools Inquiry Commission had shown most schools were poorly equipped for science teaching and the subject was badly taught. Nor had the attempts to teach science to the working classes been very successful. It was true that numbers were increasing, but these figures were inflated by the inclusion of science teaching in elementary schools where the level of teaching was very low. Samuelson emphasised the need for a greater number of qualified science teachers.

Samuelson believed that the Science and Art Department should take some of the blame for the existing state of affairs. It had

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(1) Ibid. Co.161.

developed art classes with some success but had been much less successful in the promotion of science classes. Nevertheless he was delighted to see the successful introduction of drawing lessons in_to the elementary schools.

The problem was that Government aid went solely to the working classes. The solution, in Samuelson's view, was for the Government to appoint a number of new professors who would divide their time between teaching science to managers and workers. Samuelson concluded that his emphasis upon scientific instruction did not mean that he undervalued other branches of education. On the contrary, he believed that managers and workers having received some scientific instruction which they could relate directly to their work would proceed to improve their education in other subjects. "I believe that the encouragement of technical instruction in this country will not merely promote arts and manufactures but will tend to the advancement of the general education of the people".(1)

Samuelson's motion was seconded by George Dixon who warned that Britain was losing her industrial lead and could no longer afford to neglect technical education. E. Baines, C. Bagnall, E. Potter, H.A. Bruce and T.D. Acland spoke in support. T. Bazley spoke against because he believed that self-education had its merits. "I have every confidence in the resources of the country and hope they will be left unshackled by the Government, for any kind of patronage would rather retard than develop their resources".(2)

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(1) Ibid, Col.165.

(2) Ibid. Col.198.

Lord Robert Montagu, Vice-President of the Committee of Council, said that he agreed with Samuelson on many points and favoured the setting up of a Select Committee. He admitted that "competition was in a great measure the cause of the present cry for technical education",(1) but some of that competition he attributed to the spread of railways and the consequent lowering of transport costs which had greatly benefited Continental manufacturers. Nevertheless, evidence was accumulating which showed that Britain was facing competition in a number of trades. The Vice-President said that he favoured the provision of education for the working classes but doubted whether the State should intervene in the matter of providing technical education for the middle classes who could afford to provide it themselves.

In his reply to the debate on his motion, Samuelson said that he was glad Lord Montagu supported the motion. He would, however, like to clear up some of the misunderstandings which had emerged during the debate. He did not favour the introduction of workshops into schools - a practice being abandoned on the Continent, and as to grants for middle class education, they already existed in the form of state assistance to such institutions as the School of Chemistry and the School of Mines. Examination of these questions could well form part of the proposed inquiry.(2)

The motion was agreed. A Select Committee was to be appointed "to inquire into the provision for giving instruction in theoretical and applied Science to the Industrial Classes", and on the

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(1) Ibid Col. 172.

(2) Ibid Col. 186.

the 27th March, 1868, nineteen M.P.'s were nominated to serve on it, including Bernhard Samuelson who was appointed its chairman. The Committee was empowered to send for any witnesses, papers or records it required and there had to be a quorum of four.

The Committee met for the first time on the 2nd April, 1868, to take evidence, and held twenty-three meetings in all, concluding their hearings on the 14th July, 1868. All the meetings were under the chairmanship of Bernhard Samuelson. Fifty-eight witnesses gave evidence before the Committee, the witnesses comprising manufacturers and people concerned with scientific and technical education.

What can be said of Samuelson's chairmanship of the Select Committee on Scientific Instruction? The effectiveness of a chairman is difficult to gauge from minutes of evidence which do not convey his tone of voice, the atmosphere of the committee room or the speed of the proceedings. Yet the minutes can be interpreted to tell part of the story. First, Samuelson asked most of the questions, and it can be assumed that it was not because he wished to hog the limelight, for he was always economical in speech and reserved by nature. If Samuelson dominated the Committee's proceedings it was because of his vastly superior knowledge of the subject under examination. Samuelson's technique as chairman was to establish the position of the person being called to give evidence and then to begin the questioning of the witness. Once this was completed each witness was ready to be questioned by other members of the Committee.

Through his questioning of Henry Cole, Secretary of the

Science and Art Department, and J.F.D. Donnelly, at that time the Department's Inspector of Science, Samuelson traced the complex operations of the Science and Art Department: its origins, growth, aims, organisation and staff.(1) Cole and Donnelly were asked more questions thany any other witnesses who appeared before the Committee and most of the questioning was done by Samuelson. He also did all the questioning of J.F. Iselin, the Department's Inspector of Schools(2) and J.C. Buckmaster, described as "Organising Officer" of the Department.(3) R.R.W. Lingen, Secretary of the Committee of Council for Education, was questioned by Samuelson on the scientific instruction given in elementary schools.(4)

Samuelson led the questioning of Lyon Playfair on the urgent need for more scientific instruction, and drew Playfair out on some of the advantages of the Scottish educational system.(5) He closely questioned John Perry, Professor of Metallurgy at the Royal School of Mines, on the methods used to teach metallurgy(6) a subject of obvious interest to an ironmaster like Samuelson - and Joseph Whitworth on the need for better training for foremanship.(7)

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(1) Report from the Select Committee on Scientific Instruction, with the Proceedings of the Committee, Minutes of Evidence and Appendix. Ordered by the House of Commons to be printed 15th July, 1868. pp.1-37. (Hereafter referred to as S.C.S.I.)

(2) Ibid pp.74-76.

(3) Ibid. pp.411-416.

(4) Ibid. pp.37-44 and 411-16.

(5) Ibid. pp.57-68.

(6) Ibid. pp.76-84.

(7) Ibid pp.85-93.

Samuelson carried out the questioning of A.J. Mundella, who gave evidence in his capacity as Chairman of the Nottingham Chamber of Commerce and as a juror at the Paris Exhibition of 1867. Mundella said that he believed the industrial progress of many Continental countries was largely due to the superiority of their educational systems, and he emphasised the need for more scientific instruction for Britain's foremen and managers.(1) James Kitson, a Leeds ironmaster, said that on his visits to the Continent he found "very great progress" which he attributed "in a great degree to the better education that the managers of the works possess".(2) His evidence was supported by that of John Platt, M.P., for Oldham and a trained engineer,(3) and Robert Rumney, a chemical manufacturer.(4) Alfred Field, a Birmingham hardware merchant, gave interesting testimony on the growth of American competition.(5) R.C. Clapham, manager of a Newcastle firm and Secretary of the Newcastle Literary and Philosophical Society, was questioned by Samuelson on the development of technical education on Tyneside.(6) William Cochrane of the Northern Institute of Mining Engineers gave evidence on the scientific knowledge required by the coal industry's foremen and managers(7), and his views were supported by John Daglish, manager of Earl Vane's collieries, who also emphasised the need for more scientific instruction for colliery managers.(8)

The Committee gathered evidence from the representatives

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(1) Ibid.pp.232-243.

(2) Ibid.p.247.

(3) Ibid.p.290.

(4) Ibid.p.297

(5) Ibid.p.335.

(6) Ibid. pp.351-57.

(7) Ibid. pp.357-64.

(8) Ibid. pp.364-68.

of a number of institutions concerned with scientific instruction and, again, almost all of the questioning was done by Samuelson. Sir Robert Kane, President of Queen's College, Dublin, was questioned on the work of the Dublin College of Science,[1] and Samuelson led the questioning of J. Woolley, Director of Education for the Admiralty, and J. Read, Chief Naval Constructor, on scientific instruction as applied to naval technology.[2] F. Jenkin, Professor of Civil Engineering at University College, London, compared the scientific education he had received in England with that he had experienced in France, Germany and Italy.[3] Canon Moseley, a member of the Council for Military Education and a founder of the Bristol Trade School, gave evidence on the scientific content of the school's curriculum, and Samuelson pressed him on whether the school imposed any religious tests for admission and how far the school was open to working class boys.[4] H.E. Roscoe, then Professor of Chemistry at Owens College, described the work being done there and gave evidence on Continental systems of scientific instruction.[5] T.H. Huxley and John Tyndall described the organisation of the Royal School of Mines[6] and E. Frankland gave similar evidence on the organisation of the Royal School of Chemistry.[7] J.W. Cunningham and W.A. Miller outlined the scientific instruction provided at King's College, London.[8] The Rev. E.A. Abbot, Principal of the City of London School, and the Rev.J.G. Cromwell, Principal of St. Mark's Training College, described the scientific instruction included in the curricula of their institutions.[9]

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(1) Ibid. pp.152-163
(2) Ibid. pp.164-172.
(3) Ibid. pp.122-142.
(4) Ibid. p.192.
(5) Ibid. pp.276-290.
(6) Ibid. pp.118-121 and 397-403.
(7) Ibid.pp.403-411
(8) Ibid. pp.173-182.
(9) Ibid. pp.182-191.

Dr. S. MacAdam traced the growth of the Watt Institute of Edinburgh[1] and John Mayer did the same for the Andersonian Institute of Glasgow.[2] Another Scotsman, Robert Gill, of the South of Scotland Chamber of Commerce, outlined the results of a survey he had recently carried out on Continental systems of education.[3]

The final witness was J.C. Buckmaster of the Science and Art Department. Samuelson drew him out on the desirability of making improvements in the training of science teachers and of the need to publicise more widely the facilities provided by the Science and Art Department. Buckmaster agreed with Samuelson that there was scope in the rural districts for the development of classes in the natural sciences.[4]

The Select Committee's Report falls into three parts. The first was a review of the state of scientific instruction for the "industrial classes"; the second a statement concerning the "Relation of Industrial Education to Industrial Progress"; and the third contained the Committee's recommendations.

In the first part[5] the report stated that foremen were, almost without exception, selected from the "class of workers" by reason of their "superior aptitude, steadiness and industry". The provision of elementary education for this class was held to be rarely sufficient to enable them to take advantage of scientific instruction

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(1) Ibid pp.370-382.

(2) Ibid pp.382-386.

(3) Ibid pp.386-390.

(4) Ibid pp.411-416.

(5) S.C.S.I. pp.iii-vii.

at a later period. The tendency of the Revised Code had been to diminish the quality of elementary education, and the Committee hoped that the recent introduction of a seventh standard examination would have a beneficial effect. It was suggested that drawing, physical geography, the properties of matter and health education should be taught in every school.

The Committee reviewed the various institutions offering elementary scientific instruction and deplored that they were chiefly confined to London, Lancashire, Birmingham, the West Riding of Yorkshire, Cornwall, Edinburgh and Glasgow. On the whole the Committee found the instruction to be "sound". As the Committee pointed out, the superior primary education of Scotland enabled Scottish artisans to gain more from scientific instruction than their English counterparts.

The shortage of science teachers and places in which to train them was also found to hamper the growth of scientific instruction. The payments made to science teachers were so poor that few followed it as a profession but usually as a means of supplementing their income from another full-time job.

As to the scientific instruction of "smaller manufacturers and managers" the Committee stated briefly that this group had either received the elementary education then available to workmen, or if they were "socially an offshoot from the class of minor tradesmen and clerks", they had probably received a secondary education. This secondary education, lacking in scientific instruction though it might be, nevertheless equipped them to cope with scientific education more successfully than the artisans. Some proprietors and managers of large firms had

risen from the artisan class by exceptional perseverence and energy, and their scientific knowledge had been gained by private study and practical experience. More generally, however, managers were the products of the higher secondary schools, followed in some cases by systematic scientific instruction in a college or university.

On the "Relation of Industrial Education to Industrial Progress"[1] the Committee attached less importance to the effect of education on foreign industrial development than had many observers after the Paris Exhibition. It was held that so far as workmen, as distinguished from managers, were concerned, scientific instruction could only be considered essential in certain trades, or, generally, as enlarging the area from which the foremen and managers might be drawn. Practical experience and manipulative skill, on the other hand, was in all cases an indispensable element of industrial success. It was wrong to overlook the other factors which were responsible for increased foreign competition such as better design, fashion trends, lower wages, and the absence of industrial disputes. At the same time, however, the Committee did not belittle the rapid industrial growth of many foreign countries which was due, to some extent, to the scientific education of proprietors and managers, and, in Germany and Switzerland particularly, to superior elementary education. The Committee concluded:-

> "All the witnesses concur in desiring similar advantages of education for this country, and nothing less will suffice, in order that we may retain the position which we now hold in the van of all industrial nations."[2]

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(1) Ibid pp.vii-viii.

(2) Ibid p.viii.

The fifteen recommendations of the Committee affected most aspects of the English educational system. If the working classes were to benefit from scientific instruction they would first need the basis of a sound elementary education, which should include physical geography and the "phenomena of nature". There should be an expansion of the adult science classes organised by the Science and Art Department. More scientific instruction should be introduced into secondary schools, and some endowed schools should be reconstituted as science schools with exhibitions provided for those children unable to pay the fees. The "superior colleges of science" could not be expected to survive on the basis of fees alone and should receive some state aid in addition to the financial support they obtained from private sources. It was also recommended that such colleges were best situated in industrial areas in order that theory and practice could be combined, and so that as many people as possible could attend. The Committee asserted that "the provinces of England, especially the agricultural districts have not received a sufficient proportion of the state grants for scientific education", and that the aim of Government grants should be to stimulate local activity in regard to scientific instruction. The Committee thought that there should be an increase in "the emoluments of science teachers" and that training colleges should give special attention to the training of science teachers. Oxford and Cambridge were urged to award science degrees and create additional fellowships in science subjects. It was recommended that the Public Libraries and Museums Act should be altered "so as to enable public bodies to levy a slightly increased rate for scientific purposes". The Committee's final recommendation was that

the various Government institutions for scientific instruction situated in London should be the subject of a separate investigation which could lead to a rationalisation of their functions.

As we have seen, Samuelson played an important part in the events which preceded the setting up of the Select Committee on Scientific Instruction. The Select Committee was appointed as a result of Samuelson's motion in the House of Commons. He chaired its proceedings, and it can be safely concluded that he played a major part in the drafting of the Report. The Report's analysis of the problems and its recommendations accorded closely with the proposals put forward by Samuelson in his Letter to Lord Montagu, and closely with the issues which Samuelson was to champion over the next thirty years.

Blanchet has claimed that "the Select Committee on Scientific Instruction represents the first comprehensive and systematic study of English institutions for technical education",(1) and D.L. Burn points to the Committee as an early example of British manufacturers' concern at the growth of foreign competition.(2) While Sir Eric Ashby has written:-

> "The Committee's report is a classic in educational history. It constitutes the blueprint for technological training which led ultimately to twentieth century Britain; for it was this Committee which produced overwhelming evidence that it was not the artisans who needed education in applied science, but the managers."(3)

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(1) Blanchet op. cit. p.IX.

(2) D.L. Burn "The Genesis of American Engineering Competition 1850-1870" Economic History Vol.2 (1931) pp.307-326.

(3) Ashby op. cit. p.58.

