

Colliers, Colliery Safety and Workplace Control: The Nova Scotian Experience, 1873 to 1910

Donald MacLeod

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Article abstract

Au XIXe siècle, les houillères de la Nouvelle-Ecosse étaient des endroits dangereux. Non seulement, en effet, les taux de décès y étaient-ils très élevés, mais ces mines étaient également le théâtre des pires désastres survenant sur le continent nord-américain.

L'auteur étudie ici les diverses réformes que ces dévastations ont engendrées. Selon lui, les réformes en Nouvelle-Ecosse ne furent pas que le résultat de lois et de contrôles imposés par les autorités gouvernementales. Il appert plutôt que les changements les plus significatifs concernant les politiques visant à assurer la sécurité des mineurs soient venus des mineurs eux-mêmes. Ces réformes, de plus, furent multi-dimensionnelles tant dans les motifs que dans les techniques. Ainsi, elles furent suscitées tout autant par les dangers qui sont inhérents au métier que par les ambitions sociales de certains mineurs qui voyaient d'un mauvais oeil l'autocratie exercée par de nombreux maîtres de houillères. De même, les techniques de réformes furent-elles aussi variées puisqu'on eut recours, entre autres moyens, à des sessions d'éducation populaire, à la remise de certificats, à l'intensification des inspections et à l'inclusion des mineurs eux-mêmes dans le processus d'inspection.

Si avancées pour l'époque que furent ces réformes, toutefois, elles n'eurent pas nécessairement tous les succès escomptés et cela est dû, en bonne partie, aux doutes qu'entretenait le commun des mineurs quant à la nécessité ou à l'importance de certaines des mesures de sécurité que les réformateurs avaient tenté d'instaurer.

Colliers, Colliery Safety and Workplace Control: The Nova Scotian Experience, 1873 to 1910

DONALD MACLEOD

The nineteenth century Nova Scotian colliery was a dangerous place. A major study of accident statistics published in New York in 1899 noted that the average annual death rate in Nova Scotian collieries for the period 1887 to 1896 had been 3.6 per thousand workers, worse than that for all coal producing countries for which figures were available. The average for the period 1866 to 1875 had been 4.08 deaths per thousand men. Even in the comparatively good years of 1876 to 1885 one miner in thirty would not survive work in the pits. Not only did small localized accidents slaughter miners; the Nova Scotian coal fields were the worst on the continent for major disasters. An explosion at the Springhill Mines in 1891 killed 125 men.¹

In Nova Scotia, however, the response to such devastation was not a monochromatic process engineered by a reformist officialdom of injecting increasing amounts of state regulation and inspection into the industry. Nor was the miner reduced to playing the role of mere victim as he has often been tacitly portrayed in the historical literature.² Indeed, most of the truly significant changes in the politics of colliery safety were spearheaded by a leadership among organized colliers, inspired by a belief in statute-making as a means of reordering industrial relations. Reform was multidimensional in both motive and technique. It was an attack by socially ambitious miners simultaneously on both the dangers of coal mining and the perceived autocracy of the colliery master. Its tools included popular technical education, blanket certification of miners and mine officials, intensified inspection by workmen's surrogates, and the inclusion of miners in the inspectorial process. Yet, as advanced as this reform program was, its success was uneven — in part because of mine managers' predictably undemocratic instincts, in part because of the rank-and-file miner's misgivings about important aspects of new safety practices.

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Few statistics can convey the full horror of a colliery disaster. Some men died instantly in explosions from the fiery blast that swept mine galleries — so strong that a Springhill Mines survivor reported that when, like a "lightening flash", the blast had come, his lamp had been "carried away as if in the bore of a mighty cannon". Those not killed by the blast often died from the heat. A letter to the *Stellarton Trades*

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1. F.I. Hoffman, "Fatal Accidents in Coal Mining in the United States and Canada", *The Mineral Industry*, VI (1899), pp. 720, 748 and 752.
 2. See, for example, David J. Bercuson, *Fools and Wise Men* (Toronto, 1978), pp. 1-8 and 13-5.

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Journal in 1880 warned miners not to cry out in an explosion lest the searing air be sucked down into their lungs.³

Then there were the deadly “after-damp” and lighter-than-air “whitedamp” gases produced by exploding, methane-laden “firedamp” — the primary fuel for explosions, exuded from the very coal the miner worked. After-damp — also termed “choke damp”, “black damp” and “stythe” in the language of the pits — was heavier than air. Men entering an Albion Mines pit after an explosion in the workings above found the gas seeping eerily through cracks in the roof, “dripping like, showery”. A miner might seek to escape whitedamp after an explosion by crawling, only to encounter after-damp. In fact, stythe was the major cause of death in mine disasters and the object of perhaps the most dread.⁴ Another survivor of the Springhill Mines explosion reported later, “with a shudder”, that after-damp he had walked into had seemed to “pour” into his ears and down his throat. To others it was like a “thick fog” that overtook its victims stealthily and “sweetly” with an almost imperceptible “dullness of intellect and numbness of body” — a death popularly believed, the *Maritime Mining Record* reported, to be “not violent, but strangely beautiful”.⁵

Disaster prevention posed daunting challenges to the miner and mine manager. Firedamp was colourless and odourless; the belief of some miners that it smelt faintly like green spruce was mere superstition. Large gas bodies could fill a hundred feet of roadway undiscovered for hours.⁶ The only practicable way to detect gas was with a safety lamp. Wire gauze isolated the lamp flame from the mine atmosphere, momentarily dissipating the heat when firedamp ignited inside the lamp; a blue cap on the flame ordinarily denoted the presence of gas. Yet use of the lamp required a skill and application not always possessed by miners and “firebosses”, the officials hired to patrol mine workings for gas.⁷ To compound problems, the Pictou coal field of the mainland was one of the worst for gas in the international mining world, so bad that during the first work at the Albion Mines in 1827 the firedamp “roared” as miners

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3. R.A.H. Morrow, *Story of the Springhill Disaster* (Saint John, [1891]), pp. 82-4 and 100-01; *Trades Journal* (Stellarton) (hereafter *TJ*), 28 April 1888.
 4. George L. Kerr, *Practical Coal Mining* (London, 1904), pp. 321-3; Nova Scotia, House of Assembly, *Journals*, 1896, “Report of the Commission to Enquire into the Causes, History and Effects of Fires in Pictou Coal Mines” (hereafter “Pictou Mines Fires”), p. 27; John S. Haldane, “The Causes of Death in Colliery Explosions”, *Institution of Mining Engineers, Transactions* (hereafter *IME*), XI (1895-6), p. 502; *TJ*, 14 March 1883, 28 April 1880 and 8 October 1889; Nova Scotia, House of Assembly, *Journals*, “Mines Report” (hereafter *MR*), 1883, pp. 25-6.
 5. Morrow, *Story of the Springhill Disaster*, pp. 80-1; *Maritime Mining Record* (hereafter *MMR*), I (5 July 1889), p. 18.
 6. Kerr, *Practical Coal Mining*, p. 322; *TJ*, 13 May 1885 and 26 December 1888.
 7. *Canadian Mining Review* (hereafter *CMR*), XII (August 1893), p. 141; Kerr, *Practical Coal Mining*, p. 373; Canada, Department of Mines Library, Provincial Workmen’s Association Papers (hereafter PWA), Minutes of the 25th Annual Meeting of Grand Council (minutes hereafter identified by date alone), 8 September 1903, p. 421; *TJ*, 21 April 1880.

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struck the face with their picks. "Blowers" of gas turned into flares yards long at the touch of a lamp flame. Gradual opening of the seams drained off only the worst of the firedamp. The coal in the Pictou County Main Seam remained so "fiery" that Inspector of Mines Edwin Gilpin theorized in 1894 that, "lying in dry surroundings and broken by numerous faults", the seam formed a "gas drainage channel" for the entire region.⁸ Some Cumberland County mines were only marginally less "gassy", and although the firedamp in Cape Breton mines was less fearsome, there, too, it took many lives — six, for example, in the Sydney Mines explosion of 1878. It was necessary always to keep strong air currents running throughout the entire mine.⁹

Yet the "bord and pillar" method of working, used almost to the exclusion of any other until the 1890s, made ventilation an awesome task. In bord and pillar mining, slopes were first driven down the slanting sedimentary coal seam from the surface, or shafts sunk through the strata to a low point on the dip of the seam. Miners then ran levels out into the coal and "gate roads" at intervals up the dip of the seam from the levels to begin work on a "lift" proper. The main working rooms or "bords" — each assigned to a miner and his "butty", paid by the tonnage they mined — were broken off from the gate roads, leaving intact large blocks of unworked coal. The resultant gridlike pattern of tunnelling covered acres of seam through which a single air-course was woven using screenlike canvas "bratticing" placed near walls to guide air in and out of roads and bords. Any disruption in the arrangement — a fall of roof left undetected in the pitch black of a tunnel, a frame door left open in a level — could reduce the current drastically. Constant patrols, mine officials trained thoroughly in the science of pneumatics and strict controls over ventilation were vital.¹⁰ But for years most mines relied on primitive brick furnaces placed at the bottom of tall "upcast" shafts to drive air currents; the rising column of hot air pulled air through the mazelike aircourses and down intake shafts from outside.

Conditions in the coal trade made it much less likely that a mine manager would make capital investments in safety, even in cases in which, had management thinking been otherwise, possibilities for actual cost savings might have been widely perceived. While the period of the Reciprocity Treaty saw rapidly expanding sales down the

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8. Great Britain, House of Commons, *Sessional Papers*, 1835, "Report of the Select Committee on Accidents in Mines", Query 3803; Edwin Gilpin, "Explosions in Nova Scotian Coal Mines", *IME*, VIII (1894-5), p. 145; G.C. Greenwell, *A Glossary of Terms Used in the Coal Trade of Northumberland and Durham* (Newcastle-upon-Tyne, 1888).
 9. Edwin Gilpin, "Coal Mining in Nova Scotia", Canadian Society of Civil Engineers, *Transactions* (hereafter *CSCE*), II (1888), p. 365; *TJ*, 29 July 1891; Nova Scotia, Department of Public Works and Mines, *Annual Report on Mines* (hereafter *ARM*), 1878, p. 34; F.W. Gray, "The Coal-Fields and the Coal-Industry of Eastern Canada", *IME*, XLVI (1913-4), p. 52.
 10. Gilpin, "Coal Mining in Nova Scotia", pp. 357-60, 364-5 and 377; Canada, Geological Survey, *Report of Progress for 1872-3*, pp. 245-76; Morrow, *Story of the Springhill Disaster*, pp. 44, 272-86, 293 and 304; Kerr, *Practical Coal Mining*, pp. 350-1; Public Archives of Nova Scotia, Mines and Mining Papers (hereafter *MMP*), RG 21, series A, vol. 14, R.H. Brown to H.S. Poole, 18 April 1878.

