

# The Watt Institution Dundee 1824-49

James V Smith



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## THE WATT INSTITUTION

DUNDEE 1824 – 1849

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JAMES V. SMITH  
January 1977.



## PREFACE

Mechanic's institutes occupy an important place in the history of adult education. According to a recent historian.

“Their uneasy history offers a fascinating microcosm of the forces and counterforces, the tortuous eddies and currents in early Victorian social life.”

They represent the first attempt at systematic provision of scientific and technical education for industrial workers. Some institutes were short-lived, others survived into the twentieth century. Without exception, the price of survival was modification of the original educational aims – usually dilution of the scientific and technical component and some concessions to popular demands for more entertaining lectures and reading material. The nature and extent of the changes which occurred varied from place to place and were influenced by a complex array of factors, such as the social composition of the local population, the structure of local history, etc.

No comprehensive study of the mechanic's institute movement in Scotland has yet been written – before it can be, more local studies are required. The present work, detailing the rise, fluctuating fortunes and eventual demise of Dundee's own mechanic's institute, the Watt Institution, is offered as a small contribution towards the achievement of that larger aim.

## CHAPTER 1

### THE FOUNDING OF THE WATT INSTITUTION

MR. FOSTER: - "The manufacturing system is not yet purified from some evils which necessarily attend It, but which I conceive are greatly overbalanced by their concomitant advantages. Contemplate the vast sum of industry to which the system so essentially contributes; seas covered with vessels, ports resounding with life, profound researches, scientific inventions, complicated mechanism, canals carried over deep valleys and through the bosom of hills: employment and existence thus given to innumerable families and the multiplied comforts and conveniences of life diffused over the whole community."  
Thomas Love Peacock, Headlong Hall, chapter VII.

The mechanics' institute movement was symptomatic of the early phase of the Industrial Revolution, when a utopian belief in the capacity of scientific progress to cure society's ills was becoming widespread among the industrial middle class. This naively optimistic faith in the benefits to be derived from the onward march of industrialisation was satirized by Thomas Love Peacock in Headlong Hall where the claims made by Mr. Foster, the perfectibilian, were scarcely more exaggerated than those made by some of the early enthusiasts for mechanics' institutes.

Thomas Kelly, (the biographer of George Birkbeck) discusses the origin and early development of mechanics' institutes with reference to four major contributory factors. Firstly, there was an increased need, due to technical advances in industry, for workers possessed of at least some simple scientific knowledge. Secondly, there had been, since the early years of the eighteenth century, a growing popular interest in science. A third factor was the general movement for the provision of popular education while a fourth was the working class movement for political and economic reform<sup>1</sup>.

From the standpoint of Kelly's first factor, the mechanics' institute movement may be viewed as an educational corollary of the Industrial Revolution; the increasing complexity of manufacturing processes resulting from technological development meant there was a growing demand for workers possessed of rudimentary scientific knowledge. Dundee in the 1820s was the scene not only of a developing factory industry in the linen trade, but also (as Professor Lythe has emphasized<sup>2</sup>) of important advances in engineering; the town thus offered plenty of scope to the ambitious mechanic.

During the eighteenth century and early years of the nineteenth century there was a gradual widening of popular interest in scientific topics. This had mainly affected

the middle classes but it was only a small step for this curiosity to extend to the elite of the labour force, the skilled tradesmen. In the first three decades of the nineteenth century the factory system was still in its infancy and the skilled workman was usually a member of a small industrial unit, sometimes working as a journeyman, sometimes on his own behalf. Whether such individuals are retrospectively graded as "lower middle" or "upper working" class seems largely irrelevant.

Interest in the activities of popular scientific lecturers appears to have caught on rather later in Scotland than in England. According to Cable, there was until the passing of the Toleration Act in 1712 "a complete ecclesiastical stranglehold backed by a formidable array of civil legislation which effectively prevented or delayed that general diffusion of scientific ideas which was occurring south of the Tweed." One of the earliest itinerant science lecturers in Scotland was John Booth, who specialized in experimental natural philosophy and included Dundee in his lecture itinerary in 1742.<sup>3</sup>

In addition to tours by popular lecturers, the later eighteenth and early nineteenth centuries saw the formation of the middle class scientific and literary societies which were the forerunners of the mechanics' institutes; probably the best known of these bodies were the Lunar Society (established in Birmingham in 1766 and including among its members such celebrated characters as Matthew Boulton, James Watt, Joseph Priestley and Erasmus Darwin) and the Manchester Literary and Philosophical Society, which was attended in the 1790s by the young Robert Owen<sup>4</sup>. In Dundee, a society of this kind, the Rational Institution, was founded in 1810<sup>5</sup> but seems to have enjoyed only a brief life-span. The moving spirit behind its establishment was William Lyon Mackenzie, who later achieved notoriety on account of his revolutionary activities in Canada<sup>6</sup>. Like the Dundee Advertiser, whose lively and polemically gifted editor, Robert Stephen Rintoul, was a prominent member of the society, the Rational Institution was an important manifestation of the radical, secular spirit which was abroad in Dundee at the beginning of the nineteenth century despite the fact that municipal power was monopolized by a corrupt, self-perpetuating oligarchy presided over by the notorious Provost Riddoch.

The Rational Institution differed principally from the later Watt Institution in that it was not aimed specifically at the working class. However, William Lyon Mackenzie himself was of lowly origin and working class members were certainly not discouraged. There was indeed a special category of honorary membership "for poor persons of exceptional talent; they had to be sponsored by four ordinary members and were "second class citizens" to the extent that they had no voting rights and were not permitted to hold office. The society resembled mechanics' institutes in its utilitarian emphases, its object being "to open approaches to every department of knowledge, keeping however the grand object of general and practical utility constantly in view."

The members took themselves very seriously; an essayist who failed to produce his piece of work at the correct time would be fined 2s 6d and the principal speaker in a debate 1s. As was usually the case in mechanics' institutes, controversial subjects in religion and politics were eschewed<sup>7</sup>.



Individuals prominent in the campaign for secular elementary education, especially members of the Whig-Radical group, such as Henry Brougham, James Mill and Francis Place, were also ardent advocates of scientific education for adult workers. Although their early efforts in the field of elementary education met with little success, the improved economic position in the 1820s and the advent of the more conciliatory Liberal-Tory government of Canning and Huskisson (1823) encouraged them to focus their attention on adult education.

The educational institutions they advocated were mechanics' institutes, while the provision of suitable reading material was to be the responsibility of the Society for the Diffusion of Useful Knowledge<sup>8</sup>, founded in 1826 and caricatured by Thomas Love Peacock in Crotchet Castle, as the "Steam Intellect Society."

Kelly's third factor, the relationship of mechanics' institutes to the general movement for the provision of popular education, has attracted a good deal of attention from recent writers. Of particular interest has been the manner in which education was employed by the middle class educators as an agency of social control<sup>9</sup>. The general role of education in the middle class crusade against the traditional culture of the masses has been characterized as follows by a recent historian of adult education:

"In the manufacturing towns a large working class population with its roots in the popular culture of the countryside ... gradually acclimatized itself to the new ethos. The break up of the old popular culture and its supersession by formal literary instruction based on the three 'R's was the conscious aim of many middle class educationalists."<sup>10</sup>

Later in this chapter evidence will be presented illustrating that considerations of this kind were regarded as of considerable importance by the founders of the Dundee Watt Institution.

A further strand in the story of early nineteenth century adult education was the desire for improvement on the part of the working people themselves. This was particularly apparent where the initiative for the establishment of mechanics' institutes came from working men, the most notable example in Scotland of this independent activity being the founding of the Glasgow Mechanics' Institution.

The body generally regarded as the first true mechanics' institute was the Edinburgh School of Arts, inaugurated in 1821 "for the express object of affording instruction to the labouring classes." The middle class patrons of the Edinburgh School of Arts restricted themselves to narrowly utilitarian curricular objectives "such aspects of science as would be useful to the workmen in the exercise of their several trades."<sup>11</sup> Utility was a recurring theme of the mechanics' institutes' founders in the early years, there being a Widespread expectation that workmen, having acquired the rudiments of elementary science, would be equipped to bring about direct improvements in machinery and

industrial processes. Consequently, curricula were largely confined to topics in the area of mathematics: physical and applied science while the choice of books in libraries was similarly limited. Controversial issues in religion and politics were studiously avoided and "imaginative literature" was viewed as a fatuous distraction from the serious business of learning. The educational outlook was such as would have met with the unreserved approval of Thomas Gradgrind.

By the end of 1823, six mechanics' institutes were in existence — Glasgow, Greenock and London Mechanics' Institutions as well as Edinburgh and Haddington Schools of Art and Kilmarnock Philosophical Institution. Institutes pullulated between 1823 and 1826, doubtless as a result of the genial economic and political climate of that period<sup>12</sup>. Looking back on this time from the late nineteenth century, Peter Carmichael wrote that "... spinning was carried on with great spirit in Dundee. Existing mills were enlarged, other mills were built. New and improved steam engines were set up and better machinery was introduced."<sup>13</sup>

The earliest reference suggesting the desirability of setting up a mechanics' institute in Dundee appeared in a letter bearing the pseudonym AMICUS, published in the Dundee Courier early in January 1824<sup>14</sup> and expressing the hope that the initiative would be taken by the mechanics themselves. The writer was almost certainly James Brown, the most indefatigable of the Watt Institution's early promoters and a prominent figure in the flax industry. Although the letter elicited a reply, expressing cautious approval, from one styling himself A MECHANIC,<sup>15</sup> there was no practical outcome at this juncture and the story of the Watt Institution's founding is a particular instance of Harrison's generalisation that in most cases of the establishment of mechanic's institutes the lead was taken by members of the middle class<sup>16</sup>.

Concrete plans for the founding of a mechanics' institute in Dundee evolved out of a subscription scheme, begun in London, the object of which was to erect a monument in the metropolis to the memory of James Watt. The scheme was launched at a meeting held in June 1824, presided over by Lord Liverpool and attended by such notables as Sir Humphrey Day, Sir James Mackintosh and Henry Brougham. It was proposed that a monument to Watt be set up in St. Paul's or Westminster Abbey but that subscriptions be not confined merely to the London area. The subscription committee therefore asked some Edinburgh gentlemen who attended the meeting if they would raise money in the Athens of the North.

When a meeting was held in the latter city to consider the suggestion, the company opted for a policy of Scottish independence — money raised in Edinburgh ought to be expended on a monument in Edinburgh. However, they did ask Patrick Anderson, provost of Dundee, who attended the meeting, if he would consider raising funds in Dundee for such a project. On his return to Dundee, Anderson convened a meeting of the "principal inhabitants" of the town and it was agreed to initiate a subscription scheme but to use the money to establish a mechanics' institute in Dundee. This was the first of a series of meetings which culminated, on 10 November 1824 in the inauguration of the Watt Institution<sup>17</sup>.

There was widespread support for the scheme among the propertied classes in Dundee and men of different political persuasions were prepared to collaborate towards its successful outcome. Provost Anderson, a Tory, had been a member of the town council since 1804 and had served under that egregious figure of the era of self-election, Provost Riddoch<sup>18</sup>. The clerk of the meeting at which James Brown presented his resolutions for the raising of subscriptions was Christopher Kerr, lawyer and town clerk of Dundee, described by Norrie as a "staunch Conservative." Working alongside these and other representatives of Dundee's "ancien regime" in the cause of science for artisans was Peter Dron (shoemaker) the Convener of the Nine Trades. By virtue of his office, he was a member of the town council at a time when reporters were not admitted to council meetings. "Mr. Rintoul, who was then editor of the Advertiser, knowing that Convener Dron was an out-and-out reformer applied to him to furnish short reports of the council's proceedings for publication in his newspaper — a service to the press and the Liberal party which he cheerfully and successfully rendered."<sup>19</sup>

Both the Tory Courier and the Radical Advertiser reacted positively to the infant institution. In the case of the Courier this is worthy of comment, since several writers have alluded to the predominantly Liberal-Whig-Radical complexion of the mechanics' institute movement, especially in the early years, and the hostility towards it evinced by many Tories. Too little attention seems to have been paid to differences between England and Scotland in this respect. English Tories in the late eighteenth and early decades of the nineteenth centuries were largely antipathetic to schemes for the extension of popular education, including the teaching of reading and writing, on the grounds that this might lead to social upheaval and disturb the foundations of a rigidly structured society. It was felt that the poor would develop idle habits and become disenchanted with their divinely appointed stations. Even that most dutiful labourer on behalf of Church and King, Hannah More, fell foul of Tory diehards on account of her work in establishing Sunday schools for the children of the labouring classes in Somerset<sup>20</sup>. In Scotland, however, with its Presbyterian heritage, the parochial system (even though the provision was uneven) was a thoroughly accepted feature of social life by the early nineteenth century; for the poor to be literate was in no way exceptional. Thus, attempts to extend scientific education to adult workers were unlikely to provoke hostility from Scottish Tories<sup>21</sup>.

The aspirations of the Watt Institution's founders were set out in a handbill composed by James Brown, 500 copies of which were printed and distributed in the town;

"Although the institution is named after Mr. Watt . . . it is not proposed to confine the instruction to mechanics alone. All classes of tradesmen will be readily admitted as members and lectures will be given on subjects which are interesting and applicable to those who attend, whatever their occupation might be. It is proposed to have a spacious and comfortable lecture room with adjoining apartments for library and philosophical apparatus and a well qualified lecturer will be employed to give lectures as often as may be judged necessary.

With these facilities it is hoped that great progress will be made in useful knowledge among the tradesmen of Dundee and as a natural consequence that the general prosperity of the town would be increased. Good and skilful tradesmen are most valuable members of the community. It would be expected that the Watt Institution would be the means of promoting virtuous and industrious habits among the working classes by furnishing them with an agreeable and rational mode of employing their spare time"<sup>22</sup>

It is noteworthy that the undertaking was directed not so much at the working masses as a whole but at the skilled workers, the "tradesmen." James Brown and the other patrons appear to have believed, rather optimistically, that attendance at mechanics' institutes would enable the artisans to effect direct improvements in industrial design and processes, a belief which, according to Harrison, was widespread among middle class patrons during the pioneering phase of the movement.<sup>23</sup>

In addition to more strictly utilitarian aims, the founders also had important ethical objectives which it would be an error of judgement to underestimate. Earlier in this chapter mention was made of the manner in which mechanics' institutes were employed as agencies of social control by the middle class educators. If the Industrial Revolution was to be successful, in the sense of being irreversible, there had to be fundamental changes in attitudes to life and work on the part of the "lower orders." The older, flexible attitudes to work had to be supplanted by a sterner ethic; they were regarded as anachronistic in the age of the March of Mind. The workers had to learn the virtues of punctuality, regularity of work pattern and sobriety and the mechanics' institutes were seen as affording an opportunity for inculcating such values. In Dundee at this stage, there was still plenty of work to be done by the zealous propagators of the new morality — drinking bouts were far from uncommon, even among the skilled mechanics, while irregular work patterns (as, for example, in the "Saint Monday" tradition) still persisted.<sup>24</sup>

The Watt Institution was formally established at a meeting held in the Town Hall on 29th November 1824 and attended by twenty-three persons; of these only five were working men, described as "operative flaxspinners." The preponderance of middle class gentlemen was scarcely surprising; it had been decided to equate voting power with magnitude of subscription, each subscriber being entitled to one vote for every £1 subscribed. Continuing middle class surveillance was assured by a provision in the constitution that "not less than one quarter of the directors should consist of master tradesmen, merchants or others not operative tradesmen."<sup>25</sup> In theory, at least, it was possible for a majority of the directors to be working men. In reality, middle class control was firmly established; it was the middle class patrons who controlled the purse strings; without their continuing support the institution would have collapsed.

The Watt Institution appears to have been an average case as regards the scope offered to working men for participation in the running of its affairs. In Scotland extreme cases were the Edinburgh School of Arts, where control was vested completely in the hands of the wealthy subscribers and the Glasgow Mechanics' Institution where the administration was firmly in the hands of the workers themselves.

The annual subscription, which entitled the members to "attend the lectures and classes and have the privileges of the library" was fixed at 10 shillings, while a donation of £5 conferred life membership.<sup>26</sup> (Flaxdressers at this time might earn 10 shillings — 12 shillings per week, millwrights 14 shillings — 18 shillings).