It is true, of course, that its emphasis on the need for technological training for those at the management level in British industry was among the most far-sighted of the Report's recommendations. Yet no less important was its recommendation that:

> "In order to enable the working class to benefit by scientific instruction it is of the utmost importance that efficient elementary instruction should be within the reach of every child. That unless regular attendance of the children for a sufficient period can be obtained, little can be done in the way of their scientific instruction".(1)

For perhaps the Committee's most immediate achievement was to add its voice to the rising demands for a national system of elementary education which resulted in the passing of the 1870 Elementary Education Act. Its second achievement of immediate significance was to prepare the ground for the appointment of a Royal Commission on Scientific Instruction in 1870. In Blanchet's words "the report and recommendations of the Samuelson Committee in 1868 proved to be a point of departure for a much more ambitious investigation undertaken less than two years later".(2)

Samuelson's work on the Select Committee brought him national recognition as an expert on technical education. He was no longer, as The Times had referred to him at the time of his election to the House of Commons, a "mere manufacturer" of agricultural machinery who sat for a small market town. Henceforth he was recognised as a man with great knowledge of technical education both in Britain and abroad, and he was to be closely identified in the public's mind with the technical education movement for the remainder of his life.

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(1) S.C.S.I. P.VIII.

(2) Blanchet op. cit. p. 161.

CHAPTER VII

SAMUELSON AND THE ROYAL COMMISSION ON SCIENTIFIC INSTRUCTION AND THE ADVANCEMENT OF SCIENCE 1870-75

The Royal Commission on Scientific Instruction and the Advancement of Science was appointed in May, 1870. Its terms of reference were:-

> "to make Inquiry with regard to Scientific Instruction and the Advancement of Science and to Inquire what aid thereto is derived from Grants voted by Parliament or from endowments belonging to the several universities in Great Britain and Ireland and the colleges thereof and whether such aid should be rendered in a manner more effectual for the purpose."(1)

The Commission was appointed largely in response to the agitation of T.H. Huxley, Sir William Thomson and Colonel Alexander Strange,(2) although the work of the Select Committee on Scientific Instruction of 1868 undoubtedly helped to prepare the way for the setting up of a Royal Commission to examine the question of scientific instruction in greater detail.(3)

The members of the Commission were -

The Seventh Duke of Devonshire (Chairman).

The Marquess of Landsdowne,

T.H. Huxley,

Sir James Kay-Shuttleworth,

Sir John Lubbock, the banker and scientist,

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(1) Reports of the Royal Commission on Scientific Instruction and the Advancement of Science Vol.1. p.111.(Hereafter referred to as R.C.S.I.)

(2) Argles op. cit. pp.26-27.

(3) Blanchet op. cit. p.161.

W.A. Miller, Professor of Chemistry, King's College, London,

Bernhard Samuelson,

Dr. W. Sharpey, a physician,

H.J.S. Smith, Professor of Geometry, Oxford,

and

G.G. Stokes, Professor of Mathematics, Cambridge.

Thus Samuelson was the only industrialist to serve on the Commission.

The Commission met forty- four times to take evidence and Samuelson attended thirty-eight of these sessions. The Devonshire Commission issued eight reports and it is necessary to analyse these reports with the aim of tracing Samuelson's contribution to the work of the Commission.

The Commission's First Report [1] was concerned with the organisation and efficiency of the Royal Schools of Mines and Chemistry, the British Geological Survey, the Mining Record Office, and the Museum of Practical Geology. The Commission thought that the Schools of Mines and Chemistry "practically constitute one School of Pure and Applied Science" but were not organised to "perform efficiently the work for which they were originally, or are, at present intended". The Commission pointed out the absence of a Chair of Mathematics and the acute shortage of accommodation in all institutions, particularly in regard to laboratories for practical instruction.

The Commission considered the solution to involve a

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(1) R.S.C.I. Vol.1 pp.vii-viii.

merger of the Schools of Mines and Chemistry to form a new institution called the "Science School". This new institution to be housed in the buildings then in the course of erection at South Kensington intended for the use of a School of Naval Architecture and Science. The new Science School would have its own Professor of Mathematics and would be expected to provide courses for the training of science teachers.

The first witness to advocate a merger of the Schools of Mines, Chemistry and Naval Architecture was Henry Cole, and it was Samuelson who got him to repeat the proposal he had first put before the Select Committee on Scientific Instruction urging that these three colleges should be united into a "Metropolitan College of Science", one of whose functions would be the training of science teachers. Samuelson encouraged him to outline the idea in more detail,(1) and in a later question he asked Cole to prepare an estimate of the cost of the proposed amalgamation.(2) Cole presented his estimate to the Commission on the 17th February, 1871, and was questioned at some length by Samuelson and others on his report.(3) Samuelson was foremost among the Commissioners in pressing witnesses for their views on the merger of the three London colleges. T.H. Huxley, appearing as a witness before the commission, gave his approval to the idea,(4) the Rev. J. Woolley, Inspector General of the Royal School of Naval Architecture, admitted that there was a lot to be gained by an

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(1) Ibid p.5.

(2) Ibid p.18.

(3) Ibid pp.377-389.

(4) Ibid p.22.

amalgamation,[1] and C.W. Merriefield, Principal of the Royal School of Naval Architecture, conceded the disadvantages of having three separate institutions.[2]

As a colliery-owner it was natural that Samuelson should have been interested in the work of the Royal School of Mines. In his questioning of W.W. Smyth, Professor of Mining at the Royal School of Mines,[3] Samuelson was at pains to bring out the disadvantages of the School of Mines being sited at South Kensington far from coalfields. Samuelson and Smyth also discussed the inappropriateness of written examinations in regard to mining subjects and considered alternative ways of examining mining students. Smyth said he believed that mine owners had not done enough to promote education in mining subjects at the local level, but admitted that the position was improving in the North of England. Smyth also gave evidence of the superior scientific knowledge of French and German colliery-managers and agreed with Samuelson on the need for more local mining colleges. Lionel Brough, an inspector of mines, discussed with Samuelson the kind of scientific instruction most relevant to the mining industry, and how far facilities existed for this kind of education.[4]

The Commission's Second Report consisted of two sections. The first section of the Report covered "Scientific Instruction in Training Colleges and Elementary Day Schools" [5] and the second section

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(1) Ibid. p.57.

(2) Ibid. p.65.

(3) Ibid. pp.146-149.

(4) Ibid. pp.154-158.

(5) Ibid. pp.XI-XIX.

was concerned with "Scientific Instruction in Science Classes Under the Science and Art Department".(1)

In the first section the Commission reviewed the influence of the Revised Code on scientific instruction in training colleges and elementary schools, and the changes brought about by the New Code of 1871. As a result of their investigations the Commission recommended: that scientific instruction should form a substantial part of the curriculum of training colleges; that elder children in elementary schools should be taught the "rudiments of physical science" - the New Code being modified to encourage this; and that younger children in elementary schools should be taught some elementary science to prepare them for the senior science classes to follow.

Samuelson was responsible for the drafting of the section of the Second Report which dealt with the work of the Science and Art Department.(2) All members of the Commission signed the Report and were, therefore, equally responsible for its contents and recommendations, but the fact that the drafting of this section was left to Samuelson suggests that his influence over its contents must have been considerable if not paramount. This is confirmed to a great extent by comparing the line of questioning pursued by Samuelson during the examination of witnesses with the final recommendations contained in this section of the Report. Certainly no one on the Commission was better qualified than Samuelson to write this section, for he had concerned himself with the affairs of the Science and Art Department since its inception. He had organised

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(1) Ibid. pp.XIX-XXX.

(2) Dictionary of National Biography Second Supplement Vol.111.(London 1912) p.259.

classes under the auspices of the Science and Art Department in Banbury since 1858, and the Select Committee on Scientific Instruction had spent a lot of time examining the work and organisation of the Science and Art Department. Furthermore, Samuelson had a liking and capacity for detail and administration which enabled him to master the complex regulations so characteristic of this Department.

The first part of this section of the Second Report described the origin and growth of the Science and Art Department, generously illustrated with statistics as one would expect in a section drafted by Samuelson. The next part outlined the Department's regulations governing the buildings and apparatus required for classes held under its auspices, the subjects taught, the system of examination and inspection, and, finally, the Department's system of payment by results.

The material was then analysed under the heading of "General Remarks" beginning with the view that:

> "The efficiency of the instruction given in science classes has been diminished, on the one hand, by the imperfect organisation of the classes, whether considered separately or in groups, and the absence of practical teaching; and on the other, by the irregular and unsystematic manner in which scholars have taken up the subjects taught."(1)

As an example of "the efficiency of scientific instruction as an instrument in the education of boys belonging to the humbler middle classes, and from twelve to fifteen years of age" the section described the work of the Bristol Trade School; and as an example of the grouping

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(1) Ibid. p.xxvi.

of classes for the purpose of introducing the services of more efficient teachers the report gave a brief sketch of the organisation of a group of evening classes formed in East Lancashire.

As a remedy for the irregular and unsystematic manner in which students took up subjects for the study of which they were unprepared, the Report pointed out that on the 24th November, 1871, the Science and Art Department had issued a Minute suggesting the adoption of specially grouped courses of instruction, and offering encouragement in the form of extra payments to the schools in which such courses were adopted. This Minute, the Report suggested, "will be of especial service to the teachers themselves, who have hitherto been in the habit of qualifying themselves successively in different subjects without sufficient regard to their connection".(1)

In spite of its "imperfections" the work of the Science and Art Department was praised, its deficiencies being largely attributed to its pioneering role.

> "The degree of success attained in the enterprise of thus boldly opening, in spite of all obstacles, a path for the introduction of a system of elementary scientific instruction, is greatly due to the vigorous and able administration of the Department, and to the efficiency with which the examinations have been conducted .... we confidently expect that, with needful guidance and encouragement, a thoroughly efficient system of elementary scientific instruction for the working classes may, ere long, be founded on this basis. Our recommendations show in what way, in our judgment, the existing system should be further developed." (2)

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(1) Ibid. p.xxviii.

(2) Loc. cit.

The first recommendation was that instruction in elementary science classes under the Science and Art Department should be so arranged "as to work in complete harmony with the general system of public elementary education", and that the Education Department at Whitehall and the Science and Art Department at South Kensington should "continue to co-ordinate" their activities.

During his questioning of J.F.D. Donnelly of the Science and Art Department, Samuelson asked if the two Departments might not co-operate on a number of points regarding examinations and the inspection of classes, and Donnelly agreed there was scope for this.(1) Samuelson returned to this point when he examined Sir Francis Sandford of the Education Department. Samuelson began by saying that the Commission was "tolerably well agreed" that some method other than written papers was required to test the efficiency of the instruction given in classes run by the Science and Art Department, and he would be glad to have Sandford's opinion on how far the Inspectorate of the Committee of Council on Education could be made available to undertake the kind of inspection which seemed desirable. Sandford thought that the Inspectorate could undertake the periodic inspection of science classes but could not keep these classes under constant supervision.(2) Samuelson then asked Sandford if he thought the Education Department's inspectors could do the work of inspection better than the "Engineers Officers employed by the Science and Art Department", and Sandford admitted that he thought they could.(3)

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(1) Ibid. p.418.

(2) Ibid. p.578.

(3) Loc. cit.

Sandford concluded that the two Departments were working more closely together than ever before and he did not see why the Education Department's inspectors should not cover both Departments.

The second important recommendation of the Report's section on the Science and Art Department was on the question of inspection. The Report recommended that a more efficient inspection of elementary science classes should be instituted and that inspectors should advise the local committees and report on apparatus, teaching methods, the "state of discipline", and the general efficiency of class arrangements.

The subject of the inspection of science classes was one which Samuelson pursued throughout the inquiry. In his examination of Henry Cole of the Science and Art Department, Samuelson wanted to know why there had been an increase in the number of inspectors employed by the Science and Art Department, and was informed that it was due to general expansion and the need to check irregularities.(1) J.F. Iselin, Inspector of Science Schools under the Science and Art Department, was also closely questioned by Samuelson on the nature of his duties.(2) H.H. Sales of the Yorkshire Union of Mechanics' Institutes, when questioned by Samuelson on his experience of the system of inspecting science schools, described it as "a mere farce" and went on:-

> "an inspector comes, in many cases he knows nothing of the subject in which he is to inspect the class, he knows very little indeed about the organisation of the class, and at the close of the examination, when he meets the committee, and the committee ask him what advice he has to give them, and what support he has to make, it is very seldom indeed that any suggestions of any kind are offered."(3)

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(1) Ibid. p. 375.

(2) Loc. cit.

(3) Ibid. p.396.

The Report had some suggestions to make on the classification of teachers. It recommended that those who passed the written examinations of the Science and Art Department should continue to be recognised as qualified to conduct elementary science classes, be given the title of "Elementary Science Teacher", and be paid the appropriate grants awarded by the Science and Art Department. However, a new practical examination should be instituted open to all elementary science teachers, and success in thisexamination would entitle a teacher to be classified as "Second Grade Science Master" with a correspondingly higher rate of pay than the elementary-graded teacher. New written and practical examinations should also be instituted to enable a science teacher to qualify as a "First Grade Science Master". It further recommended that a higher capitation grant be made payable in respect of the pupils of a First Grade Science Master teaching a group of allied subjects, provided that the appropriate apparatus was available. In order to maintain uniformity of standard in these examinations they should be supervised by examiners of the Science and Art Department.

In its First Report, the Commission had recommended that the Schools of Mines and Chemistry be merged to form a Science School which would provide facilities for the training of science teachers. This recommendation was repeated in the Second Report with the additional suggestion that universities should be encouraged to provide facilities for the training of teachers. Students at training colleges should also be allowed the opportunity of doing a third year which should include a substantial amount of scientific instruction given at the nearest college of science.

The Science and Art Department, it was recommended, should be given the power to accord the status of First and Second Grade Science Master to those who had been successful in university examinations in science subjects or who possessed an "obvious scientific qualification".

It was suggested that the employment of Assistant Teachers be adopted as an experiment in Science Schools, and that the more able scholars should be encouraged to become Assistant Teachers. Exhibitions should also be made available to enable elementary science teachers to study at a university or science school in order to qualify as First Grade Science Teachers.

The quality of science teaching and the training of science teachers were two subjects in which Samuelson took a special interest during the Commission's inquiry. Samuelson told Henry Cole that he was concerned with the "competency" of the teachers employed by the Science and Art Department, and his questions drew from Cole the admission that the Department's inspectors had discovered that a large amount of cramming was taking place.(1) Samuelson went on to question Cole on the existing facilities for the training of science teachers, and as mentioned above, got him to repeat his proposal that a London School of Science should be created which would undertake the training of science teachers. Samuelson also questioned Huxley on ways of improving the standard of teaching in classes run by the Science and Art Department, and in doing so he drew from Huxley the admission that there was evidence of cramming among some of the papers he had marked for the Science and

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(1) Ibid. p.4.