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eastern seaboard to New York, thereafter competition from more recently mined and less sulphurous American coal, shipped by rail to the coast at special rates, combined with declining consumption brought about by recession and technological innovations that reduced the quantities of coal required in coal-gas manufacture, severely depressed the American market. It was only after 1879 that introduction of the National Policy tariffs finally eliminated ruinous competition in St. Lawrence River ports from British coal brought over as ballast; and industrial expansion in Quebec, a switch away from the use of wood as fuel in the Maritimes, increasing rail traffic in eastern Canada, then the growth of a Nova Scotian steel industry, brought a healthier trade (with sales rising to 1,765,111 tons overall in 1890, 2,997,546 tons in 1900 and 4,896,896 tons in 1910). Only in the 1880s did powerful steam ventilating fans become the rule. The result formerly was that even when firedamp was present only in traces, oxygen deficiencies sapped health and productivity.¹¹ The only fresh air his bord received, claimed one miner sarcastically in 1880, was that carted in within empty coal tubs.¹²

Adding to the hazards were numerous mine fires, some connected with an explosion, some not; some possessing mysterious origins such as those produced in the worked-out, crushed areas of the mine, it was believed, by spontaneous combustion. Fuelled by the coal, mine fires could be fiendishly difficult to fight. Often their heat and fumes swiftly made them impossible to fight close up, sometimes forcing a retreat to the surface, in which case thermometers lowered down shafts or the condition of escaping air provided the only clues as to the fire's progress. Mine managers might order the afflicted area "built off" or the shafts sealed.¹³ Yet fire often still obtained enough oxygen, as in one case, to persist for years — "a great subterranean furnace blazing away through miles of galleries". Even fifteen years after the pit's abandonment, the stored heat was so intense that a holing made into the pit's bords resulted in rekindled fire and an explosion so violent that the blast travelling up one

11. Tyro (pseud.), "A Visit to the Albion Mines", *The Provincial or Halifax Monthly Magazine*, I (May 1852), pp. 177 and 181; Matthias Dunn, *A Treatise on the Winning and Working of Collieries* (Newcastle-upon-Tyne, 1852), pp. 132-3; Gilpin, "Coal Mining in Nova Scotia", pp. 364-5; *ARM*, 1881, p. 6; *ARM*, 1879, pp. 6 and 19; *CSCE*, II (1888), p. 388; *ARM*, 1874, pp. 3-5; *MR*, 1875, pp. 9-13; *MR*, 1880, p. N; *MR*, 1901-2, p. 101; *MR*, 1909-10, p. xiv; S.A. Saunders, "The Maritime Provinces and the Reciprocity Treaty", *Dalhousie Review*, XIV (1934-5), p. 363; MacDonald, *The Coal and Iron Industries of Nova Scotia*, p. 44; S.A. Saunders, *Historical Summary of the Economic Development of the Maritime Provinces* (Ottawa, 1939), p. 24.

12. *TJ*, 30 June 1881.

13. *CMR*, XVIII (July 1899), p. 194; *MR*, 1902-3, p. 21; "Pictou Mines Fires", p. 90; *MMP*, RG 21, series A, vol. 14, William Madden to Edwin Gilpin, May 1888, J.R. Cowans to Edwin Gilpin, 25 February 1897, and James Hudson to Samuel Creelman, 12 November 1880; T. Farnsworth, "Explosion by Lightening at a Nova Scotia Colliery", *CMR*, XIV (April 1895), p. 79; *ARM*, 1889, p. 28.

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shaft destroyed the bankhead above. Often a mine manager was forced to flood a pit, throwing it idle for months.¹⁴

Fires and explosions were only the most dramatic causes of death and destruction. The darkness of the mine was the miner's ever-present enemy — so intense that visitors might well not remember the sights of the pit (limited to the glimmering of miners' lamps shifting about in the obscurity), but rather the sounds: the shouts of boys far off down a level, the snorting of horses, the tubs rattling over pit rails. A. Gilbert claimed that miners learned to see "a wonderful distance" in the gloom.¹⁵ But the detail picked out by the faint glow of the lamps glancing off rough stone and ragged coal walls was very limited — dangerously so. The experienced collier sounded the roof and walls of his bord with his pick each day before starting work. Yet this afforded only slim protection against such almost invisible hazards as "chaldron bottoms", the fossilized stumps of prehistoric trees; "pot-holes", many in the form of lense-shaped masses of stone lying flush against the roof; and "lypes", vertical or near vertical fractures in the seam that could meet obliquely and allow huge masses of coal to roll forward onto the kneeling miner.¹⁶ The mining of pillars, an operation begun after a lift had been pushed to its furthest limits, was especially dangerous. To minimize risk, miners ordinarily started at the innermost pillar and worked back towards the lift entrance, stopping with each pillar to take a series of vertical slices until the roof dropped.¹⁷ Yet, particularly as mines deepened past the one- and two-thousand-foot marks, roof pressures became enormous. In one case, hard interstratified "fireclay" partings were observed being squeezed out of a seam "like clay out of a brickmaking machine". The miner "robbing" a pillar worked up to the last moment before the roof descended, trusting on his ability to tell which sounds were "benign" and which signified trouble.¹⁸ This was sometimes not enough.¹⁹

A rigid exactness was necessary in coal mining — especially as mine equipment, as well, could be a source of danger. Increasingly throughout the last third of the nineteenth century mines replaced horses with wire-rope arrangements such as counter-balance systems installed in gate roads to convey tubs to bords and take away coal, and "endless rope" and sheave arrangements hundreds of yards long used in

14. MMP, RG 21, series A, vol. 14, unsigned manuscript, 1880; Edwin Gilpin, "Coal Mining in Pictou County", Royal Society of Canada, *Transactions*, X, section 4 (1896), pp. 173 and 176; Edwin Gilpin, "Notes on Some Explosions in Nova Scotia Coal Mines", Nova Scotian Institute of Science, *Proceedings* (hereafter *NSIS*), VIII (1890-94), pp. 64-5.

15. A. Gilbert, *From Montreal to the Maritime Provinces and Back* (n.p., 1867), pp. 29-30.

16. MMP, RG 21, series A, vol. 14, William Madden to Edwin Gilpin, 24 January 1895, and anon., "Report of Inquest into the Death of Wm. Harroun", 28 January 1895; *ARM*, 1872, pp. 43-4; *MR*, 1909-10, p. 86; *TJ*, 9 July 1884.

17. R.W. Leonard, "The Springhill Collieries", *CSCE*, II (1888), p. 407; Gilpin, "Coal Mining in Nova Scotia", p. 361.

18. Canada, Geological Survey, *Annual Report* (1901), "Report on the Pictou Coal Field, Nova Scotia", pp. 32M-33M; *MR*, 1891, p. 6.

19. For an account of one accident see MMP, RG 21, series A, vol. 14, A.V. Cameron to Gilpin, 30 August 1905.

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levels to pull boxes.²⁰ When wire rope used on an incline corroded internally, or metal fatigue set into the rope or its attachments, a runaway tub could result.²¹ Such was the case one day in the Vale Colliery in 1883. Eight men had clambered onto a timber wagon to be drawn out of the mine. Four hundred feet up the slope the drawbar failed, sending the wagon speeding back down the slope into a wall at the bottom. All eight were killed. One man's head was "so flattened that his face was compressed into half its natural size". Several others were even more horribly mutilated.²²

Overly dangerous management practices exacerbated the hazards of coal mining. The General Mining Association, which held a virtual Crown monopoly on Nova Scotian minerals until 1858, employed detailed safety codes and hired competent British engineers as managers.²³ Yet at the Albion Mines in the 1840s the company worked the full thirty-five-foot height of the Main Seam, horizontal booms furnishing the miner's only protection. The "murky chambers" were so high, Edwin Gilpin reported later, "that the eye could not reach the roof . . . and the gleam of the miner's candle was reflected only by the white fungus which covered the timber". It was impossible to check for loose stone. As mining increased the weight on the pillars, large chunks of coal began to spit out of the walls.²⁴ The ventilation produced by the pit furnace was so poor that Gilpin thought that the resulting quantities of "vitiated" air had actually diminished the risk of explosion.²⁵

As bad as this was, the mining that followed the end of the monopoly was worse. The farmers, colliers and small-town entrepreneurs that flocked into mining were lamentably inexperienced in mine management. Their lack of capital, their willingness to sacrifice proper development in order to exploit a burgeoning American market immediately, and their "indifference to future operations" cursed the over twenty-five mines they soon opened up. So much coal was taken in the first working and the pillars left so weak that crushes were a frequent occurrence. The ventilation was poor, often depending wholly on the vagaries of the wind. A surveyor sent around the collieries by the provincial government reported that in many mines "lamps burnt with a dull red flame", a "red spark" only yards away. With the end of the Reciprocity Treaty with

20. Edwin Gilpin, "The Pictou Coal-Field", North of England Institute of Mining and Mechanical Engineers, *Transactions*, XXII (1872-3), pp. 146-7; William Blakemore, "The Introduction of Endless Rope Haulage in Cape Breton", *CMR*, XIII (August 1894), p. 154.

21. *CSCE*, II (1888), p. 396; MMP, RG 21, series A, vol. 14, Gaspard Hebard to Edwin Gilpin, 26 November 1889.

22. *TJ*, 2 May 1883.

23. James Cameron, *The Pictonian Colliers* (Halifax, 1974), pp. 32-3; Gilpin, "Explosions in Nova Scotia Coal-Mines", pp. 156-8.

