3-1972

A History of Appalachian Coal Mines

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Legal Problems Of Coal Mine Reclamation
LEGAL PROBLEMS OF COAL MINE RECLAMATION

A Study in Maryland, Ohio, Pennsylvania and West Virginia

by

THE UNIVERSITY OF MARYLAND SCHOOL OF LAW

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THE ENVIRONMENTAL PROTECTION AGENCY

Grant #14010 FZU
March 1972
CREDITS AND ACKNOWLEDGEMENTS

Professors Everett F. Goldberg and Garrett Power, both of the University of Maryland School of Law, directed the project and take editorial responsibility for preparing the final report. They were aided in this undertaking by the following contributors.

Henry P. Stetina of the Office of General Counsel, EPA, and the Project Officer, gave freely of his time and special insights.

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Paul Bugg and Gene E. Mumy, graduate students in the Department of Geography and Environmental Engineering at The Johns Hopkins University, prepared the initial draft of Coal Mining in Maryland: An Economic Case Study.

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Harry Buckley, Director, Maryland Bureau of Mines, Donald Moran, Moran Coal Company, Z.E. Murphy, U.S. Bureau of Mines, John Reckner, Soil Conservation Supervisor for Allegany Co., Md., Michael Rodevick, Maryland Department of Water Resources, and Dr. Kenneth Weaver, Director, Maryland Geological Survey, gave time and information and especially assisted
I

A HISTORY OF APPALACHIAN COAL MINES

Man has always required heat, synonymous with life and energy, and worshipped light. He learned to capture both in fire, and with that discovery came a new mastery over the quality of his environment.

Primitive people burned the obvious and easily attainable things -- dried leaves, grass, peat, wood -- before they found that by banking a wood fire the gases could be burned off, leaving charcoal, which in turn yielded a more intense and evenly dissipated heat. It is probably this kind of fuel to which reference is made in the Bible (Proverbs XXXVI): "As coal is to burning coal, and wood to fire so is a contentious man to kindle strife." By the Tenth Century B.C., when this passage could have been written, bituminous coal remained undiscovered.1

One hundred and fifty million years ago vast ridges and low depressions folded and formed near what are now the Appalachian Mountains, and ages later swamp forests developed in the valleys, bearing and shedding spores and thick leaves. Rock formations beneath the forests sank and rose in cycles, taking their carboniferous tenants to a silty grave many feet beneath the surface. New forests crept back centuries later, growing atop the fossilized predecessors, rocks rising again and trees once more shedding their leaves.

This ineluctable pattern continued until about seventy million years ago, at which time a great geographical revolution convulsed most of northeastern America. Large masses of surface land, twisted by enormous pressure and heat, were finally thrust up into the Appalachian mountains. By that time all the coal in northeastern America, from the softest bituminous to the hardest anthracite, had been formed and deposited.

Meanwhile on other parts of the earth -- in Europe, Asia and China -- dense carboniferous forests
continued to grow for another fifty million years, as they
did in western American coal fields until another physio-
graphic trauma raised up the Rockies and the Andes. This
happened twenty million years ago, the point at which all
the coal we possess had been packed away into the ribs of
the earth. That which had undergone relatively little
stress became bituminous or "soft" coal; that which with-
stood great heat and pressure became anthracite, a harder
and ultimately superior substance. The biggest and richest
deposits of anthracite lay in northeastern America, princi-
pally in the area that is now Pennsylvania.2

The early civilizations probably used some of the
coal beneath their feet (even in the Tenth Century B.C.,
the world's mountains had vast mineral cores), but the
first records of "black rocks" were made by the Romans:
Theophrastus wrote about "rock coal" (as opposed to
charcoal). At a corresponding time, the English were
mining coal -- bituminous cinders and crude mining imple-
ments have been found with the remains of early Britons.
In 852 A.D. the Abbot of Peterboro wrote a receipt for
twelve cartloads of coal, and in 1180 the Bishop of Dur-
ham offered a brief description of mining techniques.
Other civilizations had used coal for ornamentation, but
the English were the first people known to use it for heat.3

By 1250 A.D., wood was getting scarce in England
and its price was inflating rapidly. London began to
import coal from surrounding towns. Despite the high cost
of wood and the general availability of coal, in 1306 the
English Parliament decided that burning coal was harmful
to health, and called for its prohibition. At least one
luckless Londoner was executed under the law.4 As it
turned out the wood lobby did not yield until the end of
the 14th century.