Art Department.[1] Samuelson had a profound dislike of cramming which went back to his schooldays at Blezard's Academy, and he was always concerned to expose it. A.C. Ramsay, another examiner for the Science and Art Department, was questioned by Samuelson on the need to train science teachers and concurred with Samuelson that special training was desirable.

Another recommendation made in this section of the Report was that grants made by the Science and Art Department for buildings should be extended to include institutions providing scientific education and that grants should also be made available for laboratory and museum fittings. This recommendation was made with institutions such as Owens College in mind and most of the questioning was done by T.H. Huxley with the occasional question put by Samuelson and others.

Another recommendation concerned with the extension of Science and Art Department grants was that once the arrangements for science teaching in any institution had reached "a considerable degree of completeness and efficiency", the institution should be recognised as a Science School. As such it would become a suitably equipped centre for elementary science classes, able to call upon the services of First Grade Science Masters, and be eligible for special grants. This recommendation owed much to the evidence of T.W. Shore, an organiser for the East Lancashire Union of Evening Classes, who was questioned by Samuelson at some length on his experiences of organising science classes in Lancashire. Samuelson's questioning emphasised the need to confine science classes "to places in which science could be taught to greatest effect".[2] Given

(1) Ibid. p.22.

(2) Ibid. p.134.

that the amount of money available for scientific instruction was limited, the Commission felt, and Samuelson's line of questioning showed his agreement, that such money should be spent where it could do most good, namely, in supporting science classes in established centres.

The final recommendation contained in the Second Report was that in cases where laboratories were attached to second-grade grammar schools, the Trustees of such schools should be encouraged to form elementary science classes. Apart from the fact that Samuelson was responsible for drafting this recommendation it is impossible to say, upon the basis of existing evidence, what influence he had upon the Commission's thinking. The Commissioners themselves, did not undertake any examination of witnesses on the subject of the teaching of science in public and endowed schools. The evidence on this topic was collected by the Commission's Secretary, J.N. Lockyer, by means of personal visits and questionnaires. It was then, no doubt, discussed by the Commissioners and their conclusions embodied in Samuelson's final draft. However, it is clear from other sources that Samuelson was strongly in favour of scientific instruction in grammar schools and his known views were, therefore, in accord with the recommendation.

The Commission's Third Report was based upon their investigation of the scientific instruction available at the Universities of Oxford and Cambridge. The Commission examined the Universities' science courses and examinations, the role of professors in science teaching, the scientific institutions within the Universities, the work of the colleges, the relation of the Universities to technical education and the "scientific professions", and the "duty of the Universities and

Colleges with regard to the advancement of science".(1)

The Commission noted that no matriculation examination existed at Oxford and Cambridge as it did at London University, and suggested that a school-leaving examination "analogous in some respects to the Abiturienten Examen in Germany" should be instituted. This would assist the Universities to assess the "proficiency of a schoolboy" at the end of his school studies.(2) The Commission thought that the Universities' curriculum should be arranged to include some element of "literary culture" in science courses and that "evidence of corresponding scientific culture should be required from the student of Classical Literature or of Theology".(3) The Commission recommended that in addition to college scholarships a number of university scholarships in natural science should be founded "comparable to those which already exist for various branches of classical learning, and, at Oxford, of mathematical science".(4) The Commission thought that more professors in science subjects should be appointed in order that greater specialisation could take place, and that the renumeration of professors was too low to attract the best men, and that some system of pensions for professors should be introduced.

The Commission noted that in both Universities there were several bodies responsible for discharging "administrative duties in connexion with science",(5) and recommended that these should be replaced by a single administrative body in each University to be known

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(1) R.C.S.I. Vol.3. p.vii.

(2) Ibid. p.viii.

(3) Ibid. p.xi.

(4) Ibid. p.xiii.

(5) Ibid. p.xxxv.

as the "University Council of Science".[1] The Council's main responsibility would be to co-ordinate the scientific instruction provided by the colleges and the University, and to examine all applications for money required for scientific purposes.

The Commission considered that "it is of great importance with the view of promoting the study of Natural Science in the First Grade Schools throughout the country, that there should be an immediate and ultimately a large increase in the number of scholarships offered for the subject by the colleges".[2] The Commission thought that there were too many sinecure fellowships provided by the colleges and recommended that "a considerable proportion should be suppressed" and that the money saved should be paid into a fund to finance research. The colleges should also endeavour to award their science fellowships to those who had shown evidence of original research.

Reviewing the organisation of scientific instruction in the Universities, the Commission thought that it would be a mistaken policy for each college to attempt to institute its own laboratory. This should be done by the University or by groups of colleges. However, each college should have its own lecturer in natural science and some lectures should be open to all members of the University. The Commission rejected the idea that a single college in each University should specialise in science. In addition to the legal difficulties in the way of doing this, the Commission considered it undesirable on educational grounds. The position of science in regard to the other branches of learning was said

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(1) Ibid p.xxxvi.

(2) Ibid. p.xliv.

to be "not one of separation or antagonism; it should rather be regarded as running through the whole of human knowledge and as inseparably blended with every part of it".(1)

The Commission recognised that the main function of the Universities in relation to science was to "maintain its position as a part of liberal education".(2) Nevertheless, the Commission drew attention to the growing demand for science teachers and the expanding opportunities to be found in the scientific professions of medicine, chemistry and engineering, and thought that the two Universities should "provide to the fullest extent for the theoretical instruction of such professional students".(3) The Commission considered that it was a primary duty of the Universities to "assist in the Advancement of Learning and Science, and not to be content with the position of merely educational bodies",(4) and strongly recommended that the universities should be given every encouragement to undertake original research. To this end laboratories, collections and museums should provide facilities for research purposes, and the universities should institute higher degrees to be awarded on the basis of successful research.

Samuelson was active in questioning the various witnesses who appeared before the Commission to give evidence on the state of scientific instruction at Oxford and Cambridge, and his questions show that he was interested in most of the issues which were discussed in the Commission's Third Report. However, he showed greatest interest in the finance of scientific education, the obstacles which stood in the way

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(1) Ibid. p. liii.

(2) Ibid. p. liv.

(3) Ibid. p. lv.

(4) Ibid. p. lvi.

of an expansion of scientific instruction at Oxford and Cambridge, and the most economical use of the Universities' resources in regard to scientific instruction.

Samuelson questioned the Rev. B. Price, Professor of Natural Philosophy at Oxford and Curator of the University Chest, on the state of the University's finances,[1] and examined the Rev. Mark Pattison, Rector of Lincoln College, on the obstacles standing in the way of Oxford colleges devoting more of their resources to the teaching of science.[2] The Rev. B. Jowett, Master of Balliol, was questioned by Samuelson on the growth of a common lectures system replacing the old system under which each college was responsible for its own lecture programme. He wished to know if there were any obstacles which stood in the way of developing the common lecture system throughout the University, and he was assured that there was none. Samuelson wanted to know if any statutes stood in the way of Oxford colleges increasing the number of fellowships and scholarships in science subjects, and what more could be done to get the colleges to combine their resources to promote science.[3] In the same vein he questioned the Rev. J.P. Lightfoot, Rector of Exeter College, on the possibilities of the colleges making a joint contribution to a University fund to pay the salaries of assistant professors in science subjects,[4] and he asked the Very Rev. H.G. Liddell, Vice Chancellor of Oxford University and Dean of Christ Church, if the University had considered increasing the number of professorships in science, and by what means money could be raised for this purpose.[5]

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(1) R.C.S.I. Vol.1 pp.212-4.

(2) Ibid. p.249.

(3) Ibid. p.255.

(4) Ibid. p.264.

(5) Ibid. p.273.

He pursued a similar line of questioning in his examination of the Cambridge dons who gave evidence before the Commission. He questioned the Rev. J. Challis, Professor of Astronomy, on the possibilities of getting the Cambridge Colleges to combine their resources for science teaching in the University,(1) G.D. Liveing, Professor of Chemistry, was examined on whether the University authorities had considered the creation of additional chairs in science subjects,(2) and the Rev. J. Cartnell, Master of Christ's College, was questioned on the possibilities of setting up a fund to provide the money for more professorships.(3)

Samuelson showed an interest in the young men who attended Oxford University without the "capacity or industry" to benefit from a university education, and he questioned Mark Pattison on the ways of dealing with this problem, suggesting that Oxford's matriculation requirements should be made more exacting.(4) He also questioned G.M. Humphrey, Professor of Anatomy at Cambridge, on the absence of a matriculation examination at Cambridge.(5)

The position of classics in the curriculum was a subject which never failed to interest Samuelson and he tackled Jowett on whether Greek should continue to be taught at public schools. The great classical scholar thought that it should, but only as one subject among others.(6) In his questioning of the Rev. J.P. Lightfoot, Samuelson emphasised the need to raise the status of science at Oxford University in order to

(1) Ibid. p.281.
(2) Ibid. p.294.
(3) Ibid. p.345.
(4) Ibid. p.249.
(5) Ibid. p.290.
(6) Ibid. p.256.

attract the more able students who were largely drawn towards the reading of classics and mathematics.(1)

The Commission's Fourth Report covered the national science museums and collections. It recommended that a Director of National Collections should be appointed, directly responsible to a Minister of State for the administration of the country's collections. Secondly, that the Museum of the Royal College of Surgeons should be given state aid if its funds proved inadequate. The Commission also recommended the formation of a national collection of physical and mechanical instruments. Another recommendation was that the Science and Art Department should employ qualified naturalists to help fill the gaps in the collections of provincial museums. The Commission's final recommendation was that the Government should promote "in the great centres of population" lectures on science subjects, accessible "to all classes" on the payment of a small fee.

The only interest Samuelson showed on these matters was a number of questions he directed at Henry Cole on the subject of the South Kensington Collection, and he examined Cole on his suggestion that museums should be the responsibility of a Minister of Education.

The Commission's Fifth Report covered "certain Institutions of recent voluntary origin and mainly dependent on voluntary support, which have made arrangements for Advanced Instruction in Science".(3) These institutions were University College and King's College of London

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(1) Ibid. p.264.

(2) Ibid. pp.619-621.

(3) R.C.S.I. Vol. 3. p.1.

University, Owens College, Manchester, the College of Physical Science, Newcastle upon Tyne, and the Catholic University of Ireland. The Commissioners considered that the two London colleges and Owens College had established a claim to state aid. The Commissioners also thought that the newly-founded Newcastle College of Science would soon merit similar consideration. The assistance given to these institutions should consist not merely of a capital sum for buildings and laboratories but also of an annual grant to cover someitems of current expenditure. In regard to the Catholic University of Ireland the Commissioners felt that owing to the religious restrictions imposed upon the appointment of its staff and certain deficiencies apparent in its science courses, they could not recommend that the Catholic University should be given state assistance.

In the Commission's examination of witnesses in connection with this report, Samuelson showed an interest in the evening classes held at King's College, London. He also pressed W.G. Adams, Professor of Natural Philosophy, on the college's rule that all matriculated students must attend daily service in the college chapel unless they were given special exemption by the Principal. Professor Adams acknowledged the existence of the rule, but stated that it was never enforced. Samuelson then wished to know if it could not be abolished altogether and Adams admitted that it was in the Principal's power to do so.(1) Samuelson said no more, having achieved his purpose of exposing an outdated rule which was likely to give offence to people who held religious beliefs other than those of the Church of England or were freethinkers.

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(1) R.S.C.I. Vol.1. pp.454-461.

Samuelson was interested in the financial position of Owen's College, and he also asked its Principal if the college authorities had considered awarding their own degrees.(1) He questionned the Rev.W.C. Lake, Dean of Durham University, on the background to the creation of the College of Science at Newcastle upon Tyne, and on the college's case for state assistance.(2)

As stated above, no evidence was taken in connection with the Sixth Report which was concerned with the teaching of science in public and endowed schools: the Commission's Secretary, J.N. Lockyer, collecting the material by means of personal visits and questionnaires. Although the Commissioners recognised that there had been some improvement in the teaching of science in public and endowed schools, they thought that the "present state of scientific instruction in our schools is extremely unsatisfactory".(3) They considered the omission of science from the curriculum of many schools to be "little less than a national misfortune", and recommended that in all secondary schools a substantial amount of time should be devoted to natural science, and that natural science should be given more prominence in the schools' leaving examinations.

The Commission's Seventh Report examined the various scientific institutions in Scotland and Ireland, and recommended increased state assistance to these bodies. Samuelson was deeply interested in the evidence of W.J.M. Rankine, Professor of Civil Engineering at the University of Glasgow. He wanted to know the content of Rankine's lectures and the course syllabuses; and, as always, he was interested

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(1) Ibid. pp. 492-7.
(2) Ibid. p.602.
(3) R.C.S.I. Vol.3. p.10.

in the evening classes held at Glasgow University, Professor Rankine thought that they failed "to take hold of students' minds",[1] and believed this was due to the fact that students were tired after their day's work. Samuelson wondered if the reason could be that they lacked the educational background to benefit from the lectures. But Rankine thought not because most of them had an excellent grounding in mathematics and science. Samuelson wished to know if the number of students reading engineering had increased, what happened to students who successfully completed the course, and the attitude of employers to the University's engineering course. Samuelson also discussed with Rankine what means could be used to get employers to recognise the usefulness of the course.

The Commission's Eighth Report - its final one - was concerned with science in government departments and the organisation of research and state aid for science. Argles has referred to it as the most interesting of the Commission's eight reports.[2] The Report recommended the setting up of more national laboratories, increased state aid for private scientific research, and the creation of a Ministry of Science and Education assisted by a Council of Science. Samuelson played a leading part in the evolution of these proposals and his experience as a Parliamentarian proved particularly useful in the Commission's examination of the suggestion for the setting up of a Ministry of Science and Education and a Council of Science.

The discussion of the issues contained in the final

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(1) R.S.C.I. Vol.2. p.23.

(2) Argles op. cit. p.27.

report was introduced by Balfour Stewart in the form of a paper he had prepared for the Commission on the position of science in the United Kingdom. Arising from the contents of this paper the Commission discussed the Government's reluctance to extend the annual grant of £200 needed to work the Kew photoheliograph. Samuelson wanted to know if foreign governments gave assistance for similar purposes, and Stewart replied that to hisknowledge observatories in Russia, France and the U.S.A. did enjoy such grants.(1)

Samuelson then questioned Stewart on his proposal for the creation of a Science Council staffed by full-time salaried members, which would advise the Government on scientific matters and be responsible for allocating state money earmarked for scientific purposes. Samuelson asked Stewart if he thought the public was sufficiently well informed on scientific matters to be able to judge if the Council was carrying out its duties properly, and he wondered if, in any case, the public would be prepared to trust the spending of its money to such a Council.

Samuelson went on to question Stewart on the state of science in those foreign countries where the Government supported scientific research, and he wanted to know if such support tended to undermine private initiative. Stewart thought not, and pointed to Germany, where state aid was substantial yet which led the world in scientific research. In other words, Samuelson concluded, the private scientific societies in Germany flourished "notwithstanding what has been done by the Government".(2)

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(1) R.C.S.I. Vol.2. p.161.