24. Gilpin, "The Pictou Coal-Field", pp. 145-6.

25. Gilpin, "Explosions in Nova Scotia Coal Mines", p. 146.

the United States in 1866 most small operations collapsed,²⁶ and coal mining became increasingly dominated by large British, American and Canadian joint-stock companies owned by wealthy magnates such as Sir George Elliott, owner of a huge manufacturing and mining empire in Britain.²⁷ Despite the state of the coal trade, annual investments in expansion and development of \$30,000 or even \$60,000 did become common occurrences. Yet since safety could remain neglected, conditions remained abysmal. A mining engineer sent by the Geological Survey of Canada in 1868 to study the coal-bearing strata reported that, "with very few exceptions, the mines may be said to be ventilated by the miraculous interposition of Providence". In one colliery he was told that "the coal is so pure the men don't need air". In England, he remarked, the manager would have been "criminally prosecuted", but here "every man does as he likes".²⁸

They could in part because there was virtually no government regulation. Nova Scotia's first "inspector of mines", appointed in 1858, regarded his post purely as a patronage appointment. Both he and his successor lacked technical qualifications.²⁹ A bill passed by the Nova Scotian assembly in 1864 authorized the appointment of a "scientific, practical mining engineer" as inspector, but armed him with no powers to prosecute. The next man to fill the post — John Rutherford, a British mining engineer and protégé of Sir George Elliott — proclaimed later at Mining Society of Nova Scotia meetings that there had been no "absolute necessity" for regulations; moral suasion and practical suggestion had always been sufficient.³⁰ Yet his annual reports show otherwise. During his seven year tenure, forty-nine men died in the pits — one out of every forty, and many because of dismal safety standards.³¹

Change was not to come until the appointment of H.S. Poole as Inspector in 1872. Poole was well qualified. A Fellow of London's Royal School of Mines, he had won a special degree in mining from King's College, Windsor and had apprenticed in underground management under his father at the Caledonia Mines.³² Disturbed by

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26. Beaton Institute (hereafter CB), anon., "History of the Cape Breton Coalfields", pp. 86ff; David Schwartzman, "Mergers in the Nova Scotia Coal Fields: A History of the Dominion Coal Company, 1893-1940", (Ph.D. thesis, University of California, 1953), pp. 87-9 and 95; Nova Scotia, House of Assembly, *Journals* (hereafter *JHA*), 1863, "Report of the Inspector of Mines", pp. 1, 6 and 9; *JHA*, 1864, "Mines and Minerals", pp. 7 and 14; *MR*, 1865, pp. 42-3.
 27. Cameron, *The Pictonian Colliers*, pp. 50-1, 71 and 83; Morrow, *Story of the Springhill Disaster*, p. 196; *ARM*, 1874, p. 79; *ARM*, 1875, p. 74.
 28. Canada, Geological Survey, *Report of Progress for 1870-71*, pp. 2-3.
 29. *JHA*, 1864, "Mines and Minerals", p. 2; Public Archives of Nova Scotia, Governors' and Lieutenant-Governors' Papers, RG 2, vol. 1, James McKeagney to the Earl of Mulgrave, 7 March 1861; MMP, RG 21, series A, vol. 4, Samuel T. Fairbanks to Provincial Secretary, 7 September 1860; Henry How, *The Mineralogy of Nova Scotia* (Halifax, 1869), p. 6.
 30. Nova Scotia, *Revised Statutes*, 1864, chapter 25, p. 94; *CMR*, X (June 1891), p. 147; John Rutherford, "The Early History and Progress of Coal Mining in Nova Scotia", *CMR*, X (September 1891), p. 203.
 31. See *MR*, 1866 to 1872.
 32. *CMR*, IX (May 1890), p. 64.

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mounting accident statistics, Poole threw himself enthusiastically into his new job. Almost immediately he began pressing for statutory reform, soon winning support from the provincial cabinet and passage, in April 1873, of the Mines Regulation Act — drafted by Poole, but following nearly word for word legislation enacted the year before in Britain. The act was almost entirely the product of pressures exerted from within the government, not as most later amendments would be, of demands by the mining population.³³ It also appeared initially to be a watershed in mining reform.

For the first time the inspector was empowered to enforce a set of safety regulations, wide in scope. Haulage ropes were to be inspected daily. Work was forbidden wherever the roof or walls were unsafe and in lifts where dangerous amounts of gas had been discovered. "Adequate" ventilation was to be constantly provided. A fireboss was to inspect actively worked areas daily, twice a day if gas were found. Iron wedges were to replace gunpowder for bringing down coal in gassy bords, and in any lifts in which gas had been discovered in the past several months, blasting was to be the responsibility of a specially appointed "shot-firer". All cases of death and injury were to be reported immediately to the inspector. Moreover, in a further dramatic expansion of the inspector's powers, Section 22 of the act gave him the right, subject to appeal, to create new rules for a mine beyond those in the act whenever he encountered a practice "in his opinion" sufficiently dangerous to threaten life and property.³⁴

Progressive as the act appeared, however, it embodied a subtle class prejudice. This was not surprising. Poole, from the beginning, had been openly inclined to blame accidents more on the "rashness" of miners and their "ignorance of consequences" than on mine managers, whom he found "little" responsible. "Stricter discipline" of workmen was one of his most cherished prescriptions for change.³⁵ Indeed, had the British legislation not existed as a precedent, a much more conservative Mines Regulation Act might well have been the result.

Class bias was expressed variously. Formerly, grand juries, easily packed by miners, had investigated accidents. Now the task was given to coroners' juries, immune to such manipulation and routinely manned by jurors ignorant of mining. Miners could grasp the esoteric "pit talk" terminology that peppered testimony, much of the abstruse technical evidence presented, and perhaps most important, the more subtle rights and wrongs of colliery practice. The inexperienced man was lost.³⁶ Moreover, to miners' dismay (not yet strongly voiced), the act gave mine managers rights not shared by workmen — the right, for example, to propose "special rules" for

33. *ARM*, 1872, pp. v and 38-9; Rutherford, "The Early History and Progress of Coal Mining in Nova Scotia", p. 203; H.S. Poole, "Notes on the Legislation Affecting the Working and Regulation of Mines in Nova Scotia", *CMR*, XII (March 1893), p. 35; *MMR*, I (10 April 1899), p. 10.

34. Nova Scotia, *Statutes* (hereafter *NSS*), 1873, chapter 10, pp. 63-77 and 80-1.

35. *ARM*, 1872, p. 39.

36. K.G. Pryke, "Labour and Politics: Nova Scotia at Confederation", *Histoire sociale/Social History*, VI (November 1970), p. 45; *NSS*, 1873, chapter 10, pp. 70-1; *TJ*, 13 April 1881.

a mine which, agreed upon by the Commissioner of Mines, gained the full force of the law. There was some point in granting men who might well be mining engineers such powers; there was much less justification for the regulations regarding prosecutions. Management could lay charges against miners, but not miners against mine managers — certainly not without the inspector's permission.³⁷

And mine managers had little to fear from Poole. Now face to face with the responsibility of actually enforcing an act, Poole's reformist enthusiasm collapsed. This was to be expected, given his loyalties — more strikingly revealed than ever before when, only two weeks after passage of the act, a terrible explosion at the Drummond Colliery took sixty lives. The coroner's jury that met shortly after exonerated the company, but deplored management's use of gunpowder in the manifestly fiery level that became the seat of the explosion. Poole's sense of the thing was very different. In the *Annual Report on Mines* Poole acknowledged that powder had indeed been "the primary cause" of the explosion and the risk taken by management "exceedingly great". Verbal gymnastics followed. Entirely without evidence, Poole asserted that the "direct cause" of the disaster had been "either the ignorance or carelessness of the miners . . . working the level at the time". Moreover, Poole willingly justified use of the powder. Had there not been "every inducement," he asked, for the manager "to suppress any providential fears he may have had" at a time when competition in the coal trade was stiff and the men were "agitating" for higher wages?³⁸

At heart Poole believed, as did most contemporary industrial managers, that with command of an enterprise came an objectivity, grasp of competing factors, and *authority* rightfully challenged only under exceptional circumstances. In Poole's hands Section 22 of the Mines Regulation Act became a dead letter; to invoke it would make him a "sharer in the responsibility" for management, he contended. Assuredly, fears of public censure also played a part. While there was no truth, he argued, to the popular notion that the courts could hold the inspector responsible should an accident occur (his mandate being to stop bad mining), this same belief nonetheless gave him pause.³⁹ Yet it appears to have been primarily his instinctive social perceptions that led him to delay initiating any prosecutions whatsoever until 1877, when the obstinate refusal of a mine manager to report on a haulage accident that had nearly killed a young boy forced his hand.⁴⁰

The poverty of his reasoning was starkly revealed when in May 1878 the Sydney Mines explosion occurred, killing six miners. Mine officials had left the bratticing in the southeast level in disarray for nine days, allowing gas to accumulate. No danger boards had been erected, in violation of the mine's special rules. The underground manager and an overman had then blundered into the gas, carrying naked lights. Poole

37. *NSS*, 1873, chapter 10, pp. 77-80; *MR*, 1877, p. 9; *TJ*, 28 March 1888.

38. *ARM*, 1873, pp. 38-49.

39. *ARM*, 1875, pp. 3-6. See Michael Bliss, *A Living Profit* (Toronto, 1974).

40. *ARM*, 1877, pp. 6-9.

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had known that poor firebossing, weak discipline and bad ventilation plagued the mine's operations. He had also been aware of a series of small explosions that presaged the disaster. He had done nothing more than to write manager Richard Brown asking him to see to improvements.⁴¹

In 1879, however, new developments appeared that were to lead to major modifications in the relationships of state to colliery management and of workmen — in theory — to mine managers. Early that year Poole stepped down to become the Acadia Coal Company's general manager, removing a dangerous opponent of regulatory reform from the inspector's office. Poole was replaced by Edwin Gilpin, member of the prestigious North of England Institute of Mining Engineers, a recognized expert in geology and a man well regarded by Nova Scotian mine managers — no fewer than eight of whom wrote on his behalf.⁴² If Poole's attitudes epitomized those of the autocratic colliery manager, Gilpin's typified those of the enlightened engineer — the same attitudes that, when acted upon at intervals by mining companies, led to the adoption of such elements of international safety engineering as detaching hooks designed to prevent man cages from being accidentally hauled up into the hoist sheaves high above bankheads, innovative new designs of ventilating fans (some able to handle 150,000 cubic feet of air per minute), and the lining of air shafts to reduce air friction and rock falls. Gilpin, however, only several times shared responsibility for the legislative initiatives that followed in the next twelve years. The major credit lies elsewhere.⁴³

In 1879 the Provincial Workmen's Association, Nova Scotia's first colliers' union, was born in the course of a bitter strike over wage bargains at the Springhill Mines.⁴⁴ This was by no means the first time miners had acted collectively. At the Albion Mines in 1876, for example, John Rutherford faced what he called "a reign of terror", with the pits occupied by miners and seemingly the whole community united against him.⁴⁵ At the Sydney Mines in 1864 labour unrest prompted nervous militia authorities to send caches of ammunition to mine sites in anticipation of trouble.⁴⁶ But the PWA — headed by Robert Drummond, the union's Grand Secretary and editor, and later publisher, of its official organ, the *Stellarton Trades Journal* — was the collier's first permanent and province-wide organization and the first able to represent effectively the miners' interests before the government. Faced initially by bitter hostility from mine managers, unable at times even to find a meeting hall, the PWA

41. *ARM*, 1878, pp. 34-7.

42. *CMR*, IX (May 1890), p. 65; *NSIS*, XIII (1907-8), pp. xxxii-xxxiii; MMP, RG 21, series A, vol. 34, Edwin Gilpin to Samuel Creelman, 12 November 1878.

43. *MR*, 1898-9, p. 11; *ARM*, 1879, p. 17; *MMR*, V (26 November 1902), p. 13; *MMR*, V (11 March 1903), p. 16.

44. C.O. Macdonald, *The Coal and Iron Industries of Nova Scotia* (Halifax, 1909), p. 210.

45. Public Archives of Nova Scotia, Provincial Secretary's Papers (hereafter PSP), RG 7, vol. 51, I.J. Hill to J.W. Johnston, 14 July 1876.

