MECHANICS' INSTITUTES AND
THE PITTSBURGH WORKINGMAN, 1830-1840

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The broad social movement for popularizing knowledge in the three decades before the Civil War was, according to Merle Curti, "an expression of the growing power of the people in all walks of life." To democratically motivated intellectuals and idealistic social reformers, the movement presented a laboratory for testing egalitarian theories and for disseminating the search for truth.¹ For leaders of the more affluent old patrician and new mercantile classes, the diffusion of knowledge offered the opportunity for the greater productivity of an intelligent labor force and the security of insuring that the leaders of the masses, with their growing power, shared similar socio-economic and, hopefully, even political values. But for the upwardly mobile segment of the working classes, the decade of the 1830s marks a far more significant watershed with the establishment of a conceptual link between knowledge and power and the beginnings of a rapid divergence in interests between employers and workers. The quest for knowledge in the age of the common man began with an interest in the practical applications of scientific information and expanded into the early crusades for universal public education.

Paradoxically, it is from the strong anti-intellectual crosscurrents of the Jacksonian period that a popular appreciation for scientific knowledge emerges among workingmen. As the anonymous Pittsburgher, "Bacon," wrote to the editor of the Allegheny Democrat and Workingman's Advocate on December 16, 1836:

That science is becoming a necessary part of every business of life, is a source of honest pride, as well as interest, to the working-classes of society. Time was, when natural philosophy and particularly chemistry were confined to institutional learning. Now their principles are discussed with more or less intelligence, in every workshop.

In both Great Britain and the United States, many different types of organizations were established to promote the dissemination of prac-


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tical scientific principles to workingmen. Beginning about a decade earlier in Britain than in America, one of the most significant of these organizations was the mechanics' institute, represented in Pittsburgh by the Pittsburgh Mechanics' Institute (1830) and the Institute of Arts and Sciences (1836).

Originating in Great Britain, the mechanics' institute movement developed from two converging intellectual forces in the two decades before 1820. As the traditional form of church education, catechising, merged into Sabbath School movements in the early nineteenth century, initial efforts at post-Sabbath School education took increasingly secular forms. The formation of classes for artisans and the establishment of artisans' libraries were characteristic developments of this trend. At the same time, a growing interest in natural and physical sciences among the more highly educated, resulting from the publicizing of new discoveries, inventions, and their applications, led to the formation of literary and philosophical societies for professional and merchant classes.

The confluence of these two movements is reflected in the highly popular mechanics' lectures of Dr. George Birkbeck beginning in 1800 and in the *Edinburgh Review* articles on formalized mechanics' education by Henry (later Lord) Brougham. These two pioneers of adult education had been classmates and friends at the University of Edinburgh, an institution which also graduated Rev. Robert Bruce, founder of the Pittsburgh Mechanics' Institute and a major supporter of the Institute of Arts and Sciences in the same city. The efforts of Birkbeck and Brougham led to the founding in 1821 of the Edinburgh School of Arts, in 1823 of the Glasgow Mechanics' Institution, and in 1824 to the establishment of the London and Manchester Mechanics' Institutions. Typical facilities of these institutions were a reference library, a circulating library, a museum, and a reading room. The primary objective of the Manchester Mechanics' Institution, which was typical of the organizations, was systematic class instruction in chemistry and physics in order to teach the scientific principles on which the business of the machine-maker, the dyer, the carpenter, the mason, and other artisans depended.2

While the British version of the mechanics' institute developed from separate domestic sources, the American movement had its origins both in domestic traditions and in imitation of the British ex-

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ample. In 1820, the General Society of Mechanics and Tradesmen of the City of New York, a mutual assistance society organized in 1785, opened a library for apprentices and a mechanics' school. The society was assisted in the establishment of its library by William Wood, who had recently organized a similar library in Boston. In contrast to the New York experience, the establishment of the Franklin Institute in Philadelphia in 1824 reflects more clearly the imitation, with important modifications, of the British conception of a mechanics' institute supported largely by middle-class reformers. Instrumental in the founding of the Franklin Institute were Samuel Vaughan Merrick, later a famous manufacturer and first president of the Pennsylvania Railroad, and William H. Keating, first professor of chemistry and mineralogy at the University of Pennsylvania, who had firsthand experience with the operation of the Andersonian Institution in which Birkbeck taught for several years.3