A major responsibility of the directors was the engagement of suitable lecturers. The aim was to commence the lecture programme on the first Monday of October annually and continue until May. Advertisements for lecturers were inserted in the Edinburgh and Glasgow, as well as Dundee newspapers. Interestingly, neither of the lecturers appointed replied to the advertisements. Mr. Andrew Roy, whose province was mathematics and mechanical philosophy, received laudatory mention by Professor Alexander of St. Andrews University, to whom the directors had written for advice. A similar recommendation secured the chemistry lectureship for Rev. John Macvicar. In basing the curriculum on mathematics, mechanics and chemistry, the organizers were in line with practice at the other Scottish institutes.

In order to obtain the maximum of publicity for the fledgeling institution, the directors resolved that the two opening lectures be "open to all classes of society, gratis."<sup>27</sup> Both lectures were to deal with chemistry, a decision readily comprehensible in view of the great visual potential of that subject.

The first lecture was staged in the Associate Burgher Meeting House, Barrack Street, rented as a lecture hall by the Watt Institution, on the evening of Wednesday, 19th January 1825, and attracted a gratifyingly large attendance. After an opening address to the mechanics by James Brown, in which they were exhorted to be "punctual in attendance, silent, attentive and clean of apparel,"<sup>28</sup> Mr. Macvicar made his debut with a lecture featuring "various chemical experiments which were well conceived and conducted with a considerable degree of skill." The audience (again large) at Macvicar's second lecture on Friday 21st January was described by the Advertiser as being "mostly mature in experience and years but young in the knowledge of the truths of science and the phenomena of nature."<sup>29</sup>

A felicitous result of the large audiences at the open lectures was a plentiful sale of tickets for the lecture courses "which exceeded the most sanguine expectations of the directors." The directors had not anticipated selling more than 300, but in the first week after the opening of the institution, they disposed of 460.

Both lecturers presented twenty-six lectures during the first session and in addition Mr. Roy occasionally gave instruction in elementary arithmetic to those who were interested. No register of attendance was kept but it was estimated that attendance at lectures never fell below 200.<sup>30</sup>

The mathematics course proved to be much less of a "crowd puller" than that on chemistry. Mr. Roy had perhaps anticipated a tepid response, when, in his introductory

lecture he stressed to the working men how fundamental a knowledge of mathematics was to scientific understanding, while reassuring them that although their studies might appear "somewhat uninteresting and abstract at first, they would soon see their advantage and usefulness in the daily practice of their particular trades."<sup>31</sup>

The low level of interest evinced in the mathematical course and the fact that Mr. Roy was obliged to spend far more time than he had intended on basic arithmetic, highlight a factor to which the directors had paid insufficient attention — large numbers of working men did not have the degree of proficiency in the three 'R's necessary to make systematic study of science a worthwhile enterprise. That the provision of elementary education in Dundee was patchy is indicated by the parliamentary returns.<sup>32</sup> There was no parish school as such and schooling for many members of the working class was an irregular business; in large families, for example, it was customary to send children to school by turns.

## NOTES

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<sup>1</sup> T. Kelly, George Birbeck: Pioneer of Adult Education, (Liverpool, 1957) pp.56-57

<sup>2</sup> S.G.E. Lythe, "James Carmichael, Millwright, (1776-1853)", in Three Dundonians, Abertay Historical Society, publication No.13, (Dundee, 1969) p.1.

<sup>3</sup> J.A. Cable, "The Early History of Scottish Popular Science," Studies in Adult Education, 4 No.1 (1972) p.39.

<sup>4</sup> See B. Symon, Studies in the History of Education 1780-1870, (London, 1960) Ch.1.

<sup>5</sup> Laws and Regulations of Dundee Rational Institute, (Dundee, 1813). (This anonymous pamphlet is in Dundee Public Library)

<sup>6</sup> W. Norrie, Dundee Celebrities of the Nineteenth Century, (Dundee, 1873) p.202.

<sup>7</sup> Laws and Regulations of Dundee Rational Institute, op.cit.

<sup>8</sup> B. Simon, op.cit., pp. 152-153.

<sup>9</sup> E.g. discussion of recent interpretations of mechanics institute movement in A. Tyrrell, "Political Economy, Whiggism and the Education of Working Class Adults in Scotland: 1817-1840." Scot. Hist. Review, 48 (1969) p.154.

<sup>10</sup> J.F.C. Harrison, Learning and Living: 1790-1960, (London, 1961) p.40.

<sup>11</sup> T. Kelly, op.cit., p.71.

<sup>12</sup> *Ibid.*, p.209.

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- <sup>13</sup> P. Carmichael, The Autobiography of Peter Carmichael, ed. By E. Gauldie (Edinburgh, 1969) p.20.
- <sup>14</sup> Dundee Courier, 29<sup>th</sup> January 1824.
- <sup>15</sup> *Ibid.*, 5<sup>th</sup> February 1824.
- <sup>16</sup> J.F.C. Harrison, *op.cit.*, p.58.
- <sup>17</sup> These details are from Watt Institution mss., housed in Dundee.
- <sup>18</sup> A.H. Millar, Roll of the Eminent Burgesses of Dundee, 1512-1886. (Dundee, 1887) p.242.
- <sup>19</sup> Details on Kerr & Dron from W. Norrie, *op.cit.*, p.333 and pp. 219-220 respectively.
- <sup>20</sup> B. Simon, *op. cit.*, pp. 132-133.
- <sup>21</sup> See L. Stone, "Literacy and Education in England, 1640-1900," Past and Present, 42 (1969), pp. 63-64.
- <sup>22</sup> Watt Institution mss.
- <sup>23</sup> J.F.C. Harrison, *op. cit.*, p.58.
- <sup>24</sup> E.g. P. Carmichael Autobiography, *op. cit.*, p.36.
- <sup>25</sup> Based on account in Watt Institution mss.
- <sup>26</sup> Watt Institution Annual Report (hereafter, W.I.A.R.), 1825, p.5.
- <sup>27</sup> Watt Institution mss., minutes of Directors' meeting (hereafter (M.D.M.), 3<sup>rd</sup> January 1825.
- <sup>28</sup> Courier, 20<sup>th</sup> January 1825.
- <sup>29</sup> Advertiser, 20<sup>th</sup> January 1825.
- <sup>30</sup> W.I.A.R., 1825, p.8.
- <sup>31</sup> Courier, 27<sup>th</sup> January 1825.
- <sup>32</sup> e.g. "Abstract of Education Returns (Scotland) 1834," Parliamentary Papers, 1837, Vol. XLVII, p.346.



## CHAPTER 2

## THE PERIOD OF SALARIED LECTURERS, 1825-29

TABLE 1<sup>1</sup>

## Sale of Membership Tickets, 1825-29

Session	1 <sup>st</sup> Half	2 <sup>nd</sup> Half	Average	Revenue
<b>1824-25</b>	-	409	409	£102. 5. 0.
<b>1825-26</b>	170	96	133	£ 66. 10. 0.
<b>1826-27</b>	107	127	117	£ 53. 18. 9.
<b>1827-28</b>	171	105	138	£ 69. 0. 0.
<b>1828-29</b>	126	90	108	£ 54. 5. 0.

Events during the first session at the Watt Institution had reinforced the optimistic mood of its founders; over 400 persons had paid for the privilege of membership and attendance at lectures had generally been high. But these halcyon days were short-lived and the sale of tickets for the second session, 1825-26, showed a drastic reduction.

For the mechanics' institute movement as a whole, 1826 marked the beginning of a lean period which persisted into the early thirties. Undoubtedly the largest single factor responsible for the setback of 1826 in Dundee and the country at large was the major economic recession of that year. "When employment was good and wages were high, the institutes commonly flourished, while when trade was bad and the level of employment was low, the forward movement was checked and the older institutes frequently collapsed."<sup>2</sup> It is an aim of the present study to illustrate the way in which the fortunes of the Watt Institution generally mirrored the buoyancy (or otherwise) of trade and employment in Dundee.

The year 1826 passed into folk memory as "the year of the short corn" and tales emphasizing the bitterness and hardship of that time became rooted in popular consciousness.<sup>3</sup> The principal bleacher in the town, William Sandeman, failed for £70,000. "The Dundee banks which during the abundance of money had all been tempted to make advances on securities not easily realized now bridled up their discounts at once, as nearly all the spinners and manufacturers were either directly or indirectly involved with the great bleacher who bought yarns or cloth from them."<sup>4</sup> In the course of the year, several spinners and bleachers were precipitated into bankruptcy and it appeared as if the trade of the town might grind to a complete halt.

The atmosphere of austerity at this time, with severe reductions in standard of living for the working population and dread of industrial failure (or failure itself) haunting the middle classes, could hardly have been expected to foster a widespread spirit of disinterested scientific enquiry among Dundonians. Its absence was reflected in the Watt Institution's decline in membership. To ease the financial burdens of membership for working men, the directors decided to issue separate tickets for the two halves of the 1825-26 session, so that two payments of 5 shillings could be made. Many of the members availed themselves of this opportunity. In the subsequent session there was a further fragmentation in the mode of payment, with the introduction of quarterly tickets in addition to half and full yearly ones.<sup>5</sup>

During the latter part of 1827, Dundee experienced a minor trade revival; the price of provisions fell somewhat while in certain trades there were improvements in wages.<sup>6</sup> The conspicuous increase in ticket sales for the first half of the 1827-28 session (Table 1. Tickets were on sale in the autumn) is presumably to be ascribed to this temporary economic recovery. Unfortunately, the clouds of economic privation were shortly to darken the horizon once more. During 1828 trade again became sluggish and Dundee languished in the economic doldrums until the excitement generated by the growing clamour for reform had been dissipated, after 1832.

The directors did not react despairingly to the traumatic reversal of fortune suffered by the institution. In 1827, they referred to the problem of reduced membership, "not to deplore the decay of the Institution but to congratulate its friends on there being every appearance of its becoming permanent: for during a period of such mercantile distress, when the productions of industry are nearly valueless it was expected that the number would have been far more reduced."<sup>7</sup>

In their annual reports, the directors aimed most of their complaints not at the working men for failure to attend en-masse but at the middle classes in the town, whose support they considered to be inadequate. Consultation of lists of subscriptions made during the first year of the Watt Institution's life reveals that there were many well-to-do citizens whose degree of interest in the institution did not extend beyond making an initial financial gesture. The number who were prepared to take an active and continuing interest in the welfare of the institution was small. Consequently, the flow of financial donations was soon reduced to a trickle (Table 2).

TABLE 2<sup>8</sup>

Session	1825-26	1826-27	1827-28	1828-29
Amount donated	£45. 11. 0.	£12. 4. 0.	£2. 0. 0.	£3. 2. 0.

At this early stage in its history, the Watt Institution still had considerable (though dwindling) reserves of cash in the bank but lack of continuing support by the

affluent meant that there was no sure antidote to the financial haemorrhage from which the institution suffered on account of ordinary revenue from tickets being insufficient to meet the outgoing costs such as lecturer's salaries, books etc. The drain on capital is clearly illustrated in Table 3.

TABLE 3<sup>9</sup>

Session	Bank Balance at start of Session	Bank Balance at End of Session	Paid to Lecturer(s)	Spent on Books
1824-25	£872.13.6	£601.6.7	£60	£88.17. 5
1825-26	£601.8.7.	£473.12.4	£120	£14.12. 6
1826-27	£473.12.4	£362.15.0	£60	£30.13. 3
1827-28	£362.15.0	£301.16.2	£60	£ 37. 8. 8
1828-29	£301.16.2	£267.15.8	£45	£ 5. 3. 2

Lack of solid and permanent middle-class support was an enfeebling factor throughout the Watt Institution's history and rendered it particularly vulnerable to the effects of the trade cycle. During the period under scrutiny in this chapter, middle class reluctance to make sizeable contributions to the Watt Institution's coffers is understandable; economic stagnation adversely affected the middle as well as the working classes. There were many claims on the purses of the wealthy for the support of the indigent and starving which doubtless made the Watt Institution appear something of a luxury. Nevertheless, the directors felt justified in reiterating their complaints in successive annual reports, for example in 1828:

"In concluding their report, however, the directors cannot refrain from again expressing their regret at the apathy manifested towards the institution by the upper ranks of society in Dundee. Where the use of machinery is as extended as it is in this town, it cannot but be of importance to the proprietors that they themselves and the persons they intrust with the immediate care of their property, should have a tolerable knowledge of Chemistry and Mechanics. To the claims of the Institution, therefore, the attention of this class of proprietors is earnestly solicited."<sup>10</sup>

Yet in 1827-28, when there was some temporary amelioration of the economic climate, only £2.0.0 was received in donations.

It seems that the vanguard of the March of Mind in Dundee had not only overestimated the readiness of the tradesmen for scientific education but had formed an over-optimistic impression of the extent of practical assistance to be expected from the manufacturers themselves. This appears to have been a nationwide phenomenon. During this early phase of the Industrial Revolution, many businessmen distrusted anything that went much beyond empiricism. "There were intelligent, experimentally minded and even cultured manufacturers in plenty ... but it would be an error to suppose that they

represented the norm of their class."<sup>11</sup>

During the years 1825-29, lecture topics were rigidly restricted (as in the initial session) to subjects within the realm of physical and applied science. For the first two sessions the institution employed two lecturers, one to deal with mathematics and mechanics, the other with chemistry. In subsequent sessions (to 1829) one lecturer only was engaged and was responsible for work on all branches of physical science. After 1829 the Watt Institution's financial position was so parlous that the employment of a salaried lecturer was no longer possible.

After the close of the first lecture season the directors had anticipated that Messrs. Roy and Macvicar would be re-engaged as lecturers for the succeeding session. All seemed in order until six weeks prior to the beginning of the new session when a letter of resignation was received from Mr. Macvicar.<sup>12</sup> He had decided to apply for the post of chemistry lecturer at Glasgow Mechanics' Institution, a position carrying the substantial salary of £150 p.a. (the application was not successful<sup>13</sup>). Despite hints of acrimony in the correspondence between Macvicar and the directors, he was in later years involved in its affairs as a director (1833-34) and occasional lecturer (e.g. see p.28).

Another unsuccessful contender for the chemistry position at Glasgow was the Rev. William Dow,<sup>14</sup> lecturer at Dumfries and Maxwelltown Mechanics' Institution, and it was he who was appointed Mr. Macvicar's successor at Dundee. He remained in Dundee for only one year (1825-26) before returning to south-west Scotland to become minister of Tongland, near Kirkcudbright. His pious disposition occasioned the following comment by the Advertiser, "Before commencing the course, he requested the meeting to join him in prayer for the welfare of the Institution..... Everyone seemed taken by surprise but the prayer was listened to with devout devotion."<sup>15</sup> The same newspaper commended him for the "plainness and perspicuity of his language."

Unlike Mr. Macvicar, Andrew Roy did return to the Watt Institution for the second session and after Mr. Dow's departure he remained as sole lecturer for a further two years. Mr. Roy's devoted service was recognised by the directors, when, at the end of the third session they recommended that the privilege of life membership be conferred upon him, a suggestion which the members heartily endorsed at their annual general meeting.<sup>16</sup> In the summer of 1828, the academy at Cupar was extended through the aid of funds derived from Dr. Bell's bequest and Andrew Roy left the Watt Institution to take charge of the mathematics department there.<sup>17</sup> He did not, however, sever his connections with the Watt Institution; in 1834 he recrossed the Tay to become head of the commercial department at Dundee Public Seminaries and lectured occasionally at the Watt Institution in the ensuing years.

The last of the Watt Institution's own full-time lecturers was arguably the most remarkable man ever to be involved in the affairs of that body. James Bowman Lindsay (who commenced his duties in October 1828) was one of the unsung geniuses of the nineteenth century, a man whose remarkably wide-ranging intellect led him along strange paths. His 'forte' was experimental physics and in 1835 he devised the first practicable electric light, while in 1843 he proposed a transatlantic submarine telegraph, having demonstrated the feasibility of this in a series of experiments. At the time of his appointment to the Watt Institution, he was engaged in a very different enterprise (on which he thought his posthumous reputation would depend) — the compilation of his never-to-be-completed 'penteconteglossal' dictionary.<sup>18</sup>

Lindsay was a native of Carmyllie (Angus, b. 1799) and in early life had worked as a weaver, spending all his spare time in self-instruction. In 1821 he entered St. Andrews University as a student and so devoted was he to the cause of education, that during the summer vacation he obtained the use of an empty barn at Dilty Moss, near Carmyllie and transformed it into a school where he taught the children of farmers and crofters for nominal fees.<sup>19</sup>

There is little evidence of how capable a lecturer Lindsay was, though a press report of a public lecture he gave in December 1828 (presented at the request of the directors with a view to alleviating the institution's worsening financial situation, but unsuccessful in this respect) suggests that he was perhaps a little over-earnest and over-ambitious, since his address was said to be "a specimen of powerful and impressive eloquence, the effect of which was perhaps weakened by the breathless rapidity with which it was delivered."<sup>20</sup>

During Lindsay's tenure of the lectureship the directors endeavoured to extend the educational provision of the institution to include mathematical instruction for the sons of tradesmen and advertisements giving details of the "New Mathematical School" appeared in the Advertiser and Courier.<sup>21</sup>

To help instil a spirit of emulation in his pupils, Lindsay was to grant free lecture tickets to diligent scholars. Since the time spent on teaching by Lindsay was much greater than that of previous incumbents, it was agreed that in addition to the basic lecturer's salary of £60, he should receive one quarter of the revenue from day school fees.<sup>22</sup> The time, however, was not ripe for such a novel educational venture and the school did not prosper. During May 1829, there were only eight scholars in regular attendance and by July of that year it was apparent to the directors that with such slender support it was futile to keep the school open any longer. Consequently the school was closed and Lindsay presented with all the money accruing from scholars' fees.<sup>23</sup>

As Kelly remarks, "even the smallest institute seldom failed to establish a library,"<sup>24</sup> and the formation of a library was one of the earliest questions to which the directors of the Watt Institution addressed themselves. The library was not ready to open, however, until after the close of the first lecture programme. The reading material provided during the early years reflected closely the substance of lecture courses. This is apparent if the 222 volumes on the shelves of the library in 1825 are analysed into the categories subsequently used in the library for classificatory purposes (Table 4).