46. Dalhousie University Archives, John and Robert Rutherford Papers, John Rutherford to J.A. Morrow, 14 June 1876.

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nonetheless established itself in all the major Nova Scotian coal fields by the winter of 1880-81.⁴⁷

The PWA leadership sought its ends through moderate means. In 1893, in a well-publicized address to the union's governing Grand Council, Drummond declared that Nova Scotia had little to fear from the union. The "turbulent, restless and unreasoning" elements among colliers were either opposed to the union or indifferent to it. "Law-abiding, peaceable, reasonable and consistent workmen" were its mainstays.⁴⁸ The Grand Council rarely sanctioned strikes and under Drummond's leadership habitually argued that wage settlements should follow the state of the trade lest companies face bankruptcy, and miners unemployment.⁴⁹ In fact, historians have rightly condemned Drummond for his increasing accommodation to the coal master's viewpoint on economic issues.⁵⁰ Nonetheless, individual lodges could still engage in walkouts, sanctioned or otherwise, and — at the Springhill Mine, certainly — more than once exercised the prerogative.⁵¹

Moreover, the Grand Council was successful in applying pressure group politics to secure what seemed at first to be remarkable gains in reform legislation. To this end the union set about almost immediately to politicize miners — previously accustomed to let mine managers do their thinking, Drummond charged — and to lobby for an extended franchise. Drummond had only limited success in building a miners' bloc in elections, and only in 1889 was a near universal male franchise won, when men living in company houses gained the vote.⁵² Yet before long that union's voice had become clearly heard in government circles. Drummond himself won considerable influence, entering Nova Scotia's Legislative Council in 1891 and earning the *Canadian Mining Review's* condemnation as that "little man who . . . legislates without much check or control in the provincial parliament in return for a pledge of the labour vote".⁵³

Despite the union's tactical moderation, strong feelings energized its activists. A major ambition of the PWA was to put an end to what some termed despotism on the part of the mine managers. Miners at a meeting of the Pioneer Lodge in 1889 heard one of the brothers tell of the times "when miners were forced to hold secret meetings in the mines, and had to bury all the documents, fearing detection", and how, when

47. Sharon Reilly, "The Provincial Workmen's Association of Nova Scotia, 1879-98", (M.A. thesis, Dalhousie University, 1979), pp. 37 and 42; Macdonald, *The Coal and Iron Industries of Nova Scotia*, pp. 210-1; PWA, Minutes, October 1883, p. 4.

48. Macdonald, *The Coal and Iron Industries of Nova Scotia*, pp. 211-2; PWA, Minutes, October 1883, p. 4.

49. Macdonald, *The Coal and Iron Industries of Nova Scotia*, pp. 212-3.

50. See especially Reilly, "The Provincial Workmen's Association of Nova Scotia".

51. Ian McKay, "Workers Control in Springhill, 1882-1927", paper read at Canadian Historical Association meeting, Halifax, 1981, pp. 14-5.

52. *TJ*, 19 October 1881; Reilly, "The Provincial Workmen's Association", pp. 73-7 and 97. For a detailed analysis of the PWA's activities in provincial politics, see Reilly, *passim*.

53. *CMR*, XI (November 1892), p. 180; Nova Scotia, *Journal of Proceedings of the Legislative Council*, 1891, pp. 19-20.

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sixteen-hour shifts were not unusual, company officials forbade watches in the mine.⁵⁴ The belief that the PWA had succeeded in “elevating” the miner — formerly “little short of a machine” — and giving him substantial practical control over his workday experiences and his relations with mine masters, became a central feature of the union’s legitimizing mythology.⁵⁵ In the years before unionization, Drummond wrote in 1902, pit society had been such that mine officials could “hurl their cuss words” at workmen freely. The miner today, he said, “is not now cuffed, he is the cuffer, no longer the servant, more the lord and master”.⁵⁶

To be sure, much of the rhetoric was overdrawn. The “bad old days” were not nearly days of unbridled management power. For one thing, community opinion served as a check on mine officials’ actions, as a Pictou County underground manager discovered in 1873 when fined by a magistrate for having thrashed a boy who had deliberately smashed a safety lamp.⁵⁷ Nor was the PWA always able to prevent mine officials from acting in “a spirit of wanton tyranny”, as more than one miner was given to lament.⁵⁸ Nonetheless, whatever the gap between ideology and actuality, it is clear that underlying the union’s political activism were two much cherished goals: to see mine management’s power systematically circumscribed, and influence won for miners and their surrogates over what turned out to be broad categories of safety — hence workplace — policies.

A union campaign for legislative reform began in mid-1880 with a series of editorials in the *Trades Journal*. The demands at first were modest. As things stood, Drummond wrote, collieries were inspected only a few times a year, there being only one mine inspector for the entire province. It was well known, moreover, that visits were brief — that Gilpin measured air in the upcasts and downcasts only, even though, as everyone knew, “there may be a stream of ventilating wind in the shafts, then a deadly stagnation in the interior, . . . dogged with dust, smoke and laden with impurities”. It was common knowledge, also, that Gilpin toured the pits in the company of mine officials, thus inhibiting contact with workmen. Were “sub-inspectors” appointed, Drummond argued, and workmen at each colliery delegated to accompany them, inspections might acquire a thoroughness and objectivity they had never possessed before.⁵⁹

Events soon facilitated escalation of PWA demands. In October 1880 the first of two disasters struck the Foord Pit in Pictou County. Men working one of the rise bords accidentally holed into a water-filled, abandoned slope in the coal immediately above. Six men were killed instantly — not by drowning, but by the force of the descending

54. *TJ*, 16 January 1889.

55. Robert Drummond, “Nova Scotia Miners of To-day”, *Nova Scotian Mining Number* (October 1903), p. 44; PWA, Minutes, 1 October 1886, p. 116.

56. *MMR*, V (23 July 1902), p. 10.

57. See *Eastern Chronicle* (New Glasgow), 3 April 1873.

58. *TJ*, 10 October 1880. For accounts of the PWA’s failings on the wage front see Reilly, “The Provincial Workmen’s Association of Nova Scotia”.

59. *TJ*, 7 July 1880, 28 July 1880, 20 October 1880 and 9 November 1881.

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water, so strong that it left them stripped naked and “horribly mutilated”. Management responsibility was difficult to assess. Knowing that the old workings were nearby, manager John Greener had ordered boreholes run into the flank and face of his forward bords. He had not, however, accurately judged the depths to which the old workings had cut into the coal and, tragically, the boreholes missed striking water by some two feet. To the PWA’s dismay, a coroner’s jury composed entirely of non-miners exonerated management, despite evident risk-taking by Greener.⁶⁰

Then, on the morning of 12 November, a month to the day after the deadly flood, a massive explosion ripped through the pit. A number of men escaped from the north workings, but ominously, there was silence from the south side. Several descents into the pit by rescue parties — one consisting of five Pictou County mine managers braving continuing fire and explosions — found few survivors. Three days later, all hope gone, Greener ordered the pit flooded. Forty-four men and boys had died.⁶¹ Yet, tragic though the disaster was, it opened the way for a dramatic revision of the Mines Regulation Act. The coroner’s jury that met in the wake of the disaster was much more to the miners’ liking. Two of its recommendations were of particular importance: that two deputy inspectors be appointed, one each for Cape Breton and the mainland, and that miners be given the right to inspect their collieries and post official reports.⁶²

Despite opposition from the popular press, the PWA now had the wedge it needed. Union men began circulating a mass petition through the mining districts demanding implementation of the jury’s recommendations, as well as closer inquiries into mining accidents and the mandatory inclusion of miners in the investigative process. Hundreds of signatures accumulated.⁶³ Soon the *Trades Journal* joined the attack. Would not more frequent inspections induce mine managers, who repaired timbering and ventilation only when an inspection was imminent, to *keep* workings up to standard, the *Journal* asked. Was it not ridiculous to argue, as Poole had, that regular inspections would remove legal responsibility for safety from the manager’s shoulders, where it now rightfully rested? Moreover, might not inspections by workmen actually assist mine managers, by allaying miners’ mistrust? And might not such inspections help root out “waste and carelessness on the part of the workmen themselves”? Finally, was a major change in the composition of coroners’ juries not justified in view of the “floundering performance” that even the second Foord Pit jury had given?⁶⁴

It was the mine managers’ turn to react, shocked by the sudden reversal of fortunes the miners’ petition threatened. There was a “meddlesome spirit” among workmen that demanded resistance, Richard Brown complained to his company’s

60. *TJ*, 20 October 1880; MMP, series A, vol. 14, Edwin Gilpin to Samuel Creelman, 21 September 1880 and Gilpin to Creelman, 15 October 1880.

61. Cameron, *The Pictonian Colliers*, pp. 210-4; *ARM*, 1880, pp. 20-1.

62. *TJ*, 1 December 1880.

63. *TJ*, 16 March 1881; Robert Drummond, *Recollections and Reflections of a Former Trades Union Leader* (Stellarton, 1926), p. 50; *Morning Herald* (Halifax), 26 November 1880.

64. *TJ*, 15 December 1880 and 22 December 1880.

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Halifax agents.⁶⁵ Led by Poole, now the mine managers' unofficial spokesman, nine colliery managers wrote the Commissioner of Mines. "We hold," the letter read, "that we are not a criminal class to be legislated for or against, without the opportunity to express our views."⁶⁶

This they won. On 9 March 1881 W.H. Townsend, a "workingman's friend", rose in the legislature to present the miners' petition. Meetings of the Mines and Minerals Committee followed in which it appears, from the shadowy accounts that survive, that representatives of the PWA met stiff debate from a managers' committee.⁶⁷ But the impact of the miners' petition and of the climate of opinion created by the Foord Pit disasters was too great. In April the Mines Regulation Act was amended to embody all but one of the miners' demands. The provincial cabinet was authorized to appoint deputy inspectors to work under Gilpin, with many of his powers to be shared with the deputies. The chief inspector was empowered to require inclusion, as became common practice, of three "workingmen" on every coroner's jury, excluding men from collieries being investigated. The Inspector of Mines and representatives of the men from those collieries were granted the right to cross-examine witnesses, and the inspector was charged with holding separate inquests. Finally, the workmen at each colliery were empowered to form two-man committees allowed to inspect the entire workings at least once a month and file official evaluations.⁶⁸

Paper reforms did not guarantee action, however, as the PWA soon discovered. One delay followed another in appointing deputy inspectors. In late 1881 the government appeared set to hire Patrick Neville, an underground manager and ex-miner popular with Cape Breton colliers, until intervention by mine managers, who feared Neville's union sympathies. Only in 1883 did pressures from both the union and Gilpin bring results: the appointment of William Madden, a former Grand Master of the PWA, and of Neville as deputy inspectors. The *Trades Journal* was exultant. Both were men "from the ranks of the workmen, thoroughly independent of the managers, . . . the miners' men".⁶⁹

Yet the mine managers were not about to surrender. A lengthy correspondence between Poole and Albert Gayton, Commissioner of Mines, began on May 23 with a letter from Poole which cunningly accused Madden of leaving important provisions of the Mines Regulation Act unenforced. While he himself, Poole wrote, would prefer a

65. MMP, RG 21, series A, vol. 3, R.H. Brown to Cunard and Morrow, 19 March 1881.

66. MMP, RG 21, series A, vol. 12, H.S. Poole *et al.* to Samuel Creelman, 18 January 1881.

67. Nova Scotia, House of Assembly, *Debates* (hereafter *NSD*), 9 March 1881, p. 19; *TJ*, 13 April 1881; Drummond, *Recollections and Reflections of a Former Trades Union Leader*, p. 52.

