The Origin of Mechanics' Institutes

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THE ORIGIN OF MECHANICS' INSTITUTES

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The importance of the Mechanics' Institute movement has been much underestimated. It is true that the Institutes largely failed in their professed objective, which was to give to the mechanics, i.e. the manual workers, systematic instruction in the scientific principles underlying the operations they were daily called upon to perform. But the movement did accomplish a very considerable educational work among clerical workers, lower-middle-class tradespeople, and higher-grade manual workers, and in its disintegration it laid the foundations of our modern system of technical education and, in no small degree, of our public library system.

The origin of the movement is therefore of some interest. The subject has always been wrapped in a certain amount of obscurity. Even amongst contemporaries there was much dispute as to who should have the honour of being regarded as 'founder of the Mechanics' Institutes'. George Birkbeck was and still is a popular favourite, but a school of thought in Glasgow has awarded the palm to an eighteenth-century professor, John Anderson, and Hudson and some others have found the true originators in a group of working men at Birmingham. A similar doubt exists regarding the origin of the London Mechanics' Institution. The claim of George Birkbeck to be regarded as the founder is now enshrined in the title of Birkbeck College, but contemporary records cast considerable doubt on the correctness of this tradition.

The truth is, of course, that the Mechanics' Institute movement was not the offspring of a single mind: like most considerable historical movements, it was the outcome of a complex of causes operating to produce similar results in a variety of places. In what follows I have attempted a preliminary survey of the early stages of the movement, but further research will undoubtedly amplify the picture and reveal new links in the chain of development.

Some of the general factors underlying the movement have long been familiar to the social and educational historian. There was, for example, the gradual development of the idea of education as a duty owed by society to its citizens: the education of the adult worker can be regarded as a logical sequel to the development of child education in the charity schools and Sunday-schools of the eighteenth century and the monitorial schools of the early nineteenth century. The growth of philanthropic and humanitarian sentiment is another factor: from this point of view adult education takes its place alongside the anti-slavery movement,

the movements for factory reform, for the abolition of climbing boys, and the like. The growing interest in science and the growing demand for the modernization of the school curriculum is particularly significant: Adam Smith in 1776 was proclaiming the value of geometry and mechanics in primary education,[1] and the scheme of middle-class secondary education propounded by Jeremy Bentham in his *Chrestomathia* (1816) covered almost exactly the range of subjects offered in the larger Mechanics' Institutes ten years later. Finally we note the effect of the Industrial Revolution in creating a demand for literate workers. For the humbler occupations, even in the new machine age, illiteracy was still no bar, but for the supervisory grades it was necessary to have men who could read instructions, could follow drawings, and had at least a smattering of scientific knowledge.

The immediate background of the Mechanics' Institutes is to be found in the rapid spread of popular scientific lecturing in the eighteenth century. The extent of this has been strikingly illustrated in Dr. Nicholas Hans's recent work, *New Trends in Education in the Eighteenth Century*.[2] This study reveals that almost from the beginning of the century there was a widespread provision of public lectures on mathematics, mechanics, chemistry and other scientific subjects, conducted by private lecturers on a subscription basis, mainly for middle-class audiences—the commercial and industrial community and their wives. In London John Theophilus Desaguliers led the way with courses on mechanical and experimental philosophy as early as 1712 or 1713; in the provinces Manchester appears to have been first in the field, with lectures on mathematics.

A certain amount of public lecturing on science also went on under the auspices of the Universities. At Cambridge there were public lectures on hydrostatics and pneumatics as early as 1707, and at Glasgow it was provided in the statutes of 1727 that: 'Any person, not a student as said is, may attend the lessons of Experimental Philosophy without a gown.' [3] John Anderson, the eccentric Professor of Natural Philosophy there in the late eighteenth century, took particular interest in this part of his duties; he turned the experimental philosophy course into a course in applied science, and for nearly forty years (1757–96) lectured to large audiences of students and townspeople.

Private lecturing evidently continued to flourish in the early years of the nineteenth century. In my own researches I have recently come across mention of lectures on chemistry, mechanics, electricity and the like, in a variety of places—by George Birkbeck at Birmingham, Hull and Liverpool in 1804–05, by a Mr. Nield in Clitheroe about 1810, by a Mr. Jackson in Settle in 1823 and 1824. Carlyle, in a letter of 1817

1 *Wealth of Nations*, Book V, Part III, Art. II.

