

REPORT
of the
SUBSIDENCE COMMITTEE
to the
GENERAL ASSEMBLY
of the
COMMONWEALTH OF PENNSYLVANIA

under Authority of
The Act of 1956, May 31, P. L. (1955) 1931

March 1, 1957

#10935352

ACT OF THE PENNSYLVANIA GENERAL ASSEMBLY, SESSION
OF 1955, CREATING THE SUBSIDENCE COMMITTEE
UNDER THE JOINT STATE GOVERNMENT
COMMISSION

[1956, May 31, P. L. (1955) 1931]

No. 646

AN ACT

Authorizing the appointment of a joint committee of the House and Senate under the Joint State Government Commission for the *purpose of making a study and investigation and legislative recommendations relating to subsidence of surface soil in anthracite and bituminous coal mining regions and the damages occurring as a result of such subsidence; conferring powers and imposing duties on the Committee and the Commission, and making an appropriation to the Joint State Government Commission.

The General Assembly of the Commonwealth of Pennsylvania hereby enacts as follows:

Section 1. There is hereby created, under the Joint State Government Commission, a joint committee to be known as the Subsidence Committee which shall consist of five members of the House of Representatives, who shall be appointed by the Speaker of the House, and five members of the Senate, who shall be appointed by the President pro tempore of the Senate. The Committee shall elect a chairman. The members of the Committee shall serve without compensation, but shall be reimbursed for all expenses incurred in the discharge of their duties. If a vacancy occurs in the membership of the Committee during its existence, the vacancy shall be filled in the same manner as the member whose place is vacated.

Creation of Subsidence Committee, under the Joint State Government Commission.

* "Purchase" in original.

Duty of study and investigation of subsidence of surface soil due to coal mining operations.

Section 2. During the interim between the present and next succeeding biennial session of the General Assembly, it shall be the duty of the Committee to make a complete study and investigation in the anthracite and bituminous coal mining regions of the circumstances, causes and remedies relating to the subsidence of the surface soil due to coal mining operations, including any damages which have occurred or may occur to any privately owned property or school, church or public highway situated thereon.

Powers of Committee.

Section 3. The Committee shall have the power to hold hearings and take testimony. It may issue subpoenas, under the hand and seal of its chairman, commanding any person to appear before it and to answer questions touching matters properly being inquired into by the Committee and to produce such books, papers, records and documents as the Committee deems necessary. Any person who wilfully neglects or refuses to testify before this Committee or to produce any books, papers, records or documents shall be subject to the penalties provided by the laws of the Commonwealth in such cases. Each member of the Committee shall have the power to administer oaths and affirmations to witnesses appearing before the Committee.

Report of Committee to Joint State Government Commission and thence to the General Assembly.

Section 4. The Subsidence Committee shall report its findings and recommendations to the Joint State Government Commission and the Commission shall transmit the findings and recommendations of the Committee to the General Assembly on or before March 1, 1957, together with such proposed legislation as the Committee deems necessary to carry its recommendations into effect.

Appropriation.

Section 5. The sum of five thousand dollars (\$5000), or as much thereof as is necessary, is specifically appropriated to the Joint State Government Commission for the payment of expenses of the members of said Subsidence Committee for the preparation, editing, printing and distribution of the report and for any other expenses deemed necessary and proper by the Commission.

Section 6. The sum appropriated shall be paid on warrant of the Auditor General in favor of the chairman of the Commission on the presentation of his requisition for the same. Manner of payment.

Section 7. This act shall take effect immediately. Act effective immediately.

APPROVED—The 31st day of May, A. D. 1956.

GEORGE M. LEADER.

The foregoing is a true and correct copy of Act of the General Assembly No. 646.

HENRY E. HARNER,
Secretary of the Commonwealth.

LETTER OF TRANSMITTAL

*To the Members of the General Assembly of the
Commonwealth of Pennsylvania:*

Pursuant to the provisions of the Act of 1956, May 31, P. L. (1955) 1931, there is presented herewith the Report of the Subsistence Committee established under the act.

BAKER ROYER, *Chairman.*

*Joint State Government Commission
Capitol Building
Harrisburg, Pennsylvania
March 1, 1957*

SUBSIDENCE COMMITTEE

John F. Stank, *Chairman*

House Members

James J. Jump
James Musto
William J. Reidenbach
John F. Stank
Frank A. Wallace

Senate Members

Harold E. Flack
Hugh J. McMenemy
Theodore H. Schmidt
William Z. Scott
John T. Van Sant

LETTER OF TRANSMITTAL

Honorable Baker Royer
Chairman
Joint State Government Commission
of the General Assembly
Harrisburg, Pennsylvania

Dear Mr. Royer:

In accordance with the provisions of the Act of 1956, May 31, P. L. (1955) 1931, I present herewith, for transmittal to the General Assembly, the Report of the Subsidence Committee established under the act.

Respectfully,

JOHN F. STANK, *Chairman*
The Subsidence Committee

Harrisburg, Pennsylvania
February 20, 1957

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(Note: A map showing the known sources of anthracite and bituminous coal in Pennsylvania will be found facing page 6.)

RECOMMENDATIONS OF THE SUBSIDENCE COMMITTEE

The Subsidence Committee recommends:

I. That the General Assembly memorialize the Congress of the United States to amend the Federal Flood Insurance Act of 1956 to provide that subsidence resulting from mining operations shall be an insurable risk.

II. That the General Assembly enact legislation establishing an independent administrative commission in the Department of Mines and Mineral Industries, to be known as the Coal Mining Subsidence Commission, for the purpose of conducting studies of subsidence and carrying out flushing programs in the anthracite and bituminous regions. That an appropriation of \$150,000 be made to the commission, and a tax of two cents per ton of coal mined be imposed to finance the commission's program.

III. That the General Assembly provide an adequate appropriation to aid municipalities in the acquisition of pillars or other support necessary to prevent subsidence as provided by the Act of 1949, May 18, P. L. 1474.

IV. That the General Assembly enact legislation mandating that every deed to real property indicate, in bold type or otherwise conspicuously, whether or not it conveys mineral and support rights.

INTRODUCTION

Act No. 646 of 1955 directs the Subsidence Committee “. . . to make a complete study and investigation in the anthracite and bituminous coal mining regions of the circumstances, causes and remedies relating to the subsidence of the surface soil due to coal mining operations, including any damages which have occurred or may occur to any privately owned property or school, church or public highway situated thereon.”

In accordance with the legislative directive, the committee has investigated the causes of subsidence due to mining operations, the measures which may be taken to prevent the occurrence of subsidence, the effectiveness of past legislative enactments designed to cope with subsidence, and the pertinent court decisions relating to these enactments. In addition, public hearings were held, in connection with which the committee inspected some of the areas in which subsidence constitutes a community problem.

CAUSES OF SUBSIDENCE

Subsidence, which may or may not be apparent on the surface, is an inevitable consequence of any extractive operation. Such operations create unbalance in the superjacent rock strata, causing bending and fracturing and falls of rock until the void created by the extraction is filled and the strata reach a new state of equilibrium. Subsidence of the surface has been observed to follow the extraction of salt, sulphur, gypsum, limestone, sandstone, shale, clay, natural gas, petroleum, water, and coal.

There is general agreement among mining engineers that the extent and/or duration of subsidence resulting from a given extractive operation cannot be predicted with a high degree of accuracy. Similarly, no universally applicable formula has been developed to calculate the size of pillars or amount of backfill, packwall, or timber support which will prevent subsidence after mining. Generally speaking, the extent of subsidence which is likely to ensue from coal mining, as well as the cost of measures calculated to prevent subsidence, depends upon:

1. The folding, fracturing, and faulting of the rock strata which took place prior to the mining operations
2. The thickness, depth, and number of coal seams, and the method, order, and rate of extraction
3. The geological make-up of superjacent strata, which in large part determines resistance to compression and tension
4. The physical and chemical characteristics of the topsoil
5. The presence or absence of water.

In Pennsylvania, bituminous mining is concentrated in the western part of the state and anthracite mining in the east. (See map, page 7.) Though subsidence occurs in both fields, the evidence clearly indicates that subsidence is more frequent, more widespread, and of more far-reaching social and economic consequence in the anthracite than in the bituminous fields.

The differences in the incidence of subsidence in the bituminous and anthracite fields are due to variations of geological conditions. Generally speaking, bituminous coal seams are relatively thin, flat, and close to the surface, and there is considerably less folding of the coal bearing measures, less faulting, less fracturing, and less concentration of workable coal seams in a given area, while anthracite seams—sometimes as thick as 100 feet—are spaced at irregular intervals and are sometimes characterized by a marked pitch.

Though it is useful to differentiate between bituminous and anthracite fields, it should be noted that even within the anthracite area different fields show markedly different characteristics. For instance, in the northern anthracite field, which extends from south of Nanticoke to north of Carbondale, the vein is relatively flat. The cities of Scranton, Wilkes-Barre, and Pittston are situated over this field. In the middle and southern anthracite fields, over which are located the communities of Pottsville, Hazleton, Shamokin, Tamaqua, Shenandoah, and Coaldale, the vein lies in canoe-shaped basins with steeply pitching sides.

Further detail on the causes of subsidence appears in Appendix A.