Several significant similarities and differences help to distinguish the British and American examples of the mechanics' institute. One important characteristic of the typical British institute, which was usually not imitated by its American counterpart, was a constitutional mandate that at least two-thirds of the managers come from the working classes. In the United States there was rarely any attempt to limit control to apprentices and journeymen, and from the beginning businessmen, merchants, professional men, and philanthropists assumed active and dominant roles. For example, the first issue of the Franklin Journal maintains:

We have observed that in several of the European institutions, the choice of managers is in part, or wholly restricted to the class of journeymen mechanics; an idea having been unfortunately held out, that their interests, were distinct from those of the master mechanics; and that the latter could not be entrusted in the management of an institution, one of the principal objects of which, is to educate their own sons and apprentices. Fortunately, no such principle of exclusion pervades our association; and we deem the absence of it, to be by no means unconnected with the prosperity which has hitherto attended it.4

It was this exclusive and patronizing attitude which, in Joseph McCadden's view, accounts for the indifference of at least one organization of bona fide Philadelphia workingmen to the institute. The members of the new Mechanics' Library Company ignored an institute offer to make its rooms and books available at no cost. Similarly, the

3 Ibid., 317-19.
Franklin Institute ignored overtures by the more popularly controlled lyceum movement when it refused an invitation to send delegates to the fifth annual meeting of the American Lyceum.\(^5\)

Despite differences in the locus of control, however, the British and American mechanics' institutes were generally similar in the classes of people they attracted as participants. In both countries the institutions tended to attract only the upper levels of working-class society unless a concerted effort was made for a more broadly based appeal. For example, despite the provision for working-class control of the British organization, the Manchester Mechanics' Institution between 1835 and 1841 attracted over twice as many participants from business, professional, and commercial segments of society as from artisans and mechanics.\(^6\) The essential characteristics of both versions of the movement were a largely adult constituency, a heterogeneous membership, an emphasis upon mutual improvement, and a primary interest in the physical and natural sciences.\(^7\)

In addition to this similarity in audiences, neither the British nor the American example enjoyed anything approaching broadly based support from all levels of working-class society. By the 1830s, the more decentralized and less-expensive lyceum was attracting the British worker and participation in the mechanics' institutes dropped off, due both to their higher costs and to a disenchmtment with the middle-class direction of the organizations. In the United States, on the other hand, by the 1840s involvement of the working classes had expanded beyond both the mechanics' institute and the lyceum into the crusade for public schools. Rush Welter sees a sharp contrast in the workers' views of political power reflected in the divergence of the British and American movements. Chartist spokesmen increasingly repudiated the movements because of their middle-class reform leadership and their discouragement of working-class political action. But American workingmen, according to Welter, enthusiastically imitated the British forms and demonstrated an insensitivity to the political implications of self-help by supporting the school reformers.\(^8\)

The Pittsburgh Mechanics' Institute reflects both the traditional domestic and the imported British origins of the mechanics' institute movement. Although no direct link exists with the Mechanics' Insti-

\(^{5}\) McCadden, 78.
\(^{6}\) Bennett, 307.
\(^{7}\) McCadden, 74.
tute, Pittsburgh was the site of a Mechanical Society involving a circulating library, cabinet of curiosities, and chemical laboratory established by several local mechanics in 1788.\(^9\) More illustrative of the direct relationship with the British example, however, was the Edinburgh education of Robert Bruce, first president of the Pittsburgh Mechanics' Institute as well as first principal of the Western University of Pennsylvania (1822), later the University of Pittsburgh. Bruce also is representative of a very long-standing appreciation for scientific inquiry based upon theology. As he expressed this conviction in 1828:

Yes, our souls will be connected with material organs, that we may be enabled to examine and admire the infinite wisdom and knowledge which the boundless material universe will forever present to our examination, and to feed and maintain, in part, at least, our adoration of the Author of all spiritual and material being.\(^10\)

Providing him with experience in the organization and operation of such an institute was Bruce's initial presidency, beginning in 1828, of the Pittsburgh Philosophical and Philological Society which he founded. This latter organization, similar to the British literary and philosophical societies, drew its members almost exclusively from the business and professional segments of Pittsburgh and from the faculty of the Western University of Pennsylvania.