2 1951. See especially Ch. VII. Cf. D. M. Turner, *History of Science Teaching in England* (1927), Ch. IV.

3 *Munimenta Alme Universitatis Glasguensis*, II. 578.

from Kirkcaldy, mentions a Yorkshireman named Allen who has been expounding chemical philosophy there for the past three months.[1] In 1815 a correspondent to *The Times* refers to 'the peripatetic philosophers, who give lectures for a guinea each course, in every village, near London.'[2] When we look at the syllabuses and prospectuses of some of these courses we find they bear an extraordinary resemblance to what was later done in the Mechanics' Institutes.[3]

In the country districts the lectures must have been more popular in style, and directed to a wider audience. The diary of William Lodge Paley, school-master of Giggleswick, gives us a good idea of what went on at Mr. Jackson's Lectures at Settle in 1823:

'May 13 . . . attended lecture on Electricity and Galvanism. Many of us were electrified by putting each hand into a bason of water into which he put a small wire.

'May 14. Lecture with many experiments on Nitrogen, Hydrogen, Oxygen and Chlorine gasses. Loud reports in bursting soap bubbles.

'May 17. He burried needles in the flame issuing from Newmans blowpipe . . .

'May 22. Lecture on Light and Optics—says a ray of light comes from the sun in 8½ minutes but would be 32 years from the nearest fixed star. How immense is creation and how limited our ideas. . . .'[4]

When we bear in mind the considerable middle-class element in the later Mechanics' Institutes it is clear that in some respects they did no more than provide a local habitation and a name for a good deal of activity that was already going on before.

By the close of the eighteenth century or shortly afterwards there were in existence numerous middle-class institutions for the study or teaching of science.[5] The foundation of the Manchester Literary and Philosophical Society in 1781 was followed by the establishment of similar institutions in Edinburgh, Newcastle, Birmingham, Bristol and elsewhere. In 1783 the Manchester society, on the suggestion of Dr. Thomas Barnes, minister of the Presbyterian chapel at Cross Street, sponsored the establishment of a College of Arts and Sciences to provide evening courses for young business and professional men. It continued in existence for at least four sessions before it faded out owing to lack of support.[6]

[1] C. E. Norton (Ed.), *Early Letters of Thomas Carlyle* (1886), I. 94.

[2] *Times*, 9 Nov. 1815.

[3] See for example syllabuses and prospectuses of Desaguliers in London (Hans, *op. cit.*, 139); Samuel Kay in Manchester (Turner, *op. cit.*, 53); John Dalton at Kendal (J. P. Millington, *John Dalton* (1906), 18–19).

[4] *Craven Herald*, 25 Feb. 1927.

[5] A brief general account of this movement is given in E. Halévy, *History of the English People*, Book III, Ch. II. See also W. H. G. Armytage, *Arts and Sciences: The Emergence of the Civic University Tradition in England 1731–1810*, in *Univs. Rev.*, Vol. 24, No. 1, Oct. 1951, 7–20.

[6] J. Thomson, *The Owens College* (1886), 2–10. Both Halévy, *loc. cit.*, and Hans, *op. cit.*, 159, confuse this College with the Manchester Academy, founded in 1786, a Dissenting establishment which ultimately became Manchester College, Oxford.

John Anderson, Professor of Natural Philosophy in the University of Glasgow, has already been referred to. After a lifetime spent in quarrelling with his academic colleagues, he died in 1796, bequeathing almost his entire fortune for the establishment of what was intended to be a rival university.[1] In the event his fortune proved to be almost non-existent, but his trustees did their utmost to fulfil his wishes and made a beginning by establishing an Institution (1796) with a Professor of Natural Philosophy to carry on the work begun by Anderson in his public lectures on Experimental Philosophy. Dr. Thomas Garnett was the first holder of the chair, and the prospectus for his first year included a systematic course of daily lectures on natural philosophy and its practical applications in industry, 'demonstrated mathematically, and illustrated by experiments,' and also shorter and more popular evening courses in natural philosophy and chemistry.[2]

Anderson's Institution, unlike the Manchester College, was a success from the beginning, making a strong appeal to the commercial and manufacturing classes of Glasgow. It ultimately developed, after many vicissitudes, into the Glasgow Royal Technical College—affiliated to that university which Anderson so heartily despised.