For many years England produced most of Europe's
coal. When the Commonwealth was extended into North America,
the Mother Country also became the colonies' chief supplier,
despite the rich coal fields upon which the new settlements
were built. But the frontier economy was almost entirely
agricultural, and there was little demand for coal until
the mid-1700's. Whatever colonial industry did exist at
this time found an abundance of wood fuel within easy
access, and coal from England was used primarily in Philadelphia, then the leading industrial city on the coast. The total quantity of coal used yearly in the colonies prior to the Revolution never exceeded 9000 tons.\(^5\)

That the colonists did not use their own land's coal may be attributed in part to ignorance of its existence. For their part the Indians had thought coal to be little more than shiny black rocks. With the lone exception of the Hopis, in Arizona, who as early as 1000 A.D. used lignite for burning pottery, coal was never employed by the native American red man for anything more than making paint and ornaments.\(^6\)

In 1700 America was still largely a forest-clad wilderness, and there was little to suggest the extent of the coal deposits which rested beneath it. The Indians and an occasional hunter clambered over the mountains and through the woods but no one dug very deeply, until some curious settlers took notice of certain black rocks with a peculiar glossiness to them.\(^7\) The first reference to "stone coal" in America dates to 1669 -- found, as legend has it, by a Virginian hunter pulling up a small tree along the river bank. Not until 1745 was the first coal mine established.\(^8\)

It is important to understand colonial terminology. In the Seventeenth Century "coal" meant charcoal -- the most commonly used fuel. In England, from the early part of the 13th century, bituminous coal was called "sea coal" because it fell into the ocean from the seams exposed in the overhanging cliffs. On this continent the term "stone coal" was used to differentiate it from charcoal. Alexander Hamilton mentioned "fossil-coal" in his reports and in 1781 Thomas Jefferson called the substance "mineral coal."\(^9\) The word "mine," when used by early writers, had a different meaning; in the 1700's a mine was simply a deposit or outcropping of coal. When the actual extraction of coal began, it was from "pits" (today's mines).

The earliest official reference to coal in the United States is found in the accounts of Joliet's expedition to the Mississippi River in 1673. Seven years later LaSalle found coal near the Illinois River. In 1698, the
discovery of the mineral in Pennsylvania was announced in a treatise by Gabriel Thomas. A 1736 map of the Potomac River noted the presence of coal in Maryland and West Virginia. Seams were not found in Ohio until 1750.\textsuperscript{10}

By 1760 most of the colonies which had coal fields within their borders knew about them, but very little had been done to tap the vast underground wealth. The colonists had wood in great abundance, and Britain pressured them to import what little coal was used. Moreover, the areas where coal had been discovered were far outside the boundaries of eighteenth century civilization. Adventurous trappers and traders had an idea of the mineral's potential value but few settlers would risk going to get it. As early as 1736 one of the world's richest coal deposits, the Cumberland Field, was marked on a map of the north fork of the Potomac River -- but at that time not a single permanent settlement existed within a 100-mile radius. Finally, in 1754, a group of far-sighted Pennsylvanians began to exploit the resource lumped about their feet. They were the first colonists to do so. The early entrepreneurs formed the Susquehanna Company and bought from the Ten Indian Nations all the land in the Lackawanna and Wyoming Valleys of northwestern Pennsylvania. Perhaps even the buyers were not fully aware of the wealth they had purchased, and certainly it was a small sum for which the Ten Nations deeded to the colonists 484 square miles of rugged, mountainous country. Below ground extended four irregular canoe-shaped fields of anthracite, the largest and richest beds yet discovered in the world.\textsuperscript{11}

The first actual production of coal in the Appalachians occurred in 1768, when the proprietors of Pennsylvania purchased from the Indians the area around Pittsburgh and began to lease parcels for coal developing. By 1776 coal was being used in the armory at Carlisle to help forge weapons for the Continental Army. In a broadside delivered by the citizens of Alexandria, Virginia and Georgetown, Maryland (dated December 7, 1789) attention was called to the advantages of their Potomac homeland as the site for the national capitol. They advertised that "slate, marble, free-stone, and iron ore may be had in great abundance...of coal, too, there is an inexhaustible quantity near Cumberland, convenient to water carrying."\textsuperscript{12} Follow-
ing the Revolution, the coal fields of Eastern Pennsylvania and their value to the new nation was likewise discussed by Tench Coxe (Secretary of Treasury, 1794) and soon the sites of rich seams became a primary criterion for locating new towns and cities.\textsuperscript{13} While not extensive, there was continuous need of coal at places along the Potomac at least as early as 1798. The major user was the United States armory at Harper's Ferry, whose rifle works began operations with coal as the primary fuel.\textsuperscript{14}

