Harold W. Aurand

MINE SAFETY AND SOCIAL CONTROL IN THE ANTHRACITE INDUSTRY

During the nineteenth century Pennsylvania's anthracite mines claimed an inordinate number of lives. Between 1891 and 1896, for example, the hard coal industry had a much higher fatality rate than the major European coal producers. During the twentieth century American bituminous coal mining replaced anthracite as the world's most dangerous.[2] Yet anthracite's fatality rate of 3.67 per 1,000 employees over the five year period ending in 1912 was only slightly lower than the national coal mining average of 3.71.[3] Even as the industry contracted it extracted a horrendous toll in life and limb. Over the ten year period ending in 1944, 2,226 men were killed and 132,000 received compensable accidents in the hard coal mines of Pennsylvania.[4]

The continuous carnage, however, should not blind us to an incessant effort to reduce accidents in the anthracite mines. As early as 1870 the Pennsylvania Legislature enacted a safety code for the industry.[5] During the course of the next three decades the lawmakers refined and expanded the code.[6]

The thrust of the anthracite mining code was clearly preventive. It mandated such precautions as accurate mapping of mines, fencing off of machinery, and a second opening to each mine. Later revisions contained work rules prescribing, for example, how a miner should store his explosives underground. The law also attempted to remove incompetency from the mines by requiring certification of foremen, assistant foremen, and miners.[7]

Certification of miners illustrated the ease with which safety could be linked with other issues. In the 1870s the ethnic composition of the anthracite labor force began to change as increasing numbers of Slavs

Table 1
Comparison of Fatal Accidents per 1,000 Employees in the World's Coal Mines[1]

Location	1891	1892	1893	1894	1895	1896
Belgium	1.40	2.84	1.12	1.62	1.49	1.14
England	1.50	1.49	1.55	1.60	1.48	1.48
France	1.67	0.95	0.93	0.85	1.19	1.30
Germany	2.80	2.30	2.60	2.12	2.44	2.55
Pa. Anthracite	3.08	3.05	3.25	3.14	3.64	3.35

and Italians migrated into the hard coal fields. Resentful of these new arrivals, the more established ethnic groups sought their removal from the industry. They argued that the incompetency of the new immigrants contributed to the mines' high accident rate.

In 1889 the legislature partially accepted the argument by requiring the certification of all miners. To become certified the candidate had to demonstrate a minimum of two years experience as a miner's laborer in the anthracite fields and pass an examination. The law, however, failed to prescribe the language in which the examination could be taken. As a result many Slavs and Italians were able to meet the requirements by addressing the examining board through an interpreter. In 1897 the legislature closed this apparent loophole by demanding that at least twelve questions be answered in English.[8]

The ability to speak English was not crucial to mine safety. Miners worked in isolated compartments with one or two laborers. Other task groups such as mule drivers and door boys were scattered throughout the mines. Above ground, the only major concentration of employees occurred in the preparation plant. But here the noise of the machinery rendered verbal communication almost impossible. In this sense the anthracite mining code became a vehicle of discrimination as well as an instrument of mine safety.

State mine inspectors enforced the code. They were empowered to "enter and inspect the mines and machinery at all reasonable times by day or night."[9] They enjoyed direct access to the courts to seek injunction against recalcitrant mine operators. In addition to enforcing the law, mine inspectors were charged with determining the cause of accidents. To fulfill this duty they were given the powers of a coroner. They could conduct inquests, issue subpoenas, and administer oaths.[10]

The legislature attempted to remove the office of mine inspector from the state's patronage system. It established entrance qualifications of a minimum of five years experience as an anthracite miner and an

examination administered by a board composed of three miners and two mining engineers.[11] Mine inspectors could be removed upon petition of 15 "reputable" mine operators or miners followed by a court investigation of the charges.[12] In 1891 the legislature provided for a wider enforcement of the mining code by permitting any citizen to initiate prosecution for violation of its provisions.[13]