The Royal Institution in London was founded by Count Rumford in 1799. Though the emphasis here afterwards came to be on scientific research, the original proposal was for 'a Public Institution for diffusing the knowledge and facilitating the general introduction of useful mechanical inventions and improvements, and for teaching by courses of philosophical lectures and experiments the application of science to the common purposes of life. . . .' Count Rumford, the founder, was considerably influenced by the work being done at Anderson's Institution, and Garnett was brought from Glasgow to be the first professor.[3]

The early years of the nineteenth century saw the establishment in London of a number of institutions of the type of the provincial literary and philosophical societies—the London Institution (1805), the Philomathic Institution (1807), and the Russell Institution (1808).[4] In matters of organization bodies of this kind, with their libraries, reading rooms, scientific lectures and collections of scientific apparatus, had

[1] The chief original source for Anderson's life is the *Memoir of Professor Anderson* by John Parsell, in *Glasgow Mechanics' Magazine*, III (1825), v-ix, v (1826), 182–4. The most recent study is J. Muir (Ed. J. M. Macaulay), *John Anderson, Pioneer of Technical Education* (1950), in which Anderson's curious and entertaining will is printed in full. See also A. H. Sexton, *The First Technical College* (1894) and the various histories of Glasgow University.

[2] *Minutes of Anderson's Institution*, I. 24 Oct. 1796; Muir, *op. cit.*, 98–9, 146–8; T. Garnett, *Observations on a Tour through the Highlands* (1800), II. 196–201.

[3] H. B. Jones, *The Royal Institution: its Founder and its First Professors* (1871), 121–34, 166–70.

[4] Hudson, *History of Adult Education* (1851), 166–7. Hudson wrongly dates the foundation of the London Institution as 1809; cf. *Historical Account of the London Institution* (1835), 6.

much in common with the later Mechanics' Institutions, so much so that when Francis Place had the task of drafting the Rules of the London Mechanics' Institutes he first made a study of the rules of the London literary and scientific societies.[1]

It was against this background of scientific and educational activity that the Mechanics' Institution movement came into being. The earliest organized educational work among mechanics of which we have record was the Spitalfields Mathematical Society, a mutual improvement society of weavers and other manual workers, formed in 1717 for the study of mathematics and experimental science. (In the early nineteenth century the Society began to organize public lectures on Natural Philosophy, chiefly by its own members, but by that time the membership was predominantly middle-class.)[2] Anderson provided free tickets for working men who wished to attend his evening classes in Experimental Philosophy at Glasgow University.[3] At Manchester, similarly, in the 1780s, operative artisans were among those attending the lectures on Applied Chemistry at the College of Arts and Sciences.[4] In London Peter Nicholson, a free-lance lecturer and teacher, taught applied mathematics to carpenters and mechanics in an evening school at Soho between 1789 and 1800.[5]

The Brotherly Society of Birmingham, which Hudson chooses to describe as the first Mechanics' Institution in Great Britain, was really a society for the training of Sunday-school teachers. It was founded in 1796, and was a development of an earlier organization, the Sunday Society, formed in 1789 to provide further education for youths who had completed the ordinary Sunday-school course. James Luckcock, a local manufacturer, played a leading part in the organization.[6] Though neither society bore any resemblance to a Mechanics' Institute, many of those concerned were also interested in the education of mechanics. A group of members of the Sunday Society, for example, also belonged to a small mutual improvement society formed in the 'eighties for the study of natural philosophy. In 1794–95 Thomas Clark, one of the members of this society, was giving popular lectures on science at his own house to a group of artisans who, because many of them worked in the Eagle Foundry, were dubbed 'the Cast Iron

[1] F. Place, *Early History of the London Mechanics' Institution*, British Mus. Add. MS 27823, f. 252.

[2] H. H. Cawthorne, *The Spitalfields Mathematical Society* (1717–1845), in *Journ. of Adult Education*, III, No. 2, Apr. 1929, 155–66; *Mechanics' Magazine*, VI, No. 169, 18 Nov. 1826, 461; Hudson, *op. cit.*, 31 n.