(2) Ibid. p.162.

The point that Samuelson was trying to establish here was that Government aid to scientific research would not destroy private initiative in the same field. Just as he believed that there was a place in the educational system for both state and voluntary schools so Samuelson believed that there was a place for state-assisted scientific research alongside the research undertaken by private individuals, firms and societies. He did not see the solution to the problem of expanding scientific research in terms of a straight choice between statism and individualism. Samuelson thought there was ample scope for both with the state supplementing private efforts wherever necessary.

He returned to the subject in his examination of William Siemens, the eminent ironmaster.(1) Samuelson recalled that Siemens had praised the work being done by "learned societies" in England and asked if, to Siemens' knowledge, there were similar societies in Germany, France and Italy. Siemens replied that in France there were no independent societies because "the Government pretty well monopolises science through its establishments". There were some scientific societies in Germany "but there is nothing at all comparable to the English societies for the promotion of branches of science".(2) Samuelson then posed the question: taking the two extremes, France on the one hand, where the Government did everything and England on the other, where the Government was supposed to do little, if Siemens had to choose between the two systems which would he prefer? Siemens replied: "The English system

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(1) Ibid. pp.207-8.

(2) Ibid. p.207.

certainly. At the same time, I think that the Government might facilitate those individual exertions by giving judicious aid". This answer was a fair summary of Samuelson's own position on the question of the use of Government money to promote scientific research. That Samuelson's views should coincide with those of Siemens is not surprising, for these successful ironmasters had worked closely together in the creation of the Iron and Steel Institute.

Samuelson then turned his attention to how Government grants should be awarded. Should such assistance, Samuelson asked, be given through the learned societies? Siemens replied that he thought the Government's role should be to collect scientific information, assist the teaching of science, and to grant aid to the societies. Samuelson asked if the German Government gave financial support to the societies. Siemens replied that they did not, but then the societies were of much less importance in Germany because of the existence of fully state-supported academies. Samuelson then got Siemens to describe the work and organisation of the German academies.

Siemens supported Stewart's proposals for the creation of a Science Council to advise the Government on scientific matters, and was questioned by Samuelson on this subject. Was there a Science Council in either Germany or France? Siemens admitted there was not. By what means, then, had the German Government promoted Science? Siemens replied: by giving state support to universities, by the creation of polytechnics and mining schools, and by the establishment of observatories. Siemens believed that state-sponsored research should be for a specific purpose and was only justified if such research was beyond the financial

scope of individuals. Samuelson suggested the example of the work undertaken by the Coal Commission and Siemens agreed with this.

Siemens also supported Stewart's proposal for the appointment of a Minister of Science and Education, and Samuelson asked if a Minister was preferable to a permanent official and Siemens believed that it was. He need not be a scientist himself, he thought, but could seek the advice of the Science Council where necessary. A Minister would also be responsible to "the public" in a way that an official would not.

Major-General Richard Strachey of the India Office's Public Works Department also favoured the creation of a Department of Education and Science advised by a Science Council along the lines suggested by Balfour Stewart. Samuelson wanted to know if this Council would be nominated by a Minister and Strachey thought that it should.(1)

William Spottiswoode, Treasurer of the Royal Society, also supported the setting up of a Science Council. Samuelson wondered if the existence of a Council might not prevent the Government from seeking advice from outside sources. Spottiswoode agreed that there was this danger, but he hoped that the Council itself would draw upon the knowledge and experience of others. Samuelson wanted to know more about the position of the proposed Council: namely, would it be the Department of a particular Minister or a consultative body at the disposal of various Departments. Spottiswoode, thought that this was a matter which would have to be decided by Ministers, the important thing was to create a body to which scientific question could be referred

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(1) Ibid. p.214.

"for opinion and advice".(1) Samuelson suggested that a good deal would depend upon the membership of the Council, how it was chosen and by which Minister it was chosen. Spottiswoode thought that the Minister would seek the advice of scientists when making appointments to the Council.

Warren De La Rue, a member of the Royal Society, gave evidence in support of the same proposal, and Samuelson asked him if he did not think that there would be friction between the Council and the "other science departments of the public services".(2) De La Rue agreed that this would probably be the case at first but he considered it would lessen in the course of time. Samuelson asked if the Government Grant Committee of the Royal Society "might not, either temporarily or permanently, fulfil the office that you would assign to such a Council?"(3) De La Rue replied that he knew the Committee to be efficient in its present role but he did not think that it was equipped to handle things on a national scale.

Samuelson pressed the witnesses hard on the question of the setting up of a Ministry of Science and Education and a Science Council, and his questions did much to clarify the role and constitutional position of these new bodies. He must have been satisfied in his own mind that the proposals were sound for he signed the Eighth Report along with other Commissioners.

The Devonshire Commission has been described as an

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(1) Ibid. p.208.

(2) Ibid. p.306.

(3) Loc. cit.

"admirable Commission",[1] yet very few of its recommendations were implemented. The Royal Society grant was raised to £4,000 a year and the South Kensington colleges were improved "but generally laisser-faire continued in the matter of science".[2] However, the Commission's Reports did stimulate the London Livery Companies to appoint, in 1877, a committee to draw up a national scheme of technical instruction. The result was the foundation of the City and Guilds Institute in 1880. The Institute encouraged the teaching of applied science in schools and evening classes, and organised a system of examinations in technical subjects. It was also responsible for the opening of the Finsbury Technical College in 1883 and the City and Guilds Central Technical College at South Kensington in 1884.[3]

Comparing the scope of the Select Committee on Scientific Instruction and the Devonshire Commission, it can be seen that the latter made little attempt to consider at any depth, as did the Samuelson Committee, the economic functions of scientific education and particularly the contribution of scientific and technical education to industrial progress. The Devonshire Commission limited itself fairly closely to consideration of the problems of the organisation and administration of Britain's scientific institutions. Yet, as Blanchet points out: "the recommendations of the Devonshire Commission were in all instances in harmony with those of the Samuelson Committee on those questions which they considered in common".[4] It could be the case that any two groups of men who objectively examined the state of scientific education

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(1) Cardwell op. cit. p.97.

(2) Ibid. p.98.

(3) Curtis op. cit. p.495.

(4) Blanchet op. cit. p.153.

at this time would produce similar reports. It could also be, however, that the presence of Samuelson on both bodies was the reason why the two reports were in agreement, and the evidence points to the latter explanation as the more likely of the two.

CHAPTER VIII

SAMUELSON AND THE ROYAL COMMISSION ON TECHNICAL INSTRUCTION 1881-84

In 1873, after a quarter century of almost uninterrupted boom, the British economy entered a period of falling prices and profits. This period was to last from 1873 to 1896, and economic historians have labelled these years the period of the "great depression". The nature and causes of the depression have been widely discussed by historians, but one thing is generally agreed: the fall in prices owed much to increased competition in both the British home market and in markets abroad.(1) Throughout the 1870's British industrialists became increasingly concerned at this trend and a growing number began to attribute foreigners' trade successes to their superior systems of technical education. In 1880 both the Clothworkers' Company and the Associated Chambers of Commerce urged the Government to set up a Royal Commission to compare the condition of British and foreign technical education.(2) The matter was also raised in the House of Commons on the 1st April, 1881, when G. Anderson moved the setting up of a Royal Commission: "to visit the Technical and Agricultural Schools of France, Belgium, Germany and Switzerland and prepare a Blue Book setting out the advantages foreign industries are deriving from such schools".(3)

(1) See A.E. Musson, "The Great Depression in Britain 1873-1896: A re-appraisal" Journal of Economic History. Vol.XIX. June, 1959.

(2) Snowdon op. cit. p.150; Ilersic op. cit. p.32.

(3) Hansard CCLX Col.525. 1st April, 1881.

The motion was seconded by C. Patrick who felt that the appointment of a Royal Commission would help to draw attention to the subject of technical education and the Commission's recommendations could form the basis of legislation.(1)

A.J. Mundella, Vice-President of the Committee of Council, speaking on behalf of the Government, was reluctant to appoint a Royal Commission. In his speech he referred in glowing terms to Bernhard Samuelson's earlier report:-

> "We have, in the volumes which have been laid on this Table, as good a statement of the condition of technical education in Europe 1868 as it is possible to obtain, and we owe it, in a great extent, to the ability, intelligence and public spirit of my Hon. Friend the Member for Banbury (Mr. B. Samuelson), who forced it upon the attentions of the House, and conducted an inquiry in a semi-official capacity, at his own expense, for three months - the result being that he was able to produce a Report that did a great amount of good, and that led to satisfactory results."(2)

Mundella agreed that the collection of information on this matter was important, but he thought a "roving Commission" would prove expensive and "needlessly tedious". Instead he hoped he could persuade Samuelson to lead a small group of two or three industrialists to carry out a survey at their own expense, with the full support of the Foreign Office and the Science and Art Department.

Sir John Lubbock supported Mundella's proposal and hoped that Samuelson would agree to it.(3)

Samuelson spoke briefly and acknowledged Mundella's praise of his 1868 Report. He said he did not believe British industry

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(1) Ibid. Cols.533-5.

(2) Ibid. Col.542.

(3) Inid. Col.542.

to be as backward as Anderson had suggested in his speech, but he did agree with him that the setting up of a Royal Commission would be a useful step.(1)

A month later the growing demand for the setting up of a Royal Commission was reinforced by the publication of H.M. Felkin's pamphlet Education in a Saxon Town, which drew attention to the advanced state of German education. Yet the appointment of a Royal Commission was delayed, and on the 21st July, 1881, A. McDonald asked Mundella if he would confirm reports that a Royal Commission was to be appointed.(2)

In his reply, Mundella recalled his earlier proposal that a group of public-spirited industrialists should undertake the task at their own expense. Bernhard Samuelson and John Slagg, he informed the Commons, had already agreed to serve and he was still awaiting replies from two other industrialists. Finally, on the 25th August, 1881, it was announced that a Royal Commission had been set up to:

> "Inquire into the Instruction of the Industrial Classes of certain Foreign Countries in technical and other subjects, for the purpose of comparison with that of the corresponding classes in this Country; and into the influence on manufacturing and other Industries at home and abroad."(3)

The reasons why Mundella gave up his original idea of a semi-official inquiry in favour of a Royal Commission are not quite clear.(4) But at least he was successful in his desire to get members of the Commission to meet their own expenses, and considering the numerous

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(1) Ibid. Col.548.

(2) Hansard CCLXIII. Col.1473. 21st July, 1881.

(3) Royal Commission on Technical Instruction Vol.1.p.13(Hereafter referred to as R.C.T.I.)

(4) See Michael Argles, "The Royal Commission on Technical Instruction 1881-4: Its Inception and Composition". Vocational Aspect, 23, Autumn 1959.

places they visited, these must have been substantial. In addition to this, time spent on the Royal Commission was for four of its members time away from their business concerns.

Bernhard Samuelson was appointed Chairman of the Commission. The other members were -

Philip Magnus, Director and Secretary of the City and Guilds of London Institute.

H.E. Roscoe, Professor of Chemistry at Owen's College.

John Slagg, a Lancashire textile manufacturer and Liberal M.P. for Manchester.

Swire Smith, a Keighley worsted manufacturer,

and

William Woodall, proprietor of a Staffordshire pottery firm and Liberal M.P. for Burslem.

Argles has attempted to show what the six Commissioners had in common.(1) Three of them were Liberal M.P.'s and Roscoe and Swire Smith were to become Liberal M.P's. at a later date. Samuelson, Slagg, Swire Smith and Woodall were enlightened and progressive industrialists and Roscoe and Magnus were academics and educationists. All were passionately interested in education; most had had some experience of educational administration and for the most part the Commissioners were "self-made men of affairs". All the Commissioners were particularly dedicated to the cause of technical education and their task, set out in the Commission's terms of reference, was not to question whether the promotion of technical education was desirable - this was assumed to be

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(1) Ibid.

self-evident - but to collect evidence which would enable them to make a comparison between British technical education and that of other countries.

The Commission held its first meeting on the 13th September, 1881,[1] and in November, the Commission made the first of several visits to the Continent either as a full Commission or in groups of two or three members. In the course of their three year inquiry, the Commission visited educational institutions and industries in Austria, Belgium, France, Germany, Holland, Italy and Switzerland, as well as the United Kingdom. In addition to his duties as Chairman on his Continental visits, Samuelson acted as interpreter for the Commission, for he was fluent in French, German and Italian. The practice of the Commission was for one of the Commissioners, usually Swire Smith, to make notes of the Commission's findings as it went along, and these notes formed the basis of the foreign sections of the Royal Commission's Reports.[2]

In addition to the Commission's work, William Mather visited the U.S.A., Canada and Russia on behalf of the Commission, and produced reports on technical and elementary education in those countries. H.M. Jenkins, Secretary of the Royal Agricultural Society, was appointed a sub-commissioner and in this capacity, he prepared a first-hand report on agricultural education in Denmark, France, Germany, Holland and the United Kingdom.

The Commission's First Report was published before the

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(1) The Times 14th September, 1881.

(2) Snowdon op. cit. p.152.

Commissioners' inquiries had been completed. In their study of the French educational system, the Commissioners examined the recent overhaul of French education, and they considered the reforms to be so important as to merit immediate publication in England. The Report described the old system in great detail and outlined the reforms which were to be made.

In their conclusions the Commissioners observed:

> "It is clearly the aim of the (French) Government and of the great cities that this superior instruction shall be placed as fully as possible within the reach of working men." (1)

Among the reforms was the introduction of training in the use of tools into French elementary schools, and the Commissioners commented:

> "We should be glad to see this kind of manual instruction introduced into some of our own elementary schools",

but went on:

> "We have greater difficulty in estimating the necessity for, and the value of, apprenticeship schools as a mode of training artizans. Whilst giving due weight to some sections of the reasoning of French reporters, we feel sure that they underrate what, in spite of the partial cessation of apprenticeship, can be, and is, learnt in the ordinary workshop." (2)

The Commissioners also praised art teaching in France and promised to deal with the subject more fully in arlater report.

The First Report's conclusions were very much in line with Samuelson's opinions. Samuelson's view was that trade training was best carried out in the workshop, but that general school instruction in the use of tools was wholly desirable. He was also an admirer of the French system of teaching art and design. Magnus in his memoirs, confirms that

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(1) R.C.T.I. First Report (1882) p.28.

(2) Ibid. p.29.

Samuelson was responsible for -

> "bringing into prominence the advantages of our apprenticeship system and workshops training, whenever any of us ascribed, in his opinion, too much influence to technical instruction".(1)

From February, 1882 to June, 1883, the Commissioners visited various educational institutions in London, Oxford, Cambridge, Manchester, Liverpool, Oldham, Barrow, Birmingham, Leeds, Sheffield, Bradford, Keighley, Saltaire, Macclesfield, Burslem, Nottingham, Bristol, Bedford, Kendal, Edinburgh and Glasgow; and took formal evidence from a wide range of witnesses. Samuelson took the chair at these sessions and did most of the questioning of witnesses. The minutes of evidence show him to have taken a particular interest in: the teaching of art and design, the training of engineers and artisans, the work of the Science and Art Department, the training of teachers, and the teaching of Science in elementary schools.