PREVENTION OF SUBSIDENCE

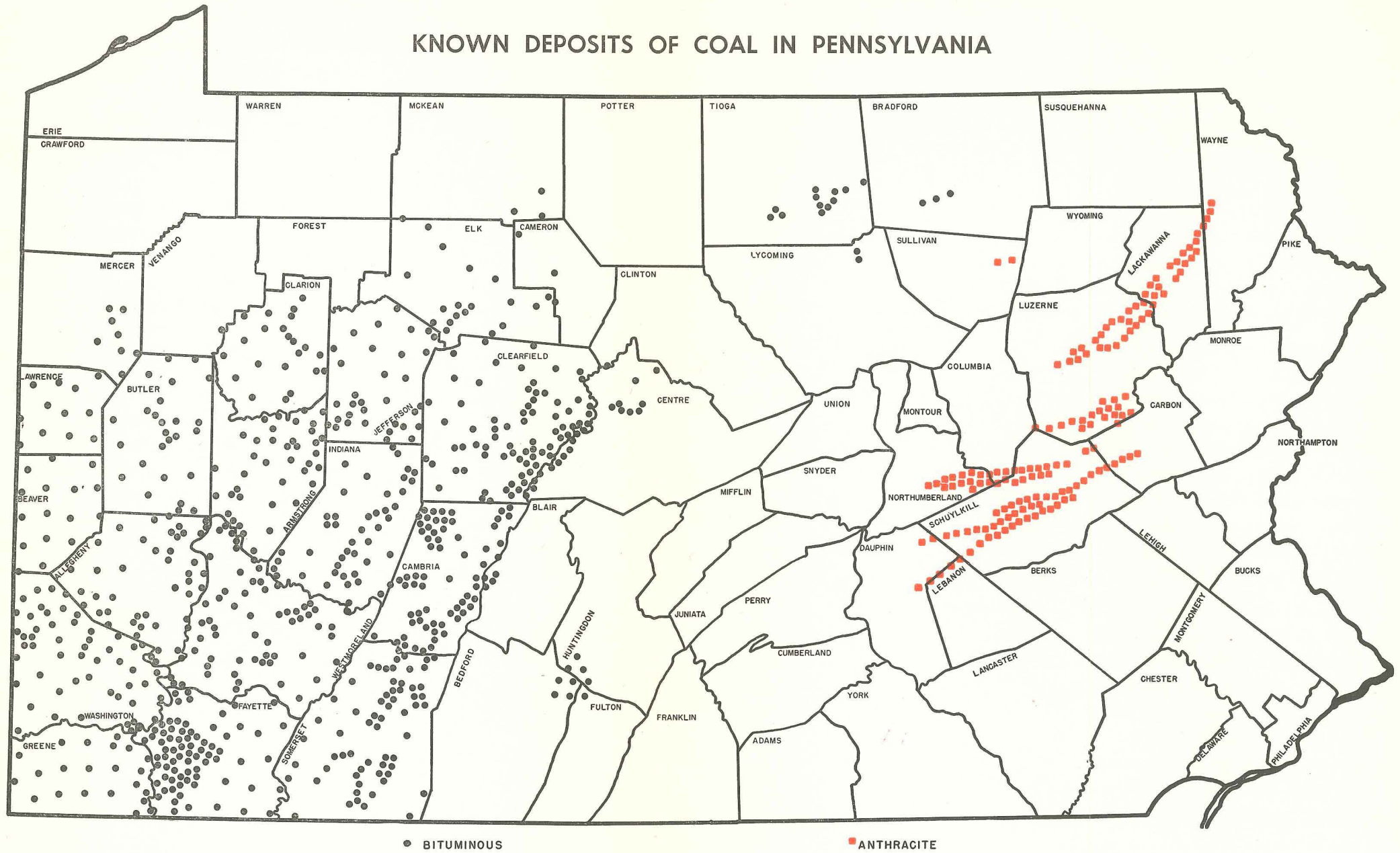
In considering preventive measures, it is necessary to differentiate between current and future mining operations and "old mine workings."

In present and future mining operations, subsidence can be minimized by the employment of systematic mining methods, which, in the United States, usually take the form of so-called "room and pillar mining." In room and pillar mining, coal is extracted from parallel openings called "rooms," "chambers," or "breasts."

Properly engineered, rooms are driven to a predetermined distance between solid coal on both sides, with temporary timber supporting the roof. When the distance is reached, retreat begins by robbing the pillar of solid coal farthest from the mine entrance. One of the important features of systematic retreat work is keeping the ends of the pillars being robbed in a straight line. This prevents uneven pressure from the unsupported roof from producing "creeps" or "squeezes" along the break-line. The purpose of this procedure is to recover as much coal as can possibly be recovered, simultaneously minimizing the probability of subsidence.

It is essential that the passageways between the coal face and the mine entrance be kept open while the mine is in operation, since these passageways—called "entries," "headings," or "gangways"—are the means of ingress and egress for all purposes. Roof support is accomplished by leaving solid pillars of coal or by supplementing the pillars with artificial support. Artificial supports in common use are timber or steel framing, roof bolting, packwalling, and backfilling. Cribbing of brick, stone, or concrete is used where extra support becomes necessary. The purpose of roof support is

KNOWN DEPOSITS OF COAL IN PENNSYLVANIA



● BITUMINOUS

■ ANTHRACITE

SOURCE: Adapted from *The Pennsylvania State College Bulletin*, XLIV, No. 39 (September, 1950), 16-17.

to prevent the beginning of failure in the rock strata immediately overlying the coal seam. The first appearance of sag or cracking in the mine roof means that failure has begun; once failure begins, the impending fall may be delayed but not prevented. So the first step toward preventing damage from subsidence is the adequate support of mine openings while first mining is in progress. If there is no break, there can be no subsidence.

The second step is to control roof subsidence during the progress of second mining or retreat. This is accomplished either by leaving artificial supports in place as coal is removed or by leaving no support at all. In low seams, say less than four feet, the practice is to take out every support, including small coal "stumps." The broken strata are then free to fall and fill the void, and equilibrium will be established before the break reaches to the surface.

Though systematic mining tends to reduce the probability of subsidence in connection with current and future mining operations, it is manifestly not a solution to the subsidence that may occur from extractive operations that have taken place in the past. The importance of past operations may be judged if it is realized that in the past approximately eight billion market tons of bituminous and five billion tons of anthracite have been mined in Pennsylvania.¹

Engineering opinion would seem to be agreed that flushing represents the best available means of preventing subsidence from old mining operations. However, all cost considerations aside, flushing—the introduction of solid matter, either by gravity or pressure methods, into voids created by mining operations—presents many serious technical problems: The exact location of voids created by past mining operations is not known; generally speaking, maps are inaccurate or nonexistent. Condition of voids is not readily ascertainable because of collapsed roofs, disintegrated pillars, and the

¹ In 1955, total coal production in Pennsylvania was 110,977,469 tons.

possible entry of water. Again, because mine openings have become inaccessible, many of the voids would have to be flushed by what is sometimes referred to as the "blind method."

All preventive measures, whether relating to present, future, or past extractive operations, involve costs, and these may be of such magnitude that their assumption would result in cessation of all mining operations in a given area. Obviously, pillars of coal left in place represent coal that is not salable, increasing the cost per salable ton. Again, the flushing of voids created by past extraction is a costly operation. For example, it was estimated by a committee of mining engineers reporting in 1942 that, at prices prevailing at that time, the cost of flushing under the built-up sections of the anthracite region would approximate seven-and-a-quarter billion dollars, assuming flushing materials were available at the site.² It is estimated that, in terms of current prices, this cost would approach fourteen-and-a-half billion dollars.

In connection with the prevention of subsidence, it should be noted that the *effect* of such subsidence as is inevitable can be minimized by proper selection of surface structure design and careful attention to structure placement. For example, it is well established that very high and long, narrow buildings are more readily damaged by earth movements associated with subsidence than are low and broad-based buildings. Again, buildings of excessively rigid construction are more readily damaged by such movement than are those of flexible construction. A concrete mat or pile foundation provides greater resistance to subsidence damage than do the more conventional foundations. Finally, buildings located at right angles to an advancing line of subsidence have greater resistance than those set at lesser angles.

Further detail is presented in Appendix A.

² The text of the 1942 report is reproduced in Appendix B.

PERTINENT COURT DECISIONS AND LEGISLATIVE ENACTMENTS

Long before the General Assembly concerned itself with the problem of subsidence, the courts of the Commonwealth developed a number of important precepts bearing on the problem. It would appear that the first case involving the question of liability for damage from subsidence came before the courts in 1870.

In this case, *Jones v. Wagner*,³ the surface was owned by one person and the underlying coal by another, and the removal of the coal had apparently caused subsidence and surface damage. The Supreme Court of Pennsylvania adopted the rule of the common law of England, which was that "where there is no restriction or contract to the contrary, the subterranean or mining property is subservient to the surface to the extent of sufficient supports to sustain the latter, or in default, there is liability to damages by the owners or workers of the former for any injury consequent thereon to the latter." The court stated that "the owner of a mineral estate, if the law be not controlled by the conveyance, owes a servitude to the superincumbent estate, of sufficient supports; consequently the failure to do so is negligence, and so may be declared upon." The court held the operators liable because the damages had resulted from the lack of "sufficient supports in the mine to prevent the plaintiff's ground, house and orchard, from injury by subsiding into the cavity made in the earth by the removal of the coal."

But the court also observed: "We have no doubt but all the evils deprecated by the adoption of this rule will disappear under regulations adapted to each case of severance of the soil from the minerals. Contract may devote the whole minerals to the enjoyment

³ *Jones v. Wagner*, 66 Pa. 429 (1870).

of the purchaser, without supports, *if the parties choose*. [Emphasis supplied.] If not, the loss by maintaining pillars or putting in props will necessarily come out of the value of the mineral estate.”

A long line of cases followed the rule set forth in *Jones v. Wagner* in imposing on mine operators an obligation to support the surface unless that duty of vertical support has been waived. See *Coleman v. Chadwick* (1875), 80 Pa. 81; *Carlin v. Chappel* (1882), 101 Pa. 348.

The principle that three estates may exist in land—namely (1) the surface, (2) the minerals and (3) the right of support—and that each of these may be vested in different persons at the same time was recognized and approved in the cases of *Graff Furnace Company v. Scranton Coal Company* (1914), 244 Pa. 592; *Penman v. Jones* (1917), 256 Pa. 416; and *Charnetski v. Miners Mills Coal Company* (1921), 270 Pa. 459. It was held that the owner of the surface could not recover from the owner of the coal vein for any damages resulting from subsidence where there had been a waiver of such support: *Scranton v. Phillips* (1880), 94 Pa. 15; *Young v. Thompson* (1922), 272 Pa. 360. Similarly, the Commonwealth and its political subdivisions are bound by effective waivers as to surface support when given by prior owners: *Commonwealth v. Clearview* (1917), 256 Pa. 328. However, the Commonwealth is not bound by such a waiver if it takes the land by condemnation: *Commonwealth v. Pardee Brothers* (1933), 310 Pa. 353. See 1933, June 1, P. L. 1409.

A search of the records indicates that the General Assembly of Pennsylvania took official cognizance of the existence of the subsidence problem in 1911, when it created a commission to study subsidence in the anthracite fields.⁴ Subsequent to the commission's report in 1913, the General Assembly passed an act making it unlaw-

⁴ Joint Resolution, approved March 24, 1911, P. L. 26.

ful for mine operators to mine in such a manner as to remove necessary adequate support from beneath streets, avenues, thoroughfares, courts, alleys, and public highways of any municipal corporation.⁵ In 1915, a similar act relating to boroughs was passed and the 1913 act as it related to these subdivisions was repealed.⁶

In 1921, the General Assembly, through the so-called "Kohler Act," extended the scope of the acts of 1913 and 1915 by making it unlawful to conduct anthracite mining operations in such a manner as to cause the cave-in, collapse, or subsidence of "public structures, streets, roads, bridges, public service facilities, cemeteries, or private structures used for habitation or for commercial or industrial purposes."⁷

Subsequent to the passage of the Kohler Act, the Court of Common Pleas of Luzerne County was asked by Mr. and Mrs. H. J. Mahon to restrain the Pennsylvania Coal Company from mining any coal underlying their property in the City of Pittston, "the removal of which will cause the caving-in, collapse or subsidence of their dwelling house," contrary to the provisions of the Kohler Act. The Luzerne County Court denied relief to the Mahons on the grounds that the coal company not only had acquired title to the coal but had obtained a waiver of support of surface and hence was

⁵ 1913, July 26, P. L. 1439.

⁶ 1915, May 14, P. L. 312.

⁷ 1921, May 27, P. L. 1198. See Appendix D for the full text of this act.