TABLE 4<sup>25</sup>

CATEGORY	No. of VOLUMES
Mathematics	<b>39</b>
Natural Philosophy	<b>52</b>
Chemistry	<b>43</b>
Arts/Manufactures	<b>25</b>
Geography/History/Biography	<b>0</b>
Mental Science	<b>0</b>
Miscellaneous	<b>57</b>
<b>TOTAL</b>	<b>222</b>

(Of the 57 volumes allocated to the miscellaneous category, 51 were numbers of scientific or manufacturing journals, the remaining 6, volumes of Nicholson's Encyclopaedia).

The circumscribed scientific curriculum and reading material at the Watt Institution was one of a number of factors (detailed below) which must have repelled significant numbers of potential working class students, particularly during times of economic depression. There is evidence, for example, that there were numbers of politically conscious working men in Dundee who were avid for reading material. A notable (and indeed notorious) group in this respect were the hecklers or flaxdressers, who as workers employed in a developing industry were among that section of the working class whose interests the Watt Institution sought to engage. They were, says Carmichael, "a peculiar class of men with strongly marked characteristics. As a rule, they were great politicians and the heckling shop was frequently the area of violent harangue and fierce debate. They had an eager desire for news and information and one of their number was usually told off to read while the others worked and listened."<sup>26</sup> Although a number of hecklers were attracted into the Watt Institution fold (e.g. Alex. Blackie) it appears that many were more likely to toast the health of Tom Paine than James Watt. Yet mechanics' institutes were seen by many of their promoters as devices for siphoning off the excess intellectual energy of the workers and channelling it into "safe" and "rational" directions. James Brown, for example, in a letter to the Courier recommending the benefits of scientific education to working men had written "Permit me Mr. Editor to hint to my townsmen that there are subjects of interest and importance to them entirely unconnected with politics."<sup>27</sup>

If political reading matter was seen to be potentially dangerous, "imaginative literature" was felt (for working men at least) to be unprofitable and time-wasting. To divert tradesmen with poetry and novels, would, it was thought, not only interfere with

scientific instruction but would encourage those habits of idleness which the institutes were designed to eradicate. Mr. Macvicar in one of his early lectures had pointed out, in true Gradgrind fashion "the superiority of the knowledge of science which was knowledge of facts" and that "the increase of knowledge was attended by an increase of power and an increase of happiness."<sup>28</sup>

Sheer lack of time was another factor handicapping the educationally inclined mechanic. How were mechanics, in their few leisure hours, to devote themselves to assiduous scientific study without neglecting the interests of their families? Yet Andrew Roy in his homiletic address at the beginning of the second session professed to regard scarcity of time as a pseudo-problem — even an advantage'. "Want of time is an excuse more specious than solid ...

It has been remarked that the artisan who has little spare time employs the little he has better and is in general more intelligent than he who has several hours to himself. Time hangs heavily on the hands of the latter, whilst the former grasps at the few minutes he has and turns them to best account..."<sup>29</sup> Even the most enthusiastic among the mechanic population were surely not to be swayed by such sophistry. During the third session, in fact, many of the members complained to the directors that four lectures per week were too many and left insufficient time for private study. As a result the lecture load was reduced to two per week.

The probability that bodily fatigue incurred as a result of day-long physical toil might adversely affect the working man's powers of concentration in the lecture room often received scant attention by the organizers of mechanics' institutes. The problem was blandly dismissed by Andrew Roy in the following terms during one of his lectures. "It may be observed," he claimed, "that in most mechanical employments, though considerable bodily strength may be required, the mind is almost totally unemployed and is as vigorous at the end as it was at the beginning of the day."<sup>30</sup> One wonders whether his experience as a lecturer had caused him to modify his opinion by the time the following comments appeared in the Advertiser: "A member of the Watt Institution complains of being annoyed and scandalized by the snoring of some of his brethren during the clear and interesting lectures of Mr. Roy. We are afraid that some of the sons of toil who attend this institution will be overcome by sleep in the evenings in spite of themselves and in spite of all remonstrances."<sup>31</sup>

As Harrison has pointed out, the methods of instruction employed by institutes often seemed alien to the working man. Consequently, loosely knit and frequently ephemeral groups bent upon "mutual instruction," or "mutual improvement," formed an important component of working class adult education in the nineteenth century.<sup>32</sup> During 1827, an educational initiative of this type was taken by a group of ordinary members, though the object was limited to the clarification of lecture topics and it was intended to supplement rather than replace formal lectures.<sup>33</sup> An important outcome of this "conversation class" was that after it became apparent that the funds of the institution were no longer sufficient to maintain a professional lecturer (after 1829, see Ch. 3) the directors decided to build on the foundations laid by the conversation class and to make mutual instruction the central educational activity of the institution.



The question: "What kinds of members did the Watt Institution attract?" is an interesting and important one, especially since the general question of composition of mechanics' institute membership has aroused a measure of disagreement among writers. R.D. Altick, for example, asserts that it was not long before "... the mechanics were pushed out and in their place came business and professional men and their families."<sup>34</sup> Kelly considers this to be too sweeping a generalization and maintains that most mechanics' institutes continued to attract considerable numbers of skilled workers.<sup>35</sup> Unfortunately, complete lists of Watt Institution members are no longer extant so that the question cannot be answered with certainty; the best that can be done, for the early years, is to study lists of those members who attended the annual meetings. This means that estimates are based on samples which comprise less than half of the total number of members; so that one has to assume that the composition of these samples is not significantly different from that of the membership as a whole. Bearing this reservation in mind, Table 5 presents an estimate of the membership during the early phase of the institution's life.

TABLE 5<sup>36</sup>

<b>Composition of Membership</b>	
<b>Artisans</b>	60%
<b>Lower Middle Class</b>	15%
<b>Manufacturers etc.</b>	20%
<b>Merchants and Professional Man</b>	5%

At the outset, then, the Watt Institution appears to have attracted roughly the kind of members its founders were looking for (the composition of membership at the Edinburgh School of Arts was very similar) but not, after the first session, in large numbers.

## NOTES

<sup>1</sup> Based on figures in annual reports for those years.

<sup>2</sup> T. Kelly, op. cit., p.208.

<sup>3</sup> W. Norrie, Dundee and Dundonians Seventy Years Ago, (Dundee, 1892).

<sup>4</sup> P. Carmichael, in E. Gauldie, op. cit., p.23.

<sup>5</sup> From annual reports.

<sup>6</sup> Advertiser, 14<sup>th</sup> June 1827.

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- <sup>7</sup> W.I.A.R., 1827, p.1.
- <sup>8</sup> Compiled from annual reports.
- <sup>9</sup> Ibid.
- <sup>10</sup> W.I.A.R. 1827, p.2.
- <sup>11</sup> E.J. Hobsbawm, The Age of Revolution 1789-1848, (New York, 1962), p.224.
- <sup>12</sup> Watt Institution mss., M.D.M., 12<sup>th</sup> August 1825.
- <sup>13</sup> R.J. Heydon, "The Origin and Development of Glasgow Mechanics' Institution," (unpublished M.Ed. thesis, Glasgow University, 1968), p.47.
- <sup>14</sup> See W.B. de B. Nicol, "Dumfries and Maxwelltown Mechanics' Institute 1825-1900," "In Dumfriesshire and Galloway Nat. Hist. and Antiquarian Society Transactions, 3<sup>rd</sup> Series, XXVIII, (1951), pp.66-68.
- <sup>15</sup> Advertiser, 27<sup>th</sup> October 1825.
- <sup>16</sup> W.I.A.R., 1827, p.1.
- <sup>17</sup> W. Norrie, Dundee Celebrities, pp. 238-239.
- <sup>18</sup> See A.H. Millar, James Bowman Lindsay and other Pioneers of Invention, (Dundee, 1925) p.20.
- <sup>19</sup> W. Norrie, Dundee Celebrities, p.212.
- <sup>20</sup> Advertiser, 25<sup>th</sup> December 1828.
- <sup>21</sup> e.g. in Advertiser, 4<sup>th</sup> September 1828.
- <sup>22</sup> Watt Institution mss., M.D.M., 11<sup>th</sup> August 1828.
- <sup>23</sup> W.I.A.R., 1829, p.1.
- <sup>24</sup> T. Kelly, op cit., p.218.
- <sup>25</sup> Based on list of titles in W.I.A.R., 1825. Pp12-14.
- <sup>26</sup> P. Carmichael, Autobiography, op. cit., p.61.
- <sup>27</sup> Courier, 29<sup>th</sup> January 1824.
- <sup>28</sup> Courier, 20<sup>th</sup> January 1825.
- <sup>29</sup> Advertiser, 20<sup>th</sup> October 1825.
- <sup>30</sup> Advertiser, 27<sup>th</sup> October 1825.
- <sup>31</sup> Advertiser, 1<sup>st</sup> January 1828.
- <sup>32</sup> J.F.C. Harrison, op. cit., p.52.
- <sup>33</sup> Watt Institution mss., M.D.M., 6<sup>th</sup> August 1827.
- <sup>34</sup> R.D. Altick, The English Common Reader, (Chicago, 1957), p.191.
- <sup>35</sup> T.Kelly, op. cit. pp.244-245.
- <sup>36</sup> Compiled from lists in Watt Institution mss, the most complete being for the annual meeting held in May, 1825.

### CHAPTER 3

#### THE PERIOD OF MUTUAL INSTRUCTION, 1829-38

**TABLE 1<sup>1</sup>**

**Extent of Membership, 1829-38**

Session	Average Membership	Financial Yield
<b>1829-30</b>	81	£21.8.0.
<b>1830-31</b>	114	£34.17.0
<b>1831-32</b>	124	£36.12.0
<b>1832-33</b>	114	£34.4.0.
<b>1833-34</b>	196	£59.9.0.
<b>1834-35</b>	240	£72.3.0.
<b>1835-36</b>	285	£86.8.0.
<b>1836-37</b>	341	£98.8.8.
<b>1837-38</b>	280	Not given

During the 1829-30 session the Watt Institution was more sparsely attended than at any period of its history. The situation was so grim that the Courier could write as if the institution were already deceased: - "Our population is upwards of 40,000 and our institution has nevertheless been allowed to expire."<sup>2</sup> The condition of the working classes in Dundee in 1830 was, to use a favourite contemporary epithet, truly "melancholy."

The Watt Institution's business was, of course, conducted largely during the winter months when reluctance to attend due to poverty was reinforced by the prevalence of disease, its incidence greater than usual on account of widespread malnutrition.

That the Watt Institution, with its emphasis hitherto only on books of readily discernible utility, had failed to meet an existing demand among the working population for emotionally satisfying reading material is suggested by a resolution passed at a meeting of the Dundee Temperance Society, ".... that a library be formed and that it should be confined not merely to the object the society has in view but suited to the taste of every individual and .... no doubt in a short time this library will provide a feast, not only for the followers of science and for the lovers of ancient and modern

history, biography, travels and voyages but likewise a dessert after dinner and a relief from uninteresting but perhaps more profitable studies in the form of a few choice novels with all periodicals."<sup>3</sup>

The directors engaged in a good deal of heart-searching at this time. They wondered whether perhaps "... the schools for mechanics as they have been planned have aimed their endeavours too high for the present state of society."<sup>4</sup> Even before their decision no longer to employ a full-time lecturer had been taken, they had been contemplating "... substituting popular lectures on a great variety of subjects for lengthened courses on one or two branches of science."<sup>5</sup> However, once the resolution to make mutual instruction the focus of the society's activities had been made, the possibility of long systematic courses was removed; if as many individuals as possible were to be encouraged to participate, important concessions had to be made to the varying interests of the members. Thus topics were introduced which a year or two previously would not have been considered suitable. The adoption of mutual instruction secured for the Watt Institution a widening of the curriculum, which turned out to be a

**TABLE 2<sup>6</sup>**

Lecture Topics, 1829-35

<b>Session</b>	<b>Physical Science</b>	<b>Mathematics</b>	<b>Natural History</b>	<b>Arts/ Manufactures</b>	<b>Not Scientific or Technical</b>
<b>1829-30</b>	6	0	5	5	3
<b>1830-31</b>	7	0	7	6	5
<b>1831-32</b>	16	0	6	5	3
<b>1832-33</b>	20	0	2	5	0
<b>1833-34</b>	13	0	11	3	6
<b>1834-35</b>	12	0	12	7	5
<b>1835-36</b>	15	0	10	4	2
<b>1836-37</b>	12	0	6	1	3
<b>1837-38</b>	9	2	9	1	8

An important point in favour of mutual instruction, amply recognized by the directors, was that benefits were conferred not only on the audience, but even more so on the lecturer himself, "for the only sure test of thorough acquaintance with any branch of knowledge is the comprising of a clear and intelligible account of it."<sup>7</sup> Even so, during the first session of mutual instruction (1829-30) the directors managed to obtain the services of two accredited lecturers. Andrew Roy (former lecturer at the Watt

Institution) provided three lectures on "The Elements of Botany" while a further four (three dealing with "The Properties of the Atmosphere" and one with "The Diffusion of Knowledge") were furnished by the celebrated astronomer, author and adult educator, Dr. Thomas Dick of Broughty Ferry.

The move away from long courses in physical science towards lighter and more varied educational programmes was widespread among mechanics' institutes during these years and was often reckoned to be a necessary condition of survival. Harrison has claimed that "when the failure of a policy of science for artisans became apparent, as was usually the case about five years after the foundation of the institute, a remedy was sought in the introduction of literary and cultural subjects into the curriculum."<sup>8</sup> Though this may have been typically the case at English institutes, it was not strictly true at the Watt Institution, where non-scientific lecture topics still formed a minority at this time. Literary subjects did not make their appearance until the late thirties. (At Glasgow Mechanics' Institution and Edinburgh School of Arts long systematic courses in physical science were retained during the thirties as the core of the curriculum). Controversial political issues were still excluded from consideration, though works on orthodox political economy began to appear on the shelves of the library and in 1831 there was a short course of four lectures on that subject. This is readily comprehensible in view of what has been written earlier concerning the function of mechanics' institutes as agencies for the dissemination of middle class values among the artisan class, for "was not the new 'science' in its popularized form essentially a code of 'correct' ideas within which working class aspirations for reform were to be contained?"<sup>9</sup>

Despite the more latitudinarian approach to lecture topics and library books, little improvement in the institutions' power to attract members could have been expected during the period of excitement generated by the reform issue. Intense interest in this question was manifested by all social classes. Several prominent figures at the Watt Institution were themselves active in the reform agitation. C.W. Boase, James Brown and George Milne were well-known orators in the cause of reform.