68. *NSS*, 1881, chapter 5, pp. 22-4.

69. *TJ*, 11 April 1883 and 8 April 1885; MMP, RG 21, series A, vol. 5, Edwin Gilpin to Samuel Creelman, 2 May 1881; *CMR*, IX (December 1890), p. 171; Reilly, "The Provincial Workmen's Association of Nova Scotia", p. 135; PWA, Minutes, April 1883, n.p.

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more “moderate” degree of “government supervision”, his company’s owners were “desirous of reaping all the advantages to be had from additional government inspection”. With deft insinuation, Poole then asked whether Madden would be allowed to testify at an inquest that “‘I saw’ or ‘I told’ or ‘said to so and so such a thing was not right’,” when he had not informed the company “in writing” of a problem. “There is apt to be a great deal of feeling after an accident has happened,” Poole remarked.⁷⁰

Then in April 1884 an amendment to the Mines and Minerals Act, a statute basically not concerned with inspection, was “quietly slipped” through the House of Assembly — the fruits of conspiracy between Poole and Gayton, Drummond thought. The amendment stipulated that henceforth deputy inspectors be qualified mining surveyors chosen by an appointed board, controlled by mine managers. The *Trades Journal* was aghast; Neville and Madden would be fired, neither being mining surveyors.⁷¹ “Let the deputy inspectors be wholly the property, so to speak, of the workmen,” the *Journal* demanded. Yet the crisis was short-lived, proof of the now well established influence of the PWA. In the House sitting of the following April, assemblyman William Fraser, recruited by Drummond to the miners’ cause, introduced legislation that stipulated that the deputies be simply “competent practical men”. Over strenuous objections from C.E. Church, now Commissioner of Mines, the bill passed. Inspection by “miners’ men” was at last firmly established.⁷²

Further victories followed. Despite union men’s general regard for Gilpin, some were disturbed by his apparent willingness to hold accident inquests, if any at all, “in the office of the Coal Coy. at whose mine the accident occurred”, with none “save the inspector and officials” learning the outcome. In 1885 vigorous protests by the Grand Council regarding inquiries into the Vale Colliery explosion led to the end of such practices.⁷³ Moreover, early in 1891, in the wake of the Springhill Mines disaster, Drummond — now member of the Legislative Council — pressed successfully for extension to the miners of two long-desired prerogatives: the right of miners’ committees to visit scenes of accidents, and the right of miners to begin prosecutions of management by affidavit. Now, crowed Drummond in an address to the Grand Council later that year, there was “equal justice for all, . . . one law for the men and the same law for the masters” — or so it seemed.⁷⁴

70. MMP, RG 21, series A, vol. 5, H.S. Poole to Albert Gayton, 25 May 1883 and Poole to Gayton, 14 June 1883.

71. Nova Scotia, *Revised Statutes*, 1884, chapter 7, p. 7; PWA, Minutes, 10 April 1885, pp. 77-8; *TJ*, 8 and 22 April 1885.

72. *NSD*, 8 April 1885, pp. 319-20; PWA, Minutes, 2 October 1885, p. 92; *NSS*, 1885, chapter 5, pp. 10-1.

73. *TJ*, 2 November 1881, 28 March 1883 and 20 May 1885; PWA, Minutes, 11 April 1885, p. 83; *JHA*, 1891, “Report on the Springhill Disaster”, pp. vii ff.

74. *TJ*, 28 July 1880, 28 March 1883, 28 March 1888 and 16 September 1891; *NSS*, 1891, chapter 9, pp. 15-7.

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The PWA's attack on the prerogatives and power of the mine manager had not, however, been limited to the stiffening of mines regulation and popular diffusion of regulatory influences. In 1881 the PWA had also won important amendments to the Mines Regulation Act that stipulated that overmen and underground managers now be licensed through examination of their knowledge of "ventilation, gases, mines and mining" — what Gilpin termed "a total change in the management of coal mines". Gilpin and the PWA both shared one argument for the change: mine managers too often chose their subordinates for their mere "willingness to carry out orders".⁷⁵ Yet, as it soon became clear, union men also felt that a system of certification might be appropriated by miners as a means of reserving management places to workmen — an enthusiasm not felt as strongly by Gilpin.

With these reforms, also, there were initial disappointments. In October the Board of Examiners empowered to grant the certificates was announced. It was to consist entirely of mine managers: H.S. Poole, John Rutherford, and three others. The *Trades Journal* was enraged; this was a "sop to the managers". The law had been passed to prevent incompetents chosen through "favoritism" and the likelihood of their adopting a "sneaking, over-efficacious zeal" in discipline from becoming officials. "Just think of it," the *Journal* complained, "a law passed to be a check on the managers and the managers applying that check."⁷⁶ Further setbacks followed. In September the provincial cabinet had already decided to grant officials with a theoretically creditable length of management experience "certificates of service" equal in weight to the "certificates of competency" won through examination.⁷⁷ A few months later, the cabinet decided, on recommendation of the Board of Examiners, to allow persons holding certificates won abroad to obtain automatically the Nova Scotian equivalent. Union men feared that incompetents would remain officials and workmen seeking advancement ignored by the managers.⁷⁸ There was also the concern that managers would acquire certificates of service for their favourite "gladiators" through influence. One miner complained that the manager at his mine was grooming a "jack tar" as overman — "not a miner, but a shiftman, and one who is trying to fight his way by sneaking and telling every little thing he can see or hear".⁷⁹

The immediate response to the erosion of the certification principle had the main effect of producing serious practical difficulties. In 1884 the legislature passed requirements that all collieries now be staffed by designated overmen and underground managers — certificated, of course — and that all mines employing more than thirty men be run by a man holding a newly created manager's certificate.⁸⁰ A year later, at the PWA's insistence, the legislature made certificates of service valid only for the

75. Edwin Gilpin, *Underground Certificates in Nova Scotia Coal Mines* (Newcastle-upon-Tyne, 1899), p. 2; *NSS*, 1881, chapter 5, p. 24.

76. *TJ*, 12 and 19 October 1881 and 15 November 1882.

77. *TJ*, 28 September 1881.

78. PSP, RG 7, vol. 94, John Rutherford to Adams G. Archibald, December 1881; PSP, RG 7, vol. 107, Edwin Gilpin to Provincial Secretary, 19 August 1887.

79. *TJ*, 8 November 1882 and 20 February 1884.

80. *NSS*, 1884, chapter 21, pp. 117-9.

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mines in which they were won. Union men had feared that officials might too easily migrate from "safe" mines to mines whose conditions were outside their experience.⁸¹ Yet the supply of certified men had now all but dried up.⁸² And it had become clear (at least to Drummond) that because workingmen anticipated unfair treatment from the Board of Examiners few would undergo the trials of study and examination.⁸³ Exams, covering such topics as coal excavation strategies, the theory and practice of ventilation, and basic arithmetic, had been held annually for the past three years, but few candidates had appeared — thirteen in 1863, six a year later. The failure rate was high.⁸⁴

Much of the problem was a lack of training facilities. At a few collieries, managers assisted ambitious men, permitting them to "practice in the mine" and lending their libraries and advice. But this did little for men not "friends" of the manager, the *Trades Journal* observed. Miners might also undertake independent study, using the many mining texts available. As Gilpin noted, however, such self-education was no way to master mining, let alone any other "professional subject". Moreover, poor school facilities in the mining districts, combined with weak child labour laws that allowed a boy of ten to work a sixty-hour week in the pits, encouraged widespread illiteracy. To those closest to the issue — Gilpin, the Board of Examiners and the PWA — the answer was obvious: government training in mine engineering for workmen.⁸⁵

Nonetheless, no action followed. Twice the Board wrote Church in early 1885, the first time to apprise him of its support for miners' schooling, the second time to propose that a mining expert be hired to teach four months a year in each coal field.⁸⁶ Nothing was done. A third letter was firmer. A survey of mining men had revealed strong support for miners' education, Gilpin announced. Church, it appears, had given Gilpin "verbal orders" not to enforce the certificates law, and Gilpin was not happy. Rutherford was threatening to resign the Board over its lack of achievement, and the rest of its members to follow him a year later.⁸⁷ Still there was no action.

Aside from the government's fiscal conservatism, much of the problem was disagreement as to the shape schooling should take.⁸⁸ Gilpin and the Board preferred the notion of a travelling lecturer.⁸⁹ Drummond feared that this would mean élitist

81. *NSS*, 1885, chapter 6, pp. 11-2; *TJ*, 27 February 1884 and 19 August 1885.

82. *MMP*, RG 21, series A, vol. 15, Edwin Gilpin to C.E. Church, 17 March 1885.

83. *PWA*, Minutes, April 1883, condensation of report of Grand Secretary.

84. *PSP*, RG 7, vol. 92, John Rutherford to Adams G. Archibald, December 1881; *ARM*, 1882, p. 15; *MR*, 1883, pp. 28-9; *MMP*, RG 21, series A, vol. 15, George Rutherford *et al.* to C.E. Church, 21 January 1885.

85. *MR*, 1883, pp. 29-30; *TJ*, 14 September 1881; *NSS*, 1873, chapter 10, p. 60.

86. *MMP*, RG 21, series A, vol. 15, George Rutherford *et al.* to C.E. Church, 21 January 1885 and Edwin Gilpin to Church, 17 March 1885.

87. *Ibid.*, Gilpin to Church, 17 July 1885.

88. Robert Drummond, *Minerals and Mining, Nova Scotia* (Stellarton, 1918), p. 350.

89. *MMP*, RG 21, series A, vol. 15, Edwin Gilpin to C.E. Church, 17 July 1885.