Interestingly, while the Pittsburgh Mechanics' Institute was deliberately modeled on the Franklin Institute and received greetings and best wishes upon its organization from that establishment,\(^11\) it followed the British example of mandating a degree of working-class control. However, it must be noted that the Pittsburgh institute took great liberty in expanding this requirement to provide for a president, secretary, and treasurer, together with nine managers, "not less than two-thirds of whom shall be Mechanics, or persons engaged in Manufacturing or Agricultural pursuits," all elected annually. These directors were charged with providing convenient rooms and apparatus for carrying out lectures and other means of instruction, "but no question or debate upon religious or political subjects shall ever be admitted," according to the constitution.

Founded "at a numerous meeting of the Mechanics and other Citizens," on June 11, 1830, the institute was dedicated to "the promotion of the useful Arts and Sciences, the improvement of its members


\(^10\) Robert Bruce, "An Address Delivered Before the Pittsburgh Philosophical Society, 1828" (Pittsburgh, 1828), 17.

\(^11\) McCadden, 79.
in practical knowledge, and the advancement of popular education." From the outset, then, the Mechanics' Institute declared its faith in and support of the common-school cause. According to the Constitution Committee, the institute, "if it be judiciously managed, and meet with the liberal support of their fellow citizens, will gradually extend its influence over all classes in the community." Financial support was based upon an annual contribution of $3.00 per member, or a life membership fee of $20.00, with persons under eighteen being admitted to membership for a fee of $1.50 and the children or apprentices of members being admitted to programs without charge. An examination of the occupational backgrounds of the initial five officers and the nineteen men named to the constitution and subscription committees at the first meetings of the institute reveals its solid middle- and upper-class foundations as well as the liberality with which the working-class control provision was interpreted. The institute's president, Robert Bruce, was a minister and university president. Secretary Thomas Bakewell was a partner in his father's extensive, flint-glass manufacturing business, an expert chemist, and a prominent local politician. Treasurer John Snyder was cashier of the Bank of Pittsburgh. In addition, the chairman of the first organizational meeting, Benjamin Bakewell, was a world-famous glass manufacturer and businessman, and the secretary, Samuel R. Johnston, was a prominent local printer and publisher. With the exception of four individuals for whom occupational data could not be found, the backgrounds of most of the constitution and subscription committees' members were manufacturing or commercial: clerk, master cabinet and chair maker, newspaper editor, stage-line agent, banker, two glass manufacturers, foundry operator, planing-machine operator, plater and manufacturer, metal fabricator, lock maker, tobacconist, engraver, and cotton-mill owner. This is not to imply that the interests of the founders of the Mechanics' Institute were not legitimately grounded in the value and usefulness of scientific inquiry. Indeed, the example of Benjamin Bakewell is most striking. Founder of Bakewell, Page and Bakewell, the most famous, flint-glass manufacturing operation in the United States, Benjamin Bakewell's interest in science was fundamental to his own personal development. Prior to their marriage, Bakewell's wife,
Anne White, lived with her sister and brother-in-law, John Palmer, a retired Unitarian minister who assisted Joseph Priestly in editing the *Theological Repository*, a publication of the Unitarian church. Bakewell became acquainted with Priestly during the courtship and adopted Unitarianism as his own theology. He later founded the Unitarian Society of Pittsburgh and remained active in it until his death. Bakewell emigrated to the United States in 1794, the same year Priestly departed from England. In addition, Bakewell's son Thomas and an early associate, Thomas W. Pears, were involved with John J. Audubon in a gristmill and sawmill enterprise in Kentucky in 1814. In 1826, Pears joined the New Harmony, Indiana, community of Robert Owen and became secretary of the society.