In passing, it may be noted that the 1921 General Assembly also passed an act known as the Fowler Act, which provided for the establishment of the State Anthracite Mine Cave Commission (1921, May 27, P. L. 1192). The act is reproduced in Appendix D. Briefly, under the act Pennsylvania corporations organized and foreign corporations admitted to do business in the state after the effective date of the act, as well as other corporations voluntarily accepting its provisions, were subject to a tax of 2 percent of the market price of all anthracite mined, the proceeds to be used for: (1) the expenses of the commission; (2) payments to persons injured or damaged in person or property by mining operations; (3) measures for the prevention of threatened injury or damage to personal property by surface subsidence resulting from anthracite coal mining operations. The records of the commission, such as they are, suggest that it was never active, and it was finally abolished by Section 2 of the Administrative Code of 1929.

under no liability for injury thereby inflicted. Though this decision was in accordance with decisions previously handed down, the city solicitor of Scranton and the Attorney General of the Commonwealth intervened and the case was taken to the Pennsylvania Supreme Court. The Pennsylvania Supreme Court reversed the lower court,⁸ and the case was appealed to the United States Supreme Court, which in turn reversed the Pennsylvania Supreme Court. The federal court held:

A source of damage to such a house [the Mahons'] is not a public nuisance even if similar damage is inflicted on others in different places. The damage is not common or public. . . . The protection of private property in the Fifth Amendment presupposes that it is wanted for public use, but provides that it *shall not be taken for such use without compensation*. [Emphasis supplied.] A similar assumption is made in the decisions upon the Fourteenth Amendment. . . . When this seemingly absolute protection is found to be qualified by the police power, the natural tendency of human nature is to extend the qualification more and more until at last private property disappears. But that cannot be accomplished in this way under the Constitution of the United States.⁹

Minor amendatory acts aside, the next enactment relating to subsidence came in 1949, when the General Assembly authorized all political subdivisions "to acquire by donation, agreement, lease, purchase, or the exercise of the power of eminent domain . . . any pillars in any anthracite or bituminous coal mine or any other necessary support of the surface over and above such mine . . . necessary to prevent subsidence, collapse or caving-in of the surface or structures thereon which may result from anthracite or bituminous coal mining operations."¹⁰ In other words, under this act, all political subdivisions can acquire support rights, provided compensation for those rights is made to their owners.

A more complete discussion of legal and judicial action relating to subsidence appears in Appendix C.

⁸ *Mahon v. Penna. Coal Co.*, 274 Pa. 489 (1922).

⁹ *Penna. Coal Co. v. Mahon*, 260 U. S. 393 (1922). The opinion of the court is reproduced in Appendix E.

¹⁰ 1949, May 18, P. L. 1474.

PUBLIC HEARINGS

Hearings were held by the Subsidence Committee as follows:

- On July 31, 1956, at Wilkes-Barre
- On August 7, 1956, at Coaldale
- On September 10, 1956, at Scranton
- On September 28, 1956, at Arnold
- On November 27, 1956, at Harrisburg.

At these hearings testimony was presented by individual citizens and by representatives of citizens' groups, municipalities, coal operators' associations, and the Pennsylvania Department of Mines and Mineral Industries. Generally, the witnesses presented evidence calculated to demonstrate the damage to surface structures, the hazards to health and safety, and the inconvenience to citizens caused by subsidence due to mining operations.

Many of the witnesses were keenly conscious of the complexity of the problem arising from the fact that the ownership of mineral rights, the right of support, and the utilization of the surface are severable. Several municipal officials, while cognizant of the provisions of the 1949 act permitting municipalities to acquire mine pillars or other support necessary to prevent subsidence, pointed out that the financial condition of their municipalities was such as to preclude any action under the legislation.

A number of witnesses cited the fact that property owners are frequently unaware that their deeds contain specific waivers of mineral and support rights, charging that such waiver clauses generally are so inserted that attention is not drawn to them.

The Pennsylvania Department of Mines and Mineral Industries has had extensive experience with subsidence. In testimony before the committee, representatives of the department indicated that they are acutely aware that the severability of property rights in land represents the crux of the problem:

This method of separating property rights vertically as well as horizontally is the main issue in the problem at hand of finding a way to mine coal with the consequent causing of damage to the surface by subsidence in such a manner as to be financially and humanly fair to both the surface owner and the coal owner. Obviously, where the right to damage clause is in favor of the owner of the coal, he has, at present, a solid legal leg on which to stand. It is this legal leg and its present application in coal mining practice that represents the key to today's problem in surface subsidence caused by coal mining in Pennsylvania.

With respect to the effectiveness of flushing¹¹ and the practicability of insurance against subsidence loss, the Department of Mines and Mineral Industries notes:

Flushing, or filling of underground voids with finely divided solid particles, using flowing water to conduct them to the desired position, has been suggested as a panacea for the subsidence problem. Flushing is not a cure all for the problem. It is the best method known to this time to reduce the probability of the occurrence and to limit the extent of surface subsidence at locations where part of the underlying coal has been removed and where existing conditions are favorable to its use. Permanent discontinuance of mining in the area is imperative if flushing is to provide continued value for surface support.

The most effective results are obtained from flushing: (1) when no further mining is to ensue (2) when the mine voids to be flushed are standing open (3) when access to said voids is possible to the workmen engaged in the flushing procedure (4) when the pertinent voids are free of underground water (5) when the dip of the vein or seam is sufficient to allow the carrying water used in flushing to drain off readily. Satisfactory flushing is also dependent on: (1) construction of proper holding barricades (2) use of desirable finely divided solids (3) admixture of minimum of carrying water (4) construction of proper drain and seepage boxes (5) proper supervision of depositing of flushing material.

¹¹ The 1955 General Assembly appropriated the sum of \$1,700,000 to the Department of Mines for works, including flushing, in connection with abandoned mines. Currently, the department is using a part of the appropriation to flush under the Pittston Hospital in the city of Pittston, Luzerne County.

The value of flushing is reduced with the reduction, or elimination, of availability of any of the above conditions. Prevailing conditions must be analyzed at each specific area by persons qualified to determine the practicability and effectiveness of proposed flushing therein. The title of the coal, or at least of the right to mine it, in any area to be flushed should pass to a group that would assure its permanent inactivity as to mining. Obviously, the owners of coal lands are anxious that mining continue in order to provide income from their ownership and it is believed only a few isolated coal land owners would be agreeable to participating in a permanent cease mining agreement unless the pertinent lands were purchased from them. It is our opinion that to attempt to purchase the coal lands necessary to accompany a wide scale flushing program would result in costs that would be beyond government practicability.

Some type of insurance has been suggested to provide for repairs to surface property damage caused by subsidence due to mining of coal. No mention of any participation on the part of the surface owner in the cost of such insurance has been noted. It is hard to believe that mining companies extracting coal from beneath unimproved lands could be expected to contribute to such a plan. It is not probable that companies mining coal under improved lands could competitively afford the additional expense of such insurance. State and/or Federal financial coverage of such insurance without participation of other parties would appear to be discriminatory.

PROPOSALS FOR REMEDIAL ACTION

Following are the major proposals for action relating to subsidence presented in the course of testimony at the hearings.

1. Provide for federal and/or state financial aid to enable municipalities to acquire pillars in any anthracite or bituminous coal mine or any other support "necessary to prevent subsidence, collapse or caving-in of the surface or structures thereon," as authorized by the Act of 1949, May 18, P. L. 1474.

2. Re-enact the "Fowler Act" of 1921, which established the State Anthracite Mine Cave Commission and imposed a tax of 2 percent of the market price of coal mined by every Pennsylvania corporation organized and every foreign corporation admitted to do business in the Commonwealth after the effective date of the act and by any other corporation accepting voluntarily the provisions of the act.

Proceeds of the tax were to be used to pay the expenses of the commission, to pay damages to persons injured or suffering property loss as a result of subsidence, and to finance measures for the prevention of injury or loss from subsidence.

3. Re-enact the "Kohler Act" of 1921, which made it unlawful to conduct anthracite mining operations in such a manner as to cause caving-in, collapse, or subsidence of public structures, streets, roads, bridges, public service facilities, cemeteries, or private structures used for habitation or for commercial or industrial purposes.¹²

4. Make it mandatory upon mine operators to furnish artificial support whenever supporting pillars of coal are removed.

5. Amend federal income tax statutes to permit full deduction as losses of structure damages from subsidence.

6. Amend the Federal Flood Insurance Act of 1956 to include subsidence as an insurable risk.

7. Prescribe by statute that every deed to real property must indicate, in bold type or otherwise conspicuously, whether or not it conveys mineral and support rights.

8. Enact legislation providing for an extensive Commonwealth flushing program in the built-up areas of the anthracite region, the cost of the program to be financed by means of a tonnage tax upon anthracite mined.

¹² All legal advice to the Subsidence Committee indicates that such an act would be held to be not constitutional. The Kohler Act was declared unconstitutional by the United States Supreme Court in 1922. Mr. Justice Holmes wrote the opinion of the court, with a dissenting opinion by Mr. Justice Brandeis.

APPENDIX A

SUBSIDENCE FROM A MINING ENGINEER'S POINT OF VIEW

R. M. FLEMING, E.M.*

Subsidences of the earth's surface, with the exception of certain types resulting from the erosive action of water, ice, or wind, are caused by the adjustment of unbalanced stresses in rock strata immediately subjacent to the area affected.

The rock strata of the earth's crust are subject to constant pressures from natural processes, and earth movements are in progress everywhere at all times. Movements may be of such magnitude as to result in an earthquake or the disappearance of an island beneath the surface of the sea, but most are infinitesimal and pass unnoticed.

Every tendency toward unbalance in the rock strata is counteracted by a tendency toward readjustment and a new state of equilibrium. Any extractive operation creates unbalance in the superjacent rock strata, causing bending and fracturing and rock fall until the void left by the removal of material is filled and the strata reach a new state of equilibrium. This adjustment may reach all the way to the surface and so result in the condition commonly referred to as subsidence. Surface subsidence has been observed to follow the extraction of salt, sulphur, gypsum, limestone, sandstone, shale, clay, minerals, natural gas, petroleum, water, and coal.

Surface subsidence has been observed in every area in which coal has been mined. Systematic study of the phenomenon in many localities has led to the development of a body of fact concerning its nature and causes to which competent mining engineers generally subscribe:

The extent and duration, and even the very occurrence, of surface subsidence depend upon a number of factors. Primary among these are the thickness of the coal seam and the depth of the seam from the surface. The thinner the seam and the greater the depth, the less chance of disturbance to the surface from mining operations. Other factors are:

* Mr. Fleming is professorial lecturer in mining engineering, College of Mineral Industries, The Pennsylvania State University.

1. The folding, fracturing, and faulting of the rock strata which took place prior to the onset of mining operations.

2. The make-up of the superjacent strata, which may be clay, shale, sandstone, or other coal seams. These vary greatly in resistance to compression, tension, and shear; some bend, some crumble, and some tend to flow under stress.

3. Top soil, which may be loam, clay, sand, or glacial till. These vary greatly in angle of repose, an important factor in determining how far subsidence will extend beyond the area of the broken rock strata.

4. The presence of water. Some materials are impervious to water, while others become plastic or swell and still others dissolve and are carried away, leaving voids.

5. The number of coal seams, the method, order, and rate of extraction, and the amount of solid coal left in place.

Mining history reveals many man-made conditions which favor subsidence, some the result of mining operations and others the result of location and type of surface construction.