After the Revolution settlers began to move westward over the mountains, into the far reaches of Pennsylvania, Virginia and West Virginia. By the early 1800's they had reached down into Kentucky and pushed further into Ohio. With the growth in population and an increasing scarcity of wood on the eastern seaboard came greater reliance upon coal. By 1830 production west of the mountains surpassed that to the east.

The greater use of American coal (as opposed to the imported variety) began in the 1810's, spurred by an embargo on shipping due to the War of 1812. However, a number of problems were raised by the shift from foreign to native coal, the most serious being transportation. When importing, there had been little trouble getting to the major coastal cities, which at that time bought 90\% of all the coal that entered the country. But when the east coast looked to the west for fuel, it found that adequate means for carrying coal out of the mountains and into east coast furnaces were virtually non-existent.

This was the first of a series of transportation difficulties that plagued the development of the coal lands. As is usually the case with heavy and cheap materials, the extent to which they can be profitably marketed depends upon the cost of transportation. At the beginning of the Nineteenth Century, the roads were poor and there were no mechanical means of haulage; in many states, particularly in Pennsylvania, most rivers remained unnavigable. The early producers could not move their coal more than a few miles from the mines.\textsuperscript{15}

The need for more efficient methods of transportation to and from the western areas had been urged
even by George Washington. The first turnpike over the Alleghenies, completed in 1818, reached to Wheeling, West Virginia. Because of the great weight of coal, however, the turnpike was of limited value to its shipment. Profitable production awaited the introduction of improved means of transportation -- the development of the steam engine and a system of canals.

In the early 1800's, when the need for coal had become urgent, serious thought was given to western canals. The increasing population, the scarcity of wood fuel, the embargo, and perhaps most important the discovery that coal could be used in iron smelting, all served to put pressure on state legislators to connect east with west. In 1811 the first steamboat appeared on the Monongahela River and revolutionized navigation on Pennsylvania's rivers. Nine years later canal systems were built in Pennsylvania and Maryland.

Around 1810 it was learned that coal -- if fired correctly -- could be used to smelt iron ore. Prior to this discovery only charcoal had been used; with supplies rapidly depleting, manufacturers needed an alternative fuel. Before the Nineteenth Century the various properties of coal had not been fully understood and the rock was used primarily for domestic purposes: home heating, brick-making, blacksmithing. With the proper firing formula came a period of rapid growth for the industry. The use of coal in iron production began as soon as the mineral was made available to the eastern manufacturing centers. By 1840 coal had become the exclusive fuel, fully replacing charcoal.

But the increased use of coal came as a mixed blessing to the mining regions. In 1800 a visiting Englishman wrote of his approach to Pittsburgh:

"We were struck with a peculiarity nowhere else to be observed in the states; a cloud of smoke hung over it; in an exceedingly clear sky, recalling to me choking recollections of London. The
Indeed Pittsburgh soon came to be called the "Smoky City." In 1807 another traveler noted that "the first entry into Pittsburgh is not agreeable, as the sulphurous vapor rising from the burning of coal is immediately perceptible." Probably one of the first anti-pollution devices to be commercially advertised was touted by the Pittsburgh Gazette in 1814. Addressed to "the inhabitants of Pittsburgh," the notice called attention to a device for "consuming the smoke of coal furnaces, etc., adaptable to any boiler or copper, at a very small price, without requiring more coal than usual." Beginning in that year, editorials regularly condemned polluters -- perhaps to little avail, as conditions were to worsen for more than a century afterward.

In 1819 Pittsburgh suffered what is now known as an atmospheric inversion. The surrounding air became so dense that townspeople were forced to wear goggles, and one newspaper reported:

"Our thick atmosphere...has been unusually gloomy for a few days...the cause is a large quantity of wood smoke, this added to the thick haze of an Indian Summer and our always heavy coal smoke has upset all our philosophy. Many wear goggles, the rest are generally in tears."