While his life in Pittsburgh was strictly that of a gentleman, Bakewell's origins were strictly working class, and he is an outstanding example of the early self-made man in American industry. At fourteen he was apprenticed to a Derby haberdasher and at twenty-one became a shopman in a London mercer's shop. At age twenty-four he opened his own mercer's shop and later entered the importing business. When the war between England and France interrupted his enterprise, he emigrated to the United States and reestablished an importing business, concentrating on French goods. In 1798, he moved to New Haven and established a brewery, but in 1804 he returned to New York to the importation business which he continued until the embargo in 1807. In 1808, he bought a glass-manufacturing plant and moved along with his family, to Pittsburgh. Bakewell's interest in educational reform was also long standing. In 1827, together with John Snyder, future treasurer of the Mechanics' Institute, and others, he proposed the establishment of a monitorial high school for boys. After 1835, he was for many years a director of the South Ward public school along with James Bartram, a clerk and member of the Mechanics' Institute Subscription Committee. Bakewell also served as president of the Teachers' Lyceum of Allegheny County. His son, Thomas Bakewell, secretary of the Mechanics' Institute, held such positions as trustee of the Western University of Pennsylvania, first president of Pittsburgh's first historical society, and first president of the Western Pennsylvania Hospital.14

Benjamin Bakewell's career illustrates not only the economic motivations of the founders of the Mechanics' Institute but the au-

authentic reform convictions as well. There can be little doubt that the economic advantages of increased productivity from a well-educated work force were obvious to the Pittsburgh businessmen and merchants who were instrumental in the establishment of the institute. In this context, it is interesting to note that in addition to the two Bakewells, two other major glass manufacturers, Frederick Lorenz and Patrick Mulvany, were also prime movers of the institute. This coincidence of interest among the leaders of the glass industry illustrates the value to the businessman of workers trained in the mechanics and chemistry of an industry less than twenty years old in Pittsburgh. Certainly there was, in the booming expansion of Pittsburgh industry in the early nineteenth century, a mutuality of interests between the skilled and semiskilled worker and his employer and between the journeyman and the merchant-capitalist for whom he worked. In this mutuality lay the keystone for the kind of broadly based attempt to popularize scientific information which the Mechanics' Institute represented.

But the economic forces operating on the merchant-capitalist, the businessman, and the manufacturer which led to the oppressiveness of the early factory system and the conceptual change from an artisan's price of labor to a worker's wage severely strained the common interest upon which the idea of a mechanics' institute depended. One example of the growing tension between worker and employer was the dispute, in March 1836, between journeymen and apprentice carpenters and their employers. In that month a group of master workmen backed away from an agreement they had signed with the journeymen carpenters for a new price book, contending that they did not understand the new wage structure. Instead of honoring the agreement which had been negotiated with the journeymen, the employers suggested that a committee be formed consisting of two representatives from them and two from the journeymen to formulate and enforce a new price book. If a disagreement should arise, the employers proposed that it should be submitted for binding settlement to a fifth man. Among the employers signing a letter explaining their position were Patrick Mulvany, Henry Beares, and John Patterson, all of whom were founders of the Mechanics' Institute.15

Angered by the withdrawal of their employers from an agreement negotiated in good faith, the journeymen no doubt realized not only the threat to their economic power posed by the employers' actions and proposals but also felt the subtle change taking place by which the

15 Pittsburgh Gazette, Mar. 16, 1836.
price of their labor was beginning to be considered a wage. The journeymen charged in a responding letter that if the employers could not understand the price book formulated through negotiations in which they took part, they did not even know how to manage their own businesses:

All the intelligent employers in this city, who have ever been workmen themselves, perfectly understand all that is contained in the book and have, in pursuance of this understanding, attached their names to it and its condition, and are now reaping the benefits of thus doing, by having their shops well stocked with good work men.16