In December 1830, James Brown had addressed a reform rally at the Rev. Mr. Donaldson's chapel in School Wynd in which he advocated getting up a petition to the King and both houses of parliament on the question of parliamentary reform.<sup>10</sup> By February 1831, petitions signed by more than 6,400 inhabitants of Dundee had been forwarded. Evidence of widespread interest in political events among working men is provided by numerous reports in the contemporary press, such as the following: - "At many of the manufactories daily papers are purchased by the workmen and read to them by one appointed and paid for the purpose."<sup>11</sup> To such a fever pitch had political excitement among the working classes been raised that in March 1831, there were ugly riots, when the situation got completely out of hand. On the night of Tuesday, 29 March, .. the streets of Dundee were patrolled by rioters and the police were compelled to take refuge and remain in hiding from the fury of the crowd."<sup>12</sup>

The Scottish Reform Act was passed on 17 July 1832 and thereafter political excitement in Dundee subsided for several years until the beginning of the Chartist agitation in the late thirties. But no sooner had the reform issue been settled than another factor inimical to the Watt Institution's prosperity appeared on the scene. This time it was not politics, but disease; the cholera epidemic of 1832 claimed victims from all strata of society but its effects were most virulent in the congested working class districts. Throughout the spring of 1832 isolated cases were identified in Dundee but since most of the affected individuals belonged to the "lower orders" little interest was shown and there was no sense of panic. However, during the late summer and autumn the epidemic spread alarmingly and by 1 November there had been 503 deaths. It was not until the end of November that the force of the epidemic was spent and shipping could be granted a clean bill of health.<sup>13</sup> Since the Watt Institution's lecture programme commenced in October each year, it is hardly surprising that the number of tickets sold for the 1832/33 session was even less than for the previous year.

After 1832 trade revived and the years 1833-37 were prosperous ones in Dundee. When Peter Carmichael returned to Dundee in 1833 after three years exile in London "the beneficial effects of passing the Reform Bill began to be seen and several spinning mills had been or were being built in the expectation of better times."<sup>14</sup>

The session 1833-34 witnessed a dramatic upsurge in the Watt Institution's popularity so that the number of members was greater than at any time since the opening session. The increasing vitality of the institution manifested itself in a variety of ways:

- a) Perhaps the most significant symbol of the Watt Institution's new strength was its acquisition of land for a hall (opened in 1838).
- b) There was a move away from simple mutual instruction of the early thirties towards a more standardised lecture programme.
- c) A museum was opened (also in 1838).
- d) It was decided to admit ladies to the lectures and use of library facilities. According to the annual report for 1838, between 20 and 46 ladies regularly attended lectures during the 1837-38 session; they were not permitted any say in the running of the institution's business.<sup>15</sup>

It was in 1834 when prosperity was newly returned to Dundee after the great depression of the late twenties and early thirties, that the directors turned their attention to the possibility of the Watt Institution acquiring its own building; hitherto use had been made of rented accommodation such as the Associate Burgher Meeting House and (latterly) the Hammermen's Hall. By 5th May 1834, C.W. Boase was able to inform the other directors that he had opened subscriptions for the building fund and that contributions already totalled £350.<sup>16</sup> A suitable site was purchased at a roup on 24th June 1835 and after much argument and prevarication among the directors, building work commenced in March 1837.<sup>17</sup>

Though the Watt Institution during the mid-thirties was apparently thriving, there is one detail which, in retrospect, suggests that the prosperity was somewhat precarious. If we neglect income from building fund subscriptions and look only at ordinary income and ordinary expenditure (Table 3) it becomes apparent that the institution was not really paying its way; in only one season (1836-37) was ordinary income sufficient to defray ordinary expenditure. Yet the directors appeared sanguine at the prospect of borrowing a sum as large as £700 if need be and by the time the hall was opened for lectures, the Watt Institution was overdrawn on bond to the extent of £630 at the Eastern Bank.<sup>18</sup> It is ironic that one of the instigators of the building project was C. W. Boase, himself a successful banker.

**TABLE 3<sup>19</sup>**

Session	Balance at Beginning of Session	Balance at end of Session	Profit/Loss
1829-30	£260.15.8.	£251.18.9	-£15.16.11
1830-31	£251.18.9.	£242.19.5.	-£ 8.19.4
1831-32	£242.19.5	£235.11.1	-£ 7.8.4.
1832-33	£235.11.1	£221.14.11	-£13.16.2.
1833-34	£221.14.11	£180.12.2	-£46.14.9.
1834-35	£180.12.2	£176.8.5	-£ 3.3.9
1835-36	£176.8.5.	£148.18.0	-£27.10.5
1836-37	£148.18.0	£161.13.4	+£12.15.4.
1837-38	£161.13.4	At this stage it is impossible to separate ordinary account from building fund.	

It was hoped that by letting the hall to interested parties for meetings etc., sufficient income would be generated to pay off the institution's massive burden of debt; further, the directors held the optimistic belief that the very existence of a commodious hall would enable the institution to expand its range of activities, attract more members and so grow in prosperity. With the wisdom of hindsight, it seems to have been myopic of the directors not even to consider what might happen to the institution, labouring under the incubus of such a vast debt, in the event of another trade depression.

In the mid-thirties, there was a move away from the pattern of mutual instruction which had obtained when the number of members was small. This system had enabled a number of individuals to develop as lecturers in their own right; under the new conditions of increased membership where all-round participation of members in lecturing was no longer feasible there was a move to a more orthodox lecturing situation, the bulk of the lectures being presented by the veterans of mutual instruction. Some of these men were prominent members of the local middle class used to public speaking (e. g. James Brown, C.W. Boase, George Milne, Dr. Alexander Webster, Rev. George Buist) but others were of humble origin.



One of the latter group was Alex Blackie, a flaxdresser who eventually became a flaxspinner. Like Peter Borrie, he was one of the Watt Institution's small group of working men who rose into the ranks of the employer class. He appears to have thoroughly absorbed and adopted the Utilitarian social philosophy which the mechanics' institutes propagated. This was revealed in his address to the members at their annual celebration of James Watt's birthday in January 1832:

"In the year 1824 a few gentlemen hit on the happy thought of forming this Institution. If this be not a lasting memorial to the memory of Mr. Watt, the working classes, for whose benefit alone it was intended, are solely to blame. Many of us, of whom I am one, owe a debt of gratitude to those gentlemen for the little scientific knowledge we possess .... and those gentlemen may experience no unpleasant sensation on learning that many highly prize their exertions on our behalf."<sup>20</sup>

Among the lecture subjects dealt with by Blackie during the thirties were "Electricity," "Galvanism" and "The Ores of Iron."<sup>21</sup> It would appear, in view of what was written in Chapter 2, that Blackie, in his pertinacious pursuit of scientific enlightenment was a most atypical "heckler."

The Watt Institution after 1829 with its increased range of lecture topics and reading material must have appeared more attractive than formerly to a group of young working men who were passionately devoted to the study of natural history. Prominent among these were William Gardiner (junior) and William Jackson (senior), who served as directors in 1831 and 1834-6 respectively. They did not work in trades related to the industrial development of Dundee and appear to have been motivated by a pure devotion to science, unsullied by considerations of personal advancement. It may be appropriate to single out one of the group, William Gardiner, as a means of illustrating the transforming effect the Watt Institution had on the lives of a small number of working class scientists in Dundee.

William Gardiner (1809-52) was an umbrella-maker by trade. He was, says Norrie, "... possessed of an indomitable spirit of perseverance" and he set out to remedy the defects of his early education by patient study. His major area of interest was botany, though he studied other aspects of natural history and also wrote verse. He developed skills as a lecturer during the mutual instruction phase and by 1834 was in a position to present a course of nine lectures on natural history.

He began collecting specimens of alpine plants for the Botanical Society of Edinburgh and the approval with which this work met led to his being elected an associate member of that body. Eventually he was able to earn his living by collecting and selling botanical specimens. In 1846 he published his *Botanical Rambles in Braemar* and followed this with two other works, *Twenty Lectures on British Mosses* and *The Flora of Forfarshire*.<sup>22</sup>

The Watt Institution played a crucially important part in Gardiner's scientific development. Apart from the intangible reinforcing benefits derived from mixing with like-minded individuals, the Watt Institution members were permitted to borrow scientific equipment to which they would not otherwise have had access; and of course the library was an essential facility. A letter from Gardiner to the directors survives, which illustrates the importance of Watt Institution membership to him in his studies:

"I lately commenced on the study of Scottish cryptogamic plants but 'ere I had proceeded far my progress was impeded by two serious difficulties: 1st in many of these plants, especially the fungi, the specific characters are derived principally from the colours of the various parts, and I am possessed of no work on the nomenclature of colours to yield me assistance. 2nd some of these objects are so minute as to baffle the unassisted eye to investigate their parts.

He went on to request the loan of a book which was not generally allowed out of the library and also the loan of a microscope; both requests were acceded to by the directors.<sup>23</sup>

As the move towards an orthodox lecturing system developed, the directors began occasionally to sponsor professional lecturers. In 1835, for example, a professional astronomy lecturer, Mr. Goodacre visited Dundee to present a series of lectures on his own behalf and he made an arrangement with the Watt Institution directors to repeat the substance of his lectures at reduced rates for working class audiences. The charge for the course was reduced from 12s to 2s 6d and it was attended by 340 persons.<sup>24</sup> The same trend was exemplified during the ensuing session when Dr. Fyfe came to a similar agreement with the directors. One of his lectures dealt with the preparation and properties of nitrous oxide and was evidently entertaining, even if not instructive.

"After his explanation, Dr. Fyfe inflated from the gas holder a silken bag containing about two Scottish pints and gave it to a gentleman to breathe and when he had done so, he evinced its effects by grimaces and laughter. Seven gentlemen in succession inhaled the gas but on no two were the results the same. One sprang to his feet and went through some pugilistic attitudes while another sat in a state of deep abstraction."<sup>25</sup>

The number and range of books available in the library by 1834 was very different indeed from in the early days, as can be seen by contrasting Table 4 below with Table 4, chapter 2.

**TABLE 4<sup>26</sup>**

Subject	No. of Volumes	% of Total
Mathematics	72	8.2
Natural Philosophy	135	13.2
Chemistry	94	8.4
Arts/Manufactures	126	17.7
Natural History	143	12.3
Geography/History/Biography	323	23.5
Mental Science	192	16.7

In their annual report, the directors noted the amount and nature of reading undertaken by the members and discovered to their surprise, that books categorised as “mental science” (i.e. philosophical topics) and “geography/history/biography” were proving more popular than the “core” books on science. (Table 5).

**TABLE 5<sup>27</sup>**

Subject	Average No. of readers during Session
Mathematics	7
Natural Philosophy	22
Chemistry	6
Arts/Manufactures	24
Natural History	23
Geography/History/Biography	59
Mental Science	43
Miscellaneous	22

The main subject categories were divided into sub-categories and in 1835 the most popular sub-section was “Voyages and Travels” (listed under Geography/History/Biography) Since novels and poetry were not yet admitted to the library, books of this kind probably served in some measure to satisfy the imaginative cravings of the readers.

New Year’s Day, 1838, witnessed a further expansion of the Watt Institution activities, the opening of the museum, the brainchild of C.W. Boase. Many of the exhibits were of a natural historical nature and both William Gardiner (junior) and William Jackson (senior) played a large part in the collection and preparation of

specimens. Jackson was appointed curator at a wage of 3s per week. The museum was open free of charge to members and fees for the public were fixed as follows: ladies and gentlemen, 6d; working people, 3d. During its first session, the museum proved something of a disappointment to the directors; the number of visitors was fewer than anticipated, while capital outlay had exceeded £200<sup>28</sup> – another instance of the rather cavalier attitude to financial matters on the part of the directors.

## NOTES

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<sup>1</sup> Compiled from annual reports

<sup>2</sup> 28<sup>th</sup> September 1830

<sup>3</sup> 20<sup>th</sup> May 1830.

<sup>4</sup> W.I.A.R., 1830, p.1.

<sup>5</sup> *ibid.*

<sup>6</sup> Compiled from annual reports.

<sup>7</sup> W.I.A.R., 1830, p.1.

<sup>8</sup> J.F.C. Harrison, *op. cit.*, p.167.

<sup>9</sup> A. Tyrrell, "Political Economy, Whiggism and the Education of Working Class Adults in Scotland: 1817-1840, "Scot. Hist. Review, 48, (1969), p.154.

<sup>10</sup> Courier, 7<sup>th</sup> December 1830.

<sup>11</sup> Advertiser, 10<sup>th</sup> February 1831.

<sup>12</sup> A.H. Millar, *Haunted Dundee*, (Dundee, 1924) p.44.

<sup>13</sup> Advertiser, 29<sup>th</sup> November 1832.

<sup>14</sup> P. Carmichael in E. Gauldie, *op. cit.*, p.50.

<sup>15</sup> W.I.A.R., 1830, p.2.

<sup>16</sup> Watt Institution mss., M.D.M., 5<sup>th</sup> May 1834.

<sup>17</sup> Watt Institution mss., gen meeting, 2<sup>nd</sup> March 1837.

<sup>18</sup> W.I.A.R., 1839, p.7.

<sup>19</sup> Compiled from annual reports.

<sup>20</sup> Advertiser, 26<sup>th</sup> January 1832.

<sup>21</sup> W. Norrie, Dundee Celebrities, pp. 139-140.

<sup>22</sup> *ibid.*

<sup>23</sup> Watt Institution mss., letter to directors, dated 5<sup>th</sup> November 1834.

<sup>24</sup> W.I.A.R., 1835, p.8 and Watt Institution mss., M.D.M., 9<sup>th</sup> March 1835.

<sup>25</sup> Advertiser, 30<sup>th</sup> September 1836.

<sup>26</sup> Table 4 compiled from detailed counts made in first library catalogue (1834).  
Miscellaneous section omitted because of difficulty in classification due to large number of journals.

<sup>27</sup> Table given in W.I.A.R., 1835, p.5.

<sup>28</sup> W.I.A.R., 1838, p.7

## CHAPTER 4

### BOOM AND SLUMP, 1838-42

**TABLE 1<sup>1</sup>**  
**Membership Figures, 1838-42**

Session	Average No. of Members	Receipts
<b>1838-39</b>	470	£145.8.10.
<b>1839-40</b>	278	£ 77.14.2.
<b>1840-41</b>	180	£ 64.14.4
<b>1841-42</b>	114	Not given

The opening of the Watt Institution's building in November 1838 gave the institution a tremendous boost and helped foster the buoyancy of spirit which is so readily discernible in the directors' report for that year. The average attendance at lectures was estimated at 500, "the hall being on some occasions even inconveniently filled." However, these palmy days were short-lived and by 1842, the Watt Institution was on the verge of extinction.

The political situation in the mid thirties had been reasonably tranquil but beneath the calm surface was a growing current of discontent, especially among those who had supported the reform campaign but had received no tangible benefits from the reform settlement. The trade depression of 1837 was the catalyst which transformed unsystematic discontent into organized political activity. The Dundee Political Union, which had been to the fore in the reform struggles, showed indications of renewed vitality, the Radical Reform Association began to campaign for universal suffrage, and so was set in motion the chain of events which culminated in the Chartist March of 1842.<sup>2</sup>

During the first session dealt with in this chapter, the growth of working class political unrest did not yet pose a significant threat to the Watt Institution's wellbeing; trade had revived since 1837 and the novelty effect of the new building ensured that this was the most successful session to date. The first lecture in the new hall was delivered on 14th November 1838 by the Rev. J.G. Macvicar, who had been one of the Institution's original professional lecturers in 1825. His lecture was introductory to a course of popular scientific topics and marked an important policy change on the part of the directors. Macvicar was a professional lecturer engaged at a fee of 30 guineas; although the Watt Institution never had its own salaried lecturer after 1829, professional lecturers were frequently hired after 1838 to give courses or even single lectures. One of Macvicar's lectures afforded the audience the opportunity of learning about a recent discovery,

destined to play an important part in Victorian social life. Having explained how fluoric acid could be used to etch figures and landscapes on glass, Macvicar "took the opportunity of noting the recent discovery of M. Daguerre."<sup>3</sup>

Despite the return in 1839 of a chillier economic climate, with cans ponding decline in membership, the directors retained a considerable degree of residual confidence; they were still prepared, for example, to expend money on professional lecturers. A course of fifteen lectures on chemistry and mechanical philosophy was presented by the erstwhile Watt Institution lecturer, Andrew Roy, at this time head of the commercial department at the Public Seminaries (see chapter 2). This doubtless provided him with a valuable addition (£22.10.0) to his regular salary, but was an expense which the Watt Institution could ill afford.<sup>4</sup>

A notable event during this session was the first appearance at the Watt Institution rostrum of the Rev. George Gilfillan, subsequently a major figure on the Scottish literary scene. At this stage, he had already published his *Five Discourses*, but had not yet embarked on the work which was to establish his reputation as a literary critic, the *Gallery of Literary Portraits*.<sup>5</sup>

Lecture subjects during the years 1838-42 constituted a fairly "mixed bag," (Table 2); though, with the exception of 1840-41, popular scientific titles were preponderant.