Prompted by organized labor, the legislature linked the anthracite industry's high fatality rate to the improper care of the injured. The lawmakers first addressed the problem in 1881 by requiring coal companies to maintain an ambulance or two stretchers at each mine.[14] The revised code of 1901 mandated an emergency hospital room in each mine.[15]

But severely injured workers required more extensive care than was available in the hard coal fields. In 1879 the legislature created a commission to select a site and erect a hospital in the area. Although the law stipulated that the land had to be donated, it authorized the expenditure of state funds for the construction of the hospital. Once built, the hospital was to give injured mine workers preference "over paying patients." Appropriations from the state treasury defrayed the hospital's operating losses.[16] Over the years other state hospitals were established throughout the 439 square mile area.[17]

By 1900 Pensylvania compiled an impressive legislative record for promoting industrial safety in the anthracite mines. It entered the new century with one of the best mining codes in the nation.[18] More importantly, it established a comprehensive safety program by lining accident prevention with proper care for the injured.

Unfortunately, the anthracite industry was not as forceful as the state in addressing its high accident rate. For the most part management limited its preventive role to conforming to the mining code.[19] Accepting accidents as a natural consequence of their industry, mine operators devoted most of their attention to the victims. Coal companies maintained physicians, often at their employees' expense, to administer aid to the injured.[20] One, Eckley B. Coxe, established a free hospital for his employees.[21] Others such as G. B. Markle and Company supplemented their company doctors with visiting nurses.[22]

Practical businessmen, operators translated accidents into economic problems. Accordingly, they developed methods for relieving the financial burdens of the victim. The Lehigh-Wilkes-Barre Coal Company donated sums of money to the injured and widows. The March, 1895 paybook for its Empire Colliery, for example, lists the following disbursement under the heading "Charity:"[23]

To Mrs. John Deaumont (death)	10.00
To Mrs. Eliza Konnell (death)	10.00
To Thomas Evans (injury)	10.00
plus expenses to nurse	13.99
To Mrs. Anthony Witt (injury)	10.00

Eckley B. Coxe maintained a more comprehensive program for his employees. He donated $50.00 towards funeral expenses when one of his workers was killed in the mines. In addition to this grant, he provided the widow and each orphan under the age of twelve with a weekly pension of $1.00 for period of one year. Injured employees received a weekly allowance of $5.00 during their disability.[24]

Most coal companies, however, sponsored jointly funded relief programs. Although details of the program varied among firms, the Lehigh Coal and Navigation Company's plan is representative. The company asked its employees to contribute 1/4 to 1/2 percent of their earning into the fund while it donated 1/2 cent per ton of coal mined. The plan's death benefit consisted of a $30.00 funeral payment and a weekly pension of 50 percent of deceased's average wages to the widow for a period of eighteen months. Disability payments required prior certification by a fund appointed doctor on a bi-weekly basis. If approved, the injured person received one half of his average weekly wages. Disability payments, however, discontinued after six months.[25]

Unfortunately, the compensation formula was based upon one of the lowest wage levels in the state. In 1884, for example, the hard coal mines ranked 34th among the 58 industries reporting average wages to the Commonwealth.[26] In that year contract miners, the highest paid manual workers in the industry, earned an average weekly wage of $8.94. Seventeen years later their weekly income averaged $10.93.[27] Although amounts varied among individuals, it seems safe to conclude that weekly dispersals rarely exceeded $5.00.

Company sponsored welfare programs contained a serious flaw; membership was voluntary. Many mine workers could not afford the small payments. In 1902 the Delaware and Hudson's relief program enrolled less than 50 percent (5,351 out of 13,000) of the company's employees.[28] The Lehigh Valley discontinued its relief program in 1899 due to the lack of employee participation.[29]

In short, the anthracite industry's response to its high accident rate was passive during the nineteenth century. It begrudgingly complied with state mandated safety precautions and provided some medical care to the injured. But its primary effort was relieving the financial burden

of accidents. Yet this commendable effort fell short of meeting the needs of the victims and their families.