THE ANTHRACITE REGION

Pennsylvania's anthracite beds are located in eleven counties in the northeastern part of the state; the operations are concentrated in Lackawanna, Luzerne, Northumberland, and Schuylkill counties. Earth movements and extreme folding of the strata in this region have bent, distorted, fractured, and, in places, crushed the rock strata. Within the region, geological conditions vary among the southern, middle, and northern fields. The coal beds, ranging in thickness from less than three to almost 100 feet, are spaced at irregular intervals, and the seams vary in number, depth of cover, and degree of pitch throughout the area. Top soil also varies greatly in thickness and composition. A large portion of the northern field, for example, is covered by an extensive glacial deposit which flows easily when wet.

Mining began in the eighteenth century, expanded rapidly in the nineteenth century, and continued prosperous until the 1920's. Early mining methods were crude, and the practice was to mine the most accessible coal. With the decline of the industry and the consequent abandonment of some mines, roof falls and disintegrating coal pillars—conditions conducive to subsidence—were paid little or no attention.

THE BITUMINOUS REGION

The bituminous fields of Pennsylvania lie primarily in the western counties, extending into the central part of the state. Here, geological conditions are less severe than in the anthracite region, and the conditions which cause subsidence are different. There is much less folding in the coal-bearing measures, less faulting, less fracturing, and generally less concentration of workable coal seams in a given area; the coal seams are generally thinner, flatter, and closer to the surface.

In some areas, surface mining has caused damage. (Surface or strip mining accounts for over 30 percent of the annual coal production in the Central Pennsylvania Field.) Where it has become uneconomical to remove the overburden, the practice of utilizing coal augers for underground extraction has developed. The aim is to extract as much coal as possible at least expense, without supporting the surface.

Subsidence is not a problem of great magnitude in the bituminous fields at the present time. Large areas have been undermined without causing serious damage to the surface. However, there are cases where surface cracks have been observed, buildings have settled, local depressions have appeared, and roads have been severely damaged, even though less than four feet of coal have been removed under almost 300 feet of cover.

Subsidence is likely to become more of a problem in the future than it is at the present time. Vast reserves of coal remain to be mined—some under areas already densely populated, some under growing residential sections and business developments, and some under farm and forest lands, which are as liable to subsidence damage as are built-up areas.

REPAIR AND REDUCTION OF SUBSIDENCE DAMAGE

There appears to be little economic justification for repair of existing damage due to subsidence. Money spent for the purpose of merely restoring buildings and improvements would be wasted, since further damage would not be prevented or even modified thereby. Subsidence will reoccur, and the process may go on for years.

Existing damage must be attributed to two principal causes: removal of the coal, leaving a void that sets up stresses in the superjacent strata and results in surface subsidence; and lack of precaution in building construction and improvement of land overlying mine workings.

A Royal Commission on Mining Subsidence found similar conditions in the coal fields of Great Britain. After an exhaustive study lasting sev-

eral years, the commission published a final report in 1927, in which recommendations for use of the following were made:

1. Hydraulic stowage (flushing or filling)
2. More scientific mining methods
3. Scientific lay-out of surface
4. Careful construction of buildings
5. Appropriate building codes

The Royal Commission report offers nothing new to mining engineers in the United States. (Similar recommendations, for example, can be found in various reports covering subsidence in the coal fields of Pennsylvania.) The reference is made for the purpose of indicating that subsidence involves the same problems wherever coal is mined.

Though there is no way to predict with certitude the extent or duration of a particular subsidence or damage resulting therefrom, mining men well understand the causes of subsidence and have some knowledge of methods for prevention of further subsidence from old mine workings and present and future mining operations. Given such knowledge, the extent and degree of surface damage from subsidence can be minimized.

ABANDONED MINE WORKINGS

Subsidence from old mine workings presents multiple problems. The total amount of coal removed since mining began in Pennsylvania amounts to several billion tons, leaving huge voids underground. According to the testimony of engineers and others who have attempted to make underground inspections, these voids are partially filled with broken rock, and any attempt to estimate the cubical content of the space remaining to be filled would be mainly guesswork. However, it is not unreasonable to suppose that billions of cubic yards would be involved, and that, even at a nominal unit cost, filling would require billions of dollars.

Hydraulic stowage, or flushing, is the only practical method known at the present time for filling old mine voids. Such filling—pumping sludge through bore holes from the surface—involves many problems. Large mine areas have been abandoned, some as long as eighty years ago, and no one knows the exact location of the voids; maps are inaccurate or nonexistent. Many mine openings are inaccessible because of roof falls, and no one knows what conditions prevail. These same roof falls would prevent fill material from flowing. Some of the mined-out coal seams are

on gentle pitches and material would not flow readily; other seams on steep pitches would require enormous amounts of fill material. A program designed to fill all mine voids in the coal fields of Pennsylvania would take years to complete, require huge amounts of material, cost enormous sums of money, and in the end would not assure that subsidence would not re-occur.

Selective stowage would seem to offer a sensible approach to the problem of reducing the damage from subsidence in the vicinity of old mine workings. Critical areas could be examined and prospected by drilling and/or by sonic methods, and the systematic lay-out of bore holes for the selected areas would prevent excessive moving of pumping stations. Sonic tests could be made to check progress. Such a program would require organized planning and direction by competent mining men familiar with local conditions.

In selective stowage, no special problem would be encountered in areas in which only one seam has been worked. Where several seams have been worked (as in certain areas of the anthracite region), the number and thickness of seams, the intervals between seams, the amount of coal left in place, and the location of the pillars would have to be taken into account. In these areas, local experience and coal company maps and records would be helpful. Pillars of coal are more likely to be offset in the successive seams rather than directly above each other from bottom to top. Since the normal procedure would be to fill the bottom seam first, there would be problems of casing throughout the voids in the top seams in order to carry the filling material to the bottom seam. If the voids were not aligned vertically, the holes would have to be moved to new locations for each successive seam.

There is always the possibility that the mined-out seams overlie other seams of as yet unmined coal. In such cases, flushing of the mined-out seams would be of limited value unless mineral and/or support rights covering these underlying seams could be simultaneously acquired, since mining under the area would negate the effectiveness of flushing the overlying seams in preventing subsidence.

Systematic selective stowage should be supplemented by systematic repairs to surface land and to the buildings and improvements on the land.

Land repairs will be dictated to a large extent by local conditions. In some areas, minor depressions and pot holes should be filled and leveled; in others, no improvement can be effected unless surface water is diverted

or carried off to prevent saturation and erosion of the top soil. In the northern anthracite field, draining and ditching would be helpful in dealing with the special water problems presented by the extensive deposit of glacial till.

The type and location of buildings and improvements on the surface should be regulated. It is a well-known fact that very high and long, narrow buildings are more readily damaged by earth movements associated with subsidence than are low and broad-based buildings. Again, buildings of excessively rigid construction are more readily damaged by such movement than are those of flexible construction. A concrete mat or pile foundation provides greater resistance to subsidence damage than do the more conventional foundations. Finally, buildings located at right angles to an advancing line of subsidence have greater resistance than those set at lesser angles. All of these factors could be dealt with by the adoption of building code regulations, applicable to business and utility as well as private construction, in communities located in the vicinity of old mine workings.

ACTIVE MINE WORKINGS

Mining operations can be conducted in such a manner as to minimize damage to surface property from subsidence. The means for reducing subsidence from present and future mining operations are available; the problems presented are those of economics and responsibility for support.

The primary method for modifying subsidence is that of systematic mining, by which the break of the mine roof and caving can be prevented during first mining and the action controlled in the process of second mining. Systematic mining is of two conventional types, called "room and pillar" and "longwall."

In room and pillar mining, commonly used in the United States, parallel openings, called "rooms," "chambers," or "breasts," are driven to a predetermined distance between solid coal on both sides, with temporary timber supporting the roof. When the distance is reached, retreat begins by robbing the pillar of solid coal farthest from the mine entrance.

The ends of the pillars being robbed are kept in a straight line in order to prevent uneven pressure from the unsupported roof from causing "creeps" or "squeezes" along the break-line. The purpose is to recover as much coal as can be recovered economically and safely.

Longwall mining is designed to recover all of the coal on first mining. The main feature is a long continuous face driven toward the boundary

of the property (longwall advancing) or from the boundary toward the mine entrance (longwall retreating). Men and machines along the face are protected by artificial support. Advocates of the longwall system claim to be able to control roof action so that the pressure is an aid in breaking down coal along the face. This method is in more general use in foreign countries, especially where mining is done under deep cover or extends beneath the sea.

Many modifications of these two basic methods are used, the adaptation dictated by local conditions and the judgment of the mining engineers in charge. Whatever method is adopted, the property must be laid out according to plan and the plan followed without deviation. Continuity of operation according to plan is probably the most effective method of preventing damage from surface subsidence. Systematic mining insures better recovery of coal with greater safety at less cost of production.

Regardless of the method used, the passageways between the coal face and the mine entrance—called “entries,” “headings,” or “gangways”—must be kept open while the mine is in operation, since these are the means of ingress and egress for all purposes. Roof support is accomplished by leaving solid pillars of coal or by supplementing the pillars with artificial supports, such as timber or steel framing, roof bolting, packwalling, and stowage or backfilling. Cribbing of brick, stone, or concrete is used where extra support becomes necessary.

The purpose of roof support is, or should be, to prevent the beginning of failure in the rock strata immediately overlying the coal seam. The first appearance of sag or cracking in the mine roof means that failure has begun; once failure begins, the impending fall may be delayed but not prevented. If there is no break, there can be no subsidence. Hence, the first step toward preventing subsidence must be adequate support of mine openings during first mining.

The second step is control of roof during the progress of second mining or retreat. This is accomplished either by leaving artificial supports in place as coal is removed or by leaving no supports at all. In low seams—of, say, less than four feet—the practice is to take out every support, including small coal “stumps.” The broken strata are then free to fall and fill the void, and equilibrium will be established before the break reaches the surface.

No absolutely dependable mathematical formula has been devised for calculating size of pillar or amount of backfill, packwall, or timber support

which will prevent subsidence after mining. Solid coal pillars left in place are the most effective means known for supporting a mine roof. The size of pillar and intervals between pillars depend largely on judgment based on experience. Empirical rules for calculating coal pillars allow for such factors as height of seam, depth of cover, and resistance of coal to decomposition and roof pressure. For example, Dron's Rule for calculating the size of shaft pillars provides for circumscribing all surface buildings which are to be protected and leaving a pillar equal to the area inscribed and extending it to a distance beyond the line to one-third the depth of the mine shaft. This calculation is said to allow for normal excavations and passageways around the shaft bottom. Many similar rules are to be found in Peele's *Mining Engineers Handbook*.

The decision of whether or not to support the surface, either by leaving permanent pillars of coal or by using artificial supports, is a matter of economics, since in either case there are two valuable natural resources involved—coal and land. Coal left in place is lost forever; land destroyed by subsidence may never be productive again.

Coal pillars left in place reduce the return on the coal operator's investment, since, manifestly, he has less coal to sell and the useful life of his plant and equipment is shortened. The ready alternative seems to be to have the surface owner reimburse the operator for this loss of revenue by purchasing support. However, in many cases the purchase price would be prohibitive, because for all practical purposes it would involve acquisition not only of support but of all mineral rights. Forced to leave large areas of coal for support under heavily populated areas and farm and forest lands, a mine owner might abandon the operation as unprofitable.