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education, too “theoretical” for the average miner. Early in 1888 Premier W.S. Fielding decided to cut the Gordian Knot, initiating steps to hire the eminent British engineer and mining text author C.M. Percy to give mining classes in Halifax. Drummond, asked his opinion of the idea, was aghast, and hid himself off to Halifax to plead for a more democratic alternative: “schools in the several mining centres, with a teacher for each school” drawn — he said pointedly — “from among the mine workers themselves”. “Home instructors,” Drummond argued, would be better able to communicate with miners and deliver the unadorned practical instruction that “a high-priced man from Britain” might be unwilling or unable to provide. A battle ensued, punctuated by earnest editorializing in the *Trades Journal* and vigorous lobbying of the provincial cabinet by the union leadership.⁹⁰

The union was victorious. In December the government hired seven certified men — two of them mine managers, the rest subordinate officials — to begin classes in the colliery towns. Though none, clearly, was a miner, this feature appears to have disturbed no one.⁹¹ Some eighty to ninety miners began classes, a figure that only increased in later years.⁹² Fifty-nine candidates appeared at the next annual certificate exams. Thirty-five passed.⁹³ A year later the province established night classes to teach illiterate miners the three R’s.⁹⁴ Mining companies and colliery officials began sponsoring miners’ lyceums to supplement the work of the mining schools — soon well on their way to becoming a central social institution in the colliery communities.⁹⁵ Nowhere else in North America for at least twenty years would there be educational facilities for mine workers as advanced as Nova Scotia’s system of mining schools.⁹⁶

To be sure, the union’s victory displeased Gilpin. How, he asked, were men “better qualified to impart of their experience than to enunciate the principles that must guide the miner in overcoming problems not previously observed by him”, going to teach such subjects as geology, the properties of mine gases and “the rudimentary laws of physiology, . . . viz. mechanics, hydrodynamics and pneumatics”?⁹⁷ Yet, had government reforms been restricted to the opening of mining schools and the certification of mine officials, few in government and elite mining circles would have been unhappy. Even Gilpin was ready to declare that the mining schools had had pronounced “moral effects” on the miner, making him “more provident and steady” — virtually eliminating “the old-time drinking and disorder of pay-days”.⁹⁸ The accepted belief was also that diffusion of the “principles” underlying mining —

90. Drummond, *Minerals and Mining, Nova Scotia*, p. 350; *TJ*, 4 April 1888 and 26 December 1888.

91. *ARM*, 1889, pp. 31-2.

92. PWA, Minutes, April 1889, p. 191.

93. *ARM*, 1889, pp. 32-3.

94. Drummond, *Minerals and Mining, Nova Scotia*, pp. 350-1.

95. *CMR*, X (December 1891), p. 254; *Critic*, (Halifax) 14 July 1893.

96. F.H. Sexton, “Technical Education in Nova Scotia in 1908”, *CMR*, XXX (15 January 1909), p. 50.

97. PSP, RG 7, vol. 113, Edwin Gilpin to C.E. Church, 8 December 1888.

98. Gilpin, *Underground Certificates in Nova Scotia Coal Mines*, pp. 5-6.

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“knowledge” added to “experience” — created a “more intelligent, alert responsible miner”.⁹⁹ Moreover, most mine managers soon came to see officials’ certificates as at least harmless. The certificates, wrote one prominent man, appealed “to the spirit that would ‘strut in buskins,’ the same that makes all societies that wear regalia in processions so well supported in the mining districts”; and by “exciting the ambitions,” he said, they led miners to acquire a valuable “theoretical knowledge”.¹⁰⁰

In 1890, however, began a series of reforms that threatened more drastically than ever before the free operation of the labour market in mines and company prerogatives in hiring. In April the composition of the Board of Examiners was changed; it now consisted of three mine managers, three miners and three nonpartisan members.¹⁰¹ Soon thereafter, the Board decided that certificates of competency would henceforth require at least three years’ experience underground, five for the manager’s ticket. It would now be much more difficult for nonworkmen to become mine officials.¹⁰²

A loophole remained, bitterly resented by the PWA: the regulations that allowed foreign certificates to be converted into Nova Scotian certificates. “Foreigners,” the *Trades Journal* lamented, were ignorant of the way things were done in Nova Scotia, with the “people’s mode of working”. The “imported men” (mostly British) were insensitive to the opinions of local miners. They bred “distrust, . . . dissatisfaction and spite” and widened the social distance between employers and employed. They were dangerously unacquainted with local mining conditions and methods, as different “as night and day” between Britain and Nova Scotia, one miner observed.¹⁰³ In May 1891 union protests were stilled when legislation terminated acceptance of foreign certificates.¹⁰⁴ Poole was enraged, remarking at a Mining Society of Nova Scotia meeting in 1893 that he found it infuriating that even “eminent” British engineers had to be passed over for mere workmen.¹⁰⁵ Yet this was not all that he and his colleagues now had to worry about.

In the spring of 1891 the government created an entirely new species of certificate, this time for miners. Henceforth no man having less than one year’s

99. Sexton, “Technical Education in Nova Scotia in 1908”, p. 50; John Moffatt, “Mining Laws and Organizations of Nova Scotia”, *Nova Scotian Mining Number* (October 1903), p. 36.

100. *CMR*, XV (February 1896), p. 30.

101. *NSS*, 1890, chapter 19, p. 43.

102. Poole, “Notes on the Legislation Affecting the Working and Regulation of Mines in Nova Scotia”, p. 36; Edwin Gilpin, “President’s Address”, *NSIS*, IX (1890-94), p. lxxxiii.

103. *TJ*, 29 August 1888; PWA, Minutes, October 1890, p. 222. Even the *Canadian Mining Review* admitted later that the foreign mine manager coming to Nova Scotia faced a “new order of things, . . . different methods of mining, . . . a different character of mines, and of everything connected therewith”. *CMR*, XXII (December 1903), p. 242.

104. *NSS*, 1891, chapter 9, p. 19.

105. Poole, “Notes on the Legislation Affecting the Working and Regulation of Mines in Nova Scotia”, p. 36.

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experience in the province's coal mines was to be made a collier — to be “given the picks”. No man with less than two years' experience was to “take charge of a place”, with his butty and perhaps a loader working under him. All men not yet “wielding the picks” were to go before a board and pass an oral examination on mine gases, ventilation, methods of working the face, timbering, safety lamps and mining regulations.¹⁰⁶

These were reforms the PWA had campaigned vigorously for since 1884, and a cornerstone of the PWA's legislative program.¹⁰⁷ A complex of motivations underlay the union's demands. For one thing, miners shared a distrust not only of mine officialdom, but of certain of their co-workers as well. As a letter to the *Halifax Herald* noted, every miner knew that safety depended “a very great deal more on the workmen than on the officials of mines”. A simple oversight, a single mistake — with gunpowder, with the bratticing, with a lamp — could endanger not only the one man, but his companions and perhaps the entire underground workforce as well. Yet too often, the *Trades Journal* contended, men ignorant of even the most elementary rules of mining were “indiscriminately poured” into the collieries.¹⁰⁸ At a meeting of the Grand Council in 1889 one member reported that miners had been leaving the Foord Pit in droves. “They are afraid to give their lives in the keeping of miners who are utterly ignorant of the nature of gas,” he said.¹⁰⁹ Miners were not alone in being concerned. Patrick Neville observed that it too frequently happened that a young man from the farming districts got work for a summer as a loader, went home in the fall and then, returning in the spring with his own loader, got charge of a place — despite his inexperience.¹¹⁰

By the mid-eighties miners were also being made apprehensive by an apparent new management policy of attacking intermittent labour shortages with mass importations of foreign workmen. A new pit opened at the Vale Colliery in 1888 was

106. At the same time regulations were passed requiring that all shot-firers and operators of hoisting or haulage apparatus be certificated by a board which, for the shot-firers' papers, was controlled by miners. *NSS*, 1891, chapter 9, p. 16; *MMP*, RG 21, series A, vol. 15, “Regulations for Board of Examiners for Granting Certificates to Shot-Firers, Engineers and Miners”, 1891; *ARM*, 1891, pp. 35-6. Accidents caused by unknowledgeable machine operators and incompetent shot-firers might be thereby reduced. Poole, predictably, was antagonistic, objecting, at a mining society meeting attended by W.S. Fielding, that necessarily untrustworthy labourers instead of mine managers, “of all men the most interested in the appointment of fit persons” would now chose shot-firers. The “book learning” (regarding mechanics) required of machine operators, he continued, would add nothing to safety, “if anything rather the reverse, as it leads to abstraction and inattention to immediate surroundings”. Poole, “Notes on the Legislation Affecting the Working and Regulation of Mines in Nova Scotia”, p. 36. The law rested, he also argued, on an absurd confusion of “the user of a machine with a mechanic”. *CMR*, XIII (March 1894), p. 52.

107. PWA, Minutes, 4 April 1884, pp. 58-9.

108. *TJ*, 6 August 1884. See also *TJ*, 15 May 1880.

109. *TJ*, 17 April 1889.

110. *MR*, 1884, p. 19. See also *ARM*, 1887, p. 36.

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manned almost entirely by Belgians.¹¹¹ The antagonisms foreign labour aroused varied, but were sometimes intense — especially in the case of non-English speakers, believed difficult to instruct in mine safety. One collier, for example, stigmatized them flatly as “a danger to every miner”. Economic considerations were equally strong a concern. The total underground labour force in Nova Scotia coal mining rose from 2241 in 1880, to 3665 in 1890, 4542 in 1900, and 8668 in 1910. An overcrowded pit, its workforce swelled by immigrants, could overburden the mine haulage, slashing output and forcing work stoppages. A buyer’s market in labour hurt wages.¹¹²

This was not all. British and American historians have reached varying conclusions as to the importance of “craft consciousness” — an ambiguous, yet useful term — in the colliery worker’s thinking.¹¹³ But here its role is clear. In Nova Scotia’s bord and pillar mining, the isolation of miners’ teams deep within the labyrinth of workings (Dominion No. 1 Colliery’s in 1904 totalled over one hundred miles) drastically reduced management supervision and promoted a palpable sense of “independence” among miners, equally reinforced by the system of payment, under contract, by output.¹¹⁴ Moreover, the skilled Nova Scotian collier commanded an art that demanded experience, extensive practical knowledge and pronounced manual abilities. It was not only necessary to be practised in the detection of firedamp, to know what to listen for when sounding a roof, to know where bad gas might be met. Productivity demanded an almost instinctive knowledge of how coal broke and how partings and the fracturings in coal called “cleats” could be exploited. As well, wielding the pick — swinging it in a smooth horizontal arc while kneeling, prone or nearly prone to make a narrow undercut in the face — required considerable muscle and physical dexterity.¹¹⁵ From the autonomy he possessed in the workplace, his manual accomplishment, his practical knowledge and his ability to work safely in a strange and dangerous environment, the skilled pickman acquired a sense of dignity, individuality, and at the same time a collective spirit. “Every true miner,” one mining

111. *TJ*, 8 June 1887; *Engineering and Mining Journal*, LII (11 July 1891), p. 57; *CMR*, VI (April 1888), p. 57.

112. *TJ*, 16 July 1884 and 4 September 1889; Reilly, “The Provincial Workmen’s Association of Nova Scotia”, p. 85; PWA, *Minutes*, 12 September 1885, n.p.; McKay, “Workers’ Control in Springhill”, p. 23. Also *MR*, 1880, p. K; *MR*, 1890, p. L; *MR*, 1899-1900, p. 71; *MR*, 1909-10, p. xv. The numbers of pickmen were, respectively, 1496, 2165, 2277 and 4883.