The Commission devoted more time to taking evidence on the teaching of art and design than they did to any other subject, and Samuelson led the Commission's questioning, supported by Roscoe on chemical matters and Swire Smith and Slagg on the relevance of art and design to manufacturing processes in the woollen and cotton trades.

Robert Haeffly, a chemist employed in a calico-printing firm, was questioned by Samuelson and Roscoe on deficiencies in the English calico-printing industry, such as the shortage of chemists and the inadequate training in art and design.(2) W.H. Perkin, an authority

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(1) Magnus, op. cit. p.92.

(2) R.C.T.I. Second Report Vol.2. pp.1-10.

on coal-tar colours, was questioned by Samuelson on the German Patent Laws and on the training of managers for chemical works.(1)

Sir Edward Baines, President of the Yorkshire Unions of Mechanics' Institutes, and Frank Curzon, Secretary of the same Union, outlined their activities, and Samuelson drew from them the observation that an increase in the number of classes in art and design subjects would prove beneficial to the Yorkshire woollen industry. Samuelson also discussed with them the problems of running science classes. Baines said that the biggest problem was to find suitable teachers and he referred to the evils of cramming under the Science and Art Department's examinations' system.(2)

John Rawle, Head Master of the West London School of Art, and formerly an art teacher at the Nottingham School of Art, whose work Samuelson had praised in his 1868 Letter, discussed with Samuelson what the Science and Art Department could do to improve the efficiency of art schools. Rawle had two suggestions: first, that there should be a catalogue of all art work available in Britain, and, secondly, that the South Kensington Training School should recruit more men with industrial experience on to its staff.(3)

John Sparkes, formerly Master of Lambeth Art School, described in great detail, methods of art teaching in operation at the school.(4) H.H. Mott, manager of a firm of fabric wholesalers, gave evidence on the popularity of French designs and the need for the development

(1) Ibid. pp.11-19.

(2) Ibid. pp.31-50.

(3) Ibid. pp.68-71.

(4) Ibid. pp.96-111.

of art education in this country.[1]

Henry Mitchell, a merchant of woollen goods, said he thought that the success of French firms in this trade was due to the superior scientific training of their managers, which enabled them to produce a constant succession of new styles. He described the work of the Bradford Technical School, which he had helped to found with the aim of training better designers and managers. Samuelson was interested in its curriculum and the reasons why it had not enjoyed greater support from local manufacturers. Mitchell attributed the lack of support to too great a faith in the traditional ways of doing things. Some manufacturers also believed that their workers would leave for the U.S.A. once they had completed training courses.[2]

F.W. Grafton, President of the Manchester School of Art, saw no hope for an improvement in the standard of British designs until there existed a complete system of training associated with art schools and with a greater supply of material for study.[3] A.A. Willms, chief artist in the firm of Elkington and Co., who had received his training in France, spoke highly of the work of the Birmingham School of Art,[4] and Walter Smith, Art Director of Bradford Technical College, gave evidence of art teaching in the U.S.A.[5]

Samuelson as a manufacturer of agricultural machinery and an active member of the Institutions of Mechanical and Civil Engineers took a keen interest in the evidence given on the training of engineers.

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(1) Ibid. pp.178-181.

(2) Ibid. p.244.

(3) Ibid. p.275.

(4) Ibid. pp.470-5.

5. Ibid. p.492.

William Anderson, an engineer with responsibility for the training of engineers, was asked by Samuelson to compare the training of proprietors, managers, foremen and workers in this country with the training methods used on the Continent. Anderson said that those who came to him for training as managers usually had no scientific knowledge and he criticised Oxford and Cambridge for their emphasis on classics. He thought the best way to train an engineer was for the trainee to spend three years at a college followed by two years of training inside a firm, instead of spending the whole five years in a firm. In this way a trainee would get a grounding in both theory and practice. Anderson's criticism of the training methods used in France, Germany and Switzerland was that too much time was devoted to theory. In response to a suggestion by Samuelson he agreed that the Continental practice of arranging sandwich courses was useful. On the training of foremen, Anderson described contemporary foremen as "hopeless" and impervious to new ideas. The succeeding generation was likely to prove much better, he thought, because it enjoyed the advantages of a better education, and he welcomed modifications in the Code which enabled science to be taught in elementary schools. In regard to the classes run by the Science and Art Department, Anderson criticised the "inferior character of teachers"[1] which discouraged the attendance of abler students. In conclusion, Anderson said he thought that the standard of our engineers was improving although Continental countries were catching up very rapidly.

James Hopps, workshop superintendent at Cooper's Hill

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(1) Ibid p.175.

Engineering College, gave his opinion on the need to devise a suitable course of technical training for civil and mechanical engineers.(1) He was against the establishment of apprenticeship schools of the kind found on the Continent because he thought it was impossible to train a craftsman in a school workshop, some training on the job was essential.

A number of artisans gave evidence before the Commission and their attendance was due to the efforts of the Rev. Henry Solly, who was anxious that the Commissioners should hear the views of some working men. Samuelson agreed and he arranged that they should appear as witnesses.(2) All were questioned by Samuelson and they described the deficiencies in the existing methods of training craftsmen in their particular trades. Solly gave evidence himself and recommended the establishment of apprenticeship schools in England.(3)

Samuelson's interest in the work of the Science and Art Department went back many years and, as we have seen, he was responsible for the drafting of the section on the Science and Art Department, which appeared in the Devonshire Commission's Report.(4)

J.F.D. Donnelly was questioned by Samuelson on the Department's work and to what extent he considered its operations had assisted British industry.(5) T.H. Huxley, Dean of the Normal College of Science and a Science and Art examiner for twenty years, was asked by Samuelson to give his assessment of the Science and Art Department's

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(1) Ibid pp.445-7.

(2) Henry Solly, <u>These Eighty Years</u> (London 1893) Vol.II. pp.547-8.

(3) R.C.T.I. Second Report Vol.2. p.204.

(4) See p. 133.

(5) R.C.T.I. Second Report Vol.2. pp.282-3.

contribution to British industry. In his reply Huxley was full of praise for the Department's work in spreading scientific knowledge. Samuelson then asked: "In what directions do you think the Science and Art Department might advantageously develop the operations?"(1) In reply, Huxley thought that the Department should consider running classes on Sundays, improvements should also be made in the supply of science apparatus, and the Department should place greater emphasis on practical instruction. Samuelson also sought Huxley's views on the conduct of the Department's examinations and Huxley obliged by describing the Department's methods in great detail with some criticism of the cramming which took place to get students through the Department's examinations.

Huxley concluded his evidence on the Department's work by describing its method of inspecting classes. J. F. Iselin, Assistant Director of the Science Division of the Science and Art Department, was also questioned by Samuelson on this subject.(2)

Thomas Armstrong, Director for Art of the Science and Art Department, and his assistant, H. A. Bowler, were asked to state the Department's aims in regard to art teaching, and the relevance of these aims to British industry, and the methods used to achieve these aims.(3)

The Rev. T. W. Sharpe, the Education Department's Inspector of Training Colleges, was questioned by Samuelson on the educational standards of the pupil teachers who passed into training colleges.(4) Sharpe reported that he found them "very backward" which was due, he thought, to neglect by the teachers in charge of them. Samuelson

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(1) Ibid. p.321
(2) Ibid. pp.345-50
(3) Ibid. pp.351-79
(4) Ibid. p.380-90

pointed out the little time they had for study after a heavy day's teaching and Sharpe agreed that the class contact time for pupil teachers was too long. Samuelson and Sharpe then went on to discuss the science content of training college syllabuses, and on how the Science and Art Department's payments by results system encouraged cramming. Sharpe said that he would like to see the responsibility for the financing of science subjects in training colleges transferred from the South Kensington authorities to the Education Department of Whitehall, and an end made to the payments by results system in connection with the teaching of science in training colleges. However, he thought that South Kensington should retain its responsibility for conducting the examinations in science subjects in training colleges. Samuelson introduced the subject of the Scottish day training colleges, pointing out the cheapness of this system of teacher training, and although Sharpe did not challenge the point that the day colleges were cheaper to run than residential colleges, he thought that much was lost in regard to "moral discipline". Samuelson's final question concerned the supply of female teachers. Sharpe admitted there was a shortage, but pointed out that two new training colleges for girls were to be founded in the near future.

J.F.D. Donnelly, in his second appearance before the Commission, challenged Sharpe's views, and said that he would prefer to see the payments by results system retained in respect of the teaching of science subjects in training colleges because with all its faults it provided the only practicable incentive.(1)

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(1) Ibid p.392.

Samuelson discussed the teaching of science in elementary schools with H.E. Oakeley, an inspector of elementary schools, Oakley being of the opinion that much of the scientific instruction given in schools was "mere cram". He was particularly critical of the method of teaching subjects such as domestic economy, which was sometimes taught without any kitchen equipment whatsoever and merely consisted of memorising recipes.(1)

J.G. Fitch, Senior Inspector of Elementary Schools, though that science "ought to be included in every scheme of elementary education, however low" beginning in the infants' school.(2) However, he regarded science as part of a liberal education rather than training for a special trade. Fitch advocated the establishment of science schools, on the lines of the higher grade schools, to which selected elementary school pupils could be sent. He thought that the position of the higher grade schools needed very careful attention, for there were powerful arguments both in favour and against such schools. Fitch concluded his evidence by describing the great potential which existed among elementary school pupils and thought that given the opportunity they would "not be content to be mere drudges and unintelligent artisans."(3)

Two of Samuelson's old friends, the ironmasters Lowthian Bell and C.W. Siemens, both of whom had given evidence before the 1868 Select Committee and the Devonshire Commission, also appeared as witnesses before the Samuelson Commission and were questioned by Samuelson.

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(1) Ibid p.403.

(2) Ibid p.411.

(3) Ibid. p.433.

Bell described the training of managers, foremen and artisans in the British iron and steel industry.[1] He reported that the industry was increasingly placing greater emphasis on scientific training and this had produced good results in regard to fuel economies. Foremen, however, had much less scientific training than the managers, and were too often inclined to follow rule of thumb methods. As a group they would undoubtedly benefit by more scientific instruction. Comparing the position in the United Kingdom with that in Germany, Bell thought that the German worker was as ignorant of scientific principles as his British counterpart, although his general education was usually superior. British and German foremen were about the same in regard to scientific knowledge. It was difficult to compare British and German managers, although it was a fact that there were fewer industrial scientists employed in British industry than was the case in Germany. Bell attributed the British iron industry's success to three things: energetic entrepreneurs, abundance of capital, and Britain's mineral wealth.

Samuelson questioned Bell on the best way of training workers for jobs in the iron trades. Bell was of the opinion that such training should be done on the job and not at school. It was better for pupils to study general science at school and they would be taught how to apply this knowledge when they started work. Turning to the scientific training of men employed in the mining industry, Bell said that mining engineers were the only ones to have received any scientific instruction. He thought that all miners should have scientific training, but especially the supervisory grades whose responsibilities were increasing.

(1) Ibid pp.19-27.

During his questioning of Bell, Samuelson referred to the sandwich course for colliery workers being currently run in France and Germany, but Bell had no knowledge of these.

C.W. Siemens described his German education and gave some of his views on education in general.(1) He thought the basis of all education should be the teaching of pure science, but this should be preceded by a good general education which would include languages and mathematics. He believed that the school leaving age should be at least fourteen, and it was wrong to let the bright children leave earlier because they had so much more to gain by staying on. Siemens said that he thought education was good as a "civilising agent" regardless of whether it had any direct influence on industrial development. Samuelson asked him if he considered that drawing should be taught in elementary schools, and Siemens replied that he thought perspective drawing should be taught but machine drawing left to a later stage. Samuelson also asked Siemens for his views on the training of managers, and Siemens thought that potential managers should be given a good general education up to the age of sixteen or seventeen followed by specialisation in a subject with their future occupation in mind. Colleges should teach the general principles of a subject and this would be followed by workshop experience.

The Commissioners spent a fortnight in Ireland in June, 1883, taking evidence on technical education and its importance to Irish industry. The Irish Question was then at the centre of British politics and Irish M.P.'s insisted that the Royal Commission should consider the Irish interest in this matter. Samuelson, however, was far from ignorant

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(1) Ibid pp.125-43.

of Irish affairs. He had toured Ireland in 1869 studying the land problem and he had heard the evidence of Irish witnesses while serving on the 1868 Select Committee and the Devonshire Commission. He took the chair at eleven of the fourteen meetings held by the Commission in Ireland; with Roscoe chairing two meetings and Slagg one.

Blanchet observes that "the approach and method of the Royal Commission on Technical Instruction was comparable to those of the Select Committee of 1868",[1] which is hardly surprising considering they both had Bernhard Samuelson as chairman. Samuelson obviously used the 1868 Select Committee as a model for the Royal Commission on Technical Instruction. Hence the Commission's Reports, following the pattern of the Select Committee, were not merely an educational survey, but also an attempt to judge how well the British educational system met the needs of British industry, and to evaluate what foreign industries owed to the educational systems of their own countries.

A large part of the Report was drafted during the summer of 1883 at Henry Roscoe's house at Graythwaite on Lake Windermere, and the Report was completed at Samuelson's country house in Devonshire.[2] Individual Commissioners were made responsible for drafting a particular section of the Report which was then approved or revised by the Commission as a whole. Roscoe was largely responsible for drafting the parts of the Report which dealt with scientific research in Germany and Switzerland, Swire Smith wrote up the Commission's observations on manufacturing industries, Magnus described the curricula and organisation of various

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(1) Blanchet op. cit. p.206.

(2) Roscoe, op. cit. p.202.

foreign educational institutions, and Samuelson was responsible for the final editing of the entire Report.(1) The Commission's Second Report was published in five volumes. Volume I contained general reports on technical education in the United Kingdom and on the Continent with the Commission's conclusions and recommendations; Volume II was devoted to Jenkins' survey of agricultural education and Mather's report on technical education in the U.S.A.; while volumes III, IV and V consisted of more reports, minutes of evidence and appendices.

The Commission's Reports reveal both the strengths and weaknesses of Samuelson's method of conducting an inquiry. In its favour the Commission's Reports were extremely thorough. The Commissioners examined technical education at home and abroad in all its aspects and "the members interpreted their terms of reference so broadly as to scrutinise institutions as diverse as Edgbaston High School for Girls and the Imperial Polytechnic in Moscow, they examined North Country industrialists and trade unionists as well as Italian silkweavers and Danish agricultural experts; they inspected German universities and French ecoles and they sent Sir William Mather to conduct an enqiry into American institutions".(2)

Yet perhaps the Commission treated the subject too widely and accumulated a mass of evidence, some of it of doubtful value (Samuelson was always inclined to pack a report or speech with facts) and it is difficult not to agree with Argles that the Report "could certainly have been improved by judicious pruning".(3) If this criticism

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(1) Magnus op. cit. p.92.