With respect to the substitution of artificial for pillar support, it should be noted that the labor and materials used in artificial support of any kind add substantially to the cost of coal production. This is a serious matter to the commercial coal operator, who must sell his coal in competition with oil, gas, and other coal. And it may be taken for granted that the cost of artificial roof support will not be uniform. Variations in thickness and pitch of coal seam, depth and composition of overburden, and methods of mining would result in varying roof-support costs, which then would become a variable factor in competition among mines, among coal fields, and among states where coal is mined.

Subsidence of land following mining operations is a problem of considerable magnitude not only in Pennsylvania but in all states where extractive

industries are conducted. From a mining engineer's point of view, a constructive approach to a solution of the problem would be the development of a comprehensive program, implemented by state legislation, to include:

1. Establishment of a liaison committee for the purpose of enlisting the support of other states and the federal government, and the creation of a clearing house, in Pennsylvania, to facilitate the assembling in one place of all available information bearing on the problem, now scattered about in various reports and records, and the dissemination of information to the public.
2. Continuous study by competent mining engineers to assure the orderly progress of efforts to minimize surface subsidence.
3. Codification of existing Pennsylvania laws relating to the exploitation and conservation of mineral and land resources.

A permanent solution to the problem of surface subsidence is certainly desirable, but inadequate or hasty measures will work more harm than benefit by placing coal operators and eventually the state of Pennsylvania in a position of economic disadvantage.

APPENDIX B

THE EFFECTIVENESS AND COST OF FLUSHING
VOIDS CAUSED BY MINING OPERATIONS
IN THE ANTHRACITE REGION

A Report to the Anthracite Subsidence

Commission of 1941

Scranton, Pennsylvania, September 25, 1942.

ANTHRACITE SUBSIDENCE COMMISSION Appointed Under
Act No. 295, P. L. 802, 1941.

Gentlemen:

Your honorable commission in the conduct of its investigation has previously referred to the process of flushing mine openings under the improved or "built-up" surface of the various municipalities in the Anthracite Region of Pennsylvania as a means of overcoming the objectionable surface disturbances attendant upon the removal of coal support. It is our purpose to call to your attention at this time only the so-called high spots involved in the process frequently referred to as hydraulic filling.

While there have been other methods employed in so-called backfilling of voids resulting from underground mining (pneumatic filling, hand packing or stowing, etc.), it is recognized that none of these are as effective as the hydraulic method. It was first employed in connection with anthracite mining in Pennsylvania some 50 years ago and has been carried on to a more or less extent ever since. However, it has never been conducted on a scale commensurate with the mine openings developed, for a number of obvious reasons; first, the lack of sufficient available material, and, second, the additional cost involved.

Reference has been made that the practise of backfilling mine openings in European countries has been used with success. We find, however, that the practise there has been no more general than that used in the anthracite region. And where used in Europe, particularly Germany, it has had

specific application to more or less isolated cases and under Government direction and subsidy.

The anthracite region, as your commission now well knows, extends from Forest City, in the Lackawanna Valley on the northeast, to Dauphin County in the southwest, covering 485 square miles of superficial area over the lowest coal beds. There are many communities, cities and towns, located wholly or in part directly over the coal measures. Available figures indicate that 26% of the entire coal area is confined within the limits of these "built-up" communities, under which the original coal content is estimated to have been 5,000,000,000 gross tons in place. During the long period of mining operations since the beginning, extending over 125 years, it is roughly estimated that 50% of the original coal content under the improved areas as a whole has been removed. Much of this area is now inaccessible and could not be flushed almost at any cost.

The voids resulting from this mining, together with that of future mining, would develop a volume of 4,424,000,000 cubic yards, the fill material for which would be sufficient to cover the surface of the entire anthracite region to a depth of 10 feet. The estimated cost of filling such openings would be an inconceivable figure of \$7,278,000,000. This estimated cost of course is based upon present prices, ranging from \$1.50 to \$3.00 per cubic yard, depending upon the conditions encountered in the mine openings. It is also contingent upon having flushing material available at the mine opening on the surface, which is not the case under present day conditions.

It is obvious, of course, that no such volume of material is recoverable in the process of the preparation of run-of-mine material currently brought out of the mines, and it would be necessary, therefore, to obtain so-called foreign material for the purpose of flushing mine openings on a large scale. This question of finding material to supplement that produced through the preparation of anthracite coal has heretofore been treated in numerous investigations by commissions from the Federal and State Governments, company and private engineers.

The investigation of the mine conditions under the City of Scranton made by two eminent engineers, William Griffith and Eli T. Conner, and published in Bulletin 25 by the Federal Bureau of Mines, indicates "the excessive cost of completely filling the openings, and the tremendous magnitude of the project makes this plan prohibitive."

More recently the report covering a proposal to flush certain mine openings under the City of Scranton made under the direction of Mr. J. Rossa McCormack and other Scranton engineers, indicated the cost of flushing 8 separate areas to involve an expenditure approximating \$50,000,000. The Federal authorities refused to appropriate such an amount of money for this purpose. It is to be noted that these reports confirm the excessive cost involved in a large scale flushing project.

The flushing of material into mine openings is no panacea for subsidence resulting from the removal of the underlying support of coal. Since it is a known fact, developed through elaborate tests, that such material is compressible to 33% of its original volume in place, the same is true in varying degrees with other types of support. Engineers and others engaged in operation are unanimously of the opinion that flushing has, as its asset, the chief function of providing lateral support to pillar coal by diminishing the disintegration of the pillar coal support. This is no new theory but one which has been demonstrated throughout the history of the industry. It is obvious, therefore, that the surface can be maintained only through leaving the coal support intact. It must be realized that not only is flushing an expensive procedure, uneconomical from an operating cost standpoint, but its application is attendant with hazards of varying degrees. The various coal beds are geologically formed on pitches ranging from light to heavy in the different basins throughout the region. On the lighter pitches the hazards involved are considerably less than those on the heavier pitches and consequently the factors with regard to cost of filling, drainage, ventilation, etc., are peculiar to the particular location.

It has been shown that flushing is beyond the economic limits of the industry and further that flushing will not provide the support necessary to prevent surface subsidence.

The only other alternate is to leave intact such pillars of coal as remain unmined under the various municipalities. Such procedure would, however, not prevent further subsidence which unquestionably will continue.

Furthermore, it must not be overlooked that the anthracite region, notwithstanding its relatively vast extent, is peculiarly and exclusively dependent upon the healthy condition of this particular industry through the employment of men, with consequent large payrolls, and those of correlated enterprises, and the vast amount of taxes paid to the municipalities in the region. Statistics show that the average tax income annually flowing into the treasuries of the various municipalities for the unmined coal lying under built-up

areas ranges from \$30 to \$50 per superficial acre of surface, amounting to more than \$3,000,000 in total. This income would be undoubtedly lost if it became necessary to discontinue mining operations and abandon the coal through legislation for the support of the surface. The local taxes paid locally is many times greater.

It is a matter of record that for more than thirty years in the immediate past, the problem of surface subsidence incident to mining has been given serious consideration by the industry, the engineering profession and the public, and no complete solution has as yet been found.

Respectfully submitted,

J. F. K. BROWN

[Hudson Coal Company]

H. A. DIERKS

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APPENDIX C

SUBSIDENCE AND THE LAW

The first Pennsylvania court case involving the question of liability for property damage resulting from subsidence due to the extraction of coal was the case of *Jones v. Wagner*, 66 Pa. 429, (1870). In this case the surface was owned by one person and the underlying coal by another. The Supreme Court of Pennsylvania adopted the rule of the common law of England which was that "*where there is no restriction or contract to the contrary*, the subterranean or mining property is subservient to the surface to the extent of sufficient supports to sustain the latter, or in default, there is liability to damages by the owners or workers of the former for any injury consequent thereon to the latter." (Emphasis supplied.) The court stated that "the owner of a mineral estate, if the law be not controlled by the conveyance, owes a servitude to the superincumbent estate, of sufficient supports; consequently the failure to do so is negligence, and so may be declared upon," and held the operators liable because the damages had resulted from the lack of "sufficient supports in the mine to prevent the plaintiff's ground, house and orchard, from injury by subsiding into the cavity made in the earth by the removal of the coal."

But the court also observed:

We have no doubt but all the evils deprecated by the adoption of this rule will disappear under regulations adapted to each case of severance of the soil from the minerals. Contract may devote the whole minerals to the enjoyment of the purchaser, without supports, *if the parties choose*. [Emphasis supplied.] If not, the loss by maintaining pillars or putting in props will necessarily come out of the value of the mineral estate.

A long line of cases followed the rule set forth in the above case in imposing on the mine owner or operator an absolute duty of support of (1) the surface above the mine and (2) the artificial additions (buildings, etc.) erected, unless the duty of vertical support has been effectively released. *Coleman v. Chadwick*, 80 Pa. 81, (1875); *Carlin v. Chappel*, 101 Pa. 348, (1882).

The principle that three estates may exist in land—namely, (1) the surface, (2) the minerals, and (3) the right of support—and that each of these may be vested in different persons at the same time was recognized and approved in the cases of *Graff Furnace Company v. Scranton Coal Company*, 244 Pa. 592, (1914); *Penman v. Jones*, 256 Pa. 416, (1917); and *Charnetski v. Miners Mills Coal Mining Company*, 270 Pa. 459, (1921). It was held that the owner of the surface could not recover from the owner of the coal vein for any damages resulting from subsidence where there had been a waiver of such support: *Scranton v. Phillips*, 94 Pa. 15, (1880); *Young v. Thompson*, 272 Pa. 360, (1922). Similarly, the Commonwealth and its political subdivisions are bound by effective waivers as to surface support when given by prior owners: *Commonwealth v. Clearview*, 256 Pa. 328, (1917). However, the Commonwealth is not bound by such a waiver if it takes the land by condemnation: *Commonwealth v. Pardee Brothers*, 310 Pa. 353, (1933). See 1933, June 1, P. L. 1409.

In addition to the possibility of there being three separate estates in the same parcel of land, there may be various seams of coal in the same estate, each seam owned by a different person, but by the very nature of the circumstances and necessities, mining operations must be conducted so as not to interfere with either the underlying or overlying seam owners or operators, and “‘in the absence of a release or waiver of support, mining operations must be so conducted as to leave intact the superincumbent estate.’” *Pa. C. & C. Corp. v. Duncan-Spangler Company*, 132 Pa. Superior Ct. 533, (1938).

The General Assembly of Pennsylvania took official cognizance of the subsidence problem in 1911, when, by joint resolution, a commission was formed to study physical conditions and the legal problems related thereto, and to propose remedial legislation.¹ This commission in 1913 made a report on existing conditions² to the legislature and proposed two bills, neither of which imposed any duties of surface support on mine operators. Neither of the proposed bills was adopted, but the General Assembly passed an act making it unlawful for mine operators to mine in such a manner as to remove necessary adequate support from beneath streets, avenues, thoroughfares, courts, alleys, and public highways of any municipal corporation.³ Specifically, the act provided:

¹ Joint Resolution, approved March 24, 1911, P. L. 26.