That some degree of common interest still existed is demonstrated by the journeymen's acknowledgment of mobility between them and the master workman status. Furthermore, both letters contain polite acknowledgments of the rights of the opponents—the employers insisting that they have no wish to prevent journeymen from receiving a fair and honest price for their labor and the journeymen insisting they do not wish to coerce their employers but only to protect their own rights. But the implicit incredulity of the journeymen that the employers could so lightly brush aside a negotiated price book and their explicit anger at the deed clearly demonstrate the change which was occurring in the life of the Pittsburgh artisan. Moreover, this transformation was becoming increasingly apparent within only a few years after the establishment of an institute founded by employers for the scientific and practical education of workers.

But it was not only economic forces which were breaking down whatever mutuality of interests still existed between businessmen and the upper levels of working-class society in Pittsburgh. Whether because of a fear of the political power of the masses in the age of Jackson, or for baser motives of simple exploitation, the political activities of the employers also helped to widen the gap between them and the workingmen. One vivid illustration of this political exploitation is that of the Pittsburgh Workingmen's Party in the election of 1830. According to William A. Sullivan, the party was a prime example of "the work of professional politicians whose only interest in the workingman was to garner his vote." 17 On May 29, 1830, some of the most prominent industrialists and businessmen in Pittsburgh conducted a workingmen's meeting for the purpose of forming a Workingmen's Party and nominating a slate of candidates. Among the workingmen

16 Pittsburgh Mercury, Mar. 23, 1836.
who were influential in the meeting were the chairman, banker Thomas Hazleton; the secretary, newspaper editor John B. Butler; and factory owner Lewis Peterson and businessman Thomas Bakewell, all of whom were founders of the Mechanics' Institute. Charging that the workingmen had been "too much influenced by feelings arising from party spirit, without sufficiently enquiring into the fitness and usefulness of the candidates," the Workingmen's Party proceeded to nominate the same slate of candidates previously nominated by the Democratic-Republicans. At this point, accusing the others of deception, Bakewell and Hazleton resigned. Although the Workingmen's Party had no significant impact on the outcome of the 1830 elections in Pittsburgh, its activities naturally inspired the local press to inquire how two parties with exactly opposite origins could nominate the same candidates, the deception being obvious to politically aware editors.

In his analysis of the Pittsburgh Workingmen's Party, Sullivan quotes from a Philadelphia Mechanic's Free Press article of September 12, 1829, which asserts that while it is difficult to define adequately the term workingman, it is clear that the term excludes employers who "unite in their own persons two distinct classes of society." Workingmen and employers alike, in Pittsburgh and many other industrial centers, were rapidly realizing that their interests might be inherently in contradiction. It is not unreasonable to assume, at least, that authentic workingmen might suspect the motives of individuals such as the leaders of the Workingmen's Party when these same men expressed their dedication to the education of mechanics.

After 1831, when a new subscription committee had to be formed to collect the delinquent dues of original members, little evidence can be found of Mechanics' Institute activities in the local press until the organization merged with the Pittsburgh Library Association to form the Young Men's Mercantile Library and Mechanics' Institute in 1847.

Apparently in a fresh attempt at popularizing scientific knowledge for mechanics while avoiding the weaknesses of the Mechanics' Insti-

19 Sullivan, 158.
20 The new organization had purposes much more closely tied to the commercial segments of the Pittsburgh community as indicated by its initial officers, among whom three of eight were grocers and two more were clerks. It continued to sponsor lectures and by 1871 had accumulated a library in excess of 12,000 volumes, including the collection of the HSWP. After changing hands several times, the books were absorbed into the Carnegie Library collection.
tute, another group of prominent Pittsburghers founded the Institute of Arts and Sciences in December 1836. Superficially, its aims were quite similar to those of the earlier organization, but its emphasis was significantly different. Among the founders of the two organizations there was certainly an identity of interests. Richard Biddle, prominent local attorney and later a member of Congress, was the first president and was well acquainted with Benjamin Bakewell with whom he served as covice-president of the Historical Society of Pittsburgh. Orin Newton, a plater and manufacturer, was active in both organizations.