[3] *Scots Mechanics' Magazine*, I (1825), 97–104.

[4] Thompson, *op. cit.*, 10.

[5] Hans, *op. cit.*, 158.

[6] J. Luckcock, *Moral Culture* (1817), 202–12, 234–45, 263–84; W. Matthews, *A Sketch of the Principal Means which have been employed to ameliorate the Intellectual and Moral Condition of the Working Classes at Birmingham* (1830), cf. Hudson, *op. cit.*, 29–31.

Philosophers'. Luckcock and others were also active in popular lecturing of this kind. A popular library, the New Birmingham Library, was established in 1796 in the rooms of the Brotherly Society, and a special Artizans' Library developed in 1799 from a Sunday-school organized by Messrs. T. and S. Carpenter.[1]

Birkbeck's work at Glasgow has often been described, and need not be recounted again at length here. George Birkbeck (1776–1841) was a Quaker, the son of a merchant banker of Settle in Yorkshire.[2] He graduated in medicine at Edinburgh in 1799, and in the same year was appointed to succeed Dr. Garnett as Professor of Natural Philosophy at Anderson's Institution, Glasgow. The eager interest displayed by the mechanics engaged in the manufacture of apparatus for his lectures led him to conceive the idea of a free course in science organized specially for mechanics.[3] His scheme was treated by many whom he consulted as 'visionary and absurd,' but he persisted, and with the approval of the Trustees of Anderson's Institution he offered during the session 1800–01 a free course, exclusively for mechanics, 'upon the mechanical properties of solid and fluid bodies, abounding with experiments, and conducted with the greatest simplicity of expression and familiarity of illustration.' [4]

Birkbeck's statement of his motives is worthy of note. He is not in the least optimistic that a course such as he proposes will lead to important new discoveries in the industrial arts; he is however convinced 'that much pleasure would be communicated to the mechanic in the exercise of his art, and that the mental vacancy which follows a cessation from bodily toil, would often be agreeably occupied by a few systematic philosophical ideas, upon which, at his leisure, he might meditate.' [5]

The response of the mechanics was enthusiastic, and during four sessions (1800–04) Birkbeck lectured to an eager and attentive audience of some 500 working men.[6] When, finding it impossible to make a living from his work for the Institution, he resigned in 1804, the Mechanics' Class continued under his successor, Dr. Andrew Ure.

Hudson supposed that Birkbeck had visited Birmingham prior to taking up his post at Glasgow, that he was cognisant of the work of the Brotherly Society and the Artisans' Library there, and that he had read

[1] Matthews, *op. cit.*

[2] J. G. Godard, *George Birkbeck* (1884), gives a careful and on the whole accurate account of his career.

[3] *Mechanics' Magazine*, I, No. 12, 15 Nov. 1823, 178–91; T. Claxton, *Hints to Mechanics* (1839), 194–5.

[4] *Mechanics' Magazine, loc. cit.* Godard, *op. cit.*, 23–4, is wrong in stating that the Trustees opposed the scheme: see *Minutes of Anderson's Institution*, I, 22 Mar. 1800.

[5] *Mechanics' Magazine, loc. cit.*

[6] The *Minutes* show that Birkbeck was wrong in asserting, as he frequently did in later years, that he gave only three courses to the Glasgow mechanics.

the account of the former in Luckcock's *Moral Culture*.[1] This, however, is incorrect. It was not until the autumn of 1804 that Birkbeck visited Birmingham,[2] and Luckcock's book was not published till 1817. 'I can assure you,' wrote Birkbeck later, 'that if any man ever did originate a measure without hint or suggestion from any other mind than his own, in such manner did I originate the Mechanics' Class in Glasgow.'[3] It must, however be emphasized that what he originated was a mechanics' *class*: the idea of an institution was still in the future.