² *Legislative Journal* (1913), V, 5947-6006.

³ 1913, July 26, P. L. 1439. Repealed as to cities of the third class by Act of 1931, June 23, P. L. 932, Art. XLVII, Sec. 4701.

Section 6. It shall be unlawful for any person, firm, association, or corporation to dig, mine, remove, or carry away the coal, rock, earth, or other minerals or materials forming the natural support of the surface, beneath the streets, avenues, thoroughfares, courts, alleys, places, and public highways of any municipal corporation within this Commonwealth, to such an extent and in such a manner as to thereby remove the necessary adequate support of the surface against subsidence, without having first placed, built, erected, and constructed sufficient adequate and permanent artificial support, in place and stead thereof, to maintain, uphold, and preserve the stability of the surface of said streets, avenues, thoroughfares, courts, alleys, places, and public highways.

This same act permitted municipal corporations in the anthracite region of the Commonwealth to create bureaus of mine inspection and surface support, vesting in the bureaus powers of mine inspection and requiring mine owners, operators, or superintendents to file with the bureaus maps or plans of their workings or excavations.

In 1915, similar provisions were enacted relating specifically to boroughs in the anthracite region and the 1913 act was repealed as it applied to them.⁴

In 1921, the legislature extended the scope of this prior legislation by making it unlawful to conduct anthracite mining operations in such a manner as to cause the caving-in, collapse, or subsidence of: public structures, streets, roads, bridges, public service facilities, cemeteries, or private structures used for habitation or for commercial or industrial purposes.⁵

Under the provisions of the act, commonly known as the Kohler Act, the Court of Common Pleas of Luzerne County was asked by Mr. and Mrs. H. J. Mahon to restrain the Pennsylvania Coal Company from mining any coal underlying their property in the City of Pittston, "the removal of which will cause the caving-in, collapse or subsidence of their dwelling house." The Luzerne County court denied relief to the Mahons on the grounds that the coal company not only had acquired title to the coal but had also obtained a waiver of support of the surface and hence was under no liability for injury thereby inflicted.

Though this decision was in accord with the decisions previously handed down, the city solicitor of Scranton and the Attorney General of the Commonwealth intervened and the case came to the Pennsylvania Supreme Court, where its importance became more evident because the court con-

⁴ 1915, May 14, P. L. 312, Chap. VII, Art. VII.

⁵ 1921, May 27, P. L. 1198; the full text of the act is reproduced in Appendix D.

sidered that it involved not only the Mahons, as the lower court had regarded it, but the interest of the entire anthracite region of the state, including many villages, boroughs, and cities, containing, the court's opinion estimated, approximately a million people.⁶ It had, according to the Supreme Court, "become a matter of widespread notoriety that these disturbances menace the safety and material welfare of the inhabitants of communities in that part of the state." The Supreme Court of Pennsylvania opinion continued:

During the period mentioned [the previous fifteen or twenty years], the facts have been put before the public, not only by news of the collapse of streets and the fall of buildings, but also through the reports of commissions created by joint resolutions of the legislature and by means of numerous proposed statutes, antedating the present law, some of which passed and others did not; likewise, by messages from the governor of the Commonwealth addressed to the general assembly.

The opinion also pointed out that the conditions that gave rise to the Act of 1921, May 27, P. L. 1198, were summarized in the preamble to the act, and added:

In signing the bill, the governor stated of record that "lives have been lost, homes, churches and schools destroyed, and an ever-present peril has threatened the morale of the entire community"; adding, "for a generation the appeal . . . to save the situation has been heard at the capital."

The Pennsylvania Supreme Court held that theretofore subsidence cases had been decided on the grounds that they involved private interests between the parties concerned, whereas the act in question was directed to halting a public nuisance; that the mining operations of the defendant coal company were a public nuisance and hence the exercise of the police power to prevent such a nuisance was a proper exercise of that power.

As to the contractual rights of the parties, the Pennsylvania Supreme Court held:

It was the harmful results, to the community as a whole, of contracts granting the right to let down the surface under any and all circumstances, that gave rise to the statute now attacked; and the power to enforce the public policy of the State, declared in this legislation, cannot be defeated because those who move the court [the Mahons] are parties to such a contract.

The Pennsylvania Coal Company took an appeal to the Supreme Court of the United States; the case there takes the name of *Pennsylvania Coal*

⁶ *Mahon v. Penna. Coal Co.*, 274 Pa. 489, (1922).

Company v. Mahon, 260 U. S. 393, (1922). The opinion of the U.S. Supreme Court stated:

A source of damage to such a house [the Mahons'] is not a public nuisance even if similar damage is inflicted on others in different places. The damage is not common or public. . . . The protection of private property in the Fifth Amendment presupposes that it is wanted for public use, but provides that it shall not be taken for such use without compensation. A similar assumption is made in the decisions upon the Fourteenth Amendment. . . . When this seemingly absolute protection is found to be qualified by the police power, the natural tendency of human nature is to extend the qualification more and more until at last private property disappears. But that cannot be accomplished in this way under the Constitution of the United States.⁷

Under the decision of the U.S. Supreme Court, the 1921 Pennsylvania act dealing with the subsidence problem was declared unconstitutional.

The 1921 General Assembly had also passed an act known as the Fowler Act, which established the State Anthracite Mine Cave Commission and gave it jurisdiction over anthracite coal mines.⁸ Mine owners or operators who accepted the provisions of the act were required to pay the commission two percent of the market price of all anthracite coal mined. (Corporations organized and foreign corporations admitted after the effective date of the act were presumed to consent to be bound by its provisions.) The commission was directed to use the moneys for: (1) expenses of the commission; (2) payments to persons injured or damaged in person or property by mining operations; and (3) payments for the prevention of threatened injury or damage to persons or property by surface subsidence resulting from anthracite coal mining operations.

The Commission had but one set of members: James B. Smith, Scranton; Philip R. Bevan, Wilkes-Barre; and Thomas H. B. Lyon, who died May 13, 1922. While the two surviving members were renominated by Governor Sproul on January 2, 1923, for terms beginning November 23, 1921, until annulled,⁹ Governor Pinchot, on January 16, 1923, recalled all of the many nominations made by Governor Sproul, including the nominations of the two members of the commission. While the act creating the commission was in no way involved in the litigation of the *Pennsylvania Coal Company v. Mahon*, for some reason or other members were never appointed after Governor Pinchot's recall of the nominations. No report of the commission

⁷ The opinion of the U. S. Supreme Court is reproduced in Appendix E.

⁸ 1921, May 27, P. L. 1192; the full text of the act is reproduced in Appendix D.

⁹ *Legislative Journal* (1923), I, 23.

has been found, and the agency was finally abolished by section 2 of the Administrative Code (1929, April 9, P. L. 177); no similar commission has since been created.

When the Department of Welfare was created in 1921, it was given specific authority to exercise its supervision over various systems of payments, including "any system of reparation provided by the Commonwealth for the relief from conditions caused by mine-caves."¹⁰

A 1927 act continued the authority of boroughs in the anthracite region to establish bureaus of mine inspection and surface support. These bureaus were given full power of inspection, and section 1160 of the act made it unlawful for any one to so "dig, mine, remove or carry away coal, rock, earth or other minerals or materials forming the natural support of the surface beneath the public highways, streets, alleys, courts, and places of any borough in the anthracite region to such an extent and in such a manner as to thereby remove the necessary support of the surface, without having first placed or constructed an artificial permanent support sufficient to uphold and preserve the stability of the surface of such public highways, streets, alleys, courts, and places."¹¹

Similarly, a 1931 act extended the authority of third class cities in anthracite regions to establish bureaus of mine inspection and surface support with powers similar to those set forth above.¹²

In 1937, a statute was enacted making it unlawful to mine bituminous coal in such a "negligent" manner as to cause the caving-in, collapse, or subsidence of surface property located in counties of the second class.¹³ The scope and purpose of this act are identical to the Act of 1921, May 27, P. L. 1198, which is reproduced in Appendix D.

In 1949 the General Assembly authorized all political subdivisions to "acquire by donation, agreement, lease, purchase, or the exercise of the power of eminent domain . . . any pillars in any anthracite or bituminous coal mine or any other necessary support of the surface over and above such

¹⁰ 1921, May 25, P. L. 1144.

¹¹ 1927, May 4, P. L. 519, sections 1155-62; section 1160 was last amended 1951, July 19, P. L. 1026, No. 217. When the Borough Code was re-enacted and amended (1947, July 10, P. L. 1621, etc.), the provisions relating to bureaus of mine inspection and surface support were also re-enacted.

¹² 1931, June 23, P. L. 932, sections 2201-09; re-enacted and amended 1951, June 28, P. L. 662.

¹³ 1937, July 2, P. L. 2787. The question of the constitutionality of this act was raised by a legislator at the time of the third reading of the bill. See *Legislative Journal* (1937), V, 5584 ff.

mine . . . necessary to prevent subsidence, collapse or caving-in of the surface or structures thereon which may result from anthracite or bituminous coal mining operations.”¹⁴ This act meets the requirements of the U.S. Supreme Court decision with reference to the Fifth and Fourteenth Amendments.

¹⁴ 1949, May 18, P. L. 1474.

APPENDIX D

ENACTMENTS OF THE PENNSYLVANIA GENERAL
ASSEMBLY, SESSION OF 1921, RELATING TO
ANTHRACITE MINE SUBSIDENCE

The Act of 1921, May 27, P. L. 1192

AN ACT

Affecting anthracite coal mines and operations; establishing the Pennsylvania State Anthracite Mine Cave Commission; defining its jurisdiction and powers; imposing duties upon owners and operators of anthracite coal mines; and imposing penalties.

Section 1. Be it enacted, &c., That the words "owner," "operator," and "mine," and the phrase "anthracite coal mine," wherever used in this act, are declared to bear the same meaning as the same bear in the act, approved the second day of June, one thousand eight hundred and ninety-one (Pamphlet Laws, one hundred seventy-six to two hundred and eight, inclusive).

Pennsylvania
State Anthracite
Mine Cave Com-
mission.
Definitions.

Section 2. Within three months after the approval of this act, there shall be established a commission, to be known as the Pennsylvania State Anthracite Mine Cave Commission.

Establishment of
commission.

Section 3. It shall be the duty of the owner or operator of every anthracite coal mine, within six months after the approval of this act, to signify in writing to the commission whether or not such owner or operator voluntarily accepts the provisions of section eight of this act. Such acceptance or rejection shall be acknowledged, and recorded in the recorder of deeds' office of the county or counties in which

Acceptance or
rejection of act
by operators.

such anthracite coal mine or mines are situate, in the same manner as deeds of conveyance. An owner or operator who has rejected the provisions of section eight of this act may thereafter accept the same in the manner hereinbefore provided.

Acceptance presumed.

Section 4. Every owner or operator who fails to signify in writing a non-acceptance of the provisions of section eight of this act, within six months from the approval of this act, shall be conclusively presumed to have accepted the provisions of said section. Every acceptance or failure to signify a non-acceptance as aforesaid shall bind the successors in title, heirs, personal representatives, and assigns of such owner or operator.