(2) Cardwell op. cit. pp.103-4.

(3) Argles, "The Royal Commission on Technical Instruction."

is valid then the blame must rest upon Samuelson who was responsible for editing the Reports.

In its conclusions, the Commission noted the "great progress" made by Continental industries since the Paris Exhibition of 1878. The Germans were ahead of Britain in the field of organic chemistry, the Belgians had pioneered ventilation fans for use in deep mines, the Swiss were using turbines to harness their water power, and the French were pre-eminent in design work. However, in spite of these trends, the Commission took an optimistic view of Britain's industrial prospects and believed that "our people still maintain their position at the head of the industrial world".(1) Indeed, it was pointed out, that in the production of some textiles in which other countries had formerly excelled Britain was gaining ground.

The Commission considered that the industrial progress of Continental countries would not have been possible without the establishment of a system of higher technical education, the provision of facilities for scientific research, and a general appreciation of technical education. The Commission stressed that they had been impressed "with the general intelligence and technical knowledge of the masters and managers on the Continent",(2) and noted the efforts being made to provide technical education for foremen. In regard to the technical education of workmen, however, "the resources of Continental countries have hitherto been, and are still, very much more limited than has been supposed in this country to be the case".(3) Yet in two very

(1) R.C.T.I. Second Report Vol.1. p.526.

(2) Ibid. p.508.

(3) Ibid. p.510.

important respects, the education of some foreign industrial workers was superior to that of English workmen: first, the systematic instruction in drawing given to adult artisans in France, Belgium and Italy; and, secondly, general elementary education in Switzerland and Germany.

The Commissioners were heartened by the growing interest in technical education found among British manufacturers and by the educational work being done by co-operative societies. They praised the "intelligent and able administration of the Science and Art Department",(1) and pointed out that, with the exception of France, "there is no European country of the first rank that has an Imperial budget for education comparable in amount with our own".(2)

The Commission considered the best preparation for technical education to be "a good modern secondary school" and deplored their scarcity in Britain. They thought that the "transfer of the functions of the Endowed Schools Commissioners to the Charity Commission has not had the effect of increasing the rate of progress in the re-organisation of our secondary schools. We consider it to be essential that steps should be taken to ensure that this work shall be carried on with greater vigour in the future than it has been hitherto".(3) The Commission held that the curricula of secondary schools should include modern languages and that more science should be taught in elementary schools. The Commissioners praised the work being done by the colleges of technical and scientific education, yet they felt that their worth was

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(1) Ibid. p.515.

(2) Loc. cit.

(3) Ibid. p.576.

not generally appreciated. The Commissioners pointed to the defects in the teaching of science and art in training colleges and supported the establishment of day training colleges. The Commissioners concluded with praise for the work of the City and Guilds Institute and wound up with some comments on Irish education.

In its recommendations, the Commission advocated that drawing should be taught to all standards in elementary schools and that the inspection of drawing classes should be done by the Education Department. All children under the age of fourteen in England and Wales should not be allowed to undertake full-time work until they had passed the Fifth Standard. The Commission considered that school boards should be given power to "establish, conduct and contribute" to the maintenance of classes under the Science and Art Department, and that the Science and Art Department itself should make a greater effort to emphasise the practical aspects of science subjects. The Commission recommended that the teaching and inspection of science and art in training colleges should be improved, and that selected students be enabled to pursue more advanced studies at the National Art Training School and the Normal School of Science at South Kensington. The Commission thought the greatest defect of the English educational system to lie in the shortage of good secondary schools and they suggested that local authorities be empowered to establish and maintain secondary and technical schools. Furthermore, that steps be taken to accelerate the application of ancient endowments to secondary and technical schools. The Commission thought that ratepayers should be given the power to approve an increase in the amounts spent on public libraries within the limits set by the Public

Libraries Acts.

The publication of the Commission's Final Report in May, 1884, was widely welcomed. The Times proclaimed that "a serious commencement has been made of a national edifice of technical education".(1) According to one historian "the Commission's exhaustive inquiries..... .... did not lead to very bold conclusions but they did provide a clear analysis of a very complicated situation".(2) However, whatever its defects, the Report remained for many years a standard reference on technical education in Britain and abroad. Furthermore, if we accept Argles' view that the Report was the work of a pressure group led by Samuelson, then it must be conceded that the pressure group was successful, for the work of the Royal Commission sparked off a train of events which was to lead to the passing of the Technical Instruction Act of 1889. In Ashby's words "out of this Royal Commission came the Technical Instruction Act of 1889".(3) Once the Commissioners had seen their Report published they addressed meetings throughout the country in support of its recommendations, and in 1886 they took the lead in forming the National Association for the Promotion of Technical Education. Within three years the Technical Instruction Act was on the statute book and was soon followed by the payment of "whisky money" to assist technical education.

Samuelson was at the centre of these events, and his reputation in the country as a leading authority on technical education probably reached its peak when the Commission's Report was published in 1884. In the same year he was given a baronetcy "for his services to

(1) The Times 16th May, 1884.

(2) Sir Eric Ashby, "Education for an age of technology" in Charles Singer and others(Editors) A History of Technology (Oxford 1958) Vol. V.p.795.

(3) Ibid. p.796.

the education of the people". During a visit to Banbury in July, 1884, A.J. Mundella gave William Potts, editor of the Banbury Guardian, some details of the background to the award of Samuelson's baronetcy. Mundella recalled:

> "I was Vice-President of the Council and it became my duty to receive the report of the Royal Commission on Technical Instruction. In doing so, I explained to the House of Commons, the noble conditions under which the inquiry had been conducted, the sacrifice, personal and percuniary, made by its members. The House listened with deep emotion, accentuated by its frequent cheers, and when I concluded, the thanks of the Chamber, and through it, of the nation, were ungrudgingly given to the Chairman and his colleagues, and recorded in the journals of Parliament. After I had sat down, Mr. Gladstone said to me, 'We really ought to do something for this noble-minded gentleman. What say you?'
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> I replied that I heartily agreed with the Prime Minister, and thereupon Mr. Gladstone spontaneously wrote a letter to Mr. Samuelson asking him if he would accept a baronetcy." (1)

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(1) Potts, Sir Bernhard Samuelson, Bart., Educationalist and Ironmaster p.41.

CHAPTER IX

SAMUELSON AND THE ROYAL COMMISSION ON THE WORKING OF THE ELEMENTARY EDUCATION ACTS 1886-1888

At the general election of 1885 the Liberals gained a majority of eighty-six seats over the Conservatives. Parnell's Irish Party, however, won eighty-six seats and gave their support to the Conservatives, enabling Lord Salisbury to form a new government. Lord Cranbrook succeeded A. J. Mundella as Vice-President of the Council in the new Conservative Government, and one of his first acts was to appoint a Royal Commission "to inquire into the working of the Elementary Education Acts, England and Wales".

Lord Cranbrook wrote to Mundella asking him to serve on the Commission, enclosing a list of possible Commissioners which included:-

The Bishop of London (Chairman)

Cardinal Manning,

Canon Gregory,

Rev. J. H. Rigg,

Rev. C. D. Morse,

C. H. Alderson,

T. H. Heller,

Rev. R. W. Dale,

Sir John Lubbock,

Lord Harrowby

and Lord Beauchamp

In his reply Mundella observed that the "whole composition will be regarded as highly denominational", and suggested that Samuelson, Roscoe or Lyulph Stanley be included to provide some sort of balance.(1)

Cranbrook responded to Mundella's suggestion that the Commission was too narrowly based and added:-

Sir Francis Sandford,

Sir Bernhard Samuelson,

Sidney Buxton,

Samuel Rathbone,

Henry Richard,

Lord Norton,

G. W. Shipton,

B. F. Smith,

J. G. Talbot

and B. C. Mulloy, with a new Chairman, Lord Cross.

Mundella, who was on the original Commission, withdrew in 1886 in favour of Lyulph Stanley, and in 1887 B. C. Mulloy was replaced by the Duke of Norfolk. Thus it appears that Samuelson's appointment to the Commission was made at Mundella's suggestion, and his name was put forward to lessen the denominational character of the original list of Commissioners.

The Commission was appointed on the 15th January, 1886, and reported on the 27th June, 1888. The Commissioners held their first meeting on the 20th January, 1886, and sat for one hundred and forty-six days, ninety-five of which were devoted to hearing the evidence of one hundred and fifty-one witnesses, and fifty-one days were taken up with

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(1) Armytage, "A. J. Mundella 1825-1897" p.232

discussion of the Report.[1] Patrick Cumin, Secretary of the Education Department, was the first witness to be called, followed by school inspectors, the representatives of educational societies and the principals of training colleges. The Commission adjourned for a summer vacation in August, 1886, and resumed in November, when they heard the evidence of elementary schoolteachers, school managers, representatives from school boards, voluntary schools and school attendance committees, and diocesan inspectors who gave evidence on the religious instruction given in public elementary schools. Sir Patrick Kennan, Commissioner for Ireland, gave an account of educational administration in Ireland and Lord Lingen, described as "a most important witness",[2] also gave evidence.

The Minutes of Evidence show that Samuelson was present for seventy of the ninety-five days devoted to the taking of oral evidence, and that he was not as active in the questioning of witnesses as he had been on the Devonshire Commission and the Royal Commission on Technical Instruction. This can be explained by the fact that the Cross Commission had more members than the other two on which Samuelson had served, and its personnel were eminent in their own fields, the Cross Commission having "a galaxy of talent at its command".[3] Furthermore, Samuelson was never one to ask an unnecessary question. It was always

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(1) Royal Commission appointed to inquire into the working of the Elementary Education Acts, England and Wales, Final Report (1888) p.2. (Hereafter referred to as R.C.E.E.A.)

(2) Loc. cit.

(3) W.H.G. Armytage, Four Hundred Years of English Education (Cambridge 1964) p.155.

his way to allow those he regarded as better qualified than himself to speak first, and then he would intervene only if he thought something of importance had been missed or if he had some special knowledge of his own to contribute.

It was natural that Samuelson should have taken the lead in the Commission's examination of the teaching of science in elementary schools. Roscoe was the leading witness on this subject and the questioning was done by Samuelson.(1) In Roscoe's opinion, England lagged behind Continental countries in regard to the teaching of science in elementary schools. Asked if he considered that the teaching of science in elementary schools had any direct bearing upon the country's industrial position, Roscoe thought it had "essential bearing" and that scientific instruction needed to be thoroughly re-organised if British industries were to retain their position: "For I look upon it that our present system tends rather to the manufacture of clerks than the manufacture of artisans".(2) Science teaching in the elementary schools, he argued, was necessary to prepare the way for the classes run by the Science and Art Department. Roscoe gave evidence on the extent of science teaching in Continental schools and described the ways in which scientific instruction had assisted the development of Continental industries. He reported that there had been no increase in the amount of science taught in English elementary schools in recent years, and indeed the number of classes in some science subjects had declined. The

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(1) R.C.E.E.A. Third Report pp.507-12.

(2) Ibid. p.507.

British Association for the Advancement of Science had prepared a report on this subject which Roscoe submitted in evidence to the Commission.

In answer to a question by Samuelson, Roscoe came out in favour of the higher grade schools, in which a substantial amount of science was taught, with special reference to the higher grade schools successfully functioning in Manchester, Sheffield and Birmingham. Roscoe was questioned on the teaching of drawing and modelling in Continental schools, and agreed with Samuelson that these subjects needed to be developed in English elementary schools. Roscoe also favoured the establishment of evening classes which would offer a wider range of subjects than those provided by the Science and Art Department. Roscoe thought that these classes should be financed by local authorities and he stated his intention of introducing a Bill in Parliament to authorise this.

The position of the board schools in the English educational system was one of the most important issues examined by the Commission, and Samuelson made three interventions on this subject. The first was after T.W. Allies, Secretary and Treasurer of the Catholic Poor Schools Committee, had stated that most Catholics regarded the board schools with disapproval. Samuelson dealt with him rather severely, pointing out that in 1870 there were one million two hundred and fifty thousand children attending elementary schools and in 1884 there were three million two hundred and fifty thousand children, and that a large proportion of the additional two million children would not be attending an elementary school if it had not been for the creation of board schools

under the 1870 Act.[1]

Allies also held that the board schools were being used by some "movers" to "crush the voluntary schools"[2] and he saw the widening range of subjects taught in board schools as part of this "plot", as well as giving the working classes ideas above their station. Samuelson attempted to describe the liberal curricula to be found in many Continental schools, but was met by Allies' assertion that such things should be paid for by those who enjoyed them or not taught at all.

The Rev. C. Williams, a former President of the Baptist Union, who disliked the idea of children from Nonconformist families being forced to attend Anglican schools, expressed his wish to see a school board in every school district.[3] Samuelson wondered if the "representation of taxpayers" on the managing bodies of denominational schools might not go some way to meeting Nonconformist fears. Williams thought that it would be a "useful concession". Samuelson pointed out the waste of resources involved in having two schools in a small village, and Williams agreed that such duplication was wasteful.

Mark Wilks, a member of the London School Board, expressed himself in favour of a universal system of school boards,[4] and Samuelson pointed out that the abolition of the voluntary schools would "add very greatly to the charge upon the ratepayers".[5] Would ratepayers be prepared to accept this burden? Wilks thought that many of them would and reiterated his belief that "the time had come when the two systems

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(1) Ibid p.355.

(2) Loc. cit.

(3) Ibid. p.94.

(4) Ibid p.249.

(5) Ibid. p.250.

should cease, and there should be universal school boards". He thought this would "secure greater efficiency of instruction for the children of the locality".[1] Samuelson wanted to know if there was any evidence available to support the latter statement and Wilks admitted that it was merely his opinion that greater efficiency would result from the change.

Samuelson's contribution to the Commission's examination of the board schools illustrates his support for the compromise settlement embodied in Forster's 1870 Act. He was quick to point out to Allies that the board schools had been responsible for providing many school places which would otherwise not have been provided, at the same time he was critical of Wilks' arguments in favour of ending the dual system and replacing it by a universal system of school boards. Although Samuelson argued against the abolition of the voluntary schools on the grounds of the additional financial burden it would place on ratepayers, his part in the Banbury "schools' crisis" of 1899 [2] and in other statements he made, show that he thought the voluntary schools should survive for as long as they were able to support themselves financially. He was strongly in favour of "the localities" being encouraged to meet their own educational needs. Only if they failed or found themselves unable to provide adequate educational facilities, did Samuelson favour the intervention of the State.

Samuelson had never liked the pupil-teacher system and he was active on the Commission in exposing the limitations. The Rev.

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(1) Loc. cit.

(2) See Chapter Two.