It is interesting to note that, about the same period a scheme for the education of mechanics was introduced at the Royal Institution by Count Rumford and Webster the clerk of works. A score of young men were provided with lodging, employed in the Institution's workshops, and instructed in mathematics, drawing, and the like. The instruction was of a severely utilitarian kind, and not at all comparable to what Birkbeck was attempting in Glasgow. The experiment was commenced in 1801, and was dropped within a year because it was 'thought to have a dangerous political tendency.'[4]

In 1810 Mr. John Broster, a Chester bookseller and antiquarian, issued proposals for the formation there of 'a Mechanic Institution for the Advantage of Masters, Journeymen and Apprentices.' His scheme embraced only the provision of a library and reading-room, so that it was only a partial anticipation of the later Mechanics' Institutions, but the use of the title is of interest. What became of the project is not clear.[5]

As far as I am aware, the credit for the first full-scale proposals for Mechanics' Institutions must be assigned to Thomas Dick, LL.D., schoolmaster, of Methven, near Perth, who in 1814 propounded in letters to the *Monthly Magazine* a scheme for 'establishment of literary and philosophical societies, among the middling and lower ranks of the community, in every town and prosperous village, for the purpose of diffusing general information, as well as for making improvements and discoveries in art and science.' His proposed institutions were to be run at a modest quarterly subscription; they were to be equipped with libraries and collections of scientific apparatus, and were to provide instruction by means of lectures, papers, debates and discussion. Dick himself apparently attempted something of the kind in Methven, with what success we are not informed.[6]

[1] Hudson, *op. cit.*, 33.

[2] Matthews, *op. cit.*, 26–7; *Minutes of Anderson's Institution*, II, 28 Aug. 1804.

[3] Quoted in *Scots Mechanics' Magazine*, I (1825), 285–6.

[4] H. B. Jones, *op. cit.*, 141–6, 193–5.

[5] *Mechanic Institution established in Chester, MDCCCX* (MS Chester City Library); F. Simpson, *Chester Free Public Library* (1931), 5.

[6] *Monthly Magazine*, XXXVII, 219–21, 507–10; XXXVII, 23–5, 121–2, 503–6. The letters are signed variously 'T. Dick' and 'F. Dick': for the authorship see the article on Thomas Dick by A. M. Clerke in *D.N.B.* He later became well-known as the author of *The Christian Philosopher* (1823), which sought to reconcile the claims of science and religion.

In August 1817 Timothy Claxton, a journeyman mechanic in London, finding himself refused admission to a Philosophical Institution, persuaded some of his fellow mechanics to join him in the establishment of a Mechanical Institution, for 'the mutual instruction of each other on all subjects connected with the arts, sciences, manufactures and commerce.' The original plan envisaged the formation of a library and a collection of models of machinery and the like, but the latter does not seem to have materialized and the former took shape only in the form of a joint subscription to one of the commercial libraries. The Mechanical Institution continued active until Claxton, who was its secretary, left for St. Petersburg in 1820. He afterwards settled in the U.S.A., and took a prominent part in the Mechanics' Institute movement in that country.[1]

While all these proposals and experiments were taking shape in various parts of the country, the Mechanics' class at Anderson's Institution was continuing to flourish under Dr. Andrew Ure. Ure was a chemist of some distinction, and was afterwards well-known as the author of a *Dictionary of Chemistry* (1821), a *Dictionary of Arts, Manufactures and Mines* (1837), and a panegyric of the Industrial Revolution entitled *The Philosophy of Manufactures* (1835), for which he was pilloried by Engels in his *Condition of the Working-Class*.[2] In 1818 Dugald Bannatyne, a director of the Glasgow Gas Company, drew attention in the *Encyclopædia Britannica* to Birkbeck's work at Glasgow, and recommended an extension of the plan to all large manufacturing towns, chiefly on utilitarian grounds: 'the expense of such an undertaking would be trifling, while means would be afforded of rearing, in every department of industry, a body of intelligent workmen, qualified to carry forward that progress in machinery which we have shown to be necessary to the prosperity of our existing undertakings.'[3]

About 1821 Bannatyne and his fellow directors encouraged the employees of the Gas Company to form a library, which ultimately (1824) developed into a mutual improvement society for the study of chemistry and mechanical philosophy.[4] A similar library, which also developed later into an institution, was formed in August 1823 in the Glasgow University Printing Office.[5]

The first real Mechanics' Institute in the country was the Edinburgh School of Arts, which was inaugurated in October 1821, and owed its inspiration directly to the work done at Anderson's Institution. The leading spirit in its formation was Leonard Horner, afterwards first

[1] *Mechanics' Magazine*, XIV, No. 393, 19 Feb. 1831, 446–7; T. Claxton, *op. cit.*, Chs. I–IV.