Whom acceptance binds.

Corporations hereafter incorporated.

Section 5. Every corporation hereafter to be organized, under the laws of this Commonwealth, under a charter giving the privilege to own or operate anthracite coal mines, shall be conclusively presumed to consent to be bound by the provisions of section eight of this act.

Foreign corporations.

Section 6. Every foreign corporation hereafter admitted to do business within the jurisdiction of this Commonwealth under a charter giving the privilege to own or operate anthracite coal mines shall be conclusively presumed to consent to be bound by the provisions of section eight of this act.

Maps and plans to be filed with commission.

Section 7. It shall be the duty of every owner and operator of every anthracite coal mine or mining operation to file with the aforesaid commission copies of all maps and plans of their underground workings, whenever the same are required by existing law to be filed or deposited with any public officer or authority.

Payments by operators to commission.

Section 8. It shall be the duty of every owner or operator who accepts or becomes subject to the provisions of this section of this act in the manner hereinbefore provided, to pay the commission herein established, on the first day of May, August, November, and February, respectively, a sum equal to two per centum of the market price, when pre-

pared for market, of all anthracite coal mined within this Commonwealth by such owner or operator during the first, second, third, and fourth quarters, respectively, of every year. The commission shall have power by suit in assumpsit to enforce collection of such sums as become delinquent, with interest thereon at the rate of one per centum per month. Collection.

Section 9. All sums received by the commission shall be deposited to the credit of the commission in one or more banks which are entitled to receive deposits of State moneys, and shall be expended only, upon order of the commission, for the purposes and objects and in accordance with the provisions of this act. Deposit and expenditure of commission's funds.

Section 10. Said funds so received shall be expended by the commission for the salaries and other expenses of said commission, for the prevention and elimination of danger to life, limb, and health, and avoidance of grave public harm by surface subsidence resulting from past or future anthracite coal mining operations, and likewise for the prevention, ascertainment, and remedying of damages to persons and properties so resulting. Purposes for which funds may be expended.

Section 11. Every person, natural or artificial, including municipalities, claiming to have suffered injury or damage to person or property by reason of surface subsidence occurring within six years prior to the passage of this act, or which may hereafter occur, resulting from past or future anthracite coal mining operations, may file a sworn itemized statement thereof with the commission, which shall promptly proceed to investigate the claim, and shall award the claimant such sums as, in its judgment, will fairly compensate for the damages sustained. Claims for damages resulting from caves. Investigation and award.

Section 12. The commission shall have power in every case, instead of awarding damages to such claimants, to cause injured property to be restored to its former condition, and for this purpose to employ labor, purchase materials, or let contracts. Restoration in lieu of damages.

Release	<p>Section 13. No awards shall be paid to any such claimant, except upon condition that such claimant execute a general release of all past damages to the particular property injured or damaged in favor of the owner or operator whose workings occasion the damage, provided said owner or operator has accepted the provisions of section eight of this act.</p>
Mining under structures, highways, etc.	<p>Section 14. Every owner or operator who has accepted the provisions of section eight of this act shall be privileged, at any time, to submit to the commission an application, setting forth details of proposed mining operations to recover coal belonging to the applicant and located beneath a structure, highway, or other improvement of a class protected against subsidence by the provisions of the act of one thousand nine hundred and twenty-one, entitled "An act regulating the mining of anthracite coal; prescribing duties for certain municipal officers; and imposing penalties." The application shall also set forth, under oath, the belief of the applicant that the removal of such coal can be affected without endangering human life, limb, or health, or causing grave public harm.</p>
Details of proposed operation to be submitted.	
Application for permission.	
Investigation.	<p>Section 15. The commission shall take prompt action upon such application, make such investigation as appears to be required, and, if convinced of the truth of the matters set forth in the application, make an order permitting the applicant to carry out proposed mining operations, under such safeguards of life, limb, health, and general welfare, as it may reasonably require; and all damages occasioned by such mining operations shall be paid by the commission: Provided, however, That nothing in this act contained shall be construed to affect any express or implied contractual or property right of support belonging to the owner of the overlying or adjacent surface.</p>
Permission.	
Rights of support not affected.	
Prosecution of operators.	<p>Section 16. No owner or operator shall be prosecuted for causing a subsidence, collapse, or cave-in of any structure, highway, or other property, where the mining operations had been conducted in pursuance of an order of the commission and in a careful and skillful manner.</p>

Section 17. The commission, its engineers, and agents, shall have the right of access, at all reasonable times, to all anthracite coal mines and mining operations, and to all papers, records, books, maps, plans, charts, and other documents pertaining thereto; and where, upon investigation, conditions appear to exist in any mine or mining operation which threatens the life, limb, or health of persons upon the surface, the commission may, after hearing and determination of the existence of such danger, order and direct the owner or operator in control of such mine or mining operation to leave or provide such support or to take such precautions as the commission may determine are reasonably necessary to avoid or eliminate such danger, provided that any owner or operator who has accepted the provisions of section eight of this act, and contributed the sums required to be paid under said section, shall be reimbursed by the commission for the fair and reasonable value or cost of the support so required to be left or provided.

Right of access to operations and books.

Orders to remedy dangerous conditions.

Reimbursement of operator.

Section 18. Whenever, in the opinion of the commission, it shall be deemed necessary for the safety of the traveling public using any public street or of any person occupying or residing upon property from under which the coal has been mined prior to the passage of this act or is about to be mined out under the provisions of this act, in such a manner and to such an extent as to create a public peril, the commission shall have the right and power to withdraw said portion or portions of such street or streets from public use by closing the same until such time as the danger is removed, and likewise, upon the petition of the majority of the inhabitants of any territory affected as aforesaid, to direct said inhabitants to temporarily remove therefrom until such time as the danger has been eliminated. In such case, the commission shall provide suitable and adequate housing facilities for the inhabitants so affected, and recompense any injured party for all damages and expenses by them sustained in such connection, such damages to include all expense of moving from and to said property and all additional

Closing of dangerous streets.

Removal from endangered properties.

Housing of inhabitants who have moved.

Damages caused by moving.

Refusal to move.

expense, including loss of rents, resulting from the aforesaid removal, which the commission may approve, and likewise any damage to any buildings or building so affected, except to the extent which the same may be repaired or restored by said commission or under its authority out of the funds so provided. In case any owner or occupant of any property in such affected territory shall refuse to comply with any order of the commission in this behalf, he shall not be entitled to receive any compensation or reparation from said commission.

Priorities in commission's funds.

Section 19. In case at any time the commission has not sufficient funds to pay all sums awarded by it, the following preference shall be made in the payments:

1. Payments of the necessary expenses of the commission.
2. Awards to persons injured or damaged in person or property by mining operations of mines the owners or operators of which have accepted the provisions of section eight of this act, priority being given in accordance with the date upon which the claims were filed.
3. Expenditures for the prevention of threatened injury or damage to persons or property by surface subsidence resulting from anthracite coal mining operations. Where the commission shall certify that an emergency exists, such payments shall take precedence over payments of awards of damage for injuries.
4. All other awards, priority being given in accordance with the date upon which the claims were filed.

Where payments of awards are deferred for lack of funds, such awards shall bear interest at the rate of six per centum per annum.

Personnel of commission.

Section 20. The commission shall consist of a chairman and two other members, one of whom shall be a practical mining engineer, and all of whom shall be citizens and residents of the anthracite producing counties of the Common-

wealth, to be appointed by the Governor and to hold office during his pleasure, and shall establish headquarters at such place in the anthracite region as it may determine. Headquarters.

Section 21. The members of the commission shall each receive a salary of eight thousand dollars per annum and their actual necessary expenses. The commission shall employ a secretary, counsel, and such other deputies, assistants, engineers, investigators, and clerks, as it seems necessary, and may fix and pay the salaries thereof, the organization to be modeled as nearly as practicable upon the organization of the Public Service Commission: Provided, however, That all salaries and expenses of the commission shall be payable only out of the funds received by them from owners and operators who have accepted the provisions of section eight of this act, and no funds shall be payable out of the public treasury on account of salaries or expenses of the commission or awards of damages. Organization and salaries. Payment of salaries.

Section 22. The commission shall make annual report to the Governor, and shall recommend to the Governor such changes in the laws as will, in its opinion, reduce the evils resulting from mine caves or surface subsidences in the anthracite region of this Commonwealth. Report.

Section 23. The commission shall have power to issue subpoenas and subpoena duces tecum, to administer oaths, and to regulate the procedure to govern the conduct of its affairs. Any person aggrieved by any final order of the commission shall have the right to appeal to the courts of the Commonwealth to the same extent and in the same manner as appeals are allowed from final orders of the Public Service Commission. Subpoenas and oaths. Appeals.

Section 24. It is hereby declared that the provisions of this act are severable one from another, and if, for any reason, this act should be judicially declared and determined to be unconstitutional so far as relates to one or more phrases, clauses, sentences, paragraphs, or sections thereof, such judicial determination shall not affect any other provisions. Construction.

of this act. It is hereby declared that the remaining provisions would have been enacted notwithstanding such judicial determination of the invalidity in any respect of one or more of the provisions of this act.

- Violations. Section 25. Any owner or operator, or officer, agent, or employe thereof, wilfully violating any order of the commission shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be sentenced to pay a fine of not more than five thousand (\$5,000) dollars, or undergo imprisonment of not more than one (1) year, or both, at the discretion of the court.
- Misdemeanor.
- Penalty.
- Repeal. Section 26. All acts or parts of acts inconsistent with this act are hereby repealed: Provided, however, That nothing herein contained, except as expressly recited, shall in any manner affect the act of one thousand nine hundred and twenty-one, entitled "An act regulating the mining of anthracite coal; prescribing duties of certain municipal officers; and imposing penalties."

APPROVED—The 27th day of May, A. D. 1921.

WM. C. SPROUL.

The Act of 1921, May 27, P. L. 1198

No. 445

AN ACT

Regulating the mining of anthracite coal; prescribing duties for certain municipal officers; and imposing penalties.

Section 1. Be it enacted, &c., That it shall be unlawful for any owner, operator, director, or general manager, superintendent, or other person in charge of, or having supervision over, any anthracite coal mine or mining operation, so to mine anthracite coal or so to conduct the operation of mining anthracite coal as to cause the caving-in, collapse, or subsidence of—

Mining of anthracite coal.

Must not cause subsidence of certain lands and structures.

(a) Any public building or any structure customarily used by the public as a place of resort, assemblage, or amusement, including, but not being limited to, churches, schools, hospitals, theatres, hotels, and railroad stations.

(b) Any street, road, bridge, or other public passageway, dedicated to public use or habitually used by the public.

(c) Any track, roadbed, right of way, pipe, conduit, wire, or other facility, used in the service of the public by any municipal corporation or public service company as defined by the Public Service Company Law.

(d) Any dwelling or other structure used as a human habitation, or any factory, store, or other industrial or mercantile establishment in which human labor is employed.

(e) Any cemetery or public burial ground.