But while the occupations of the founders of the new Institute of Arts and Sciences still identify those men as distinctly middle and upper class, the occupational data, nevertheless, illustrates a movement away from major industrialists and intellectuals toward more mercantile types. Of the twelve original officers, occupational information could be found for seven. Among this group are a sign and ornamental painter, a druggist, a housemover and carpenter, a regulator of weights and measures, an attorney, a bank clerk, and one individual who was either (or both) an engine builder or a collier.

As interesting as the occupational backgrounds of the founders of the new organization are, however, of at least equal significance is the text of the “Introductory Lecture Delivered Before the Institute of Arts and Sciences” by Rev. Robert Bruce. In an apparent reference to the Mechanics’ Institute, of which he was the first president, Bruce urges the members of the new organization not to be discouraged by “failures in some instances formerly.” Bruce also adds the further caution that the new institute should avoid the “exhibition of knowledge on scientifical subjects which are not connected with the daily pursuits of practical men” since detailed treatment of such subjects “would lead to weariness if prosecuted beyond the very first elements.” According to Bruce’s analysis:

The more eager the members of the society were to form it, and the more intelligence they had in their own practical departments, the sooner they become disgusted; and they forsake the room where they anticipated a rich repast but where they see nothing but clumsy servants and empty dishes.\footnote{Robert Bruce, “An Introductory Lecture Delivered Before the Institute of Arts and Sciences 20 December 1836” (Pittsburgh, 1837), 9, 14-15.}

If it can be reasonably assumed that Bruce’s references are to the shortcomings of the Mechanics’ Institute in which he was so deeply involved, his words can be interpreted with two different meanings and still reflect the probable difficulties encountered in the earlier
effort. If he is speaking from the point of view of the intellectuals and industrialists who founded the Mechanics’ Institute, his observations illustrate the frustration which must have been felt by learned men attempting to teach complex scientific subjects to artisans whose grasp of their principles must have been elementary in most cases. This very problem led many such institutes in the United States and Great Britain to establish schools for youths in order to teach the basic principles upon which their later education would be based.

On the other hand, if Bruce is speaking from the point of view of the mechanics, his account illustrates the frustration which must have been felt by very practical, common sense-oriented artisans attempting to sit through long, formal lectures by professors and businessmen. It is not unreasonable to expect that some of the enthusiastic principals in the earlier Philosophical and Philological Society might have overestimated both the value of their highly abstract knowledge to workingmen and their own ability to communicate that information effectively to mechanics.

In any case, gone from the constitution of the Institute of Arts and Sciences is even a qualified reference to significant artisan control. It appears that a major objective of the new organization was to secure a stable, financially secure membership which could sustain its operations. For example, instead of membership being open to all who could pay the dues, a prospective member was required to apply, citing his name, address, and occupation, and to be recommended in writing for acceptance by one or more members of the institute. The applicant then had to be accepted by majority vote of the electing committee in order to become an active member, although “distinguished and learned men, artists, mechanics, &c., at home or abroad, can be elected Honorary Members of this Institute.” Funds for the organization were to come from members’ contributions, public donations, exhibition proceeds, and members’ fines. Apparently a relatively substantial financial base was anticipated since the constitution provides for a curator of the institute’s property to be appointed by the board of directors.22

What is clear from this structure is that the Institute of Arts and Sciences was a more formally organized association than the Mechanics’ Institute and apparently intended to appeal only to the higher echelons of mechanics and workingmen rather than to a broad base of artisans and apprentices at every level. In addition, the founders ap-

22 Allegheny Democrat and Workingman’s Advocate, Dec. 9, 1836.
parently also had in mind the new objective of promoting Pittsburgh's industry as well as that of the United States. As Bruce noted in his introductory lecture, patriotism "is now of necessity a wave which is daily widening its circle, and is melting into that unlimited affection which is the birth of reason and the parent of universal good." Further illustrative of the change taking place in Pittsburgh's industry, not to mention its society, is Bruce's assertion that natural philosophy (physics) now has to be considered superior to chemistry as a useful subject, especially "in this mechanical city of ours" where even the manufacture of glass has become more dependent upon the principles of mechanics than those of chemistry.²³