Despite this unpleasantness, numerous coal towns sprang up through western and northeastern Pennsylvania, western Maryland, eastern West Virginia and eastern Ohio. In 1821 a West Virginia newspaper ran an advertisement for colliers:

"From 10 to 20 steady and industrious men, who understand digging coal, may obtain high wages in Kenhewa for that business."
A few days later the contractors announced they had received over 100 job applications. Tracts of land were opened by various other companies, and there was seldom any difficulty finding takers.

Whence these men who "understood coal digging" when coal was so new to the country? Most of them immigrated to the United States from Europe, particularly Wales where coal had been mined for more than a century. Others came from England, Ireland, and various parts of eastern Europe, hoping to make their fortunes teaching an upstart country how to use its new found resource. A good number of the early arrivals became wealthy. They had come just prior to the discovery that coal could smelt iron, and with relatively limited funds they purchased coal property. When demand suddenly increased and prices rose, the immigrants became charter members of a growing class of entrepreneurs.

The coal regions of Pennsylvania, Maryland, Virginia and West Virginia grew and prospered during the first half of the Nineteenth Century. In 1838 the Pennsylvania Legislature directed its Secretary of the Commonwealth to collect data on all of the state's resources -- the country's first official collection of coal statistics. The survey showed that in Pittsburgh alone the coal industry had contributed $565,200 to the city's economy. By 1839 coal had become a million-dollar business in both Pennsylvania and Maryland, and during the next three years West Virginia and Ohio could make similar claims. 24

With the completion of the B. & O. Railroad to Cumberland in 1842 and the C.& O. Canal in 1850, Maryland coal could be transported from the west to the tidewater areas. The Free State's coal fields developed rapidly.

In 1822 the canal along the Schuylkill River in Pennsylvania had been finished. During its first year of operation 1500 tons of coal were hauled through; by 1841 the tonnage had grown to 6500. In that year, the railroad connecting Pennsylvania and Ohio coal fields with the east was completed, and canal traffic began to decline. 25
The outbreak of hostilities between the states in 1861 greatly increased the demand for coal as both North and South sought to cut off one another's supply lines. By 1864 all mining activity had ceased in West Virginia -- not to be resumed again until 1867. During that lapse dams were washed out, the turnpike became overgrown, and heavy damage to the mines occurred. Operations of Maryland's B. & O. were likewise seriously hindered by military activities and the mining of coal severely curtailed. Within a year of the reopening of the lines in 1865, however, Maryland's production was greater than ever.26

Following the Civil War, as newer and heavier factory machines were developed, the nation's renewed demands for iron were reflected by manufacturers clamoring for coal, by now the prize fuel. But mining operations were becoming more difficult as supplies from surface fields were exhausted -- the coal companies were forced to go farther and farther underground.

In practically every field opened before 1840, coal was recovered by quarrying -- an operation done by hand, on a small scale, which amounted to simplified strip mining. New quarries were opened as soon as recovery became too difficult or expensive. When it became necessary to drill into hillsides, the coal was undercut by hand and taken out on sleds.27 After the Civil War, however, with the surface veins of Pennsylvania and Maryland nearly depleted by North and South, the primitive quarrying methods proved inadequate to meet demands.

Two innovations changed the fortunes of the coal companies and the lives of their employees, as well as the surface of the land: underground mining and the widespread use of explosives. Perhaps even more consequential were the changes in mine ownership. The Civil War had given rise to large iron and steel companies, at that time the principal coal consumers. It did not take long for these early corporations to realize that if they owned and operated their mines they could greatly cut their costs. Iron and steel companies sent emissaries to purchase as many coal properties as were available, before news of their value leaked out. Seams opened and operated by the big corporations were known as "captive" mines, meaning all the coal prod-
uced was captured by the companies for their own use.28

The implications of the shift in ownership (from small, private companies to large corporations) were particularly important to the immigrants still flooding over the mountains. Prices were too high to buy the small bits of real estate left by the corporations, but so desperate were the inexperienced mining companies for the skills of professional miners that they often recruited in Europe and paid for the passages of experienced hands.29 The immigrants still had advantages over those who would follow.

The price of coal rose steadily through the 1870's and 1880's. Mine owners had become wealthy and could afford to build attractive settlements for their employees. Most of the mining towns constructed in the 1870's were well laid out, consideration being given to planning for churches, schools, recreation facilities and meeting houses. The houses were coal-heated, of course, and built of sturdy wood. Except for occasional cave-ins and other disasters occasioned by the shift to underground recovery, the life of the miner in the years immediately following the Civil War was reasonably comfortable. He was usually well paid, his skill respected.