T.W. Sharpe, a Chief Inspector of Schools, who had been questioned by Samuelson during the hearings of 1868 Select Committee, the Devonshire Commission and the Royal Commission on Technical Instruction, was again examined by Samuelson during the hearings of the Cross Commission. Their previous exchange had not been cordial and Samuelson must have had a good idea what Sharpe's answers were likely to be.

Samuelson began by asking Sharpe to confirm that in some of the London board schools the staff consisted entirely of adult teachers,(1) and Sharpe countered with the reply that the same situation could be found in some voluntary schools. Samuelson then asked if any comparisons had been made between the results gained by schools with all-adult staffs and those of schools which employed pupil-teachers. Sharpe replied that there was no doubt that adult teachers were more intelligent than pupil teachers and he admitted the superiority of schools in which adult teachers were exclusively employed. Samuelson went on to point out that the pupil-teacher "had been abandoned in nearly all European countries", and Sharpe agreed that this was likely to have beneficial effects on the educational systems of those countries provided they had an adequate supply of adult teachers. Samuelson asked if Sharpe thought it was desirable to have pupil-teachers teaching half-time, as was the case in London, leaving them more time for study. Sharpe agreed that it was likely to make them better teachers and concurred that the London system should be adopted elsewhere.

Samuelson returned to this subject when he examined

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(1) R.C.E.E.A. First Report p.163.

the Rev. Warburton, another Chief Inspector of Schools. Warburton had spoken of the educational standards of students entering training colleges as being "frequently wretched" and of how some of them had to be taught to read.(1) Samuelson pointed out that most these were pupil-teachers and it was a "great misfortune" that children should be taught by such pupil-teachers. Warburton agreed and said that the situation was due to the poor financial position of some schools. However, the Rev. Daniel, Principal of St. John's Training College, Battersea, was "on the whole" satisfied with the educational standards of the students who entered his college, although he admitted to Samuelson that the instruction they had received in science subjects tended to be "superficial and unco-ordinated".(2)

Samuelson had long championed the foundation of day training colleges in England and he questioned Sharpe on the Scottish day training colleges, which were, Sharpe admitted, "thoroughly efficient".(3) Samuelson then pointed out that the cost to the Government of maintaining a Scottish day college was less than one-third of the cost of maintaining an English residential college. The Rev. Warburton readily conceded that day colleges were cheaper to run but preferred the residential colleges because they allowed greater opportunities for moral training.(4) Roscoe considered that the general standard of teacher training in England needed to be raised and he favoured the Scottish system in which the Universities were

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(1) Ibid. p.294.

(2) Ibid. p.440.

(3) Ibid p.163.

(4) Ibid p.294.

responsible for the training of teachers. He also supported the setting up of day training colleges in England. Roscoe said he thought the pupil-teacher system to be the weakest part of the English elementary school system.(1)

The position of the higher elementary schools engaged the attention of the Commissioners, and Samuelson made a contribution to the discussion. The Rev. Sharpe when questioned by Samuel Rathbone on the desirability of introducing an eighth standard into elementary schools had replied that he would prefer to see the establishment of a secondary school system. Samuelson asked him to distinguish between higher elementary schools and secondary schools, and Sharpe said that the distinction lay in the teaching of languages. Samuelson then asked if Sharpe would object to the provision of higher elementary schools as a substitute for secondary schools. Sharpe wanted to know what would be taught in the higher elementary schools and Samuelson thought that it would be the same subjects as those taught in the seventh standard, but at a more advanced stage, to which Sharpe replied: "I think that at the end of the seventh standard they have obtained at the expense of the State sufficient education to qualify them for their work in life".(2)

C. Twiss, Head Master of the British School, Warrington, favoured the establishment of higher elementary schools in large towns, and Samuelson wondered if the separation of the better teachers and

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(1) R.C.E.E.A. Third Report p.512.

(2) R.C.E.E.A. First Report p.239.

abler pupils from the less able teachers and pupils might not have certain disadvantages from the point of view of the slower children. Twiss, however, thought that the separation would be better for both the clever and the backward child, for both would get the attention they needed.(1)

During the Commission's examination of the education of children working in theatres, Samuelson questioned Mrs. H. Fawcett on what action was taken to enforce the attendance at school of such children, and what suggestions she had to offer on the problem.(2) Mrs. Fawcett reported that little was done to enforce attendance and she thought that the answer lay in amending the Factory Acts to include children working in theatres. On the same subject, Samuelson pointed out to C.T. Mitchell of the National Vigilance Association that in France all children not educated in public elementary schools were examined by State inspectors to test their educational progress and could this practice not be adopted in England. Mitchell had no objection to this, but he thought that it would not be too difficult to groom children to pass examinations, especially as most theatrical children were extremely intelligent, hence this would not be sufficient in itself to ensure that they were being properly educated.(3)

When Cumin, Secretary of the Education Department, made his first appearance before the Commission, Samuelson asked if the Code was ever laid upon the table of the Houses of Parliament in "dummy" before the Education Department had actually decided what the

(1) R.C.E.E.A. Third Report p.460.

(2) Ibid. p.319.

(3) Loc. cit.

contents of the Code were to be.[1] Cumin's answer was a straight "No". Samuelson must have been well aware of the practice followed in such matters and, therefore, his question can be interpreted as a suggestion to Cumin, and, perhaps the other Commissioners, that a preliminary draft of the Code should be placed before Parliament before it was finalised by the Education Department.

In his second appearance, Cumin was questioned by Samuelson on his proposal that elementary education in the counties should be placed under an elected county board which would replace the elected parish boards. Cumin argued that it would reduce the number of elections and "a very superior class of persons" would be prepared to serve on the county education boards or committees which could take a "county view" of education.[2] Cumin admitted that his proposals would help to eliminate many small parish schools. Samuelson asked if there was no value in encouraging competition between parishes on educational matters. Cumin admitted there was, but he pointed out the friction also engendered by each parish having its own school. Samuelson asked Cumin if the aim of his scheme was to simplify administration or improve the standard of education, and Cumin thought that both would be improved by the change.

The problem of the small schools was also brought up by the Rev. James Duncan, Secretary of the National Society, who said that the small schools had difficulty in recruiting competent teachers

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(1) R.C.E.E.A. First Report p.53.

(2) R.C.E.E.A. Third Report p.687.

because of shortage of funds.[1] Samuelson wondered if the answer did not lie in encouraging amalgamations among small village schools, especially schools for the senior children who could travel to other villages without too much difficulty. Duncan thought the trend was in the opposite direction and his Society was in the process of building a number of small schools in remote country districts.

Samuelson was always impatient with sectarians and sectarianism and this probably explains why he said little on the question of religious teaching in schools. His only intervention was a short discussion he had with the Rev. Duncan of the National Society on whether morality could be taught without a religious basis. Duncan admitted this was possible, but as a Churchman he had to insist that in Church of England schools morality must be taught in accordance with Anglican doctrine, and, he explained, he expected Roman Catholics and Wesleyans to take the same line in their schools.

When the Commission finally published its findings in June, 1888, Samuelson was one of the eight Commissioners who signed a Minority Report (the others were Buxton, Dale, Heller, Lubbock, Richard, Shipton and Stanley). The Minority Commissioners regretted they could not sign the Majority Report but stated that:

> "the differences of opinion, which apply as much to the general tone and arguments of the report as to its summary of conclusions, have been so many and so important that our signature would have conveyed a false impression. The proposal, more especially, that voluntary schools should be enabled to claim aid from rates, would, it appears to us, re-open the whole settlement of 1870; and further, while we recognise that the function of the character of

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(1) Ibid. p.417.

> the children attending our elementary schools is of paramount importance alike to the children, the parents and the nation, we fear that the recommendations regarding religious instruction contained in the report of the majority would lead to a renewal of bitter disputes and rivalries, which were and are happily subsiding. These differences alone, even in the absences of others, compel us to set forth our conclusions in this report."(1)

The Minority Commissioners, however, began their Report by outlining the points of agreement they had reached with the Majority Commissioners. The Commissioners were unanimous in favouring a relaxation of the payments by results system. They agreed that the State should be more exacting in its rules on the standard of school accommodation, that the management of schools should not be carried out by teachers, and the accounts of voluntary schools be made public. There was agreement that the inspectorate should be open to elementary schoolteachers and that teachers should be paid fixed salaries which did not vary with the grant. They shared the Majority Commissioners' view that the poor methods of instructing pupil-teachers in schools was a serious obstacle to their progress in training colleges, and that pupil-teachers should be allowed more time for their studies. In regard to the training colleges, they agreed with the Majority Report in recommending that selected students should undergo a third year of training, and that day training colleges be established. They agreed with the recommendation that the minimum age for half-time exemption from school attendance should be eleven and for full-time pupils, thirteen. There was agreement on the setting up of truant schools as a means of enforcing attendance.

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(1) R.C.E.E.A. Final Report p.237.

It was agreed that the employment of children in theatres should be brought under the Factory Acts. In regard to changes in the curriculum, the Minority Commissioners agreed that more stress should be given to science teaching and technical instruction in elementary schools, more drawing should be taught in schools, they approved of the introduction of cookery lessons for girls, and recommended the provision of a greater variety of reading textbooks in schools. Even on the subject of the higher elementary schools, there was agreement that they were an important addition to the elementary schools' system, and in cases where such schools were not available, they concurred that higher classes for pupils above the seventh standard should be attached to ordinary elementary schools. It was also agreed that facilities should be provided whereby poor persons might obtain the payment of moderate school fees for their children in voluntary as well as in board schools "without the taint of pauperism". Finally, there was agreement that a longer term of office should be allowed for in the constitution of school boards.

The Minority Commissioners went on to state the points on which they dissented from the views of the Majority Report. They began by defending the Education Department against suggestions that it had exceeded its legal authority in setting up school boards to meet deficiencies in school accommodation and in the exercise of its powers concerning the stopping of grants to superfluous schools. They regretted the suggestion of a doubt as to the right of all to attend public elementary schools and questioned whether it was good for many village schools, where the only one in a village, to be under the control of the local clergy. They considered the pupil-teacher system to be "the

weakest part of our educational machinery, and that great changes are needed in it if it is to be continued in the future".(1) They thought that no pupil-teacher should be entrusted with a class until he or she was fifteen years of age, and on the question of training colleges, the Commissioners observed "we do not think that chapter in the report does justice to the greatness or the need for better training".(2)

Their dissent from the Majority view on the question of religious instruction in schools was stated thus:

> "While we attach the very greatest importance to the moral element in our national education, we differ from our colleagues in their recommendation that it is to the State we should look for increased support to the moral element of training in our schools. We would rather look to the local interest taken and to the influence that managers and parents can bring to bear on the conduct of the school, together with the personal character of the teacher for maintaining that high moral standard among the scholars which it is the object of the State to secure."(3)

They were also strongly opposed to the Majority Commissioners' proposal to assist voluntary schools out of rates.

The Majority Commissioners had felt that it would be "premature to make any definite recommendations as to the nature and powers of the local authorities which it may be necessary to constitute under the new conditions of local government, now under consideration of the legislature".(4) The Minority Commissioners, however, thought that

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(1) Ibid. p.242.

(2) Loc. cit.

(3) Ibid. pp.244-5.

(4) Ibid. 223.

the creation of new educational authorities with the power to open new schools would be desirable "whereas at present in the absence of a school board, delays are repeatedly interposed before the Education Department finally orders the election of a board and the provision of necessary accommodation".(1)

In general terms the Minority Commissioners felt that the Majority Report tended to look at educational improvements from the point of view of their effect on certain types of school, whereas the Minority Commissioners claimed to be interested in achieving "an expansion of education, a widening of its aims, and its establishment on a broad base of local support and popular management".(2)

At a meeting of the Commission held on the 15th November, 1887, it was resolved that all divisions of the Commission should be made known by show of hands, and that on the application of any member of the Commission the voting record of each Commissioner should be published. One hundred and thirty-four divisions were thus recorded.(3) It would be unnecessarily tedious to list Samuelson's voting on these divisions. It is sufficient to say that he voted consistently in support of the views which found expression in the Minority Report. His voting rarely differed from that of Lyulph Stanley and Sir John Lubbock.

The amendments to the draft report proposed by Samuelson, however, need to be recorded in full because they show his attempts to influence the final report. The failure to get these amendments and

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(1) Ibid p.247.

(2) Loc. cit.

(3) Ibid. pp.446-488.

others accepted by the majority led to the drawing up of the Minority Report. Page 56 line 27 of the final report stated:

> "Objection has been taken to the interpretation thus given of the powers conferred on school boards by the Act of 1870, on the grounds that it is at variance with the language used by Mr. Forster, when he had charge of the Bill in the House of Commons. It is stated that he gave countenance to the idea that the door was in the future always to be left open to all comers to supply a deficiency, even when a school board had taken the matter in hand. But this power is now one of secondary importance, since the law officers of the Crown have not upheld such a construction of the words of the Act."

On the 17th November, 1887, Samuelson moved that after the words "of the Department" to omit from the words:

> "Objection has been taken"

down to the words

> "the House of Commons"

for the purpose of inserting the following words:

> "But no words of Mr. Forster relevant to this contention and supporting it, spoken during the passing of the Bill, have been produced to us."

Samuelson's amendment was defeated by six votes to twelve and it was the unamended passage which appeared in the Commission's Majority Report.(1)

On page 84 of the Final Report, the Commissioners dealt with the question of teachers' superannuation and concluded:

> "On the whole, we should be glad to see a superannuation scheme established, and we have arrived at the conclusion that the compulsion upon existing teachers to contribute to such a scheme should be indirect rather than direct, and should be enforced by the action of the managers, rather than as a legal obligation upon the teachers themselves. The

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(1) Ibid. p.447.

> facilities afforded by the Post Office for the purchase of deferred annuities are great, and we think that this system affords the best method of placing teachers in such a position that when, after the attainment of a certain age, in the judgment of their managers, they become less competent for teaching, they may be relieved of their duties without any sense of injury or injustice."

On the 8th February, 1888, Samuelson proposed that after the words "the best method" the following be inserted:

> "We should be glad if some arrangement could have been suggested by which provision could be made for the whole age of a body of men whose services are so valuable to the country. We regret that we are unable to offer any scheme by which that object could be effected."

Samuelson's amendment was defeated by four votes to thirteen and the unamended passage appeared in the Majority Report.(1)

In Part IV of the Final Report, dealing with local education authorities, appeared the passage:

> "It is more than a matter of probability that much of the opposition to a general establishment of school boards is due, not so much to jealousy or dread of interference by representative ratepayers in the work of voluntary school management, as to disapproval of the restriction of distinctive religious teaching, imposed upon the rate-supported schools by Section 14 of the Act of 1870."

On the 2nd May, 1888, Samuelson moved that the following words be inserted after the above passage:

> "We believe, however, that the repeal of the Cowper-Temple clause, would give great umbrage to those who now consider themselves to be protected by it, and we could not, therefore, recommend its repeal."