In the twentieth century, however, the industry adopted a more active role in safety. It willingly complied with the provision of the 1901 revison of the mining code. "Read the law carefully and live up to it," Edgar Kudlick, Chief Engineer of Eckley B. Coxe and Company, instructed his mine foremen and superintendents.[30]

Similar admonishments generated extraordinary efforts to comply with the emergency hospital room requirement. Well ventilated rooms with cement floors and whitewashed walls were quickly constructed at convenient places within the mines. Where practical, the rooms were supplied with steam heat and electrical lighting. All contained stretchers, reclining chairs, tables, and first aid equipment. Many had hot and cold running water and telephone connections with the surface.[31]

Operators' provisions for emergencies often exceeded legal requirements. The Lehigh Valley maintained special rescue stations at central points in each of its three operation districts.[32] It also stationed an emergency train consisting of a heated hospital car, a special mine fire fighting car, and a locomotive at Hazleton. Prepared to leave on a ten minute notice, the train could quickly reach any mine within the Lehigh Valley's system.[33] The Delaware, Lackawanna and Western maintained a similar train at its Kingston Station. In additon to a heated hospital car, the train consisted of a fire fighting car and a rescue car equipped with helmets, specialized equipment, and oxygen.[34]

Efficient use of these resources required trained personnel. Coal companies met this need by recruiting and training first aid and mine rescue teams. Each colliery had at least one first aid team; usually the mine sponsored two teams—one for men and the other for boys. Equipped with first aid kits which were often superior to those issued by the United States Army, the teams trained twice a month at company expense.[35] Mine rescue teams occasionally trained under realistic conditions. Confined in sealed rooms filled with sulfur fumes, the men sawed timber, shoveled coal and dirt, carried stretchers, and crawled through low spaces.[36]

As it improved its emergency aid delivery system, the anthracite industry embarked upon an ambitious preventive program. Coal companies hired their own safety inspectors to supplement the activities of the state mine inspectors.[37] Several made extensive investigations into the causes of accidents. One Delaware, Lackawanna and Western mine superintendent, for example, conducted an exhaustive study of premature blasts. He discovered that worn drilling bits caused most of these

accidents. As a result of this study the company instructed its mine foremen to periodically gauge all of their miners' drills. Worn bits were immediately sent to the surface to be sharpened and drawn out to the proper caliber at the miner's expense.[38] The Philadelphia and Reading Coal and Iron Company devoted considerable time and resources to the development of a safe electric lamp for its employees.[39]

The anthracite industry, however, directed most of its attention to the worker. Management did not originate the concept of the victim as the agent of the accident. Throughout the nineteenth and twentieth centuries state mine inspectors placed the responsibility for most accidents upon the workers. "Inexcusable negligence," "carelessness," and "gross stupidity" were constant refrains in their annual reports.

The charges were justified. John Lykofski, for example, blew himself to bits when he mistook a keg of powder for oil and poured the contents into his burning lamp.[40] Lykofski, of course, represents an extreme example. But the mine workers themselves agreed that many accidents were caused by their carelessness.[41]

Miners explained their carelessness in terms of economic necessity. They earned most of their income by sending coal to the surface. To them, it was a simple equation; the less time spent on precautions, the more time available to make money. "You have to take a chance," a retired miner explained, "if you don't, you don't get the coal."[42]

Mine operators devoted considerable attention to training employees not to take excessive risks. C. E. Tobey, Superintendent of the Delaware, Lackawanna, and Western's Coal Department:

> How to educate our men as to eliminate this carelessness is a problem which I assure you has had more thought and discussion at our superintendents' and foremen's meetings than has been given our cost sheet.[43]

Tobey's comparison between safety and costs may be dismissed as propaganda. But the D. L. & W. did develop an extensive safety educational program. The company established "extension schools" in safety at all of its major collieries. It supplemented the instructors' lectures with a "magic lantern show" consisting of 200 slides depicting the most common accidents. Later the company incorporated the slides into an illustrated text, *Mine Accidents and Their Prevention.*[44] Finally, it produced motion pictures to increase the visual impact of the text.[45]