The relatively good working and living conditions did not prevent the miners from trying to organize, although early attempts at unionization were mostly unsuccessful. Prior to 1848 there were few concerted movements to unionize; that year, however, in Schuylkill County, Pennsylvania, the first United States miners union was formed. A secret organization created in 1859, called the Equal Justice Society dissolved after attempting an unsuccessful strike for higher wages. In 1861 the American Miner's Association was formed in Illinois. Two years later it had spread to Ohio and Pennsylvania, but the union folded in 1864 following internal confusion.

While scattered locals were started during the Civil War, no large-scale attempt was made to organize the coal fields until 1868. This movement was spearheaded by the Miner's and Laborer's Benevolent Association, which was founded in 1868 in Pennsylvania and soon spread to Maryland.
and Ohio. In 1869 the M.L.B.A. called a long strike to support its demands for uniform wage standards. (At that time miners worked ten-hour days, six days a week, for from $15 to $18 weekly, a comparatively high salary for the era.) In 1873 the M.L.B.A. was absorbed by the National Association of Miners of Ohio. This union reached its zenith in 1875, then collapsed.30

In 1875, the biggest and most organized miner's union to that time was formed. Fostered by the Knights of Labor, it called itself the National Federation of Miners and Mine Laborers of the United States. Fights for higher wages did not begin until the 1890's; the Federation's initial grievances were directed against unscrupulous company stores and hazardous underground mine conditions.

Alongside of these publicly formed organizations grew many secret ones. Groups known as the "Buck Short," the "Sleepers," and the "Ribbonmen" were created before, during, and after the Civil War. The maverick fraternities were made up mostly of immigrants who had been excluded from formal unions; many of them were crude fighting men, not averse to violence. The most notorious of the clandestine organizations was the Molly Maguires, which began in the Pennsylvania anthracite fields in the late 1860's. Racial prejudice and anti-Catholic sentiment ran high through many of the mining towns: the Molly Maguires were frustrated Irish immigrants angered by discriminatory hiring practices.

The rise and fall of the "Mollies" occurred over a short span of years, but during its life the group attracted worldwide notoriety. The Molly Maguires regularly went on rampages of murder, riot and sabotage. Their activities were not brought to an end until the organization had been infiltrated by Pinkerton men and exposed. The summer and autumn of 1876 were filled with the trials and hangings of more than a score of Molly leaders.31 Although incidents of violence have continued to scar the mining industry up to the present day, the decline of the Molly Maguires signaled an end to large-scale secret organizations of miners.

The later decades of the 1800's were characterized by a power struggle among the various large unions.
The contest for the miners' allegiance eventually narrowed to one between the Knights of Labor and the National Federation of Miners and Mine Laborers. Both groups fought continuously until January 23, 1890, on which date they joined in Columbus, Ohio to become the United Mine Workers of America. The UMW continues to represent coal miners throughout the country.

The coal boom continued into the Twentieth Century. The "age of invention" had begun and each new creation boosted market demands, particularly from the automobile industry.

With the First World War massive amounts of supplies -- steel for munitions, food and clothing for the army, lumber for ships -- had to reach their nationwide destinations by rail. Coal supplied 70% of the energy to keep the locomotive wheels turning. Though eleven thousand mines were in operation by 1920 to supply the country's needs, prices continued to rise. The "War Brides" of the Appalachians were born, companies which flourished while war prices were high and closed when the prices went down.

Coal markets continued to expand after the First World War, though their growth was slower and more irregular than before. Two new fuels, natural gas and petroleum, were now beginning to satisfy the call for fuel.

As consumers were turning to new sources of energy, labor disputes and sporadic strikes and violence made the supply of coal unsteady in the decades of the 20's and 30's. The Second World War again underscored the need for freight to move from coast to coast, so again new mines were opened and again the industry flourished. Coal heated millions of homes, powered huge locomotives, and fed burgeoning electrical plants. The industry hit its peak in 1947, when it produced 630 million tons of coal.

By now, however, diesel-electric locomotives had come into use and natural gas and fuel oil had begun to assume preeminence as the nation's primary home heater. The industry looked for a new, less expensive way to
retrieve coal from the earth. It found its answer in widespread strip mining.