Furthermore, the founders of the Institute of Arts and Sciences make clear in the preamble to their constitution that their intentions extend beyond education in the practical arts and sciences and into the area of social values:

... It is abundantly evident from the history of Nations and States, which have encouraged the Arts and Sciences, that in proportion to their extension among communities has been the diffusion of knowledge, the acquisition of wisdom, and a corresponding advancement in the social and political relations of the great body of the people. . . .

The preamble further observes that an institute offering instruction in scientific subjects would extend a fostering hand to the mechanical arts generally in the distribution of premiums to the most deserving worker.²⁴

No longer is there any mention of teaching scientific subjects for the sake of intellectual improvement alone, except as such an organization might serve as a place of "instruction and amusement" to young and old. Nor is the movement for popular education any longer explicit in the objectives of the institute as it was for the earlier organization. Only the elite of the masses of workingmen could be elevated through education and rewarded with a greater stake in society than their colleagues. For the rest, an education in the manual arts would provide them with adequate knowledge to assume their proper station in life. As Bruce put it:

... every extensive shop is an epitome of a nation; while the common intellect is the most prevalent, there are yet some qualified for all the public walks of life. These should be marked and educated as well as possible. A quarter or two at a common school to learn, not what is peculiar to their profession, but common to all the concerns of the world, is not what is meant by an education. What is intended is to make a man an intelligent tradesman or mechanic in the business he

²⁴ Allegheny Democrat and Workingman's Advocate, Dec. 9, 1836.
has chosen. Masters by being attentive themselves to explain principles and to encourage youth to frequent the meetings of a well-conducted society of mechanics and manufactures, can greatly aid in the accomplishment of what we have in view.25

Without question, Bruce’s point of view was in fact supported by many workingmen who saw the brightest future not in the middle-class reformer’s cause of public education but in manual arts schools. But the very fact that Bruce should take such a position strikingly illustrates the difference in emphasis between the new organization and the Mechanics’ Institute which placed the reformist goal of public education in its constitution.

Apart from questions of interpretation and emphasis, one clearly obvious fact about both organizations is that neither was intended to serve those men, women, and children working thirteen to fifteen hours each day in Pittsburgh’s factories. The polite and formal evening lectures on such topics as “Oxygen” or “Success” each weeknight were not attracting the workingmen who lived, according to a Pittsburgh physician, “in the confined ill-ventilated rooms and cellars, among the poorest of the poor, in old frame houses where the atmosphere is peculiarly bad, highly impregnated with putrid miasmata.”26 The activities and facilities of the Mechanics’ Institute and the Institute of Arts and Sciences were attractive only to the secure or socially mobile among Pittsburgh’s working classes.

What also seems apparent, especially as reflected in the activities and words of Robert Bruce over the period, is that the six and one-half years between the establishment of the Mechanics’ Institute and Bruce’s introductory lecture remarks to the Institute of Arts and Sciences mark a dividing line between the early period of industrialization and the maturation of the machine age in Pittsburgh. By 1836, the anonymous “Bacon” could observe to a newspaper editor that as the result of the diffusion of scientific information, farmers “now labour not as mere machines, but as intelligent beings.”27 Could the new inventions and contrivances transported over the mountains to run newly built factories ever have been referred to as “mere machines” in the frontier Pittsburgh of only a generation earlier? The coming of industrialization to Pittsburgh and every other American city forced a separation of employer from worker so that the employers, reacting to

27 Allegheny Democrat and Workingman’s Advocate, Dec. 16, 1836.
an entirely new economic environment, were seen to "unite in themselves two distinct classes of society." It is the great social tension in this simultaneous mutuality and divergence of the interests of masters and journeymen which is mirrored in the contrast between Pittsburgh's two mechanics' institutes and their efforts to popularize scientific knowledge in the Great Western Workshop.