The educational programs of other companies were less elaborate. The Kingston Coal Company offered its employees bimonthly lectures on safe mining practices and a monthly talk on first aid.[46] Usually

attendance at the safety schools was voluntary. Unfortunately, it is impossible to gauge either the rate of attendance at these programs or the attitude of the participants. But a Delaware and Hudson mine superintendent attempted to stimulate participation by offering prizes for best attendance at his mine's monthly safety institute.[47]

In conjunction with the Young Men's Christian Association the industry superimposed a secondary level of instruction upon its elementary safety education. Two institutions, the mining school and the mining institute, composed the secondary education program. Conducted by the Y.M.C.A. but financed by the coal companies, the mining schools prepared ambitious workers for both the miner's and foreman's certification examination. Offering courses in mining, ventilation, and mine law, the schools stressed safe work habits.[48] Organized into seven geographical units, the institutes provided a forum for lectures on special mining problems and safety.[49] The institutes were extremely popular; in 1912 800 men and boys attended the opening banquet of the Pittston District's Institute while the Wilkes-Barre Institute's opening dinner drew 1,400 people.[50]

In short, the anthracite industry dramatically altered its position on safety during the first two decades of the twentieth century. It entered the new century with a passive posture towards accident prevention believing that it fulfilled its responsibilities by complying with the mining code and providing some financial assistance to victims and their families. Over the next twenty years, however, it vastly improved its first aid delivery system. Even more importantly, it developed a well defined safety educational program.

How can this reversal in policy be explained? Since the industry was well aware of the carelessness of its work force prior to 1900 it cannot be argued that it was addressing a newly defined problem. And, it would be naive to suggest that mine operators suddenly allowed humanitarian impulses to guide their decisions. They were, afterall, businessmen who based their decisions upon economic reasoning.

But simple financial consideration did not motivate the policy transformation. Accidents rarely inflicted capital losses upon the mine operators. The hard coal mines were immune to dust explosions which caused the sealing of many bituminous mines.[51] Most anthracite accidents occurred on an individual basis in the isolated working compartment (breast) of the miner. Such mishaps would not translate into a total disruption of production.[52] Since the miners owned their own tools, such mishaps did not entail equipment losses for the company.

Nor did the specter of expensive litigation and huge damage awards

accompany accidents. The three doctrines governing employer liability cases—assumption of risks, contributory negligence, and fellow servant—normally precluded a successful recovery tort against any employer.[53] But the anthracite industry enjoyed complete immunity from liability suits. In an important case, *Durkin versus Kingston Coal Company and Jones,* the court argued that certification transformed mine foremen into agents of the state, not the operator.[54]

Neither did workmen's compensation motivate the industry's concern for safety. Pennsylvania enacted a workmen's compensation law in 1912. But the precedent established by *Durkin versus Kingston Coal Company* was extended to exclude the anthracite mine workers from its coverage. In 1915 the legislature removed this barrier by repealing the requirement for certification of foremen.[55] Clearly, the industry's safety program antedated workmen's compensation!

Although accidents did not pose a serious financial threat, several business reasons prompted management to espouse safety after 1900. Safety permitted management to gain some control over work.[56] Coal mining did not readily lend itself to time and motion studies. But mine superintendents and engineers were becoming increasingly cost conscious. Edgar Kudlich, for example, personally kept an account of the amount of dynamite used by each employee and admonished them to control the production of fine coal.[57] But mining engineers were limited to impose work practices upon their subordinates. Indeed, it was traditional in the mines to stop working whenever the "boss" appeared.[58]

State certification of miners left them firmly in control of the industry's informal training program. Moreover, the composition of examination boards and entrance requirements for the positions of foreman and state mine inspector allowed the miners to control admission to these occupations. Control not only provided advancement opportunities to the miners. It effectively precluded mining engineers from interfering with their day-to-day activities.[59] Against this backdrop of entrenched traditonalism, safety education provided the engineers with a platform for inculcating their notions of correct mining procedures.

Unionization was a major concern of management. Contrary to popular opinion, the strikes of 1900 and 1902 did not insure the organization of the hard coal miners. The industry did not officially recognize the United Mine Workers until 1920.[60] And the union failed to consistently enroll a majority of anthracite miners.[61] The fact

encouraged mine operators to believe that they could wean their employees from the United Mine Workers of America.