**TABLE 2<sup>6</sup>**

<b>Session</b>	<b>Physical Science</b>	<b>Natural History</b>	<b>Social Questions</b>	<b>Others</b>
<b>1838-39</b>	13	10	0	2
<b>1839-40</b>	25	2	2	2
<b>1840-41</b>	5	3	21	3
<b>1841-42</b>	5	7	6	5

By 1840 the earlier euphoria had completely evaporated and the directors realized that further employment of professional lecturers would be a recipe for disaster. They therefore called upon friends of the institution to rally in the hour of need and provide the maximum number of gratuitous lectures; in this connection valuable assistance was received from several of the nonconformist ministers in the town.<sup>7</sup>

Working class discontent, which had risen to the surface in 1837, was in the years 1840-42 conspicuous by its intensity. Many skilled workers were leaving Dundee, of whom a considerable number emigrated to Australia.<sup>8</sup> As in the years of reform agitation, the political atmosphere was electric. Large numbers of intelligent working men, however moderate their political stance, must have experienced a quickening of curiosity in view of the welter of political ideas that were "in the air," and must have experienced an irrepressible urge to discuss these openly with any interested party. Yet

mechanics' institutes were notorious for their exclusion of controversial subjects, especially such as impinging on political issues.

1841, a year that "began and ended so calamitously in Dundee" was a year of great excitement on the political front. The Queen's letter to the General Assembly in May, recommended ministers

"to inculcate in their flocks lessons of good order and obedience to the constitution."<sup>9</sup>

In their report for 1841, the directors admitted that the attractions of political activity were exerting an adverse effect on attendance at lectures. There were meetings which

"being more temporary and very exciting monopolized almost all the spare time at the command of those for whose benefit the mechanics' institutes were established."<sup>10</sup>

The situation continued to deteriorate and the late summer of 1842 saw widespread strike action throughout the industrial areas of Scotland, the extent to which the strikes were Chartist organized varying from place to place. It was in Dundee that the connection between strikes and Chartism was closest. On 19th August 1842, a hundred delegates from works in the town resolved to undertake concerted strike action. The strike for the Charter commenced on 22nd August and the following day a crowd of about 4,000 assembled on the Magdalen Green to hear an address by John Duncan, shoemaker, known as "The Chartist Preacher." It was a procession subsequent to the meeting which escalated into the Chartist march ("The Pilgrimage of Folly") which ended "not with a bang but a whimper" at Forfar at 3 a.m. the following morning, when 400 weary marchers, their belligerence dissipated, were grateful to accept victuals from the local inhabitants.<sup>11</sup>

Evidence of the alarm felt by law-abiding citizens during the height of the Chartist agitation is provided by the comments of David Maxwell, a director of the Watt Institution (at this time employed as a machine-maker at Walker's Mills in the Dens). "We at Walker's Mills undertook to defend the works. We armed ourselves with stout sticks. I knew that the manager had loaded pistols in his desk."<sup>12</sup>

Intense interest in political affairs could not be censured as a peculiarly working class vice, for this was the heyday of the Anti-Corn Law League, "that uniquely powerful instrument in the forming of middle class consciousness." In Dundee the free traders were particularly active in the early forties and drew some of their most ardent supporters from among those involved in the affairs of the Watt Institution, men such as James Brown, Edward Baxter and Rev. George Gilfillan. Feelings ran high at a League meeting held in February 1842 when Gilfillan went as far as to assert that the Corn Laws "were condemned by the Word of God."<sup>13</sup> The Watt Institution, supposedly an apolitical organization, received unfavourable attention from the Tory Courier on account of alleged pro- League sentiments expressed by a speaker at the Annual Watt Festival, in 1842<sup>14</sup>.

Unfortunately the volatile political situation and the captiousness it produced in many people meant that even the innocent-seeming device of reducing the Watt Institute's debt by letting out the hall, became fraught with difficulties. Controversy was sparked off on account of Chartist sentiments being expressed at a meeting of the Political Union held at the Watt Institution, in March 1839. Peter Dron, a veteran Radical from the days of self-election, objected strongly and moved that, "it would be injurious to the character and interests of the institution if the hall were let to the Chartists."<sup>15</sup> However, another director, J. T. Wilson, manufacturer, took issue with Dron. He averred that the Watt Institution could no more be held responsible for opinions expressed by those hiring rooms, than could a landlord for the views of his tenants; in addition, he felt that the Watt Institution with its appalling millstone of debt could hardly afford to be fastidious about such matters, provided there was no disorderly behaviour on the premises. Wilson's view narrowly won the day<sup>16</sup> and determined the letting policy of the Institution until 1845.

The directors had the tricky task of steering between the Scylla of middle class alarmism and the Charybdis of working class suspicion and scepticism. Lack of opportunity for open political debate tended to alienate working men and a decision to deny working class political groups the opportunity to hire rooms could only have aggravated this. On the other hand it is evident that the policy pursued by the directors cost them some support among the wealthier section of the community. During the summer of 1842 when the Institution was threatened with imminent extinction, the directors admitted that their letting policy had led to withdrawal of support by some prosperous citizens; but they reaffirmed their conviction that "... party distinction must not be taken into account, else the directors themselves will become implicated in these party contests."<sup>17</sup>

During the session 1841-42, income was so meagre that it was not possible to pay the interest owing to the Eastern Bank. The situation was so grave that the Advertiser wrote; "It appears that unless some strenuous efforts are made by its friends and the public, the directors will be compelled to make over the property to the creditors."<sup>18</sup> The Institution was extricated from this crisis only by virtue of an extension of its range of activities, the staging of a large- scale exhibition of natural and scientific curiosities and works of art.

An earlier scheme for raising a public subscription fund was dropped because of "... the many calls of a more pressing nature at that time making on the more opulent classes."<sup>19</sup> The proposal for holding an exhibition appears to have originated with Thomas Wighton, wright,<sup>20</sup> and "was not adopted without deep and anxious consideration." Similar exhibitions had already been staged at other institutes (e.g. the great Manchester exhibition of 1838) and usually for similar reasons — as Kelly emphasizes, mechanics' institute buildings were easier to build than to pay for.<sup>21</sup>

The directors canvassed likely persons in the Dundee area for the loan of "any article, scientific apparatus, machine or model, natural or artificial curiosities, antiquities, drawings, paintings or anything tending to illustrate the past or present state of the productive arts or manufactures of this or any other country."<sup>22</sup> The exhibition opened on



26 August 1842 and met with widespread acclaim. During the three months it was open, more than 30,000 visits to it were made.

The exhibition represented a further widening of scope, another move away from the original utilitarian objectives. The introduction of "cultural" subjects, such as music, poetry, painting, etc. into mechanics' institute curricula reflected not only concessions to the varied interests of the members but also a desire to spread middle class gentility to the lower orders. This increasing concern with "refined amusement" as well as "useful knowledge" was probably a product of the growing middle class awareness of working class social conditions. This was derived largely from the work of social investigators such as Kay Shuttleworth, or in the case of Dundee, Rev. George Lewis.

During the 1841-42 session when attendance at lectures was generally sparse, Lewis had presented a four-lecture course on "The Physical, Moral and Educational Statistics of Dundee," and for these lectures the hall was filled to capacity.<sup>23</sup> The information forming the core of the lectures was collected by Lewis in his own parish of St. David's and was subsequently published as a series of pamphlets, which are rich sources of social historical detail.<sup>24</sup> Lewis illustrated the magnitude of the obstacles impeding the spread of "useful knowledge" or even "refined amusement" among the working masses. He pointed out, for example, that in St. David's parish, there was one spirit shop for every twenty families but only one public school for the whole parish.<sup>25</sup>

The Watt Institution exhibition was certainly a centre of "refined amusement." The Courier averred that "A couple of hours on an evening spent here with a wife, a sister or a sweetheart will be productive of more real pleasure than as many weeks spent in the theatre or the ballroom." Conspicuous among the attractions were "the murmuring sounds of a jet d'eau and fountain with goldfishes and the sweet and silvery tones of many female voices;" and it was alleged that a visitor might easily imagine himself transported to "the temple of Apollo, to the Elysium of the Muses or in the midst of a ne plus ultra spectacle of love, beauty, friendship and fashion."<sup>26</sup>

However, the most important function of the exhibition was enabling the Watt Institution to satisfy its creditors sufficiently to remove the possibility of early deace. Receipts from the exhibition totalled £524.19. 9 of which the net profit to the Institution was £188.2.2.<sup>27</sup>

## NOTES

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<sup>1</sup> Compiled from annual reports

<sup>2</sup> Anon., Memoranda of the Chartist Agitation in Dundee (Dundee, no date) p.5.

<sup>3</sup> Advertiser, 1<sup>st</sup> February 1839. Daguerre's discoveries were the basis of early photography.

<sup>4</sup> W.I.A.R., 1840, p.18.

<sup>5</sup> *ibid.*, p.9.

<sup>6</sup> Compiled from annual reports.

<sup>7</sup> W.I.A.R., 1841, p.10. Examples were Rev. McGavin's course on "Moral Philosophy" and Rev. Shoebotam's course on "The Classification of the Objects of Human Thought."

<sup>8</sup> P. Carmichael in E. Gauldie, *op. cit.*, p.83.

<sup>9</sup> *ibid.*, p.82.

<sup>10</sup> W.I.A.R., 1841, p.11.

<sup>11</sup> A. Wilson, The Chartist Movement in Scotland, (Manchester, 1970) pp.192-194.

<sup>12</sup> David Maxwell's unpublished autobiography. Acknowledgement due to Mr. C. Donaldson of Dundee for permitting writer to see his copy.

<sup>13</sup> Memoranda of the Chartist Agitation in Dundee, p.20.

<sup>14</sup> Courier, 25<sup>th</sup> January 1842.

<sup>15</sup> Watt Institution mss., M.D.M., 3<sup>rd</sup> June 1839.

<sup>16</sup> *ibid.*

<sup>17</sup> Watt Institution mss., M.D.M., 6<sup>th</sup> June 1842.

<sup>18</sup> Advertiser, 25<sup>th</sup> November 1842.

<sup>19</sup> W.I.A.R., 1842, p.6.

<sup>20</sup> Advertiser, 25<sup>th</sup> November 1842.

<sup>21</sup> T. Kelly, *op. cit.*, p.237.

<sup>22</sup> W.I.A.R., 1842, p.6.

<sup>23</sup> W.I.A.R., 1841. P.10.

<sup>24</sup> Titles are, The Tavern Bill of Dundee, The Pauper Bill of Dundee, The Filth and Fever Bill of Dundee, The Church Bill of Dundee, The School Bill of Dundee, all 1841.

<sup>25</sup> Tavern Bill, p.2.

<sup>26</sup> Courier, 11<sup>th</sup> October 1842.

<sup>27</sup> W.I.A.R., p.2.

## CHAPTER 5

### THE YEARS OF RECOVERY, 1842-45

**TABLE 1<sup>1</sup>**

**Membership Figures, 1842-45**

Session	Average No. of Members
1842-43	226
1843-44	150
1844-45	249

The previous chapter dealt with a period of acute trade depression, when political excitement remained at a high level. After the abortive "Pilgrimage of Folly" in 1842, agitation for the Charter declined in intensity and remained at a low pitch until the brief re-awakening of 1848. During the intervening years, Chartism was, in Wilson's phrase, "a slumbering movement."<sup>2</sup> The ringleaders of Dundee's 1842 "insurrection" were arrested and sentenced to imprisonment early in 1843,<sup>3</sup> but the trial of the principal actor in the drama, John Duncan ("The Chartist Preacher") was repeatedly postponed and he eventually succumbed to insanity, dying in an Edinburgh lunatic asylum in 1845.<sup>4</sup> During the years 1842-45, Chartism, then, no longer exerted a magnetic attraction upon "that class of persons whose benefit the Watt Institution principally contemplated."

Despite the collapse of Chartism, there was no immediate improvement in the economic situation, which thus remained as an obstacle in the way of the Watt Institution's achievement of prosperity. Early in 1843 for example, a meeting was held in South Chapel, Lindsay Street, for the purpose of "considering the prevailing destitution in the town"<sup>5</sup>. However, by April 1844 and throughout the remainder of 1844 and 1845, trade was more buoyant than at any time since the mid-thirties<sup>6</sup>.

Evidence has been presented in earlier chapters illustrative of the way in which Watt Institution membership figures reflected rather closely the state of trade and employment in Dundee. The 1842-43 session is something of an anomaly in this respect, for there was a sharp increase in membership without any corresponding amelioration of the economic climate; during the following session the membership declined to a level more commensurate with the state of trade. The most likely explanation would seem to lie in the effect on the public mind of the great exhibition of 1842, which brought the Watt Institution into public notice more than any event since the opening of the new building in 1838. An exhibition on such a grand scale had never previously been staged in Dundee, and week after week the newspapers poured forth plaudits. Many of the working people who visited it, though lacking specialized interests, must have been captivated and intrigued by the displays of exotic stuffed animals and birds or antique

weaponry. Above all, the splendid and sumptuous setting must have exerted a powerful effect on the minds of those for whom the recent past had been stark with threat of starvation.

That the exhibition not only was successful in its own right but was also instrumental in boosting the sale of membership tickets is suggested by the figures in Table 2, showing quarterly sale of tickets for the 1842-43 and 1843-44 sessions.

**TABLE 2<sup>7</sup>**

Session	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
1842-43	219	305	207	153
1843-44	158	159	161	123

What is being suggested is that the high number of tickets sold for the second quarter of 1842-43 resulted from the novelty effect of the exhibition. The second quarter commenced in October, when the exhibition was open and lecture tickets were on sale at the exhibition. Furthermore, the decline in ticket sales during the third and fourth quarters was probably due to the wearing off of this novelty effect after the closure of the exhibition; those who had purchased tickets as a result of being impressed by the exhibition would soon find that similar delights were not in store at the week-by-week lectures.

Despite the considerable profit accruing to the institution from the 1842 exhibition, it was still the case that ordinary annual expenditure continued to exceed ordinary annual income. This "balance of payments" problem was aggravated by the engagement of professional lecturers. The dilemma facing the directors was essentially this: if lectures were provided free of charge they were generally presented by local lecturers (with whom the local population was already familiar) who failed to attract large audiences; therefore income was meagre. If professional lecturers were hired a larger audience was generally guaranteed, hence income was larger, but the expense involved in remunerating the lecturer had to be set against revenue from tickets so that frequently the profit margin was slender and sometimes even a loss resulted. This was a problem which the Watt Institution never solved. It was a difficulty which afflicted the mechanics' institute movement as a whole and the formation of unions of institutes from the late thirties onwards was an attempt to guarantee attractive lectures by accredited lecturers, while minimising the cost to the individual institute.<sup>8</sup> A Scottish Union did not come into being until 1848.

That the employment of professional lecturers was something of a gamble may be illustrated by an example from the 1843-44 session. Mr. Wilson, from Glasgow had offered to present a course of three lectures (on hydroelectricity, the microscope and the polariscope) and to exhibit his collection of apparatus. His total charge was to be £25, while admission charges were fixed by the directors at 6d per lecture for non-members and 3d for members.<sup>9</sup>

In the minutes of a subsequent directors' meeting it is recorded that "Mr. Wilson's lectures have fallen so much below the promises contained in his letters that the agreement between Mr. Wilson and the institution has been cancelled and they (the directors) throw upon Mr. Wilson the responsibility of the course of lectures and proposed exhibition, he having the proceeds and paying the whole expenses incurred and if Mr. Wilson accede to these terms, the directors agree to allow him the use of the hall rent free during the times stated in his letter."<sup>10</sup> After an offer of £10 to Mr. Wilson had been disputed by him, the directors reluctantly agreed to pay him £12. 10.0d to avoid litigation.<sup>11</sup>

**TABLE 3<sup>12</sup>**

Session	Maths	Physical Science	Natural History	Arts/ Manufactures	Non- Scientific
1842-43	-	13	9	-	7
1843-44	-	5	-	1	16
1844-45	-	17	-	-	14
	-	35	9	1	37

As can be seen from Table 3, lecture topics were fairly evenly divided between popular science and non-scientific topics, with a slight preponderance of the former. The latter category covered a wide range of subjects, including such titles as the following: "Wilhem's System of Singing," "Diffusion of Knowledge," "Religion and its Relationship to Art and Literature," "Elocution."<sup>13</sup>

For reasons discussed above, only a minority of the lectures were given by professional lecturers and, indeed, during 1843-44 financial stringency forced a partial and temporary reversion to the kind of mutual instruction classes which had been the norm in the early thirties. The most successful of the courses conducted by a professional lecturer was that by Dr. Samuel Brown, the Edinburgh chemist and friend of Rev. George Gilfillan. In 1842, Gilfillan induced him to visit the Watt Institution "to tell the strange story of atoms and magnetism." (13) Brown was the fourth son of Samuel Brown of Haddington, the originator of itinerating libraries. In this same year (1842) he was an unsuccessful applicant for the chair of chemistry at Edinburgh University.<sup>14</sup>

Among providers of gratuitous lectures was Rev. George Gilfillan. During 1843-44 he gave two lectures on "The Reconciliation of Astronomy with Scripture," while during the succeeding session he provided four more lectures on religiously orientated topics.<sup>15</sup>

In view of the favourable reception granted by the public to the 1842 exhibition, the directors, in an attempt to strengthen the institution's still somewhat frail financial position, decided to hold another similar exhibition during the autumn of 1843. This was ambitiously conceived and its opening was planned to coincide with that of the Highland Show, held in Dundee that year, with a view to engaging the interests of farmers as well as manufacturers and urban workers.<sup>16</sup> To this end, a collection of agricultural implements and models was borrowed from the Highland Society, while Professor Johnston from London presented a couple of lectures on agricultural chemistry.<sup>17</sup> Although the number of visits made to the exhibition slightly exceeded that for the previous year, the outcome was something of a disappointment - the net profit was only £96. 8. lid., compared to £188 in 1842, which seemed a small return for all the effort involved.<sup>18</sup> It seems that the excessive ambition of the directors had led them to run up high overhead costs, thus reducing profit.