113. See, for example, papers in Royden Harrison, ed., *Independent Collier: The Coal Miner as Archetypal Proleterian Reconsidered* (Hassocks, England, 1979) and Raphael Samuel, ed., *Miners, Quarrymen and Saltworkers* (London, 1977).

114. David Frank, “Class Conflict in the Coal Industry, Cape Breton, 1922”, in G.S. Kealey and Peter Warrian, ed., *Essays in Canadian Working Class History* (Toronto, 1976), pp. 167-8; Drummond, *Recollections and Reflections of a Former Trades Union Leader*, p. 15; *Globe* (Toronto), 15 July 1904.

115. *MR*, 1874, p. 12; Morrow, *Story of the Springhill Disaster*, pp. 261-2; *ARM*, 1887, p. 36; Drummond, *Recollections and Reflections of a Former Trades Union Leader*, pp. 15-6; “Report on the Pictou Coal Field, Nova Scotia”, p. 32M.

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engineer wrote, "has a secret contempt for every trade but his own, and there is in consequence a kind of freemasonry between them and the rest of mankind."¹¹⁶

Yet almost anyone could mine coal, if only inexpertly. To the miner, the fact that a manager could take "country stumpers" or foreigners and make them pickmen was an insult to the miner's trade. They "butchered" the coal, the skilled miner complained, breaking it into piles of useless "slack" with their sloppy undercuts and reckless blasting practices. They were slow. One miner claimed that two pairs of the old hands at his mine could outpace seven pairs of "imported novices".¹¹⁷ Worse still, miners complained, "young lads verging on manhood and . . . brought up in the mines" — many whom their fathers wanted as butties — were being repeatedly denied the picks in favour of outsiders. This amounted to a frontal attack on traditional customs of mine apprenticeship, whereby youths made their way up in unskilled jobs, working as loaders before earning the picks.¹¹⁸ That traditions were under attack was only emphasized by the interest some mine managers were beginning to show in experiments with "longwall" mining. With this approach, the *sides* of rooms were mined, the roof being allowed to drop some yards behind the miners. Four or more men worked a longwall face, not a miner and his butty in the close-knit relationship miners had long been used to. Longwall necessarily meant a loss of autonomy. Wage levels depended on what the group mined. Roof control demanded a synchronized advance of the face.¹¹⁹ And in yet another departure, mine managers appeared about to invest heavily in compressed air undercutting machines. Adoption of the "iron men", as miners termed them, threatened to make the pickman's skills obsolete. Though maintenance costs were high, a single percussion coal cutter (resembling a jackhammer mounted on a gun carriage) would outstrip a hand pick miner many times over. Unskilled machine runners, not the collier, would mine coal.¹²⁰

It is little wonder that the PWA should have lobbied vigorously and repeatedly for a system of certification it believed could protect the collier's status, restrict his trade to the young men who had apprenticed in the mines, and inhibit the hiring of outsiders, many of whom would otherwise become machine runners.¹²¹ With the achievement of this, the last of the major reforms, in the brief flurry of regulatory change that followed the Springhill disaster, the PWA appeared to have completed a fundamental recasting of management-worker relationships. Yet the question remains: how successful was codification? And for that matter, how committed was the rank-and-file miner to every

116. *TJ*, 15 May 1889; Frank, "Class Conflict in the Coal Industry", p. 168; F.W. Gray, "Miners' Clubs", *CMJ*, XXVIII (15 November 1908), p. 615.

117. *TJ*, 7 February 1883, 19 July 1883 and 4 September 1889; Canada, Royal Commission on the Relations of Labour and Capital in Canada, *Nova Scotia Evidence* (hereafter RCRCLC, *NS*), 1889, p. 367.

118. PWA, Minutes, 4 April 1884, p. 59 and October 1889, p. 208.

119. F.W. Gray, "The Mining Operations of the Dominion Coal Company, Article 5", *CMJ*, XXX (15 March 1909), p. 178; *MMR*, I (5 October 1898), p. 13, and IX (8 May 1907), p. 11; J.G. Rutherford *et al.*, "Modifications of Working Coal", *CMR*, XII (April 1893), pp. 57-61.

element of the safety practice dictated by the Mines Regulation Act? Some clues are provided by miners' reactions to the Gunpowder Clause of 1891 and the factors leading to its enactment.

ii

Throughout the 1870s and 1880s evidence had been accumulating internationally that major mine explosions were not caused by firedamp alone, but by a mix of firedamp and ambient coal dust. Pneumoconosis was not a concern. The Mines Report for 1888 characteristically claimed that because coal particles were "soft", colliers suffered the least from lung problems of all workers in the "dusty trades".¹²² Indeed, mine managers — and miners — had also been skeptical of the "coal dust theory" of mine explosions.¹²³ Even scientific experts were puzzled by the perverse behaviour of coal dust, usually seemingly benign, then suddenly explosive.¹²⁴ Yet the scientific data amassed by European scientists and "firedamp commissions" and the evidence gathered in the wake of the Sydney Mines and Vale Colliery explosions of 1878 and 1885 provided increasingly convincing support for the coal dust theory, capped by conclusive evidence collected in investigations of the Springhill disaster by Gilpin and a coroner's jury. Miners working a seam below the flash point, for example, had heard "a series of rumblings" that seemed to shake the roof, not the "sudden clap" of a pure firedamp explosion.¹²⁵

Safety lamps were only partial protection against the coal dust and firedamp explosion: firedamp in the less than 2.5 per cent concentrations the lamps would detect

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120. *TJ*, 23 September 1891; C.O. Macdonald, "On Electrical Coal-Cutting", *Critic* (Halifax), 17 November 1893; W. Blakemore, "The Capacities of Coal Cutting Machines", *CMR*, XII (December 1895), p. 229; W. Blakemore, "Coal Cutting by Machinery", *IME*, XI (1895-6), pp. 181-96. See also *CMR*, March 1894 to January 1895.
121. *TJ*, 6 August 1884, 4 June 1887, 17 April 1889 and 4 September 1889; PWA, Minutes, 4 April 1884, pp. 58-9 and October 1889, p. 208.
122. *ARM*, 1888, pp. 22-3. As late as 1907 the *Maritime Mining Record* could blame miners' "asthma" on poor ventilation, not dust, and the miner for having contracted the "deadly miners' disease", especially "if he persists on running up hills or along levels, or allows himself to rush into draughts when heated". *MMR*, IX (27 February 1907), p. 15.
123. William Haldley, "Coal Dust", *MMR*, IX (12 June 1907), p. 11; Leonard, "The Springhill Collieries", p. 409.
124. Edwin Gilpin theorized, for example, that it was possible that in pits having both wet and dry districts the proximity of a "damp and better conducting tract" might set up "electrically induced conditions" in dry areas, "at times presenting unusually favourable conditions for the ready ignition of gas and prompt distillation of coal dust". Gilpin, "Notes on Some Explosions in Nova Scotia Coal Mines", pp. 68-9.
125. *ARM*, 1876, pp. 22-4; *ARM*, 1878, p. 37; *NSD*, 15 March 1888, p. 136; *CMR*, X (March 1891), pp. 75-6; *TJ*, 14 December 1881; *JHA*, 1891, "Report on the Springhill Disaster", pp. iii-vii and xiv-xx.

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could ignite coal dust.¹²⁶ Watering the bords could keep only so much dust down, and as mines deepened into “dry zones” below where the strata gave off water, the dust problem worsened. Stronger ventilation ironically raised more dust and provided more of the oxygen necessary for an explosion.¹²⁷ And it was common knowledge, confirmed by the Springhill investigations, that “gun shots” — by which gunpowder charges blew their stemming, spewing flame out into bords — were daily occurrences in mines. Working at breakneck pace to make a living wage, miners too often stemmed charges carelessly, frequently with the coal dust they found lying by their sides. Some repeatedly “shot off the solid” — the often risky practice of blasting the face without first cutting vertical “shears” into the coal — and thus produced “flaming shots”. Others used excessive amounts of gunpowder, a practice rarely discouraged by those mines that sold miners their explosives. Existing rules had proven to be powerless in preventing the blown-out shot.¹²⁸

At least since 1889 Gilpin had campaigned for stiffer restrictions on the use of gunpowder, his arguments stymied by mine managers’ protests that such rules would unfairly penalize mines that “nature” had made dangerous, for these mines would have to be mined by mauls and wedges.¹²⁹ A gunpowder clause had been the one union demand that the managers had successfully quashed in 1881.¹³⁰ When the Springhill disaster finally resulted in legislation banning gunpowder in a mine for three months after gas had been encountered three days running, the Grand Council was delighted. “Friendly talk” about Fielding filled the Council’s October 1891 meeting. “In order to make wages easily,” one delegate declared, “the men hazard much, and a false economy [leads] managers to take many risks.” Soon, he thought, all that would be past.¹³¹

Yet some sectors of the rank-and-file miner were at variance with their leadership. As Richard Brown remarked sourly, Cape Breton miners, “familiar with the use of gunpowder since they were born, could see no want of safety in it”. While most granted the need to restrict blasting in fiery mainland mines, few saw the necessity in the relatively gas-free Cape Breton collieries. Most miners abhorred tedious maul and wedge mining. Indeed, but for one provision of the legislation, the

126. *ARM*, 1881, pp. 21-2; Joseph R. Wilson, “The Shaw Gas-Tester for Detecting the Presence and Percentage of Fire-Damp and Choke-Damp in Coal Mines, Etc.”, *IME*, VIII (1894-95), p. 164.

127. *CMR*, XII (August 1893), p. 141.

128. *JHA*, 1891, “Report on the Springhill Disaster”, pp. ii and xv-xix; Greenwell, *A Glossary of Terms Used in the Coal Trade of Northumberland and Durham*, p. 81; *CMR*, XII (August 1893), p. 141; *MMR*, V (24 December 1902), p. 16; *MMR*, X (26 February 1908), p. 11; *TJ*, 28 March 1888.

129. *ARM*, 1889, pp. 6-7.

130. *NSD*, 11 March 1881, p. 35; *TJ*, 6 April 1881; *NSS*, 1891, chapter 5, pp. 22-4.

131. *NSS*, 1891, chapter 9, pp. 18-9; *JHA*, 1891, “Report on the Springhill Disaster”, pp. v-vi; *PWA*, Minutes, October 1891, p. 238.