The industry's improvement of its emergency care system provides an insight into managerial manipulation of safety. The first aid movement did not originate with the coal companies. It began on February 1, 1900 when a small group of men organized the Jermyn First Aid Society and began training twice a month. Local beneficial societies donated funds for the purchase of equipment. Soon similar organizations appeared in other coal communities. It was only after the concept demonstrated wide appeal that the mine operators became interested in first aid. Using their vastly superior resources they then co-opted a grass-roots movement which could have diverted their employees' loyalty.[62]

Management then converted training into an athletic contest. Teams from all collieries demonstrated their expertise before qualified judges at annual company-wide first aid competitions. Winning teams received money or other prizes. The Woodward and Pettibone company, for example, awarded each member of the winning team in its men's division $50.00 and presented its captain with an engraved safety lamp. Each member of the first place team in the boys' division received $15.00.[63] The best team from each company competed for the silver "Muckle Cup" signifying superiority in the entire industry.[64]

Often held at an amusement park, the first aid competitions provided an opportunity for a family outing. The coal companies provided free transportation to the event and often supplied free food to the participants and their families.[65] Several companies expanded the competition by adding track and field events.[66]

Athletic contests contribute to a sense of common identity. "Home town" fans associate with their team's accomplishments and share in the agony of defeat. By pitting colliery against colliery and company against company in the "Muckle Cup" contest, the first aid competitions established a pattern of identity which focused upon company and colliery, not the union.

Safety could be manipulated in other ways. Emergency care and accident prevention projected management's concern for employee welfare. The message, however, often fell upon skeptical ears. "They cannot understand why the 'big boss' should take any interest in their safety or welfare," complained C. E. Tobey.[67] Yet, it could be hoped that the men would note the United Mine workers apparently was unconcerned about their safety. Safety did not become a collective bargaining issue until 1946.[68]

Mining institutes also invited comparison between the labor union and management. The monthly lecture-discussions attracted "all classes of the mining fraternity from the door boys to the presidents of the companys (sic.)"[69] "Fraternity" is an instructive choice of words. It alludes to a hierarchical brotherhood bounded together by the specialized secrets of anthracite mining. Furthermore, all ranks of the brotherhood ritually broke bread together at the institute's opening banquet. Intruding upon this fraternity was an alien organization, the U.M.W., whose leadership, management never tired of noting, came from the bituminous regions. Safety, in short, presented mine operators several opportunities to encourage invidious comparisons between themselves and the United Mine Workers.

In a less subtle fashion the industry utilized safety to attack the culture of its immigrant employees. The Delaware, Lackawanna and Western's illustrated textbook, Mine Accidents and Their Prevention, was actually a primer in English. Based upon Peter Roberts' method of teaching English to foreigners, each lesson contained a picture or two and a series of short sentences arranged in the sequence of action depicted in the photographs. The instructor first presented the sentences orally and had his class repeat them several times. After the class was able to rehearse the lesson by memory, they opened their books and began "reading" each sentence. Finally the students wrote out the less.[70]

Mining schools also employed the Roberts' method of English instruction. In addition to the mining schools, the Y.M.C.A. offered a special English program which was also funded by the coal companies. The first or Preparatory Course in the program consisted of thirty lessons describing every day experiences. Ten of these were devoted to work and promoted safe practices. The lesson entitled "Firing the Shot," for example, employed the adverb "carefully" three times and stressed the need to warn others before firing the shot.[71] The anthracite industry clearly equated proficiency in English with safe mining.