Throughout the 'Fifties and the first half of the 'Sixties, the coal producers struggled to regain their wartime successes. A revival began in the late 1960's and continues today. By 1970 production was more than 600 million tons. In 1970 renewed demands for coal, intensified by a fuel shortage and subsequent energy crisis, shot prices up from $6.00 to $13.00 per ton. With natural gas in increasingly short supply and fuel oil becoming more difficult to obtain, and with steel production pinching supplies, mines which not so long ago were closing because of a coal glut are now digging in to meet seemingly endless demand.

Japan has quadrupled its steel output since 1965, and now imports up to 95 million tons of coal a year. Japanese steelmen are investing 500 million dollars to finance new mines in Canada, Australia, South Africa, the United States, India, Poland and Russia. The United States has been Japan's largest supplier of coal, exporting 21 million tons in 1970, but the limited domestic supply is making it more lucrative for coal producers to keep their product at home. Electric power needs, moreover, are doubling every ten years. There is little likelihood of a voluntary slowdown in demand.

Only the disadvantages inherent in extracting coal from the earth, and the environmental pollution to which the fuel contributes afterwards, may serve to depress production figures. Though new techniques are being developed to eliminate the high percentages of sulphur oxides given off by burning coal, serious mining problems remain.

The industry's pitch -- that the cheaper its product the better the nation's economy -- cannot be faulted by elementary logic. But it is difficult to overlook the environmental consequences of strip mining. Here is how one journalist describes the process:

A herd of coughing machines crackle the once serene
mountain air. To reach the coal, the machines must first attack the trees. They quiver against the knives and give up with a shudder. Bulldozers push them aside and bite into the surface dirts, which is added on top of the trees. Gradually, a bank of debris begins to grow -- a spoil bank -- and as the machines meet the rock, they shred it with powerful explosives. Power shovels come to help the bulldozers. Ton upon ton of shale rock, which disintegrates into clay when exposed to air, is added to the fast-growing bank. (Sterile sub-soil -- upon which nothing will grow because it has been rendered devoid of life-giving minerals -- is unearthed and piled on top. When it rains, the pile soaks up water like a sponge and takes on a viscous quality.) Now the coal is exposed. It looks like a solid black roadway. Small tractors with brushes whisk away the last dirt from the exposed vein. The power shovels break up the coal and lift it onto trucks which haul tons at a time to the railhead.

Even as this coal is being put onto trucks, bulldozers up ahead cut new swaths in the land. As they move one, the mountains of spoilbanks remain as a permanent, festering scar that will never heal. When it rains and the banks become
soggy, they tear loose and slide down mountainsides, scouring off timber and topsoil. Families are often sent scurrying. The banks pour onto the croplands below, covering them with barren subsoil which may lay dormant for decades. This is how the coal areas have been ravished. The disaster visited on them is called strip mining.39

Between the Civil War and World War I, most of America's coal was extracted through shaft mines, intricate networks of tunnels running miles beneath the earth. Strip mining is much faster and requires fewer men. Technological improvements on the already incredible stripping machines make the operation even more profitable. The new gougers demolish tracts of land by the hundreds of square miles.

Legal efforts are now being made to protect such lands from future degradation. States have enacted a variety of laws designed to require abatement of acid mine drainage and requiring regrading and revegetation of surface mines. But the technology for preventing mine drainage is imperfect, and according to one mountaineer:

"Strip mining laws are kind of like letting a fellow go ahead and commit rape -- provided he signs a bond guaranteeing to restore the victim to her original condition -- it can't be done."40

Moreover, the problems surrounding who should pay to reclaim orphaned mines (those abandoned before present laws) remain serious. For example, to abate acid mine drainage alone, from underground and surface mines it is estimated that $6.6 billion would be required.41

The coal industry of 1971 is very different from what it was ten years ago. For a while coal production was
moribund, until late in the 1960's when a revival began that is still under way today. Part of the coal industry's renaissance is due to the cyclical scarcity of other fuels. Natural gas is in short supply because of diminishing reserves and producers holding back for higher prices. Fuel oil costs have also escalated. The ever-increasing demand for steel has likewise again boosted the need for coal. Steel mills around the world are running short of coking material. With electric power needs doubling every ten years, there is little likelihood of a slowdown in the coal boom.

The trend in the coal industry of the 'Seventies is toward size, speed, and efficiency. A greater and greater volume of production seems inevitable.