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Cape Breton miner's opposition to the gunpowder clause might well have been its undoing.¹³²

By law, if a panel of appointed experts could find a perfectly "flameless" explosive it could be used in fiery mines.¹³³ In July an order-in-council established an "explosives commission" consisting of Edwin Gilpin, three mine managers, and three miners. Repeated practical tests of new explosives were followed in December by a report declaring a derivative of dynamite manufactured by the Acadia Powder Company and a chloro-denitro-benzole and nitrate compound called "Roburite" to be safe.¹³⁴ Yet flameless explosives proved to be only a partial solution. Miners' antagonisms were transferred to these new explosives, difficult to adjust to because their "shattering" action produced much more slack and distrusted by miners because of the headache and nausea sometimes produced by fumes from blasts. A perennial problem for companies and mine inspectors in the years to come became that of persuading miners to abandon their "good old blackjack" for a new blasting compound.¹³⁵

This was not the only source of trouble. Equally trying for the inspectors was miners' hostility to use of the safety lamp, the classic tool of colliery safety. To be sure, miners quite often welcomed its use, though frequently forced to fight for proper lamp care facilities.¹³⁶ Others, however, complained that the faint glow of the lamp, glimmering softly through wire mesh or soot-covered glass, lowered productivity. Some, as well, contended that the lamps produced "eyestrain" and "risk of early blindness". Many, moreover, believed that safety lamps actually *reduced* safety. Flaws in the roof were harder to see. It was thought that mine managers became complacent and neglected such vital factors as proper ventilation. It was even charged that some managers adopted safety lamps so as to be able to send men into the more dangerously gassy areas of a mine. And every miner knew that, despite improvements in safety lamp design, a sudden gust of wind or the shock from a blast could easily blow flaming gas right out through the mesh of the lamp.¹³⁷ It was little wonder that,

132. PSP, RG 7, vol. 381, "Report of Meeting of the Explosives Commission", 16 December 1891; *TJ*, 29 July 1891. As well, mine managers feared, justifiably, that blanket bans on blasting would swiftly close those collieries "already compelled to use every economy to make ends meet". Edwin Gilpin, "The Use of Safe Explosives in Mines", *CMR*, XII (August 1893), p. 140.

133. *NSS*, 1891, chapter 9, pp. 18-9.

134. PSP, RG 7, vol. 381, Gilpin *et al.* to C.E. Church, 16 December 1891 and "Meetings of the Explosives Commission", 3 and 4 September 1891 and 15 and 16 December 1891; Gilpin, "The Use of Safe Explosives in Mines", p. 140.

135. *CMR*, XII (August 1893), p. 141; H.S. Poole, "On the Introduction of New Explosives for Coal Getting in Nova Scotia", *CMR*, XI (July 1892), p. 120; *Industrial Advocate*, II (September 1897), p. 12; *MMR*, III (8 August 1900), p. 14.

136. *TJ*, 28 July 1880, 9 February 1881 and 29 July 1891.

137. Moffatt, "Mining Laws and Organizations of Nova Scotia", p. 36; RCRLC, *NS*, pp. 343 and 369; *Industrial Advocate*, II (May 1897), p. 12; *ARM*, 1881, p. 22; MMP, RG 21, series A, vol. 9, Patrick Neville to Edwin Gilpin, 12 February 1897; *CMJ*, XXX (1 January 1909), p. 28; *TJ*, 2 February 1881.

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aided and abetted by cost-conscious mine managers, miners' resistance to use of the safety lamp became a constant headache for mine inspectors.¹³⁸

This is not to say that rank-and-file miners were uniformly, or even in general, hostile to mine inspectors. Miners often considered mine inspectors the best authorities to whom they could turn to right safety grievances, as letters to the Mines Department clearly demonstrate.¹³⁹ And, as difficult as it is to measure the impact of inspection on safety (given rapidly changing conditions produced by the deepening of mines), numerous examples can be cited of management abuses halted by inspectors.¹⁴⁰ Yet it is perhaps indicative of the limited degree to which mining regulations actually transformed relationships between masters and men that Madden felt constrained in 1896 to write Gilpin to explain that he was adopting the policy of travelling the pits alone to allow workmen a chance to report troubles without fear of management reprisal.¹⁴¹ Even Drummond was later forced to admit that, although before 1881 workmen had "writhe[d] under a sense of discontent that they had no say . . . in the conduct of the mines", now in only a few collieries did workmen regularly inspect the workings.¹⁴² As for workmen's rights in prosecutions, one manager in 1900 simply circulated notices that anyone attempting to have mine officials charged under the Mines Regulation Act would be summarily fired.¹⁴³

Institution of the certificates system, too, turned out to be only a partial victory, stunted in its more radical aspects by company opposition. To be sure, the mining schools became a major success (although their rudimentary curriculum was one factor in leading Nova Scotia to establish an advanced system of professional education in 1907).¹⁴⁴ By 1910 native Nova Scotians formed the clear majority in the management staffs of the province's collieries; nearly all Dominion Coal's officials were ex-miners trained in the mining schools.¹⁴⁵ And it was largely the mining schools to which the

138. MMP, RG 21, series A, vol. 8, William Madden to Edwin Gilpin, 8 September 1888; *ibid.*, vol. 6, David Mitchell to Gilpin, 25 August 1905; *ibid.*, vol. 9, Patrick Neville to Gilpin, 30 November 1896.

139. See, for example, MMP, RG 21, series A, vol. 8a, Patrick Neville to Edwin Gilpin, 16 August 1896, and *ibid.*, vol. 10, Malcolm Blue to Gilpin, 30 August 1899.

140. See, for example, MMP, RG 21, series A, vol. 8a, Patrick Neville to Edwin Gilpin, 1 June 1895, and *ibid.*, vol. 14, Neville to Gilpin, 13 November 1897.

141. MMP, RG 21, series A, vol. 6, Patrick Neville to Edwin Gilpin, 28 October 1896.

142. *TJ*, 17 October 1888. This is not to say that when workmen sensed trouble they were slow to organize inspections. See *TJ*, 4 November 1891; Moffatt, "Mining Laws and Organizations of Nova Scotia", p. 37.

143. Miners' Museum, Glace Bay, Thomas J. Brown Notebooks, unsigned letter, September 1900.

144. Donald Macleod, "Miners, Mining and Mining Reform: Changing the Technology of Nova Scotian Gold Mines and Collieries, 1858 to 1910" (Ph.D. thesis, University of Toronto, 1982), pp. 557-9.

145. *CMJ*, XXXI (15 August 1910), p. 503; Mining Society of Nova Scotia, *Transactions*, XIV (1909-10), pp. 28-9. Indeed, by 1903 nearly all the province's colliery managers were former workmen who had risen from the ranks. *MMR*, V (9 June 1903), p. 17.

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Dominion Royal Commission on Industrial Training and Technical Education in 1913 gave the credit for Nova Scotia now having the "world's record" for the least number of accidents per tonnage of coal mined.¹⁴⁶

The miners' certificates, however, failed almost totally in the goals miners set for them. It is difficult to overestimate the hostility the certificates aroused among mine managers and owners. The certificates were merely a means of preventing the hiring of strikebreakers, declared one manager, purely an attempt to make mining "as it were, a guild", according to another. What repeated management lobbying could not achieve, studied indifference to the law could.¹⁴⁷ Infractions of the law became legion, as managers struggled to meet the manpower requirements brought about by massive expansions in individual mines and the coal industry as a whole.¹⁴⁸ Moreover, while in the first few years control of the examining boards had rested largely with the PWA, by the midnineties that control had begun to slip away. Patronage appointments filled the gaps. All too familiar were the problems related by one delegate to the September 1907 meeting of the Grand Council. The government had recently hired an examiner for his mine with a remarkable talent for turning raw farmers into pickmen. By law, examiners pocketed certificate fees. The two former examiners had been a magistrate and a market gardener. Overall, the certificates had long ceased to be a control.¹⁴⁹ Almost anyone could obtain a certificate, complained a miner in 1904; the mines were "rapidly filling up with inexperienced men", many of them foreigners who, according to another miner, regularly showed up at mine gates flourishing certificates with an infuriating "air of triumph" or suspiciously soon after acquired them.¹⁵⁰ And, finally, the certification procedure did little to slow the introduction of machine mining and the erosion of the traditional craft. "Ten years ago," wrote a collier to the *Maritime Mining Record* in 1902,

146. Canada, House of Commons, *Sessional Papers*, 1913, "Report of the Royal Commission on Industrial Training and Technical Education", p. 1711.

147. *CMR*, XIV (December 1895), pp. 224-5; *CMR*, XV (February 1896), p. 30; CB, Clipping File, clipping from *TJ*, 24 January 1896.

148. PWA, Minutes, October 1891, p. 237; MMP, RG 21, series A, vol. 14, William Madden to Edwin Gilpin, 24 January 1895.

149. PWA, Minutes, 19 October 1907, p. 638; MMP, RG 21, series A, vol. 29, Edwin Gilpin to James Hargreaves, 19 December 1901. The PWA's influence could not have been enhanced in the late nineties by another factor: several years of labour division brought about by the efforts of the Knights of Labour to organise colliers. See Reilly, "The Provincial Workmen's Association of Nova Scotia", p. 169.

150. PWA, Minutes, 6 September 1904, p. 436; *MMR*, VI (11 May 1904), p. 15; Nova Scotia, *Report of the Commission on Hours of Labour* (Halifax, 1910), pp. 56-7. While one authority commented later that only 7 per cent of the miners around Sydney were from "non-English-speaking races", another writer reported in 1907 that "on the trams that run from Glace Bay around the collieries to Sydney . . . it is no unusual matter to see Frenchmen, Italians, Greeks, Poles, Russians, Jews, Belgians, Hungarians, Germans, etc. on the same car" and hear a "babble of tongues that ranges from Gaelic to Micmac, from Lithuanian and Magyar to the dialogues of Lancashire and the Yorkshireman and his comrade from the 'wee kingdom.'" *CMJ*, I (15 December 1907), p. 600; Gray, "The Coal-Fields and the Coal-Industry of Eastern Canada", pp. 56-7.

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all the miners in Nova Scotia were practical miners, but in these modern days the system of mining has so changed that one can take a man from the Banks of Newfoundland or from the backwoods of Cape Breton and in three months learn this man to run a machine and dig 50 tons of coal per day. This man is not a practical miner. He knows nothing about shooting coal or timbering.¹⁵¹

The lesson was clear. Organized labour — especially when assisted by the strategic lessons in mining morality produced by colliery disasters — could periodically overcome managerial resistance to power-sharing to the extent that progressive legislation was put in place. Immediately thereafter, however, inertial factors reasserted themselves. The collier's attachment to workplace control had its ironic consequences. His need to resist changes that threatened personal output, combined with cultural affinities to familiar mining methods and tools, and his own decided opinions as to safe techniques, could materially delay implementation of legislated safety practices. Codification assuredly had its limits, especially in the context of a rapidly expanding industry. And when legislation struck too closely at management's rule in the pits, near complete failure was the result.

151. *MMR*, VI (11 May 1904), pp. 11-2; *MMR*, V (24 December 1902), n.p.; MMP, RG 21, series A, vol. 6, R. Drummond to C.E. Church, 1896.