During the nineteenth century the mine workers advanced the same argument in their campaign to exclude Slavs and Italians from the industry. At that time, however, the operators discounted the thesis and continued to recruit immigrant workers. A Slavic mine worker told the 1902 Strike Commission that his foreman asked him to write a letter, which the foreman dictated, describing the good jobs available in the mines to his home village. The letter enticed fourteen people to come to America. Later, he said, his mother became a labor recruiter in Europe for the company.[72]

The coal companies' demand for proficiency in English did not reflect a new anti-immigrant bias. They continued to hire Slavs and Italians. But they sought to change their culture. "Become an American," the Lehigh Coal and Navigation Company instructed its new employees.[73] To enable the immigrant to achieve this worthy goal, the industry launched a welfare program consisting of: model housing, public baths, playgrounds, libraries, and kindergartens.[74] Safety education, with its accent on instruction in English, was an integral part of the Americanization program stressing the traits of cleanliness, thrift, and sobriety.[75]

The 1902 strike explains the operators' concern with Americanization. During the strike the industry was often scored for employing a large number of immigrants. In a period of growing concern over the threat of cultural pluralism, an Americanization campaign was an excellent public relations ploy.

Americanization also served as an anti-union tactic. The success of the strikes of 1900 and 1902 was largely due to the solidarity of the immigrant community.[76] An attack upon ethnicity would, it could be hoped, deprive the United Mine Workers of this crucial base of support during labor-management confrontations.

Finally, worker proficiency in English permitted more effective explanations of company policy. In this sense Peter Roberts' justification of teaching immigrants English is enlightening:

> It (command of English among immigrants) enables the foreman or superintendent also to talk face to face with the foreigner, and avoid misunderstandings and trouble which might otherwise disturb relations and demoralize an industrial plant.[77]

Roberts, of course, was not alluding to the foreman or superintendent instructing the immigrant in safe working practices. Miners, it must be remembered, did not work in the presence of "bosses." Rather, the foreman discussed adjustments to the piece rate and other economic factors which could lead to a dispute which might "disturb relations and demoralize an industrial plant."

Concerned about costs, productivity, and labor unrest, the anthracite industry seized upon safety as both a justification for and a vehicle to alter work habits, realign loyalties, and redefine cultural attributes in an effort to produce what it considered to be the "best men."[77] But the mine workers, well acquainted with paternalism, recognized and rejected this form of social control: I have known of instances where persons have been called "suckers" and other less desirable names because they have

been selected to act on safety committees or have become interested in safety-first meetings and safety matters.[78]

NOTES

1. United States, Anthracite Coal Strike Commission, *Report to the President on the Anthracite Coal Strike of May-October, 1902* (Washington, 1903), 28.

2. Andrew Roy, *The Coal Mines* (Cleveland, 1876), 243.

3. United States Bureau of Labor Statistics, *Industrial Accident Statistics* (Washington, 1915), 101.

4. City of Pottsville School District, *Safe Practices in Mining Anthracite: A Manual for Instruction for On-The-Job Training* (Harrisburg, 1944), 2–3.

5. In 1869 the Legislature passed a mine safety act which was limited to Schuylkill County. The following year the law was extended to every anthracite mine in the Commonwealth. *Pennsylvania Laws, 1869,* Law No. 845; *Pennsylvania Laws, 1870,* Law No. 1.

6. Major revisions of the code occurred in 1885, 1891, and 1901. See Alexander Trachtenberg, *The History of Legislation for Protection of Coal Miners in Pennsylvania, 1824–1915* (New York, 1942).

7. Certification was by examination after the candidate demonstrated a minimum number of years experience in the anthracite mines. Certification of foremen was required in 1885, miners in 1887, and assistant foremen in 1891.

8. *Pennsylvania Laws, 1897,* Law No. 225.

9. *Pennsylvania Laws, 1869,* Law No. 845.

10. *Pennsylvania Laws, 1870,* Law No. 1.

11. *Ibid.* In 1901, however, the legislature made the office elective.

12. *Pennsylvania Laws, 1870,* Law No. 1.

13. *Pennsylvania Laws, 1891,* Law No. 177.

14. *Pennsylvania Laws, 1881,* Law No. 21.

15. Pennsylvania, Mine Inspectors, *Annual Reports. 1906,* 13.

16. *Pennsylvania Laws, 1879,* Law No. 165.