[2] W. S. C. Copeman, *Andrew Ure*, in *Proc. of the Roy. Soc. of Medicine*, XLIV, No. 8, Aug. 1951, 655–62; F. Engels, *Condition of the Working-Class in England 1844* (1892), 167–9 and *passim*.

[3] *Encycl. Brit.: Suppl. to the 4th, 5th and 6th edns.* (1824), III. 406.

[4] *Glasgow Mechanics' Magazine*, II (1824–25), 191–2, 376–80.

[5] *Ibid.*, III (1825), 341–44.

Warden of University College, London, and its aim was the quite specific one of providing education for mechanics 'in such branches of physical science as are of practical advantage in their several trades.' Long and systematic courses in chemistry, mechanics and mathematics were the main staple in the early years; and in the second year a library was formed, and a beginning was made in the provision of what became a very important feature of the later Mechanics' Institutes, namely, classes to provide elementary instruction in basic subjects. The first such class was in geometry and arithmetic, with a young joiner as teacher. The Edinburgh School of Arts was from the first under the direction of, and dependent on the financial support of, leading citizens of the town: this, however, was a feature which later Institutes sought to avoid rather than to imitate.[1]

Some time before July 1823 a School of Arts was also established in Haddington. Here, in 1817, Samuel Brown, Provost of Haddington, had established a system of 'itinerating libraries', i.e. small collections of books, chiefly of a religious character, which were periodically interchanged between a score of centres in Haddington and the surrounding area. Hence had arisen, in September 1818, a small mutual improvement society of tradesmen to study such subjects as mechanics, chemistry and geometry. It was from this body that the Society of Arts arose, and the title suggests that its affiliation was to the movement in Edinburgh.[2]

In Glasgow in 1823 friction arose between the managers of Anderson's Institution and the Mechanics' Class over the control of the collection of books and models which had been assembled for the use of the class. On 5 July the mechanics determined to secede and form a School of Arts. Rules for the new institution were approved on 14 July, and on 20 September the title Mechanics' Institution was adopted instead of the Edinburgh title School of Arts. It was from Glasgow that this title spread throughout the country.

Glasgow differed also from Edinburgh in being thoroughly democratic in its organization. The management of affairs was entirely in the hands of the mechanics, who at once proceeded to lease a hall, appoint a paid lecturer in chemistry and mechanics, and assemble a library and museum of apparatus. In the first year courses were given in natural philosophy, chemistry, mechanics, mathematics and astronomy, and over 1,000 students were enrolled. It must be confessed that in spite of its professions of self-reliance the Glasgow institute was before long compelled, like so many other similar bodies, to rely to a large extent on the support of the wealthy. The Mechanics' class

[1] The salient facts concerning the Edinburgh School of Arts have been carefully assembled by W. H. Marwick, *Early Adult Education* in Edinburgh, in *Journ. of Adult Educ.*, v, No. 4, Apr. 1932, 389–404; see also Hudson, *op. cit.*, 39–41, 75–80.

[2] *Glasgow Mechanics' Magazine*, II (1824–25), 32.

at the Anderson Institution, it is interesting to note, continued to flourish.[1]

In the same month that the decision was taken to establish the Glasgow institute, July 1823, a Mechanics' and Apprentices' Library and reading room was established in Liverpool by the efforts of Egerton Smith, editor of the *Liverpool Mercury*. This continued a useful existence for many years and is of interest because it was 'prompted by the example of New York.' This is the only example of American influence in the origins of the English Mechanics' Institute movement. Apprentices' libraries were established in Boston and New York in 1820, but the first American Mechanics' Institute proper, namely the Franklin Institute of Philadelphia, founded in 1824, was inspired by the example of the Anderson Institution.[2]

In December 1823 a Mechanics' and Apprentices' Library was established also in Sheffield, again on the initiative of a newspaper editor, T. A. Ward of the *Sheffield Courant*. Like the Liverpool library, it had a long and successful history.[3]