Section 2. Every owner, operator, lessor, lessee, or general contractor, engaged in the mining anthracite coal within this Commonwealth, shall make, or cause to be made, a true and accurate map or plan of the workings or excavations of

Maps and plans of proposed operations.

such coal mine or colliery, which shall be drawn to a scale of such size as to show conveniently and legibly all markings and numbers required to be placed thereon by the terms of this act. Such maps or plans shall also show, in detail and in markings of a distinctive color, all contemplated workings which are intended to be undertaken or developed within the succeeding six months. Such maps or plans shall be deposited, as often as once in six months, with the mayor in cities where such coal mines or collieries are situated. In boroughs and townships of the first class, such maps or plans shall be filed with the county commissioners of the proper county. Such maps or plans shall be considered public records, and shall be open to the inspection of the public, and copies or tracings may be made therefrom. No mining shall be done which is not shown on the map or plan filed at least ten days previously.

Filing.

Public records.

Time of filing.

Designation of pillars.

Section 3. Every owner, operator, lessor, lessee, or general contractor, engaged in the mining of anthracite coal, or any president, director, general manager, superintendent, or other person in charge of, or having supervision over, any anthracite coal mine or mining operation in this Commonwealth, shall be, and is hereby, required: (a) To designate, within a period of six months from the passage of this act, and to keep designated by number, each and every pillar of anthracite coal beneath the surface still remaining in place at the time this act goes into effect and all pillars thereafter created, the number of each pillar to be placed in a conspicuous position with white paint or some other equally durable and visible substance; and (b) to designate, or cause to be designated, by numerals of convenient and legible size, upon all mine maps or plans mentioned in section two of this act, with the space on each map or plan designating any pillar of coal, the number of such pillar.

Certain officers to have access to mines.

Section 4. The mayor of cities, the burgess of boroughs, the boards of township commissioners of townships of the first class, and such engineers and other agents as they may employ, shall, at all reasonable times, be given access to

any portion of any anthracite coal mines or mining operations which it may be necessary or proper to inspect, for the purpose of determining whether the provisions of this act are being complied with, and all reasonable facilities shall be extended by the owner or operator of such mine or mining operation for ingress, egress, and inspection.

Section 5. The mayor of cities, the burgess in boroughs, the board of township commissioners in townships of the first class, shall have the power to prevent the mining of anthracite coal beneath the surface in any mine or mining operation in which the pillars of coal shall not have been numbered and the numbers thereof designated by maps or tracings as provided by this act; and where mining operations are being conducted in violation of this act, they shall have the power to prevent any miner or laborer, other than those necessary for the protection of life and property, from entering the mine or mining operation, until such time as the provisions of this act have been complied with.

Mining where pillars have not been designated.

Mining in violation of act.

Section 6. The provisions of this act shall not apply to townships of the second class, nor to any area wherein the surface overlying the mine or mining operation is wild or unseated land, nor where such surface is owned by the owner or operator of the underlying coal and is distant more than one hundred and fifty feet from any improved property belonging to any other person.

To what cases act is inapplicable.

Section 7. Any owner, operator, lessor, lessee, or general contractor, engaged in the mining of anthracite coal, or any president, director, general manager, superintendent or other person in charge of, or having supervision over, any anthracite coal mine or mining operation, who shall violate any provision of this act, shall be deemed guilty of a misdemeanor, and, upon conviction, shall be sentenced to pay a fine of not more than five thousand dollars, or undergo imprisonment for not more than one year, both or either, at the discretion of the court.

Violations.

Misdemeanor.

Penalty.

Section 8. The courts of common pleas shall have power to award injunction to restrain violations of this act.

Injunction.

Remedial legisla- Section 9. This act is intended as remedial legislation, tion. designed to cure existing evils and abuses, and each and every provision thereof is intended to receive a liberal construction such as will best effectuate that purpose, and no provision is intended to receive a strict or limited construction.

Construction. Section 10. It is hereby declared that the provisions of this act are severable one from another, and if, for any reason, this act shall be judicially declared and determined to be unconstitutional so far as relate to one or more words, phrases, clauses, sentences, paragraphs, or section thereof, such judicial determination shall not affect any other provision of this act. It is hereby declared that the remaining provisions would have been enacted notwithstanding such judicial determination of the validity in any respect of one or more of the provisions of this act.

When effective. Section 11. This act shall go into effect three calendar months after its final approval.

Repeal. Section 12. All acts and parts of acts inconsistent with this act are hereby repealed.

APPROVED—The 27th day of May, A. D. 1921.

WM. C. SPROUL.

APPENDIX E

DECISION OF THE UNITED STATES SUPREME COURT RELATING TO MINE SUBSIDENCE

[*Penna. Coal Co. v. Mahon*, 260 U. S. 393 (1922)]

This is a bill in equity brought by the defendants in error to prevent the Pennsylvania Coal Company from mining under their property in such a way as to remove the supports and cause a subsidence of the surface and of their house. The bill sets out a deed executed by the Coal Company in 1878, under which the plaintiffs claim. The deed conveys the surface, but in express terms reserves the right to remove all the coal under the same, and the grantee takes the premises with the risk, and waives all claim for damages that may arise from mining out the coal. But the plaintiffs say that whatever may have been the Coal Company's rights, they were taken away by an Act of Pennsylvania, approved May 27, 1921, P. L. 1198, commonly known there as the Kohler Act. The Court of Common Pleas found that if not restrained the defendant would cause the damage to prevent which the bill was brought, but denied an injunction, holding that the statute if applied to this case would be unconstitutional. On appeal the Supreme Court of the State agreed that the defendant had contract and property rights protected by the Constitution of the United States, but held that the statute was a legitimate exercise of the police power and directed a decree for the plaintiffs. A writ of error was granted bringing the case to this Court.

The statute forbids the mining of anthracite coal in such way as to cause the subsidence of, among other things, any structure used as a human habitation, with certain exceptions, including among them land where the surface is owned by the owner of the underlying coal and is distant more than one hundred and fifty feet from any improved property belonging to any other person. As applied to this case the statute is admitted to destroy previously existing rights of property and contract. The question is whether the police power can be stretched so far.

Government hardly could go on if to some extent values incident to property could not be diminished without paying for every such change in the

general law. As long recognized, some values are enjoyed under an implied limitation and must yield to the police power. But obviously the implied limitation must have its limits, or the contract and due process clauses are gone. One fact for consideration in determining such limits is the extent of the diminution. When it reaches a certain magnitude, in most if not in all cases there must be an exercise of eminent domain and compensation to sustain the act. So the question depends upon the particular facts. The greatest weight is given to the judgment of the legislature, but it always is open to interested parties to contend that the legislature has gone beyond its constitutional power.

This is the case of a single private house. No doubt there is a public interest even in this, as there is in every purchase and sale and in all that happens within the commonwealth. Some existing rights may be modified even in such a case. *Rideout v. Knox*, 148 Mass. 368. But usually in ordinary private affairs the public interest does not warrant much of this kind of interference. A source of damage to such a house is not a public nuisance even if similar damage is inflicted on others in different places. The damage is not common or public. *Wesson v. Washburn Iron Co.*, 13 Allen, 95, 103. The extent of the public interest is shown by the statute to be limited, since the statute ordinarily does not apply to land when the surface is owned by the owner of the coal. Furthermore, it is not justified as a protection of personal safety. That could be provided for by notice. Indeed the very foundation of this bill is that the defendant gave timely notice of its intent to mine under the house. On the other hand the extent of the taking is great. It purports to abolish what is recognized in Pennsylvania as an estate in land—a very valuable estate—and what is declared by the Court below to be a contract hitherto binding the plaintiffs. If we were called upon to deal with the plaintiffs' position alone, we should think it clear that the statute does not disclose a public interest sufficient to warrant so extensive a destruction of the defendant's constitutionally protected rights.

But the case has been treated as one in which the general validity of the act should be discussed. The Attorney General of the State, the City of Scranton, and the representatives of other extensive interests were allowed to take part in the argument below and have submitted their contentions here. It seems, therefore, to be our duty to go farther in the statement of our opinion, in order that it may be known at once, and that further suits should not be brought in vain.

It is our opinion that the act cannot be sustained as an exercise of the police power, so far as it affects the mining of coal under streets or cities in places where the right to mine such coal has been reserved. As said in a Pennsylvania case, "For practical purposes, the right to coal consists in the right to mine it." *Commonwealth v. Clearview Coal Co.*, 256 Pa. St. 328, 331. What makes the right to mine coal valuable is that it can be exercised with profit. To make it commercially impracticable to mine certain coal has very nearly the same effect for constitutional purposes as appropriating or destroying it. This we think that we are warranted in assuming that the statute does.

It is true that in *Plymouth Coal Co. v. Pennsylvania*, 232 U. S. 531, it was held competent for the legislature to require a pillar of coal to be left along the line of adjoining property, that, with the pillar on the other side of the line, would be a barrier sufficient for the safety of the employees of either mine in case the other should be abandoned and allowed to fill with water. But that was a requirement for the safety of employees invited into the mine, and secured an average reciprocity of advantage that has been recognized as a justification of various laws.

The rights of the public in a street purchased or laid out by eminent domain are those that it has paid for. If in any case its representatives have been so short sighted as to acquire only surface rights without the right of support, we see no more authority for supplying the latter without compensation than there was for taking the right of way in the first place and refusing to pay for it because the public wanted it very much. The protection of private property in the Fifth Amendment presupposes that it is wanted for public use, but provides that it shall not be taken for such use without compensation. A similar assumption is made in the decisions upon the Fourteenth Amendment. *Hairston v. Danville & Western Ry. Co.*, 208 U. S. 598, 605. When this seemingly absolute protection is found to be qualified by the police power, the natural tendency of human nature is to extend the qualification more and more until at last private property disappears. But that cannot be accomplished in this way under the Constitution of the United States.

The general rule at least is, that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking. It may be doubted how far exceptional cases, like the blowing up of a house to stop a conflagration, go—and if they go beyond the general rule, whether they do not stand as much upon tradition as upon principle. *Bowditch v.*

Boston, 101 U. S. 16. In general it is not plain that a man's misfortunes or necessities will justify his shifting the damages to his neighbor's shoulders. *Spade v. Lynn & Boston R. R. Co.*, 172 Mass. 488, 489. We are in danger of forgetting that a strong public desire to improve the public condition is not enough to warrant achieving the desire by a shorter cut than the constitutional way of paying for the change. As we already have said, this is a question of degree—and therefore cannot be disposed of by general propositions. But we regard this as going beyond any of the cases decided by this Court. The late decisions upon laws dealing with the congestion of Washington and New York, caused by the war, dealt with laws intended to meet a temporary emergency and providing for compensation determined to be reasonable by an impartial board. They went to the verge of the law but fell far short of the present act. *Block v. Hirsh*, 256 U. S. 135. *Marcus Brown Holding Co. v. Feldman*, 256 U. S. 170. *Levy Leasing Co. v. Siegel*, 258 U. S. 242.

We assume, of course, that the statute was passed upon the conviction that an exigency existed that would warrant it, and we assume that an exigency exists that would warrant the exercise of eminent domain. But the question at bottom is upon whom the loss of the changes desired should fall. So far as private persons or communities have seen fit to take the risk of acquiring only surface rights, we cannot see that the fact that their risk has become a danger warrants the giving to them greater rights than they bought.