17. The hospitals were located in Hazleton, Scranton, Coaldale, Shenandoah, Nanticoke, and Shamokin.

18. William Graebner, *Coal Mining Safety in the Progressive Period: The Political Economy of Reform* (Lexington, 1976), 72.

19. Apparently, the large corporations complied with the code more readily than the smaller "independent" operators. Pennsylvania, Mine Inspectors, *Annual Reports, 1879,* 50; *1885,* 180.

20. Operators usually deducted 75 cents per month from the wages of their married employees and 50 cents per month from their single workers to pay for the services of the company doctor. United States, House of Representatives, Select Committee on Existing Labor Troubles in Pennsylvania, *Labor Troubles in the Anthracite Regions of Pennsylvania. 1887–1888,* Report 4147, 50th Congress, 1st Session, 1888, 43, 488.

21. Pennsylvania, Mine Inspectors, *Annual Reports, 1883,* 246–247.

22. United States, Anthracite Coal Strike Commission, "Proceedings of The Anthracite Coal Strike Commission," (Washington, 1902–1904), 7256, 7262.

23. Lehigh-Wilkes-Barre Coal Company, Payroll Books, Wyoming Geological and Historical Society, Wilkes-Barre, Pennsylvania.

24. Pennsylvania, Mine Inspectors, *Annual Reports, 1883,* 246–247.

25. Lehigh Coal and Navigation Company, *Benefit Fund Rules,* copy located in Schuylkill County Historical Society. See also Ray Ginger, "Company-Sponsored Welfare Plans in the Anthracite Industry Before 1900." *Business History Review,* XXVII (June, 1953), 112–120.

26. Pennsylvania, Secretary of the Interior, *Annual Report, 1882–87,* Part III, *Industrial Statistics,* 39.

27. *Ibid.,* 4. The Anthracite Strike Commission placed the contract miner's average annual income at $560. Anthracite Coal Strike Commission, *Report to the President on the Anthracite Coal Strike of May-October, 1902* (Washington, 1903), 50.

28. Anthracite Coal Strike Commission, *Testimony,* 4887–4891.

29. *Ibid.,* 6506.

30. E. Kudlich, "Circular Letter, Number 241," December 9, 1901. Kollenz Collection, Eckley Miners' Village Museum.

31. Pennsylvania, Mine Inspectors, *Annual Reports, 1906,* 13–14.

32. C. M. Young, "Lehigh Valley Coal Co.'s Mine Rescue Department," *Coal Age,* IX (February 12, 1916), 299–300.

33. The city of Hazleton is the central point in the anthracite coal fields.

34. C. E. Tobey, "First Aid Methods of Lackawanna Company," *Coal Age,* 1 (March 16, 1912), 753.

35. Pennsylvania, Mine Inspectors, Annual Reports, *1906,* 8–9. James Cougherty interview tape in author's possession.

36. Tobey, *op. cit.,* 754.

37. *The Colliery Engineer,* XXXIII June, 1913), 607.

38. C. E. Tobey, "Preventive Methods, Lackawanna Company," *Coal Age,* I (March 9, 1912), 722.

39. Pennsylvania, Mine Inspectors, *Annual Reports, 1912,* 13–18.

40. Pennsylvania, Mine Inspectors, *Annual Reports, 1883,* 135.

41. Lester Magagna, William Miller, Michael Shurak interviews, tapes in author's possession.

42. Frank Leganoski interview, tape in author's possession.

43. "Preventive Methods," 721.

44. Pennsylvania, Mine Inspectors, *Annual Reports, 1911,* 207; *1912,* 11–13.

45. *Coal Age.* VII (January 16, 1915), 146.

46. Pennsylvania, Mine Inspectors, *Annual Reports, 1907,* 249. For an account of the educational programs of other mining companies see Pennsylvania, Mine Inspectors, *Annual Reports, 1910,* 4–6.

47. Pennsylvania, Mine Inspectors, *Annual Reports, 1917,* 192.

48. Pennsylvania, Mine Inspectors, *Annual Reports, 1908,* viii; *1913.* 8–9.

49. Pennsylvania, Mine Inspectors, *Annual Reports, 1914,* 10.

50. *Mines and Minerals,* XXXII (April, 1912), 541. *Coal Age,* II (December 7, 1913), 807. Also see Charles L. Fay, "Problems of the Y.M.C.A. Mining Institute," *Coal Age,* I (March, 1912), 789–790.