Despite the acrimonious debates which had taken place in 1839, the directors persisted until 1845 with their policy of letting rooms to all interested parties irrespective of political standpoint. Early in 1845, after a period of quiescence, this once more became a live issue. The incident which sparked off the conflict was the hiring out of the hall to an atheist speaker, Mrs. Martin, whose views, according to the **Courier** were "openly infidel . . . and indeed grossly immoral."<sup>19</sup> The **Courier** objected violently to such a speaker being granted a platform at the Watt Institution and their protest was vigorously supported by Rev. A. Thomson, minister of the Original Secession. The outcome of the resulting debate among the directors was the reversal of the policy of open letting; henceforth it was resolved that rooms should only be hired out for scientific or other uncontroversial lectures.<sup>20</sup>

Another instance of the widening of the Watt Institution's range of activities during the later stages of its history, was the opening of a reading room in 1844. According to Kelly, the move to establish reading rooms in mechanics' institutes was frequently attended with controversy, opponents of the idea maintaining that it would (a) be too expensive to run, (b) draw undesirable persons, (c) lead to political disharmony.<sup>21</sup> At the Watt Institution, however, the scheme does not appear to have provoked adverse criticism. According to the annual report for 1844: "It had long been the wish of a number of the active members to have a reading room in connection with the institution"<sup>22</sup> and at a general meeting of members convened on 12th December 1843, a resolution that a reading room be established was passed without difficulty. Unfortunately, during the years dealt with in this chapter, the reading room was not a financial success.<sup>23</sup>

The reading material provided was reasonably varied, though of course the extreme radical press was not represented. Apart from the three regular Dundee newspapers,<sup>24</sup> the other newspapers taken were The Sun, The Economist and The Scotsman, as well as the following periodicals: The Edinburgh Review, The Phrenological Journal, Blackwood's Magazine, Tait's Magazine, Glasgow Engineer's

Magazine, London Mechanic's Magazine, The Athenaeum, Punch, Chamber's Journal and The Penny Magazine.<sup>25</sup>

The library was the most consistently successful department at the Watt Institution. Even in 1842, when members were few and the institution was poised precariously on the brink of an economic abyss, the directors recorded that "notwithstanding the small number of members this session, the library has been made use of to a considerable extent."<sup>26</sup> The continuing popularity of the library was doubtless at the back of the directors' minds when they decided to spend the relatively large sum of £52 on new books, in 1843, so soon after the 1842 financial crisis.<sup>27</sup>

Prior to 1843, no works of fiction had been admitted to the library. In that year the question whether or not fiction ought to be included was raised at a directors' meeting but a final decision was deferred and I have not found evidence of the issue being resolved at any subsequent meeting.<sup>28</sup> However, by 1845 lists of purchases indicate that by this time fiction was being purchased out of the institution's own funds.

After 1843, library opening was extended to six nights per week (instead of the previous two) and this led to a steady increase in the extent of borrowing, so that by the second half of the 1844-45 session, more than 300 volumes were being taken out each week, "showing a taste for reading quite unprecedented in the institution and which is attributed solely to the additional facilities recently given to the members."<sup>29</sup>

Museums established at mechanics' institutes do not, on the whole, appear to have been very successful. Kelly claims that: "Only at Dundee Watt Institution does this department appear to have met with substantial success."<sup>30</sup> Nevertheless the story was far from being one of unblemished success. A statement dealing with museum finance appeared in the 1843 annual report. Despite the large number of donations made to the museum by local gentlemen and sea captains, the deficit (on the period from the opening in 1838, to 1843) was £15.6.3d.<sup>31</sup>

After 1843, there was a significant shift in the social composition of the Watt Institution's membership. The increase in proportion of middle class relative to working class members, which had happened earlier at many institutes, began to be apparent at the Watt Institution, as can be seen from Table 4, on next page.

The figures suggest that when prosperity returned to Dundee, after the depression of 1839-43, relatively more members were recruited from nonworking class groups. Other evidence, too, suggests that the tone of the institution was becoming more middle class. In press reports, for example, there was an increasing tendency for adjectives such as "fashionable", "highly respectable", etc. to be applied to the class of persons attending meetings. At the annual Watt Festival, in 1845, "the platform was tastefully covered with crimson cloth and the centre was surmounted by a beautiful

transparent portrait of Watt decorated with evergreens." Significantly, the Advertiser noted that the audience was 'One of the most numerous and respectable' ever to assemble at the Watt Institution,<sup>32</sup> while the Courier pointed to the relatively small proportion of mechanics present.<sup>33</sup>

TABLE 4 <sup>34</sup>

	1842-43	1844-45	1845-46
Working Class	<b>60%</b>	<b>46.5%</b>	<b>38%</b>
Lower Middle Class	<b>15%</b>	<b>26.0%</b>	<b>25%</b>
Ladies *	<b>3.5%</b>	<b>3.0%</b>	<b>4.5%</b>
Young men at school *	<b>2.0%</b>	<b>5.0%</b>	<b>6.5%</b>

Note: As these figures are based on numbers using the library, no figures for upper middle class are included — many of these did not use the library as they had their own book collections.

\* Most of the "ladies" and "young men at school" would probably be of middle class background.

Despite what has been said above, it is still necessary to emphasize that, at least as far as the library was concerned, the working class had not been "pushed out" — they were still there in considerable numbers.

In December 1842, Adam Symon Esq. resigned the office of Watt Institution president and was replaced by Lord Kinnaird, who thus commenced his lengthy association with the institution; he remained in office until the Watt Institution became moribund in 1849. Kinnaird was a Liberal in politics and was an enthusiastic social reformer. It was at the request of the Watt Institution's directors that he succeeded to the presidency,<sup>35</sup> presumably it was felt that the presence of a well-known peer of the realm and active social reformer as president would add to the institution's prestige. Kinnaird was a figurehead rather than an active president and attended directors' meetings infrequently.



## NOTES

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- <sup>1</sup> Compiled from annual reports
- <sup>2</sup> A. Wilson op. cit., pp.199, et seq.
- <sup>3</sup> Courier 3<sup>rd</sup> January 1843.
- <sup>4</sup> A. Wilson op. cit. p.194.
- <sup>5</sup> Advertiser 24<sup>th</sup> February 1843.
- <sup>6</sup> Advertiser 5<sup>th</sup> April 1844 and 31<sup>st</sup> January 1845.
- <sup>7</sup> Compiled from annual reports.
- <sup>8</sup> T. Kelly, op. cit., pp.248-249.
- <sup>9</sup> Watt Institution mss., M.D.M., 29<sup>th</sup> April 1844.
- <sup>10</sup> *ibid.*, 14<sup>th</sup> May 1844.
- <sup>11</sup> *ibid.*, 15<sup>th</sup> May 1844.
- <sup>12</sup> compiled from lists of lectures in annual reports.
- <sup>13</sup> Anon., In Memoriam: George Gilfillan, (Dundee, 1878), p.39.
- <sup>14</sup> Dictionary of National Biography, VII, (London, 1886) p.28.
- <sup>15</sup> W.I.A.R., 1845, p.2.
- <sup>16</sup> Watt Institution mss., report of general meeting, 4<sup>th</sup> May 1843.
- <sup>17</sup> Courier, 10<sup>th</sup> August 1843.
- <sup>18</sup> W.I.A.R., 1844, p.3.
- <sup>19</sup> Courier, 28<sup>th</sup> January 1845.
- <sup>20</sup> Watt Institution mss., M.D.M., 3<sup>rd</sup> February 1845
- <sup>21</sup> T. Kelly, op. cit. p.239.
- <sup>22</sup> W.I.A.R., 1844, p.5.
- <sup>23</sup> e.g. W.I.A.R., 1844, p.5.
- <sup>24</sup> i.e., The Advertiser, The Courier and The Warder.
- <sup>25</sup> W.I.A.R., 1844. p.5.
- <sup>26</sup> W.I.A.R., 1842, p.4.
- <sup>27</sup> W.I.A.R., 1843, p.8.
- <sup>28</sup> Watt Institution mss., M.D.M., 9<sup>th</sup> January 1843.
- <sup>29</sup> W.I.A.R., 1845, p.3.
- <sup>30</sup> T. Kelly, op. cit., p.238.
- <sup>31</sup> W.I.A.R., 1843, p.5.
- <sup>32</sup> Advertiser, 24 January 1845.
- <sup>33</sup> Courier, 28<sup>th</sup> January 1845.
- <sup>34</sup> compiled from lists of library users in annual reports..
- <sup>35</sup> W.I.A.R., 1843, p.6.

## CHAPTER 6

### THE FINAL YEARS, 1845-49

**TABLE 1<sup>1</sup>**

#### **Membership Figures, 1845-49**

Session	Average No. of Members
<b>1845-46</b>	678
<b>1846-47</b>	633
<b>1847-48</b>	470
<b>1848-49</b>	410
<b>1849-50</b>	590

The period discussed in the present chapter opened auspiciously for the Watt Institution; the membership figure for the 1845-46 session was the highest in the Institution's history (Table 1) and trade showed greater vitality than at any time since 1838. The prosperity generated by the frenetic economic activity of the mid-forties, the age of "railway mania," was however short-lived, and by 1847, Dundee was suffering terribly from the ensuing trade depression. Harvest failure led to high food prices and the situation was exacerbated by the prevalence of sickness; according to the Advertiser, at this time "pestilence" was "raging among the lower orders with frightful rapidity." The diseases were scurvy, dysentery and typhus fever.<sup>2</sup> Objective evidence is provided by the mortality figures for the years 1847-49, which were conspicuously higher than for the previous ten years, when the average annual number of deaths had been 1570:

1847:	2641 deaths
1848:	2248 deaths
1849:	2462 deaths <sup>3</sup>

Large-scale unemployment, as in earlier periods, provided a fertile soil for the growth of radical agitation. The economic; blight of 1847, together with the catalytic effect of the European revolutions of February 1848, produced a political atmosphere favourable to a reawakening of the Chartist spirit. This revival, though transient and ineffective, for several months "succeeded in creating considerable trepidation in middle class breasts." <sup>4</sup> Early in 1848, Dundee was the scene of several Chartist demonstrations but these passed off without disturbance. A meeting held on the Magdalen Green on 16th May even led to the appointment of a brigadier and secretary for the "Dundee Military Division" of the Chartist National Guard.<sup>5</sup>

The revolutionary mood, though intense, was ephemeral and the latter part of 1848 was a complete anti-climax for Scottish Chartism, Dundee being no exception. By August, attendance at Chartist meetings was sparse. The last spark to issue from the Chartist embers in Dundee was the visit of Fergus O'Connor to the town in October and even this egregious orator was unable to attract a capacity audience; the Bell Street Hall was only two-thirds full during his address.<sup>6</sup> From this occasion forward, Chartism was no longer an effective force in Dundee.<sup>7</sup>

The boom of 1845-46 saw the Watt Institution at its zenith as regards number of members. With the onset of the lingering recession of the late forties, there was some decline, but it is noteworthy that numbers did not ebb to an extent comparable with the very low figures recorded in earlier times of depression (e.g. 1830 and 1842). An important feature of general industrial growth in Dundee was a rapid expansion in population and this ensured a larger pool of potential members than in earlier years. The increase in number was, however, larger than would have been predicted on the basis of population growth alone. Being well established and with a widening variety of facilities to offer, the Watt Institution perhaps appealed to wider sections of the community than in earlier times.

Paradoxically, the large membership which the Watt Institution was able to attract during its final years, created its own crop of problems; accommodation in particular, was insufficient to meet the demands put upon it. One unfortunate result of this was competition for space between the reading room and the museum, leading to in-fighting among the directors over the issue of priority. Until the 1856-46 session, the museum collection had been housed in a spare classroom at the Public Seminaries but this was reclaimed for teaching purposes and the museum removed to the Institution's own building, where it was, in any case, more accessible to the public.<sup>8</sup> A happy outcome of the transfer was a tremendous upsurge in popular interest<sup>9</sup>; unfortunately, the collection was accommodated in the former reading room so that this department was displaced to the library apartment, where, on account of "its inconvenient and uncomfortable situation" interest declined<sup>10</sup>. The position was reversed, with results no less unsatisfactory, after the 1847 exhibition, (see below) when the museum was dismantled and the reading room reinstated in its former situation.<sup>11</sup>

Another unhappy consequence of lack of space was the refusal of the directors to provide evening classes, despite a petition by the members in 1845<sup>12</sup>. It was in this particular of evening classes that the Watt Institution differed most strikingly from the other three major Scottish institutes and the directors were taken to task by J. W. Hudson in his *History of Adult Education*. Of the Watt Institution, he wrote: "The defect in this society is the absence of evening classes and although the members have memorialized the directors to establish a system of classes, the request has not been acceded to, upon the scarcely valid plea of inadequate accommodation."

The absence of evening classes suggests two grave weaknesses in the Watt Institution viewed as a venture in adult working-class education; there was no provision

for the working men to acquire competence in the basic skills of literacy and numeracy, nor was there provision for regularly conducted classes at a more advanced level which would have been a great advantage to working men who did have a reasonable command of basic skills. As Peter Carmichael expressed it:

"the schools should be so organized as to draw out by emulation the talents of the scholars by public examination, by prizes for merit. .... and we know not but that even diplomas should be given to the leading scholars, who have passed with distinction through all the classes. A most important end would be gained by these schools and a want supplied that most employers must have experienced; that is knowing in the case of vacancies where to get a qualified person to act as a foreman or overseer. Now a distinguished scholar from the mechanics' institution would be seen by every employer to offer a fair chance of a really good man. . . ." <sup>13</sup>

The Edinburgh School of Arts, as early as 1835, had begun to act in accordance with these precepts, while the Glasgow Mechanics' Institution had a system of academic prizes awarded annually.<sup>14</sup> The Watt Institution, by contrast, had little in this respect to offer the ambitious artisan; if he were deficient in elementary knowledge there was no provision of remedial help; if he were competent in the sphere of elementary learning there was no system of certification whereby he could specify to potential employers proof of the extent of his attainments.

As can be seen from Table 2, lecture topics during the final years covered a wide miscellany of subjects, with popular science still very much in evidence.

**TABLE 2 <sup>15</sup>**

**Lecture Topics, 1845-49**

Session	Physical Science	Natural History	Arts/ Manufactures	Literature	Other Non- Scientific Subjects
1845-46	16	-	-	8	7
1846-47	6	4	1	1	4
1847-48	15	-	1	6	10
1848-49	9	-	-	7	13

The lecture session of 1845-46 was very largely given over to presentations by professional lecturers and the sum expended in this way (£40) was the largest paid out since the Institution had ceased to employ its own salaried lecturer in 1829.<sup>16</sup> High attendance at lectures seemed to induce a state of euphoria in the minds of the directors, leading them to regard the provision of courses by celebrated public lecturers as a panacea for all the Institution's problems — despite earlier experience of the risks involved. The

question of how the Institution would cope in times of economic setback was simply not faced up to.

During these final years many distinguished lecturers visited the Watt Institution and space allows only a few of these to receive mention. During 1846-47, for example, the course which appears to have exerted most power over the popular imagination was one consisting of six lectures on popular astronomy, delivered by Professor John Pringle Nichol, of Glasgow. The Courier reported that "from the great crowds who have been attracted by the astronomical lectures of Professor Nichol, the directors have been under necessity of seeking a larger place of meeting...."<sup>17</sup> Nichol was one of the most popular scientific lecturers in Scotland; he was invited back to the Watt Institution during 1847-48.