The final stage in the early development of the Mechanics' Institutes is signalized by the foundation of the London Mechanics' Institute in the closing months of 1823. The full story of its origins and its influence on the subsequent development of the movement must await a further article. The credit for having conceived the idea of such an institution must go to J. C. Robertson, editor of the *Mechanics' Magazine*, who was inspired by a published account of the establishment of the Glasgow Mechanics' Institution. Thomas Hodgskin, Robertson's collaborator in the *Mechanics' Magazine* and afterwards well-known as a writer on Socialism, assisted in the initial stages, and Francis Place, the Radical tailor of Charing Cross, also did valuable preparatory work. Birkbeck, who had been practising as a physician in London since 1805, offered his assistance as soon as the project was made public in October 1823, and thereafter took a leading part in the proceedings, being elected first President at the foundation meeting on 2 December 1823. Henry Brougham, and many other Whigs and Benthamites, gave cordial support to the project, and the London Mechanics' Institution was formally opened on 20 February 1824.[4]

[1] Hudson, *op. cit.*, 42–3; A. H. Sexton, *The First Technical College* (1894), Ch. VI; W. H. Marwick, *Early Adult Education in the West of Scotland*, in *Journ. of Adult Educ.*, IV, No. 2, Apr. 1930, 192–4; Muir, *op. cit.*, Ch. V.

[2] Hudson, *op. cit.*, 45–8; Lord Brougham, *Practical Observations upon the Education of the People*, in *Speeches*, III (1838), 140–41, C. A. Bennet, *History of Manual and Industrial Instruction up to 1870* (1926), 317–19.

[3] J. Taylor, *A Nineteenth-Century Experiment in Adult Education*, XI, No. 2, Dec. 1938. 151–4.

[4] Hudson, *op. cit.*, 49; Godard, *op. cit.*, Ch. III; C. D. Burns, *Short History of Birkbeck College* (1924), Ch. I. Burns is in error in stating that Place did not take an active part: see Place's own account in Brit. Mus. Addit. MS 27823. For Robertson's account see early volumes of the *Mechanics' Magazine*, especially VII, No. 199, 16 June 1827, 382–4.

It will be seen that the main line of descent of the Mechanics' Institute movement begins with Anderson's lectures at Glasgow University, and comes down through the Mechanics' class of Birkbeck and Ure to the Edinburgh School of Arts, the Glasgow Mechanics' Institution, and the London Mechanics' Institution. If we are to insist on a single founder it must be Birkbeck, but in fact many other people, in different parts of the country, were thinking and experimenting on similar lines, and thus helping to create a general awareness of the need for mechanics' education. The result was that from Edinburgh, Glasgow and London as centres the movement spread with astonishing rapidity throughout Great Britain, and by the middle of the century there was hardly a town of any size that had not its Mechanics' Institute or its School of Arts.

The motives that inspired this development were many, and have already been glimpsed in what has been said above. The mechanics themselves were clearly inspired alike by a zeal for knowledge, and by the very human wish to improve their own lot, to 'get on'. In some cases also, especially among the London mechanics, there was a strong political motive. Of the middle and upper class supporters some, like Birkbeck, were concerned mainly with education for its own sake; others, like Bannatyne, with increasing the economic efficiency of the worker; while still others were prompted by the motive of moral and social reform. The following pathetic passage, taken from an address by the manager of the Glasgow Gas Company, admirably illustrates this last motive, and may serve as a tailpiece to this essay:

'Happy he, who, despising and throwing behind him the worthless enjoyments of sense and all its allurements, can spend his leisure hours in the pure and simple pleasures which the study of literature and the arts present! His youth is continued delight, and happiness dwells within him; his manhood is pure and rational enjoyment, and intellect beams in his eye and brightens his manly brow; his old age is comparatively tranquil and easy; the young listen, with admiration, to the wisdom which drops like honey from his lips, and he sinks into the grave blessed and honoured by all who knew him. But how different is the fate of him who is the votary of sensual enjoyments. Choosing what he conceives the primrose path of dalliance, he finds his mistake, only when it is too late to remedy it; and when his misery is increased by the contemplation of what he has lost, and what he might have been had he chosen differently. His youth is a scene of riot and dissipation; with manhood comes disease and an exhausted frame; and he either sinks into an early and unlamented grave, or wears out a lingering and miserable existence, despised and shunned by the virtuous and happy.' [1]

[1] *Glasgow Mechanics' Magazine*, III (1825), 157–8.