51. Anthracite dust was not explosive. Anon., "Anthracite Dust Not Explosive," *Coal Age,* V (April 4, 1914), 554–555.

52. Traditionally mine workers did not enter the mines on the day of the burial of the victim. In this sense a fatal accident did cause a disruption of work for one day.

53. Robert Asher, "Failure and Fulfillment: Agitation for Employers' Liability Legislation and the Origins of Workmen's Compensation in New York State 1876–1910," *Labor History,* XXIV (Spring, 1983), 198–199.

54. 171 Pa. 193.

55. Pennsylvania, Mine Inspectors, *Annual Reports, 1915,* 7.

56. See David Montgomery, *Worker's Control in America: Studies in the History of Work, Technology and Labor Studies* (Cambridge, England, 1979).

57. Circular Letter, 253, March 6, 1903.

58. Carter L. Goodrich, *The Miner's Freedom: A Study of the Working Life in a Changing Industry* (Boston, 1925), 56.

59. Candidates had to demonstrate prior experience as an anthracite miner and pass an examination administered by a board composed of a majority of anthracite miners. See Harold W. Aurand, "The Anthracite Miner: An Occupational Analysis," *The Pennsylvania Magazine of History and Biography,* CIV (October, 1980), 462–473.

60. Prior to 1920 labor representatives signed contracts under the heading "On behalf of the Anthracite Mine Workers' Organization."

61. Union membership, however, did increase prior to the opening of contract negotiations. Patrick M. Lynch, "Pennsylvania Anthracite: A Forgotten IWW Venture, 1906–1916," (Unpublished M.A. Thesis, Bloomsburg State College, 1974), 18.

62. Pennsylvania, Mine Inspectors, *Annual Reports, 1906,* 6–7.

63. *Coal Age,* V (June 27, 1914), 103.

64. *Ibid.,* V (October 11, 1914), 546–547.

65. *Ibid.,* I (October 28, 1911), 90–91; IV (October 4, 1913), 505; (October 11, 1913), 549–550. *Mines and Minerals,* XXVIII (December, 1907), 209–210; XXIX (November, 1908), 172–173.

66. *Coal Age,* IV (October 4, 1913), 499–501.

67. "Preventive Methods," 721.

68. 1946 Contract. Grabner attributes the U.M.W.'s lack of concern to its need to increase membership, *op. cit.,* 113.

69. Pennsylvania, Mine Inspectors, *Annual Reports, 1911,* 9.

70. *Ibid.,* 207. *1912,* 12–13.

71. Peter Roberts, "Teaching English to Foreign-Speaking Men," *Coal Age,* VII (January 2, 1915), 23.

72. Anthracite Coal Strike Commission, *Testimony,* 3268.

73. Lehigh Coal and Navigation Company, *Miner's Handbook* (Philadelphia, 1927), 1.

74. The extent of the program varied from company to company. See Dr. S. P. Mengel, "Welfare Work of the Lehigh Valley Coal Co." *Coal Age,* XII (October 13, 1917), 622–624. "The Edwardsville Improvements," *Coal Age* V (June 6, 1914), 936–939. Pennsylvania, Mine Inspectors, *Annual Reports, 1910,* 5.

75. Fay, *op. cit.,* 789.

76. See Victor R. Greene, Slavic community.

77. Roberts, *op. cit.*, 24.

78. H. W. Kingsbury, Manager of the Stevens Coal Company, noted that only the "better men" join the first aid corps. *Mines and Minerals,* XXIX (April, 1909), 403.

79. "Anthracite Welfare Worker," "Safety First or Accident Prevention," *Coal Age,* XII (November 24, 1917), 882. One correspondent noted that the winners of the first aid competitions were "for the most part indifferent to the honor." *Coal Age,* I (October 28, 1911), 90-91.