The opening of the rail link between Dundee and Edinburgh in 1847 removed some of the obstacles in the way of bringing well-known lecturers from the south. An indication of this was the large increase in the amount of money paid to lecturers:<sup>18</sup>

1846-47	£40
1847-48	£130

In December 1847, the members were treated to a course of six lectures on "Egypt, Ancient and Modern" by James Silk Buckingham, one of the best-known figures on the mechanics' institute "circuit." Buckingham, the former editor of a Calcutta newspaper which had made scathing criticisms of the British authorities in India, leading to his expulsion from that country, had travelled widely in the East.<sup>19</sup> His talks at the Watt Institution were presented on six consecutive evenings and "attracted large and delighted audiences ..... who testified in the most marked manner the interest they felt in the celebrated traveller's graphic description of oriental scenery and customs, so pithily interlaced with humorous and acute observations on general subjects."<sup>20</sup> The Courier estimated that average attendance exceeded 1000.<sup>21</sup>

Of all the lecturers who took the platform at the Watt Institution, none was more renowned than Ralph Waldo Emerson, the distinguished American man of letters, who visited Dundee in February 1848 and presented two lectures: "On the Spirit of the Times" and "On Eloquence." His engagement was facilitated by J.W. Hudson, President of the recently formed Scottish Union of Mechanics' Institutes.<sup>22</sup>

In his first lecture, Emerson criticised the individualistic temper of nineteenth century life and lamented "the decay of those feelings of mutual sympathy by which the past ages had been characterized." The Advertiser expressed uncritical admiration of Emerson's performance as a lecturer, claiming that the audience listened with "breathless attention and apparent delight,"<sup>23</sup> but the Courier's appraisal was more cautious; "We think, however, that to be fully appreciated or even properly understood, Emerson must

be studied in his books." The Courier writer claimed to detect "a comparative coldness about his manner that tends to repel an ordinary audience."<sup>24</sup>

The large attendances at some of the most popular lectures aggravated the Institution's accommodation problem, the hall on many occasions being too small, thus necessitating the hire of church buildings.<sup>25</sup> More disconcerting was the realization that the celebrity lecture programmes were not proving to be a financial success. In the 1848 annual report, the directors pointed to economic distress and the prevalence of disease as among the factors undermining the success of their ambitious plans.<sup>26</sup> Yet despite this, lecture audiences were still larger than during the early period of the Institution's history. The directors must surely have been guilty of gross miscalculation, if with such large audiences, a loss still resulted and their purblind commitment to over-ambitious lecture courses must be identified as one of the root causes. In April 1848, the Watt Institution was overdrawn £900 at the Eastern Bank and had other debts totalling £319;<sup>27</sup> yet the directors resolved to go ahead with the expensive business of recruiting the very cream of lecturing talent for the 1848-49 session. Only in their 1849 report did the directors sadly and soberly admit the failure of their expansionist programme.<sup>28</sup> Unfortunately, it was too late, the future held only the prospect of bankruptcy for the Watt Institution.

As in earlier phases of the Institution's history, the library was steadily successful. Despite the incidence of disease and redundancy during 1847-48, for example, we read in the annual report for that year that "the library has been taken advantage of to a more than usual extent by the members."<sup>29</sup> During the following session, 16,578 volumes were issued, an average of 46 to every reader.<sup>30</sup>

Of absorbing interest to the directors during 1845-46 was the possibility of an amalgamation with the Dundee Public Library. The latter body was a subscription library, founded in 1796.<sup>31</sup> At the time in question it consisted of 7,000 volumes and was labouring under the incubus of a £200 debt. A combined library would have resulted in a varied collection comprising 10,000 volumes.<sup>32</sup>

The proposal for union appears to have originated with the committee of the Public Library and was conveyed to the Watt Institution's directors by Mr. William Boyack, flaxspinner, who held office with both bodies. The Watt Institution directors declared their interest in the suggestion and arranged a number of joint meetings with the Public Library committee, the outcome of which was an agreement on terms for the proposed amalgamation.<sup>33</sup>

Certain of these terms proved unpalatable to a vocal section of Watt Institution members, especially the proposal that there be two classes of subscribers, paying 12s and 6s respectively. Antagonism was further roused by the suggestion that although both groups should be allowed to vote in the election of Watt Institution directors, the committee of management of the library should be appointed as follows: one half by the directors and one half by first class subscribers only. Discussion at a meeting of members

convened to consider the matter "assumed a rather noisy and acrimonious tone."<sup>34</sup> Divisions of opinion regarding the proposals arose, too, among the Public Library subscribers.

Negotiations dragged on but eventually it was the Public Library which decided to abandon the projected union, in December 1846; they had been able to arrange the housing of the library in the building of the Exchange Coffee Room.<sup>35</sup> Their decision was vindicated when, three years later, the Watt Institution collapsed under its vast weight of debt. The Public Library maintained a viable existence until its eventual incorporation in the new Central Public Library which opened in 1869.

Mention has already been made of the Watt Institution's accommodation problem. The simple and obvious answer was to extend the building, but the directors realized that in the desperate economic situation of 1847, subscriptions to finance such a scheme would not be easy to come by. It was not unnatural therefore, that they should look back with interest upon the strategy adopted in the similarly blighted years of the early forties, for rescuing the Institution from liquidation at the hands of its creditors. After studying the accounts of the exhibition held in 1842 and 1843, they concluded that a similar exhibition, judiciously managed, ought to yield a profit of about £260.<sup>36</sup>

The exhibition opened its doors on 30th July 1847, but unfortunately it did not attract as many visitors as its two predecessors. During the thirteen weeks it remained open, 13,000 visits to it were made, compared with more than 30,000 at each of the two previous exhibitions. Times were unpropitious; as the exhibition closed its doors for the last time the Advertiser was lamenting the fact that "... never since we were visited by the Cholera have disease and death prevailed to such an extent as at present."<sup>37</sup>

The failure of the exhibition was a bitter blow; instead of the anticipated profit of £260, the result was a net loss of £24. At the same time, expenditure on lectures had increased tremendously and the accommodation problem remained unsolved.

An apparent way out of the financial quagmire was suggested by Lord Kinnaird, when he made one of his infrequent attendances at a directors' meeting in February 1849.<sup>38</sup> This was a scheme to raise by shares a sum sufficient to erect, on vacant ground behind the existing building, a large hall capable of accommodating public meetings, concerts, etc., together with a library and classrooms. The profits, after payment of a percentage to shareholders, were to accrue to the general funds of the Institution.<sup>39</sup> A snag was Kinnaird's advocacy, in the short term, of raising a public subscription to clear the Watt Institution's more pressing debts. There was mention of a possible advance of £1,000 by Kinnaird himself, but nobody seemed to know on what terms. In fact the correspondence between the directors and Kinnaird, during the late summer of 1849, appears to have been fraught with misunderstandings.

During October, the impracticability of Kinnauld's scheme became apparent. The detailed proposals are not set out in the manuscripts, but it appears that too much of the burden of raising money was to fall on the shoulders of the directors themselves. This was something they could not contemplate with equanimity; they had staged the abortive 1847 exhibition because they felt that any more ordinary device for raising funds was doomed to failure.

The revelation of Kinnauld's proposals at a directors' meeting on 12th October led to four immediate resignations from the directorate. The remaining five directors present at this meeting also lacked faith in the efficacy of Kinnauld's scheme, but agreed to remain in office for the time being "to make arrangements for winding up the affairs of the Institution."<sup>40</sup>

At the last recorded meeting of the directors, held jointly with life members and trustees, on 10th December 1849, Francis Dick, tinsmith, moved that the directors be empowered by life members and trustees to wind up the affairs of the Institution, and to meet, wherever possible, the claims of the creditors. This motion was unanimously agreed to, thus sealing the Watt Institution's fate.<sup>41</sup> On the same day, at a joint meeting of directors and creditors, it was agreed to form a combined committee of directors and creditors to make arrangements for the liquidation of the Institution's debts.<sup>42</sup>

From this time onward, we may regard the original Watt Institution, founded in 1824 and managed in accordance with the constitution of that year, as defunct. For several years, there were sporadic attempts at resuscitation but there was no doubt in the minds of the members of the 1853 committee, (appointed to inquire into the reasons for the Institution's failure and the possibility of re-establishing it) that the Institution died in December 1849:

"The Dundee Watt Institution was established in the year 1824 for the instruction of young tradesmen in the useful branches of the arts and sciences and after maintaining a somewhat chequered existence for about 25 years, during which it appears to some extent to have accomplished these objects, the doors were finally closed in the year 1849, in consequence of the directors being unable to discharge a heavy debt which had been incurred." <sup>43</sup>

According to Kelly, the years 1849-52 were a "boom period" for the mechanics' institute movement as a whole<sup>44</sup>, so that one is led to ask: "Why did the Watt Institution fail when it did?"

The first point to note is that throughout its life, current expenditure almost invariably exceeded ordinary income. The various factors (early emphasis on narrow scientific topics, avoidance of live political issues, etc.) likely to reduce working class interest have been illustrated and discussed in earlier chapters. To Peter Carmichael, analysing reasons for the Watt Institution's failure from the close standpoint of 1853, a



major drawback was the lack of basic education possessed by the working men whom the Institution was trying to attract.<sup>45</sup>

In addition to lack of large scale working class support, mention must also be made of widespread indifference on the part of the middle class throughout the Institution's life. Hudson admitted that the survival of the Edinburgh School of Arts and Glasgow Mechanics' Institution was guaranteed by the middle classes in those cities. Of course, Dundee was a smaller town than either Glasgow or Edinburgh and for this reason alone we would expect the gross amount of middle class support to have been less.

It was not, however, difficulty in balancing the ordinary accounts which proved in itself fatal to the Watt Institution, but this circumstance combined with the accumulation of a heavy debt as a result of the decisions to erect the building. The authors of the 1853 investigation into the Watt Institution's affairs wrote:

"It would not be becoming in your committee to offer any decided expression of opinion on this subject, ignorant as most of us are of all the circumstances which influenced the directors in permitting the accumulation of so large an amount of debt, but it appears to us abundantly evident that to this cause is mainly to be attributed the downfall of the Dundee Watt Institution."<sup>46</sup>

From 1838 onwards, we may regard the Watt Institution as having been very much "at risk" and particularly vulnerable to the effects of trade depression. This was apparent in 1842, for example, when the Institution was rescued from the brink of the abyss only by the staging of its first exhibition, the proceeds of which were sufficient to keep the creditors at bay.

From 1847 the economic situation once more put the Watt Institution in a precarious position. The directors, however, seemed unaware of the seriousness of the situation and persisted in staging lectures by celebrated speakers, which were a great drain on the Institution's coffers. Ultimately, then, the Watt Institution collapsed when it did because the inept policy of the directors with regard to hiring of professional lecturers exacerbated the Institution's already weak financial position, to the extent that by 1849 the backlog of unpaid interest was sufficiently large to move the creditors to take action.

## NOTES

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- <sup>1</sup> Compiled from annual reports
- <sup>2</sup> Advertiser, 7<sup>th</sup> May 1847.
- <sup>3</sup> Courier, 6<sup>th</sup> February 1850.
- <sup>4</sup> A. Wilson, op. cit., p.19.
- <sup>5</sup> *ibid.*, p.232.
- <sup>6</sup> Courier, 25<sup>th</sup> October 1850.
- <sup>7</sup> Memoranda of the Chartist Agitation in Dundee, p.78.
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- <sup>40</sup> Watt Institution mss., M.D.M., 24<sup>th</sup> October 1849.
- <sup>41</sup> *ibid.*, 10<sup>th</sup> December 1849.
- <sup>42</sup> Watt Institution mss., M.D.M., Meeting of directors and creditors, 10<sup>th</sup> December 1849.
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- <sup>44</sup> T. Kelly, op. cit., p.259.
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## **POSTSCRIPT: A BRIEF NARRATIVE OF EVENTS SUBSEQUENT TO THE COLLAPSE OF THE WATT INSTITUTION**

After the demise of the Watt Institution in December 1849, the principal aim of its well-wishers was . "...to secure for scientific purposes and for the benefit of the working classes, the valuable property, which is at present likely to be disjointed." (1) The property alluded to was not so much the building as the "movables" i.e. the library books, the contents of the museum and the scientific apparatus. In order to generate interest among the public in the saving of these items from public auction, an open meeting was called for 28th January 1850. (2)

The meeting was presided over by Provost Thoms. Mr. James Chalmers (jun.), a former director of the Watt Institution, addressed the company and emphasized the undesirability of a sale of Watt Institution property, which would result in the public of Dundee no longer having access to the library and museum. He suggested that either the Watt Institution be resuscitated and re-modelled, or a new scientific society be established in its place. (3)

A committee was appointed from among the gentlemen present to deliberate upon what might be the best course of action to follow and they agreed to report to a future public meeting. (4) In the meantime an attempt would be made to raise money by subscription, including an appeal to the working men of Dundee, to protect the movables from sale. (5)

The efforts of this committee do not appear to have borne fruit, (6) but towards the end of 1850 a new scheme was set under way. At a public meeting on 1st November 1850, Provost Thoms announced that he had been informed by Lord Kinnaird that if suitable representations were made to the government a School of Design might be established in Dundee in conjunction with a resuscitated Watt Institution. Another committee was, in consequence, set up, its remit being to report on the feasibility of Kinnaird's proposals. (7)

Negotiations with the government were initiated by Provost Thoms in February 1851. A Mr. Poynter was deputed by the Board of Trade to visit Dundee and investigate its suitability as a site for a School of Design. Kinnaird's suggestion was that the School of Design be housed in the Watt Institution building. (8) However the outcome of the affair was not encouraging to the Watt Institution's well-wishers; as a result of his conducted tour round Dundee Mr. Poynter recommended the upstairs of the Academy as the most appropriate location for the proposed School of Design. (9)

On 16th March 1853 yet another public meeting was convened for the purpose of considering how the Watt Institution might be resurrected. It was pointed out by Mr. A. J. Buist, that before the public could be expected to give their wholehearted support to such a venture, they must be satisfied as to the reasons for the failure of the old Watt

Institution and convinced that there would be no repetition of its mistakes. Accordingly a committee was set up to delve into the reasons for the Watt Institution's failure. (The evidence of this committee was discussed in Chapter 6).

The committee's report was presented at a meeting on 7th June 1853, at which a series of resolutions was passed, pledging the meeting to the carrying out of the report's recommendations and appointing a further committee to collect subscriptions. The meeting was attended by only about fifty gentlemen and according to the Advertiser, "there was not a spark of enthusiasm, ordinary or extraordinary, in connection with the meeting." (10)

The newly appointed committee, however, set to work energetically, and by June 1854 they had raised £502 in subscriptions — rather more than the £329 necessary to secure the contents of the library and museum from the depredations of the creditors. In view of the financial surplus, it was decided to take out a three year lease on Lindsay Street Hall, to house them. (11)

During this three-year period, the Watt Institution was, in a sense, re-born. Towards the end of 1854, for example, popular lectures were once again being organized under the auspices of the Watt Institution. As well as lectures, classes were organized on such subjects as English composition, history, singing, drawing and French. (12)

The new Watt Institution appears to have been a predominantly middle class society. The Courier in 1856 commented that: "If the class for whose benefit the Watt Institution was originally intended failed to benefit by the instruction thus afforded to the extent that might have been expected and desired, others have come forward to supply their place." (13)

In the late eighteen-fifties and eighteen-sixties, the Watt Institution, as far as the public of Dundee was concerned, meant the library and museum. Museum visitors were charged 1d at the door, while subscribers to the library were charged according to the number of books taken out in the course of a year. Both library and museum were well patronized during these years; at one time there were as many as 600 library subscribers, while on Saturday evenings the museum was often crowded. (14)

Dundee adopted the Free Library Act in 1866 and after the Albert Institute buildings were completed in 1867, negotiations opened between the Free Library Committee and the Watt Institution's directors with a view to the handing over of the whole collection of books and objects in the Lindsay Street Hall, to the Free Library Committee. The Watt Institution's directors were agreeable, provided the Free Library Committee paid £110 which the directors had incurred for rent, salaries and taxes. The amalgamation was finally settled and agreed to at a meeting held on 10th June 1868.

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## **BIOGRAPHICAL APPENDIX**

This appendix contains additional information on some of the more prominent individuals referred to in the main narrative. It does not include details on well known national or international figures, such as Ralph Waldo Emerson. A brief indication of sources is given at the end of the appendix.