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(1) Ibid. p.453.

Samuelson's amendment was defeated by four votes to thirteen and his words did not, therefore, appear in the Commission's Final Report.

The division of opinion among the members of the Cross Commission, though it reflected the conflicting views on education among the public at large, undoubtedly weakened the force of the Commission's recommendations. Steps were taken, however, to give effect to some of its suggestions. The Code of 1890 abolished grants in respect of the three "R's", and this was a heavy blow to the system of payment by results. Another important outcome of the Cross Commission was the establishment in 1890 of day training colleges in universities and university colleges. Both of these were measures which Samuelson had campaigned for since the 1870's and the Cross Commission, in spite of its divided council on many points, was largely instrumental in getting them implemented.

CHAPTER X

RETIREMENT YEARS 1895-1905

At the dissolution of Parliament in July, 1895, Samuelson announced his decision not to seek re-election and he was created a Privy Councillor on the occasion of his retirement. As we have seen, he had been made a baronet in 1885 and a Fellow of the Royal Society in 1881. In 1878 he had served on the Royal Commission on the Paris Exhibition, and while in Paris had been made a Chevalier of the Legion of Honour for his services in connection with the organisation of the Exhibition. Samuelson's links with France were very close. He had established his first business at Tours and was a frequent visitor to France on business matters, as well as undertaking several visits as part of educational surveys. He often holidayed in the South of France, and in 1892 established a new branch of his Banbury firm at Orleans. In July, 1880, Samuelson had been a guest at the French President's banquet held at Cherbourg, and he had carried an important diplomatic despatch on the Egyptian crisis from Sir Charles Dilke, Under-Secretary at the Foreign Office, to the French Prime Minister, Gambetta.(1)

Samuelson had a long and distinguished career, yet he failed to achieve Ministerial rank and it is difficult not to agree with

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(1) S. Gwynne and G.M. Tuckwell, The Life of Sir Charles W. Dilke (London 1915) p.333.

William Potts's explanation for this:

> "There is little doubt that the failure to win the second election in 1859 and the consequent deferment of his real start in Parliamentary life by six years was unfortunate, and prevented him from securing that Parliamentary standing to which he afterwards attained at a time when the fortunes of his party would have made it possible for them to have promoted him to Cabinet rank. As Vice-President of the Committee of Council for Education or as President of the Board of Trade, his great abilities would have found plenty of scope and there is little doubt that the country would have benefitted greatly by such an appointment."(1)

If Potts is right, then if Samuelson had won the 1859 election at Banbury he might have had a place in history comparable to that held by, say, A.J. Mundella, who served in both of these offices in Gladstone's Ministries.

Samuelson had already reduced his business commitments before his retirement from Parliament in 1895. In 1873 he had formed his Middlesbrough enterprises into a limited liability company under the chairmanship of his second son, Francis A.E. Samuelson, and in 1888 his Banbury firm was similarly converted into a limited liability company.(2) Samuelson retained the chairmanship of the board of directors of the Banbury company until his death, with his nephew, Ernest Samuelson, and J.P. Hardy as the firm's managing directors. It was under this management that the firm began the manufacture of mill machinery which lessened the company's dependence on the sale of agricultural implements.

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(1) Potts Sir Bernhard Samuelson. Ironmaster and Educationist p.27.

(2) Certificate of Incorporation. Samuelson & Co.Ltd., 1888. (S.P.)

After his retirement from Parliament, Samuelson's political views underwent a considerable change. In 1897 he took advantage of a dinner at Torquay to announce that on the Irish Question he no longer supported the policy of Home Rule. He also disliked "the ultra-radical sentiments which increased in the party during his last years",(1) for although a Liberal and by the standards of the 1860's and 1870's he can be classified as a Radical, Samuelson had no liking for Socialist ideas or any sympathy for trade unionism and in the 1890's the Liberal Party was becoming increasingly associated with both. There were some Liberals who, in contrast with old-fashioned Gladstonians such as Samuelson, "displayed leanings towards collectivism" and "the workmen who came forward as Liberal electioneering agents or candidates were the secretaries of the great trade unions, whose membership grew every year."(2) Samuelson was not alone in his defection from the Liberal ranks for "among the great landowners and leading manufacturers there were only a few who, more from family tradition than personal inclinations, remained faithful to the Liberal creed. Even among the gentry, manufacturers, bankers and traders of the middle-class, an uninterrupted stream of defectors thinned the party ranks". Some Banbury Conservatives even tried to persuade Samuelson to accept nomination as their candidate at the 1900 general election.

During the last years of his life, Samuelson also modified his views on the free trade question. In a paper read before the

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(1) Dictionary of National Biography op. cit. p.259.

(2) Elie Halevy, Imperialism and the Rise of Labour (1929 London) p.6.

(3) Ibid. p.7. 6th November, 1901.

Political Economy Club in London on the 5th July, 1901, the chief conclusions of which he summerised in a letter to The Times, he argued that a departure from Britain's traditional free trade policies could be justified on three main grounds. First, that a moderate tariff would be a useful means of raising additional revenue for the Exchequer; secondly, that a tariff could be used as a bargaining counter in commercial negotiations with foreign states; and, thirdly, that a tariff would serve to check the dumping of foreign goods in British markets at prices less than their cost of production.(1) In the following year Joseph Chamberlain launched his Tariff Reform programme which embraced the main points put forward in Samuelson's paper.

Samuelson retained his interest in education to the end of his life and there is no evidence that his views changed on this subject after his retirement. He remained Chairman of the Oxford County Council Technical Instruction Committee and Chairman of the Governors of the Banbury Municipal School. He also continued to attend the meetings of the Royal Society of Arts, the Iron and Steel Institute and the Institutions of Civil and Mechanical Engineers. In December 1901, he gave written evidence to a special sub-committee of the London County Council Technical Education Board set up to examine the application of science to industry. In his evidence Samuelson said he believed that some sections of the chemical and electrical industries were suffering in various degrees from "want of scientific training of their leaders", but this was only one of several factors which included

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(1) The Times 6th November, 1901.

weaknesses in Britain's patent laws, outdated laboratory facilities and the need for "more hard work and less play". Samuelson, however, did point to the "defects with us in secondary education, which had caused us to fall behind other nations in the capacity for seizing upon and adapting ourselves to the new conditions of the age". In regard to the position in London, Samuelson went on:

> "I am of the opinion that, should the county Council obtain the necessary right, every penny expended in the promotion of modern secondary education will, for several years to come, be worth £1 spent on special technical training. If, however, the London County Council should decide on contributing more liberally than at present to the promotion of the latter, they would, I think, do well to aid in the appointment and liberal renumeration of professors of special branches of science in existing schools of university rank."(1)

This evidence, with its emphasis on the need for improving the country's secondary education, given a year before the passing of the Education Act of 1902 which re-organised English secondary education, shows that Samuelson was aware of the educational requirements facing Britain at the beginning of the twentieth century.

Samuelson was married twice. In 1844 he married Caroline, daughter of Henry Blundell, a Hull merchant. By this marriage he had five sons. Henry Bernhard, born in 1845, who sat as Liberal M.P. for Cheltenham 1868-74 and Frome 1876-85, Francis Arthur Edward born in 1861, who became Chairman of Samuelson's Middlesbrough firm; Godfrey Blundell, born in 1863, who was Liberal M.P. for the Forest of Dean

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(1) London County Council Technical Education Board: Report of Special Sub-Committee on the Application of Science to Industry (Presented to the Council on the 15th July, 1902) p.18.

1887-92, and private secretary to A.J. Mundella when President of the Board of Trade; and Herbert Walker, born in 1865, who was knighted in 1922 for his work on behalf of the hospital service and served as Chairman of University College Hospital, 1927-37. Samuelson's fifth son died in infancy. There were seven daughters by the marriage; three died very young and the fourth, Florence, died in 1881. The remaining three; Caroline, Camilla and Alice, married and survived their father. Samuelson's first wife died in 1886 and three years later he married Lelia, daughter of Chevalier Leon Serena, and widow of William Denny of Dumbarton.(1)

Bernhard Samuelson died of pneumonia at his London residence, Prince's Gate, at 1.40 p.m. on Wednesday, the 10th May, 1905. His illness was sudden and the result of a chill caught while travelling from Torquay to London. He was buried on the 13th May, according to Anglican rites, at Torre Cemetery, Torquay, beside his first wife and his daughter Florence.(2) In his will he left £74,000 and the bulk of his property to his eldest son, Henry Bernhard, who succeeded to the baronetcy, and smaller amounts of money and property to his other children.(3)

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(1) Burkes Peerage, Barontage and Knightage (London 1967 Edition), p.2222, Who Was Who.

(2) Oxford Chronicle 19th May, 1905.

(3) Middlesbrough Daily Gazette 10th November, 1905.

EPILOGUE

An attempt has been made in the previous pages to describe Bernhard Samuelson's contribution to the development of English education. It is the purpose of this epilogue to briefly trace the fortunes of the educational institutions with which Samuelson was closely associated.

Samuelson was associated with the early years of three institutions of higher education: Owen's College, the Yorkshire College of Science, and the Newcastle College of Physical Science, all of which were to acquire university status in the course of time. In 1880 the Victoria University was chartered with Owen's College as its first, and for a time its only constituent college. It was joined by University College, Liverpool, in 1884, and the Yorkshire College, Leeds, in 1887.(1) In 1903 Manchester obtained its own charter and was followed by Leeds in 1904.(2) The Newcastle College of Physical Science was renamed Armstrong College in 1904, and in 1937 it was merged with the Newcastle School of Medicine to form King's College, which was recognised as a constituent College of the University of Durham. King's College became the University of Newcastle in 1963.(3)

The Banbury Institute, which Samuelson presented to the town in 1884, came under the Higher Education Committee of Oxfordshire County Council in 1904, when it became the Banbury Technical Institute and School of Art. It was renamed the North Oxfordshire Technical

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(1) Armytage, Civic Universities p.225.

(2) Ibid. p.246.

(3) Sir James Mountford, British Universities, (Oxford) 1966 p.18.

College and School of Art in 1952, and in 1961 it moved to new buildings in Bath Lane.

Samuelson was closely concerned with the foundation of two secondary schools: the Middlesbrough High School in 1870 and the Banbury Municipal School in 1893. In 1900 a new governing body was set up for the Middlesbrough High School under the Charitable Trusts Acts. This virtually placed the management of the school in the hands of the Middlesbrough Town Council, which had majority representation on the new governing body. It was not until 1909, however, that the first municipal secondary school was formally established in Middlesbrough, when the Board of Education approved a scheme whereby full responsibility for the administration and maintenance of the High School was transferred to the Council as the Local Education Authority. The High School was transferred from its central site to new buildings on the outskirts of Middlesbrough in 1959,[1] and in 1967 it was reorganised as a mixed school for pupils in the thirteen to eighteen age range. After the passing of the 1902 Education Act, when Oxfordshire County Council became responsible for secondary and technical education in Banbury, the Banbury Municipal School was given a new governing body composed of representatives of the County and Borough Councils and the School's trustees, with the County Council making an annual grant towards the maintenance of the school. In 1912 the County Council as the Local Education Authority became fully responsible for the maintenance of the school and the appointment of governors. In 1923 new articles of government were drawn up, whereby the County Council undertook to maintain the school, and its governing body became a section of the Higher Education Sub-Committee of the County

(1) Brochure Official Opening of the new premises of the Middlesbrough High School 2nd December, 1960. (M.P.R.L.)

Education Committee. The School's name was also changed from the Banbury Municipal School to the Banbury County School. In 1930 the school was transferred from its original site in the town centre to a new one at Easington on the outskirts of Banbury. A technical department was added to the school in 1944, and in 1950 this department was formed into the Wood Green Technical School and housed in separate buildings.(1) The Wood Green Technical School was merged with the North Oxfordshire Technical College in 1961. The Banbury County School was re-named the Banbury Grammar School in 1949, and in 1967 it was amalgamated with the Easington Secondary Modern School to form a comprehensive school for two thousand pupils.

Samuelson founded two all-age schools to provide education for the children of his employees; the Cherwell School and the East Hedley Hope Colliery School. The Cherwell School was opened by Samuelson in 1861 to serve the educational needs of children living in the Britannia Works area of Banbury. The School was transferred to the Banbury Borough Education Authority in 1902, and re-organised as an infants' school in 1905. It was renamed the Dashwood Infants' School in 1932(2) and is still in use at the time of writing. The East Hedley Hope Colliery School, opened by Samuelson in 1877 for the children of his colliery employees, is now closed along with the East Hedley Hope Colliery. The school was taken over by the Durham County Council in 1905 and re-named the East Hedley Hope Council School. In 1937 its

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(1) E.R.C. Brinkworth "Grammar School's Sixty Years' History". Banbury Guardian 26th March, 1953.

(2) Potts, Banbury Through a Hundred Years p.81.

senior pupils were transferred to Waterhouse's Intermediate School,[1] and in December, 1961, the school was closed after its remaining eleven children were transferred to the Waterhouse County Junior Mixed School.

The fate of Samuelson's business concerns might be briefly mentioned. The limited liability company of Sir Bernhard Samuelson and Company, Limited, was acquired as a subsiduary by Dorman Long and Company, Limited, in 1917. The assets of the firm then included eight blast furnaces and over two hundred coke ovens at Newport-on-Tees and two wharves on the river, some Cleveland iron-stone mines and Durham collieries, and a financial holding in a Brazilian company.[2] In April, 1921, Samuelson's old firm was merged with Dorman Long and its name disappeared from the register of limited liability companies.[3] Samuelson's Banbury firm of Samuelson and Company, Limited, fared little better. The firm enjoyed some success in the making of milling machinery up to the First World War, but its sales declined in the 1920's and the firm went into liquidation in 1933.[4]

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(1) Log Book - East Hedley Hope Council School 1907-61. Vol.1. p.397. Ibid. Vol2. p.30.

(2) Carr and Taplin op. cit. p.328.

(3) Ibid. p.384.

(4) Potts, Banbury Through a Hundred Years. p.39.

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ACKNOWLEDGMENTS

I should like to thank my Supervisor, Mr. R.F. Goodings of the Department of Education, University of Durham, for the guidance he has given me throughout the writing of the thesis. Mr. Goodings has been generous with his time, and I am grateful to him for many valuable criticisms and suggestions. I am also indebted to the Library Staffs of: the Bodleian and the British Museum, the Universities of Durham and Newcastle, the Public Reference Libraries of Banbury, Kingston-upon-Hull, Leeds, Middlesbrough, Newcastle and Oxford, and the Durham County Records Office. The Staff of the Oxfordshire County Records Office deserve special mention for allowing me to work on the Samuelson Papers very shortly after they had been acquired and before they had been fully catalogued. I am grateful to the Editor of the Banbury Guardian for allowing me to consult his newspaper files, and the Bursar of the University of Leeds for opening his old records to my inspection. My thanks also to Mrs. D. Lovedale for typing the thesis.