### **PATRICK ANDERSON**

Anderson was enrolled as a burgess in 1804 and thereafter served continuously on the Dundee Town Council until 1824. He became Dean of Guild (1817) and was four times provost (1818, 1819, 1822, 1823). It was while he was provost that the agitation for municipal reform commenced, and Anderson was the author of two different municipal constitutions which were submitted to the House of Commons committee appointed to enquire into the conditions of the Scottish burghs. His occupation was that of merchant. He died in 1839.

### **EDWARD BAXTER**

Edward Baxter, described by Norrie as "one of the merchant princes of Dundee," was born in 1791, the eldest son of William Baxter of Balgavies, a successful export merchant in Dundee. In 1813, he commenced business in partnership with his father. An important achievement of his early career was the opening of direct communication between Dundee and foreign merchant houses; previously export business had been conducted through factors in London and Liverpool, who thus reaped a large proportion of the profits. He was also active in procuring the repeal of the Linen Stamping Act (1823) which had been something of an obstacle to the early development of the factory-based linen industry. He was involved in public affairs in Dundee throughout his life, occupying the office of Dean of Guild in 1831, and at various times serving on the Harbour, Parochial and Infirmary Boards. In addition to the Watt Institution, other educational bodies which benefited from his attention were the Industrial Schools and the High School. He was twice an energetic enthusiast for political causes; firstly in the campaign for municipal reform and secondly, in the agitations of the Anti-Corn Law League. He died in 1870. He was three times a director of the Watt Institution: 1824-25, 1825-26 and 1826-27.

### **CHARLES WILLIAM BOASE**

Charles William Boase, a member of an old Cornish family, was born in London in 1804. In 1821, he was sent to Dundee by his father, Henry Boase, i partner in the Dundee New Bank, "to learn Scotch banking."

Boase's interests outwith banking were by no means confined to his devoted work on behalf of the Watt Institution (as secretary and treasurer for twelve, and director for eleven of the sessions between 1824 and 1839, as well as prime mover behind the establishment of the museum). He was an enthusiastic liberal politician and spoke on several occasions for the Political Union in support of the Reform Bill. His services in this quarter were recognized in 1831, when he received the freedom of the burgh.

In 1835 he became involved in the affairs of the newly formed Catholic Apostolic Church. The following year he was ordained to the priesthood and by 1851 had risen to the rank of bishop. In the final years of his life he wrote a number of works dealing with doctrinal matters. He died in 1872.

### **JAMES BROWN**

James Brown of Lochton, the Watt Institution's first president, was a successful flaxspinner in Dundee. In the same year as his presidency of the Watt Institution, he also held office as Dean of Guild and twenty years later (1844) he was elected provost of Dundee. His interests were not limited to industry and education; he was a conspicuous champion of liberal causes such as parliamentary reform and the repeal of the Corn Laws. According to Norrie, he also "... had a decidedly literary turn and contributed a number of articles to different periodicals among which was an account of a visit to America which appeared in the Caledonian, a local magazine." He died in 1869, aged 81 years.

### **JAMES SILK BUCKINGHAM**

Buckingham was a native of Truro, Cornwall (b. 1784). He began his working life as a printer, then went to sea and eventually settled in Calcutta for a number of years where he became editor of a newspaper which launched vituperative attacks on the Indian authorities. He was expelled from India but continued his agitations even after his return to Europe. He travelled extensively in the Middle East and America and his travels formed the subjects of several books. He was said to be a "dexterous speaker and a voluminous, if not very amusing author." He was elected M. P. for Sheffield after the passing of the 1832 Reform Act. At the time of his visits to the Watt Institution he was a familiar platform figure at mechanics' institutes.

### **REV. GEORGE BUIST**

George Buist, L.L.D., was the son of the Rev. John Buist, at one time minister of Tannadice, and a brother of the Dundee flaxspinner, A. J. Buist. He was a conservative in politics and the fact that he served as a director at the Watt Institution (1833-34 and 1834-35) is illustrative of the way in which, in Scotland, representatives of differing political persuasion felt able to collaborate in the running of mechanics' institutes. In 1834, Buist obtained an appointment with the Tory Dundee Courier,

while in 1839 he left Scotland to assume the editorship of the Bombay Times. He died in Calcutta in 1860.

### **PETER CARMICHAEL**

Peter Carmichael of Arthurstone (b.1809) was the son of a Fife flax mill manager. The father moved to Dundee as tenant of a small flax mill and Peter attended Dundee Grammar School, before going on to serve an apprenticeship at Monifieth Foundry, which was concerned with the manufacture of textile machinery. He worked for a while as an engineer in London and Leeds, but returned to Dundee in 1833 and became mill manager for the firm of Baxter Bros. The firm prospered under Carmichael's direction and in 1852, he was offered a partnership. He became senior partner in 1872 and by the 1880s, Baxters' was the largest flax concern in the world. Peter Carmichael died in 1891, leaving the princely sum of £516,000.

He served as a director at the Watt Institution during the following sessions: 1840-41, 1841-42, 1842-43 and 1843-44.

### **Dr. THOMAS DICK**

Thomas Dick was born in the Hilltown, Dundee, in 1774, the son of a small linen manufacturer. His interest in astronomy appears to have been awakened at an early age; while working at the loom, as a youth, he placed an open astronomy book in front of him, so "... while his feet and hands set the treddles in motion, and above the clattering shuttles across the loom, his eyes followed the lines of his favourite page." At the age of sixteen, he became an assistant teacher in one of the schools in Dundee and in 1794 matriculated as a student at Edinburgh University. He taught in a number of parochial schools, but in 1801 he became a licensed preacher in the Secession Church and thereafter officiated in this capacity in various parts of Scotland. For ten years he taught in the Secession School at Methven, near Perth and during this period conducted pioneering experiments in adult education. He established a lending library and organized scientific evening classes - work which anticipated by several years that of the mechanics' institutes. In 1827, at the age of 53, he settled in Broughty Ferry, where he remained for the rest of his life. Part of his cottage was equipped as an astronomical observatory. He was the author of numerous works dealing with astronomy and related topics, including Christian Philosopher, Philosophy of a Future State and Celestial Scenery.

He served as a Watt Institution director during the 1830-31 session.

His son, Thomas Dick (jun.), who was English master at Tay Square Seminaries was also involved in Watt Institution affairs. He served on the directorate from 1837 to the collapse of the Institution in 1849, with the exception of only two sessions, 1841-42 and 1845-46.



### **PETER DRON**

Peter Dron, a master shoemaker by trade, succeeded to his father's business at the west end of Dundee High Street. Dron was many times Deacon of the Shoemakers and subsequently was elected Convener of the Nine Trades, a position which entitled him to membership of the old self- elected town council. He was a director at the Watt Institution from 1824-28 and 1839-41. He died, in somewhat reduced circumstances, in 1862, aged 78 years.

### **WILLIAM GARDINER (Jun.)**

William Gardiner was born in Dundee in 1809. According to Norrie, his early education was strictly limited, "... consisting in little more than learning to read and write." He became apprenticed to the trade of umbrella making at the tender age of ten years. The manner in which he overcame his early educational disabilities has been alluded to in the main text, as have some of his later scientific accomplishments. Important influences were his father and uncle, who were both enthusiastic amateur botanists.

In addition to his scientific interests he also dabbled in versifying. An example is his poem "To the Lace-Winged Fly", which was introduced during the course of a lecture "On the Transformation of Insects" given by him at the Watt Institution in 1836. Norrie prints the poem in full. He died in 1852. He was a director at the Watt Institution, 1834-37.

### **REV. GEORGE GILFILLAN**

Gilfillan was born at Comrie, in 1813. He studied at Glasgow University and came to Dundee at the age of 23 as pastor of George Chapel, School Wynd. His first publication, Five Discourses appeared in 1839, but the work which earned him his literary reputation was the Gallery of Literary Portraits, which was published in three parts, in 1845, 1849 and 1854. Edwards comments of this work that "...no book of its time did more to quicken, especially in the young Scotchman, the love of literature and open his eyes to the glory of Shelley, Wordsworth, Byron and even his own Burns." Gilfillan was an enthusiastic promoter of education, especially mechanics' institutes, and took a leading part in the agitation for the repeal of the Corn Laws. Not long before his death (in 1878) he was presented with a testimonial of £1, 000 by his friends and admirers.

### **WILLIAM JACKSON**

Norrie remarks that William Jackson was "... perhaps one of the most devoted students of nature of whom Scotland can boast. Little known beyond a small circle, he yet wielded an influence and excited an enthusiasm which did much to extend a taste for natural sciences in Dundee." His occupation was that of journeyman

tailor but his principal interests were ornithology and entomology. His competence in these fields was such that he was at one time offered a scientific appointment abroad by the government, but declined it on grounds of ill-health. He was particularly friendly with William Gardiner (jun.) and Charles William Boase and collaborated with them in the collection of specimens for the Watt Institution museum. He was curator of the museum from its opening in 1838 until his death in 1846, and served as director during 1831-32.

William Jackson's son, William Jackson (jun.) was also an enthusiastic naturalist though his interest was different in emphasis from his father's, being concentrated largely on botany. In 1847, he helped establish the Dundee Naturalists Association, but died soon after, in 1848, at the early age of 27. Some of his papers were published posthumously in the North British Agriculturalist.

### **CHRISTOPHER KERR**

Kerr was born in Dundee in 1797, and held the office of town clerk, for almost half a century. He was a partner in the successful legal business of C. & J. Kerr, which carried on one of the largest factorage businesses in the east of Scotland. He died in 1869.

### **LORD KINNAIRD**

George William Fox Maule was educated at Eton and succeeded to the title of ninth Baron Kinnaird in 1826. He was a liberal in politics and became a Privy Councillor in 1840 during Lord Melbourne's premiership. He was a great enthusiast for education and agricultural improvement. "The farms he held in his own hands were visited by agriculturalists from all parts of the world, to witness the various uses to which steam had been put in carrying on farm work." He opened evening schools and reading rooms in the Carse of Gowrie, "... to elevate at once the intellectual and moral tone of the agricultural labourers." His home was at Rossie Priory. He was president of the Watt Institution from 1843-49.

### **JAMES BOWMAN LINDSAY**

Mention has been made in the main text of Lindsay's background and early career. In 1835, he produced the first constant electric light. Although this and his realization of the potential of the electric telegraph may seem to modern readers to be his major achievements, he felt that it was his work on language which was most likely to enlarge his posthumous reputation. For over a quarter of a century, prior to his death in 1862, he was involved in compiling his (never completed) pentaconteglossal dictionary. It was, says Norrie, "... truly a magnum opus. ... Such was his anxiety to do everything in his power to make the work complete in every respect that on one occasion, he travelled on foot to Edinburgh and back, for the sole purpose of correctly ascertaining the sound and meaning of a single Chinese

character."

Throughout his life, Lindsay lived with extreme frugality in order that he might have sufficient means to purchase the books and scientific instruments necessary for him to be able to prosecute his studies. His daily occupation was that of teacher at Dundee Prison, but by 1858, his fame for erudition had attracted government attention. Lord Derby recommended him as a suitable recipient for a royal pension. In July 1858, he was granted an annual pension of £100, which enabled him to resign his teaching post and devote himself exclusively to his studies. He died in 1862.

### **REV. GEORGE LEWIS**

Rev. George Lewis, minister of St. David's Parish, Dundee, is chiefly remembered for his book Scotland, a half-educated nation (1834), which pointed to the decline in the parochial system of education in early 19th century Scotland, and for a series of pamphlets published in the early 1840s dealing with social conditions in St. David's parish. Described by Saunders as "a pioneer of the social Christianity that was to characterize the forties," he did not shrink from attributing some of the blame for the appalling conditions in his parish to "absentee landlords and capitalists."

### **WILLIAM LYON MACKENZIE**

Mackenzie, born in Dundee in 1795, the son of a weaver, was the moving spirit behind the establishment of the Dundee Rational Institution. After unsuccessful business ventures in Alyth, Dundee and various parts of England, he emigrated to Canada in 1820, where, before long, he became printer and editor of a newspaper, the Colonial Advocate. His career in Canada was a turbulent one and included involvement in the abortive political rebellion of 1837. At one time a reward of £1,000 was offered for Mackenzie's capture. He was obliged to take refuge for several years in the United States but was granted permission to return to Canada in 1849. He was returned to the Canadian parliament in 1857. His death occurred in 1861.

### **DAVID MAXWELL**

David Maxwell was the author of an interesting unpublished autobiography, a copy of which is now lodged in Dundee University Library. In 1834, he commenced a five-year's apprenticeship as a millwright with Messrs. Umpherston and Kerr, Dundee, during which period (1836) he became a member of the Watt Institution. In addition, he records that he was a member of an "Artisans' Scientific Club" at which papers were read weekly by the members, with experiments and discussions. He was employed as a machine-maker at Walker's Mills in the Dens, during the Chartist Crisis of 1842. He was a director at the Watt Institution in 1843-44 and 1844-45.

### **GEORGE MILNE**

Milne was born in 1791, the son of a small farmer near Kirriemuir. His profession was the law and he made his first appearance in court as a procurator in May, 1820, when he acted as counsel for a poor man unable to afford a legal fee. After 1830 he became actively involved in radical politics and was founder and editor of the erratically published newspaper, the Dundee Chronicle. His style of writing was caustic and earned him a number of enemies among the prominent citizenry of Dundee. "Mr. Milne was no fewer than four times the object of street assaults on account of abusive, or fancied abusive articles in his paper."

### **JAMES PRINGLE NICHOL**

James Pringle Nichol, born 1804, was the son of a Brechin merchant. He studied at King's College, Aberdeen, "where he gained the highest honours." At the age of 17 he became schoolmaster of Dun, near Brechin. After a number of other positions in parochial schools, he rose to become rector of Montrose Academy. "By his writings and by his lectures, which latter were, in a high degree popular, fascinating and instructive, he soon became generally known and in 1836 was appointed to the chair of practical astronomy at Glasgow University." He was the author of numerous astronomical works.

### **ALEXANDER RIDDOCH**

The name of Provost Riddoch is associated with the era of self-perpetuating municipal government in Dundee. A native of Crieff, he became established as a merchant in Dundee during the second half of the eighteenth century, his name appearing in the lists of the town council for the first time in 1776. He became provost in 1788 and thereafter, he filled that position every second year for thirty years, while he continued as a member of the council. During this long spell, he was effectively in control of municipal affairs. He died in 1822.

### **ROBERT STEPHEN RINTOUL**

Rintoul was born at Tibbermuir, now Tibbermore, Perthshire, in 1787. He came to Dundee to work as a journalist on the Dundee Advertiser and by 1813 was editor of that organ. He acquired a solid reputation as a capable journalist and courageous fighter on behalf of liberal causes. He left Dundee

in 1825 and following an abortive journalistic venture in Edinburgh, he moved to London, where in 1828 he became the editor of the Spectator. Rintoul continued as editor of the Spectator until shortly before his death, in 1858.

### **ANDREW ROY**

A native of Perth, he completed the course in Arts at St. Andrews University in 1824 and immediately took up the post of mathematical lecturer at the Watt Institution. On his departure from the Watt Institution in 1828, he took charge of the mathematics department at Cupar Burgh School, before returning to Dundee as head of the commercial department at the Academy, in 1834. He remained in this post until 1853, when he took charge of the science department. In addition, he held an appointment to examine the qualifications of sailors intending to become masters or mates of vessels. "Mr. Roy was distinguished by a profound knowledge of mathematics and contributed papers illustrative of the higher branches of that science to scientific journals in England." He was a director at the Watt Institution during 1835-36 and 1837-38. He died in 1864.

### **DR. ALEXANDER WEBSTER**

Dr. Webster was born in 1799, the son of a tenant farmer at Inverarity, Angus. He was for many years a successful physician in Dundee. In 1832, he was appointed dispensary surgeon to the Royal Infirmary and "... during the frightful Cholera visitation in that year, the Doctor, whose courage in braving diseases of all kinds was well known, exerted himself with an energy which rendered him conspicuous in the profession." Dr. Webster was a Watt Institution director during 1832-33 and 1833-34.

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I was allowed to see a typescript copy of an unpublished autobiography of David Maxwell, who was for some years a director of the Watt Institution, which is in the possession of Mr. C. Donaldson, Dundee Commercial College.

I am grateful for having been granted access to the above-mentioned sources, and also for having been given permission to see the following unpublished research thesis:

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periodicals in which articles are to be found:

<u>J.A.E.</u>	<u>Journal of Adult Education</u>
<u>P.P.</u>	<u>Past and Present</u>
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